



2007

wiring accessories
cable management
circuit protection
control equipment



 Electrium

LAURENCE
1000

Acknowledged as one of Britain's leading manufacturers of wiring accessories and circuit protection equipment. Crabtree's diverse product range is renowned for its outstanding quality and excellent value for money. Specified worldwide, Crabtree products are designed to satisfy the needs of specifiers, wholesalers, contractors and end-users in domestic, commercial and industrial markets alike.

Crabtree



Crabtree's reputation for pioneering new concepts in the electrical industry – right from the acclaimed Lincoln Switch in 1919 to the launch of the Starbreaker Modular Circuit Protection System, and Platinum low profile & flat plate wiring accessories, put us at the forefront of manufacturing technology. It is this insight into our customers' needs, together with the technical expertise to turn innovative ideas into top quality products that has made Crabtree a market leader.

Left
Electrium's purpose
built Commercial
Centre in Cannock,
Staffordshire

Crabtree is part of Electrium, one of the UK's largest independent electrical groups, which has offices and manufacturing sites in the UK, India, China and the Middle East.

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All Crabtree products comply with the applicable British Standard specification and should be installed by suitably qualified personnel in accordance with the requirements of relevant legislation, regulations (including IEE Wiring Regulations) and the accepted practice in the industry.

The products listed or described in this publication may be protected by one or more patents, and/or registered designs and/or applications. A full list of patents registered designs and applications may be obtained from the company secretary of Electrium Limited.



CAPITAL

POWER & CONTROL

Capital power and control accessories are fully design co-ordinated to offer consistent styling and inherent safety features across a broad range of applications.

The range of socket outlets, fused connection units and switches is complemented by products which cater for specific applications such as cooker control units, shaver units, fan control switches and shower control switches.



Wide concave rockers are easy to operate.

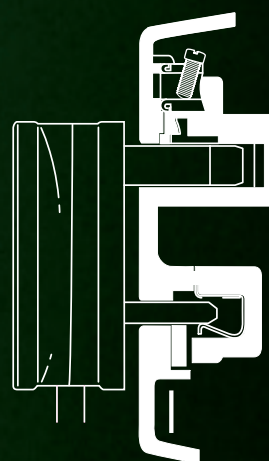


Two earth terminals are fitted as standard to the Switched Single and Twin Socket.

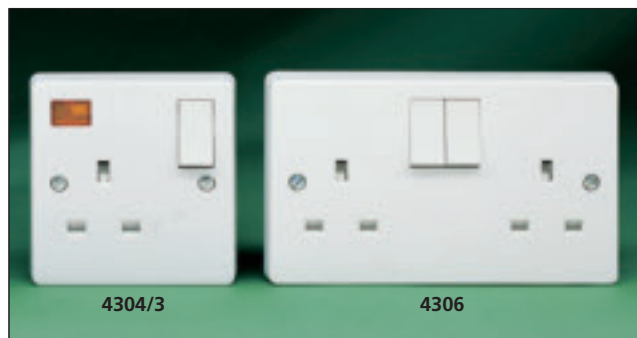


Unique labyrinth switch design minimises visible arc flash and prevents front access to live parts.

Positive drive switch action prevents balancing between the 'on' and 'off' position and gives reliable indication of the contact position.



Shutter mechanism is operated by earth pin of plug.



13A SWITCHED SOCKET OUTLETS

BS 1363	PACK QTY	
1 gang SP with two earth terminals	10	4304
1 gang DP with two earth terminals	10	4304/D
1 gang DP fitted with neon indicator	10	4304/3D
2 gang SP fitted with two earth terminals	5	4306
2 gang DP fitted with two earth terminals	5	4306/D
2 gang DP fitted with neon indicator	5	4306/3D
2 gang DP outboard rockers twin earth	5	4307
2 gang DP outboard rockers with neon indicator	5	4307/3

Dimensions	1 gang 86mm x 86mm
	2 gang 146mm x 86mm
Mounting boxes	1 gang 9047 surface, SB655 flush galv. or SB619 dry lining
	2 gang 9048 surface, SB665 flush galv. or SB629 dry lining

- Large capacity tunnel type terminals for easy wiring.
- Shallow back projection for ease of installation in a 25mm deep box.
- Two Earth terminals for use where compliance with section 607 (IEE wiring Regs.), high integrity earthing is necessary.

13A UNSWITCHED SOCKET OUTLETS

BS 1363	PACK QTY	
1 gang unswitched	10	7255
2 gang unswitched	5	7257

Dimensions	1 gang 86mm x 86mm
	2 gang 146mm x 86mm
Mounting boxes	1 gang 9047 surface, SB655 flush galv. or SB619 dry lining
	2 gang 9048 surface, SB665 flush galv. or SB629 dry lining

13A FUSED CONNECTION UNITS

BS 1363	PACK QTY	
DP Switched	10	4827
DP Switched with neon indicator	10	4827/3
Unswitched	10	4828
Unswitched with neon indicator	10	4828/3

Dimensions	86mm x 86mm
Mounting boxes	9047 surface, SB655 flush galv. or SB619 dry lining

- Fitted with knock-out position in bottom edge of plate for use with or without cord outlet. Suitable for flexible cord up to 10mm outside diameter.
- Fused on the line side with a 13A fuse link.
- Fuse ASTA certified and marked to BS1362. For spare fuse links see page 8.
- With fuse removed, carrier may be padlocked for extra on site 'maintenance' safety.
- Suitable padlock see page 114.
- Shallow back projection for ease of installation in a 25mm deep box.

13A SAFETY SOCKET WITH RCD PROTECTION

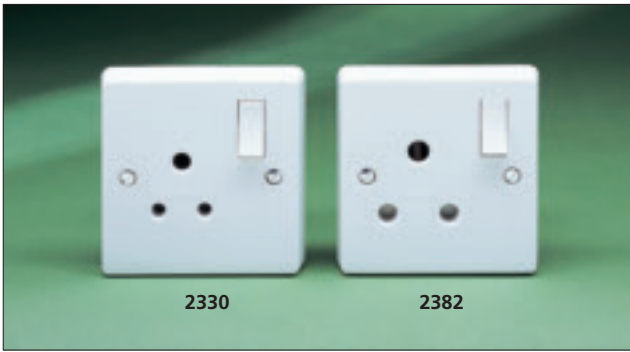
BS 7288	PACK QTY	
2 gang switched with neon indicator 30mA tripping current	1	4406/A03

Dimensions	146mm x 86mm
Mounting boxes	9048 surface, SB665 flush galv. or SB629 dry lining

See page 119 for further information.

Can be installed to replace any 2 gang size socket outlet on 25mm deep box.

All available with two earth terminals to enable installation to comply with section 607 (wiring regulations).



5A, 15A SWITCHED SOCKET OUTLETS

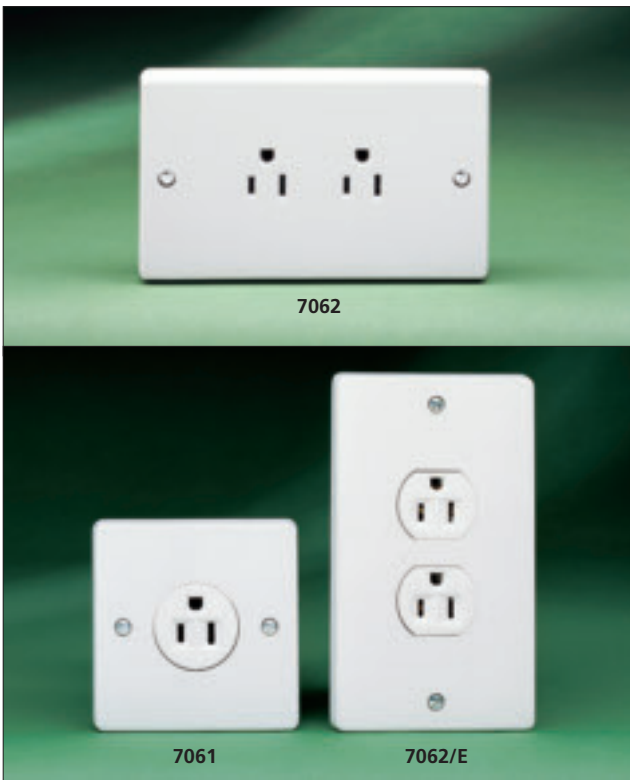
BS 546	PACK QTY	
5A Shuttered SP	10	2330
15A Shuttered SP	10	2382
Dimensions	86mm x 86mm	
Mounting boxes	2330 – 9047 surface, SB655 flush galv. or SB619 dry lining 2382 – 9041 surface, SB615 flush galv. or SB619 dry lining	



2A, 5A, 15A, 16A SOCKET OUTLETS

BS 546 WHERE APPLICABLE	PACK QTY	
2.5-16A 2 pin Unswitched unshuttered	10	7044*
2A Unswitched shuttered	10	7046
5A Unswitched shuttered	10	7047
Dimensions	86mm x 86mm	
Mounting boxes	7044, 7046, 7047–9047 surface, SB655 flush galv. or SB619 dry lining	

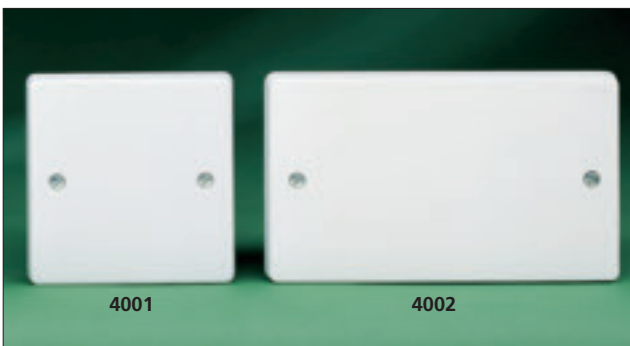
* Export only



15A 125V AMERICAN STANDARD SOCKET OUTLETS

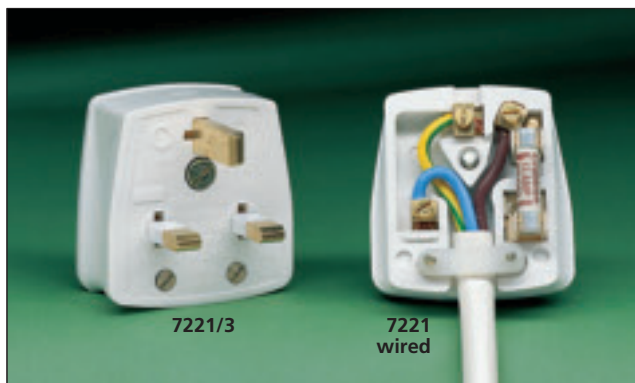
NEMA CONFIGURATION 5-15	PACK QTY	
1 gang	10	7061
2 gang Horizontal	5	7062
2 gang Vertical	5	7062/E
Dimensions	1 gang 86mm x 86mm 2 gang 86mm x 146mm	
Mounting boxes	1 gang 9047 surface, SB655 flush galv. or SB619 dry lining 2 gang 9048 surface, SB665 flush galv. or SB629 dry lining	

Tunnel Type termination accepts 6.0mm² cable (7062).
Screw-in termination accepts 4mm² cable.



BLANKING PLATES

BS 5733 WHERE APPLICABLE	PACK QTY	
1 gang	20	4001
2 gang	20	4002
1 gang architrave	20	4003
2 gang architrave	20	4004
Dimensions	1 gang 86mm x 86mm, 2 gang 146mm x 86mm 1 gang architrave 33mm x 86mm 2 gang architrave 33mm x 146mm	



3A, 13A FUSED SAFETY PLUGS

BS 1363 ASTA MARKED	PACK QTY	
Fused at 13A	10	7221
Fused at 3A	10	7221/3

Live and neutral pins have moulded nylon sleeves for safety.

ASTA certified for complete compliance with BS 1363.

ASTA approved by reference number 4.

*Fitted with ASTA certified fuse link marked BS 1362, List Nos. **6920/3** and **6920/13**, see below.*



13A FUSED RESILIENT PLUGS

BS 1363/A	PACK QTY	
Fused at 13A – White	10	7222/WH
Fused at 13A – Black	10	7222/BK

Live and neutral pins have moulded nylon sleeves for safety.

Cover in rubber material. Base in nylon.

ASTA approved by reference number 20.

*Fitted with ASTA certified fuse-link marked to BS 1362, List No. **6920/13**, see below.*



13A NON-INTERCHANGEABLE PLUGS

	PACK QTY	
Fused at 13A – White	10	13NP
Fused at 13A – Red	10	13NPRD

*Only for use with **Britmac non-standard sockets***



2A, 5A, 15A PLUGS

BS 546	PACK QTY	
2A	10	7011
5A	10	7111
15A	10	7211

Moulded from white thermoset plastic.

Live and neutral pins have moulded nylon sleeves for safety.

Round pin plugs are not fused.



FUSE LINKS

	PACK QTY	
3A Red	100	6920/3
5A Black	100	6920/5*
13A Brown	100	6920/13

Type tested to BS 1362 and ASTA certified.

** Price and delivery on application.*



5A CARD SWITCH

	PACK	QTY
5A Card Switch	5	4018

Dimensions	86mm x 94mm
Mounting boxes	SB615 flush galv. or SB619 dry lining

Controls energy consumption in installations such as hotels by ensuring that appliances are not left on when rooms are unoccupied.

The switch is operated by a door entry card and controls the supply to a room via a suitably rated contactor.

Will accept door entry cards up to 86mm x 54mm x 1mm.

Mounting box must be 35mm in depth.



10A TP CONTROL SWITCHES

	PACK	QTY
10A Three pole isolating switch marked with isolator symbol	5	4017

10A Three pole isolating switch marked with isolator and fan symbol	5	4017/1
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Dimensions	86mm x 86mm
Mounting boxes	9043 surface, SB623 flush galv. or SB619 dry lining

Provides local isolation of fans with or without timers whilst the rest of the circuit remains live. Enables repair or routine maintenance of fans.

240V only.

For full details of compliance with BS EN 60947-3 see Technical Data page 199.



20A DP CONTROL SWITCHES

	PACK	QTY
20A DP Control Switch	10	4015

Fitted with neon indicator	10	4015/3
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Fitted with neon indicator and marked 'water heater'	10	4015/31
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Dimensions	86mm x 86mm
Mounting boxes	9047 surface, SB655 flush galv. or SB619 dry lining

Fitted with knock out position in bottom edge of plate for use with or without cord outlet.

Cord outlet suitable for flexible cord up to 10mm outside diameter.

Two earthing terminals are fitted to the switches.



32A DP CONTROL SWITCH

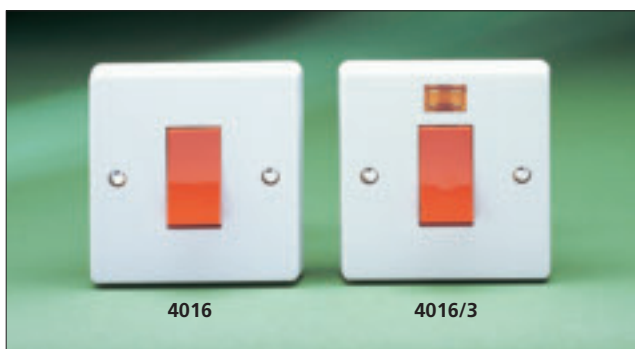
	PACK	QTY
Fitted with neon indicator	10	4013/3

Dimensions	86mm x 86mm
Mounting boxes	9041 surface, SB615 flush galv. or SB619 dry lining

Fitted with knock-out position in bottom edge of plate for use with or without cord outlet.

Cord outlet suitable for flexible cord up to 10mm outside diameter.

Two earthing terminals are fitted to the switches.



45A DP CONTROL SWITCHES

	PACK	QTY
45A DP Control Switch	5	4016

With neon indicator	5	4016/3
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Dimensions	86mm x 86mm
Mounting boxes	9041 surface, SB615 flush galv. or SB619 dry lining

Dual Screw Terminal.



4521/31

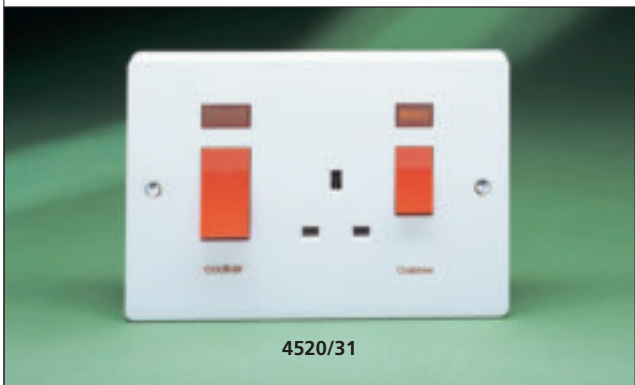
45A DP 'SLIM LINE' COOKER CONTROL UNITS

BS 4177 & BS 1363	PACK QTY	
45A DP main switch and 13A switch socket outlet. Faceplate marked 'cooker'	1	4521/1
45A DP main switch and 13A switch socket with neon indicators. Faceplate marked 'cooker'	1	4521/31

Dimensions 146mm x 86mm

Mounting boxes 9054 surface, SB625 flush galv. or SB629 dry lining

- Same plate size as standard twin socket.
- Large capacity tunnel terminals on live and neutral take up to 10mm² cable.
- Two earth terminals are fitted.
- Separate double pole switching for both cooker and socket outlet.



4520/31

45A DP COOKER CONTROL UNITS

BS 4177 & BS 1363	PACK QTY	
45A DP main switch and 13A switch socket outlet. Faceplate marked 'cooker'	1	4520/1
45A DP main switch and 13A switch socket with neon indicators. Faceplate marked 'cooker'	1	4520/31

Dimensions 168mm x 114mm

Mounting boxes 9052 surface or 9338/GV flush



4523/3

50A DP COOKER CONTROL UNITS

	PACK QTY	
Faceplate marked 'cooker'	1	4523
Faceplate marked 'cooker' and fitted with neon indicator	1	4523/3
Blank Faceplate	1	4211/BLANK

Dimensions 165mm x 178mm

Mounting boxes For 'retro fit' applications – allows use of original flush box

- Durable white powder coated metal faceplate.



4506
4507

4506
rear view

45A CABLE OUTLETS

BS 5733	PACK QTY	
With terminals and cable clamp	10	4506
With cable clamp	10	4507

Cable clamp will accept 1 x 16mm² through cable

Dimensions 86mm x 86mm

Mounting boxes 9041 surface, SB615 flush galv. or SB632 dry lining

Cable knock-out in cover prevents access to terminals before outgoing cable is fitted.



50A DP CONTROL SWITCHES

BS EN 60669-1	PACK QTY	
50A DP Control Switch	5	4500
Faceplate marked 'cooker'	5	4500/1
Fitted with neon indicator	5	4500/3
Faceplate marked 'cooker' and fitted with neon indicator	5	4500/31

Dimensions 86mm x 146mm
Mounting boxes 9040 surface, SB625 flush galv. or SB629 dry lining

BS EN 60947-3 rating 240V 50A category of duty AC22.



20A CORD OUTLET

BS 5733 WHERE APPLICABLE	PACK QTY	
With cable clamp	10	4075

Dimensions 86mm x 86mm
Mounting boxes 9047 surface, SB655 flush galv. or SB619 dry lining

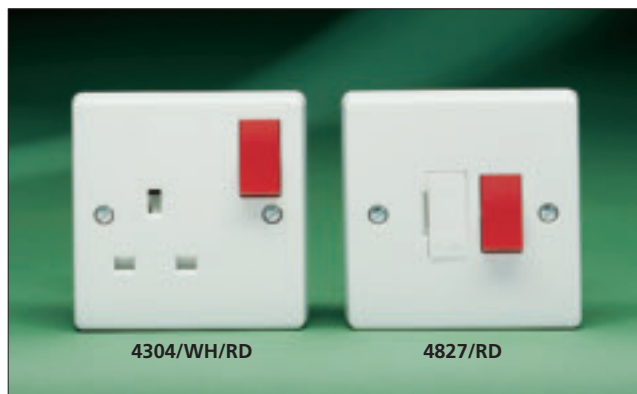
Outgoing cable 2.5mm² max with 11mm diameter max outer sheath.



RED FRONTPLATE, RED ROCKER

BS 1363	PACK QTY	
1 gang DP Dual Earth	10	4304/RED
2 gang DP Dual Earth	5	4306/RED
FCU Switched	10	4827/RED
FCU Unswitched	10	4828/RED

For applications where essential supply systems are in use, sockets and fused connection units completely in Red are available to order.



RED ROCKERS

For applications where essential supply systems are in use, sockets and fused connection units with red rockers are available to order. These are ideal for use in hospitals, computer installations, etc.

To order add suffix to List No.
 ie 4306 with red rockers = 4306/WH/RD.
 4304 with red rockers = 4304/WH/RD.
 4827 with red rockers = 4827/RD.
 4307 with red rockers = 4307/RD.

For Rockergrid switches with red rockers see Rockergrid section page 68.



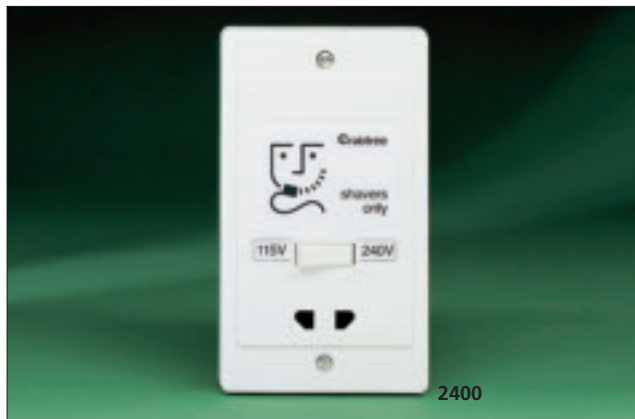
PRODUCT MARKING SERVICE

A wide range of markings can be added to 13A fused connection units and double pole control switches. The majority of these markings are consistent in style, colour and position with the standard Tampo-printed 'water heater' marking on List No.4015/31. All of the markings offer the same high level of durability.

To order any of the markings listed below, add suffix to List No. ie 4827 marked 'fridge freezer' = 4827/FF.

MARKING	SUFFIX	MARKING	SUFFIX
air condition	AC	humidity vent	HV
alarm	AL	intruder alarm	IA
appliance	APP	immersion heater	IH
bathroom	BA	infra red sauna	IRS
bell transformer	BE	jacuzzi	JA
bathroom extract fan	BEF	kitchen extract fan	KEF
bathroom heater	BH	light	LG
boiler	BO	lift	LI
boiler supply	BOS	loft light	LL
boost	BST	microwave	MW
British Telecom	BT	night immersion	NI
caravan	CA	off peak	OFFP
CCTV	CCTV	outside light	OL
central heating	CH	on peak	ONP
cooker	CK	oven	OV
cupboard light	CL	pelmet light	PEL
convector heater	CNH	plinth heater	PLH
day boost	DB	panel heater	PH
detector	DE	refrigerator	RF
downflow heater	DH	security alarm	SA
door bell	DO	socket below	SB
dish washer	DW	smoke detector	SD
dryer	DY	security equipment	SE
emergency circuit	EC	saniflo	SF
extractor fan	EF	shower	SH
extractor hood	EH	security light	SL
fire alarm	FA	shower pump	SP
for cleaners use only	FCO	storage heater	ST
fan coil unit	FCU	steam cabinet	STC
feature fire	FE	stair lift	STL
fridge/freezer	FF	tanning cabinet	TC
fan heater	FH	tumble dryer	TD
fire	FI	towel rail	TR
fan	FN	traditional sauna	TS
fridge	FR	TV amplifier	TVA
freezer	FZ	underfloor heating	UH
gas ignition	GI	underlights	UL
garden shed	GS	vent fan	VF
hand dryer	HA	water heater	WA
hob	HB	water cooler	WC
cooker hood	HD	waste disposal	WD
heating	HG	washing machine	WM
hair dryer	HI	washer	WS
heating isolator	HS		
heater	HT		

These popular markings are offered on a fast track service in the standard wiring accessories colour. For price and delivery information on other markings not listed above, contact our Technical Services Department.



SHAVER SUPPLY UNIT

BS EN 61558-2-5		PACK QTY	
input	240V 50Hz	1	2400
output	{ 115V 50Hz 240V 50Hz		
input	115V 50Hz	1	2400/E
output	{ 115V 50Hz 240V 50Hz		

Dimensions 86mm x 146mm

Mounting boxes 9053 surface, SB628 flush galv. or SB631 dry lining

Complies with the requirements of the IEE Wiring Regulations (BS 7671) for use in rooms containing a fixed bath or shower.



LIGHT & SHAVER UNIT

BS EN 61558-2-5, BS 4533-102.1		PACK QTY	
input	240V 50Hz	Unswitched 1	2402/E
output	{ 115V 50Hz 240V 50Hz		
60W 284mm tungsten lamp			

Dimensions 458mm x 68mm x 74mm

Complies with the requirements of the IEE Wiring Regulations (BS 7671) for use in rooms containing a fixed bath or shower.

- Tough, impact resistant, all-moulded construction – no need to bond extraneous metal work.
- Diffuser is removed complete with lamp fitting to facilitate safer lamp changes.
- 60W lamp can be switched independently by a separate pull switch.
- Moulded back-plate may be used as a template.

SHAVER SUPPLY UNIT AND LIGHT & SHAVER UNIT

- 20VA minimum output at rated voltage.
- Suitable for use for 'Mains shavers only'.
- Insertion of plug switches unit on.
- Incorporates an automatic thermistor protection device.
- Accepts most standard British, Continental, American and Australian 2 pin plugs.



16A CEILING SWITCHES

BS EN 60669-1		PACK QTY	
2 way SP		10	2161
1 way DP with neon indicator		10	2163

Dimensions 68.5mm diameter x 42.5mm

Mounting boxes Integral pattress for surface mounting.

Can be mounted to a small circular conduit box.

Two way switch may be wired as one way.

Standard pull cord/acorn is 1.5m long, in white.

Fully rated for fluorescent or inductive loads.

Suitable for use with 16mm x 16mm mini-trunking.



50A CEILING SWITCHES

BS EN 60669-1		PACK QTY	
1 way DP with neon and mechanical indicator		1	2167

Mounting boxes Integral pattress for surface mounting.

Can be mounted to a large circular conduit box.

Complies with the requirements of the IEE Wiring Regulations (BS 7671) for use as an isolating device.

Terminals will accept up to 10mm² cable.

Standard pull cord/acorn is 1.5m long, in white.

Suitable for use with 25mm x 16mm trunking.

Rated for non-inductive loads only.

For 6A ceiling switches see Capital Lighting section, page 17.

CAPITAL

LIGHTING CONTROL

The extensive Capital lighting range of plate switches and ceiling accessories combines modern styling with advanced safety design features.

The standard range of ceiling accessories now offers a competitive alternative to the safety range.

The new compact fluorescent lampholder allows domestic dwellings to have some form of energy efficient lighting.

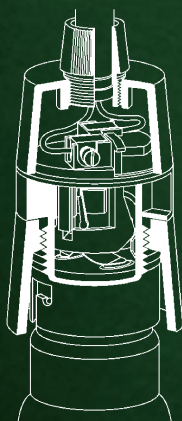
Each plate switch will accept a seek light which is housed unobtrusively in the body of the switch to help locate it in the dark – a useful aid in sheltered housing.



Wide concave rockers are easy to operate.



Design of the Safety lampholder body is common to both pendant and batten lampholders. Ensures that the lamp must be fully inserted before the lampholder contacts become 'live'.



MINDER

PIR SENSORS

Minder passive infra red sensors (PIR) allow for the automatic control of lighting and other equipment.



Minder PIR Sensor.



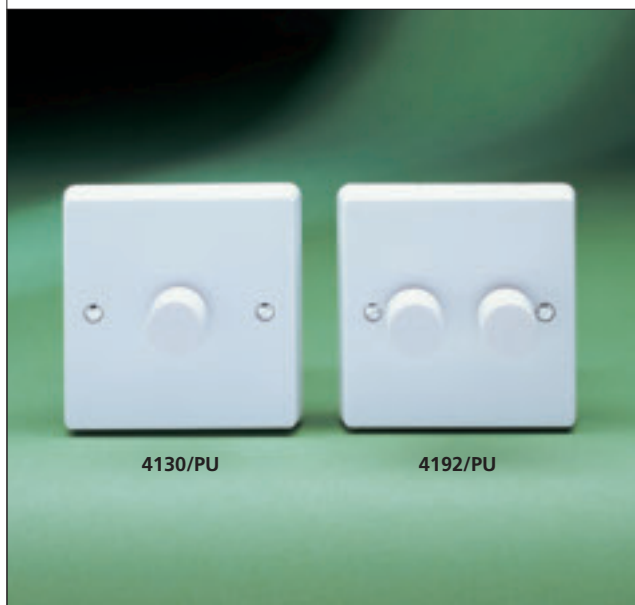
Energy saving – Provides power only when movement is detected.



Courtesy – Automatic illumination of doorways to welcome visitors.



Security – Automatic lighting control to deter intruders.



10AX PLATE SWITCHES

BS EN 60669-1	PACK QTY	
Seeklight	1	4009
1 gang 1 way SP	10	4070
1 gang 2 way SP	10	4170
1 gang 1 way DP	10	4171
2 gang 2 way SP	10	4172
3 gang 2 way SP	10	4173
4 gang 2 way SP	5	4174
1 gang intermediate	10	4175
6 gang 2 way SP	5	4176

Dimensions 1-3 gang 86mm x 86mm
4-6 gang 146mm x 86mm

Mounting boxes 1-3 gang 9043 surface, SB623 flush galv. or SB619 dry lining
4-6 gang 9048/1 surface, SB665 flush galv. or SB629 dry lining

Two way switches can be wired as one way.

Fully rated for fluorescent or inductive loads.

- All 86mm x 86mm and 146mm x 86mm switches have the facility to fit one seeklight assembly, List No. **4009**, as above, to assist location in the dark.

10A RETRACTIVE SWITCHES

BS EN 60669-1	PACK QTY	
1 gang 1 way SP marked with bell symbol	10	4096/B
1 gang 2 way SP marked with bell symbol	10	4096/2WB
1 gang 2 way SP marked 'press'	10	4096/P

Dimensions 86mm x 86mm

Mounting boxes 9043 surface, SB623 flush galv. or SB619 dry lining

- All 86mm x 86mm and 146mm x 86mm switches have the facility to fit one seeklight assembly, List No. **4009**, as above, to assist location in the dark.
- Can be wired for normally open (N/O) or normally closed (N/C) circuits.

DIMMER SWITCHES

BS EN 55014 BS EN 60669-2		
ROTARY MODULES	PACK QTY	
1 gang 250W - Push on/off	10	4130/PU
2 gang 250W - Push on/off	10	4132/PU
1 gang 400W - Push on/off	10	4190/PU
2 gang 400W - Push on/off	10	4192/PU

Dimensions 1-2 gang 86mm x 86mm
Minimum installation depth 35mm

- Suitable for Tungsten filament lamps.
- 2 x 400W dimmer modules on a 1 gang plate should have a combined rating of 500W maximum.



10A 'CORINTHIAN' PLATE SWITCHES

BS EN 60669-1	PACK	QTY
10AX 1 gang 2 way SP	10	5170
10AX 2 gang 2 way SP	10	5172
10AX 3 gang 2 way SP	10	5173
20AX 1 gang intermediate	10	5175
10AX 1 gang retractive marked 'Press'	10	5177

Dimensions 86mm x 86mm
Mounting boxes 9047 surface, SB623 flush galv. or SB619 dry lining

Intermediate switches require a 29mm back box.

Fully rated for fluorescent or inductive loads.

- Seeklight facility available see page 34 for details.
- Clip-on trim conceals fixing screws.
- Extra wide rocker makes Corinthian ideal for use in sheltered housing installations.



6A CEILING SWITCHES

BS EN 60669-1	PACK	QTY
1 way SP	10	2041
2 way SP	10	2141
Retractive SP	10	2147

Dimensions 68.5mm dia x 42.5mm
Mounting boxes Complete with pattress for surface mounting.
 Can be mounted to small circular conduit box.

Two way switch can be wired as one way.

Retractive switch can be wired for normally open (N/O) or normally closed (N/C) circuits.

Standard pull cord/acorn is 1.5m long in white.

Retractive pull cord/acorn is 2m long in red.

Fully rated for fluorescent or inductive loads.

Variations to retractive switch are available to order.

For 16A & 50A ceiling switches see Capital Power & Control section, page 13.



10AX ARCHITRAVE SWITCHES

BS EN 60669-1	PACK	QTY
1 gang retractive SP marked with bell symbol	10	4097/B
1 gang retractive SP marked 'press'	10	4097/P
1 gang 2 way SP	10	4177
2 gang 2 way SP	10	4178
1 gang 1 way DP	10	4179
1 gang intermediate	10	4180

Dimensions 1 gang 32mm x 86mm
 2 gang 32mm x 146mm

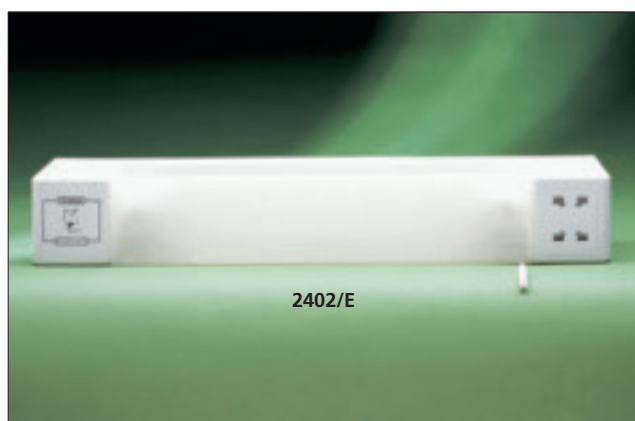
Mounting boxes 1 gang **4005** surface or **9257** flush
 2 gang **4006** surface or **9258** flush

Two way switches can be wired as one way.

Fully rated for fluorescent or inductive loads.

Retractive switches can be wired for normally open (N/O) or normally closed (N/C) circuits.

Retractive switches are 10A rated.



SHAVER SUPPLY UNIT

BS EN 61558-2-5	PACK	QTY
input 240V 50Hz output { 115V 50Hz 240V 50Hz	1	2400
input 115V 50Hz output { 115V 50Hz 240V 50Hz	1	2400/E

LIGHT & SHAVER UNIT

BS EN 61558-2-5, BS 4533-102.1	PACK	QTY
input 240V 50Hz Unswitched	1	2402/E
output { 115V 50Hz 240V 50Hz		
60W 284mm tungsten lamp		

For more information on the Shaver Unit see page 13.



5850

SAFETY PENDANT LAMPHOLDERS

BS EN 61184, T2 RATING	PACK QTY	
Safety pendant lampholder	20	5850

Fixed terminals on pendant lampholder accept 1.0mm cable.

- 'Wipe clean' contacts avoid lamp seizure to pins making for safe and easy lamp replacement.
- Cord grip on pendant lampholder prevents strain on the terminal wiring.



5851

5801

SAFETY BATTEN LAMPHOLDERS

BS EN 61184, T2 RATING	PACK QTY	
Safety batten lampholder	1	5851
Home office shield	50	5801

Batten lampholder has terminals for live, neutral, loop in and protective earth.

Fixing centres 50.8mm.

Fixed terminal strip on batten lampholder accepts 1.5mm cable.

Home office shield supplied with the safety batten lampholder.

Base diameter 92mm.

- 'Wipe clean' contacts avoid lamp seizure to pins making for safe and easy lamp replacement.



5855

SAFETY PENDANT SETS

BS67 BS EN 61184, T2 RATING	PACK QTY	
With 6" cord	10	5855
With 9" cord	10	5855/9
With 12" cord	10	5855/12

Comprises safety ceiling rose (List No. **5860**) and safety pendant lampholder (List No. **5850**), supplied with appropriate length of heat resistant 0.75mm² twin core circular cord to BS 6141 for service loads up to 2.5kg.



5856

SAFETY HEAVY DUTY PENDANT SET

BS67 BS EN 61184, T2 RATING	PACK QTY	
With 6" cord	10	5856

Comprises heavy duty ceiling rose (List No. **5861**) and safety pendant lampholder (List No. **5850**), supplied with appropriate length of heat resistant 0.75mm² twin core circular cord to BS 6141 for service loads up to 2.5kg.



5855/S

SAFETY LAMPHOLDER PENDANT SET

BS67 BS EN 61184, T2 RATING	PACK QTY	
With 6" cord	10	5855/S
With 9" cord	10	5855/S9
With 12" cord	10	5855/S12

Comprises standard ceiling rose (List No. **3443**) and safety pendant lampholder (List No. **5850**), supplied with appropriate length of heat resistant 0.75mm² twin core circular cord to BS 6141 for service loads up to 2.5kg.



LOW ENERGY LAMPHOLDERS

10/13W LOW ENERGY LAMPHOLDERS FOR 4 PIN CFLs
PACK QTY

6" pendant set with compact fluorescent lampholder	1	3450/LECFL
Compact fluorescent lampholder	1	3442/CFL

- Lampshade requires 42mm diameter.
- Will accept 10/13W G24q1 or 18W G24q2, 4 pin plug in lamp (not supplied).
- See page 202 for Technical details.



SAFETY CEILING ROSE

BS 67
PACK QTY

Safety ceiling rose	10	5860
---------------------	----	-------------

Terminals for live, neutral, loop in and protective earth.
Fixed terminal strip accepts 1.5mm cable.
For service loads up to 2.5kg.
Fixing centres 50.8mm.
Base diameter 92mm.
Cord grip prevents strain on the terminal wiring.



HEAVY DUTY CEILING ROSE

BS 67
PACK QTY

Heavy duty ceiling rose	10	5861
-------------------------	----	-------------

Terminals for live, neutral, loop in and protective earth.
Base diameter 81mm.

- Two screw cover fixing giving strong secure fixing and automatic earthing of decorative luminaires.
- 15kg load capacity.
- Integral pattress for surface mounting.
- Can be mounted on circular conduit box.



STANDARD CEILING ROSE

BS 67
PACK QTY

Ceiling rose with integral terminal block	10	3443
---	----	-------------

- Terminals accept up to 1.5mm² cable.
- Separate earth terminals with 6mm² capacity.
- 50.8mm fixing centres.
- 3 sets of knockouts.



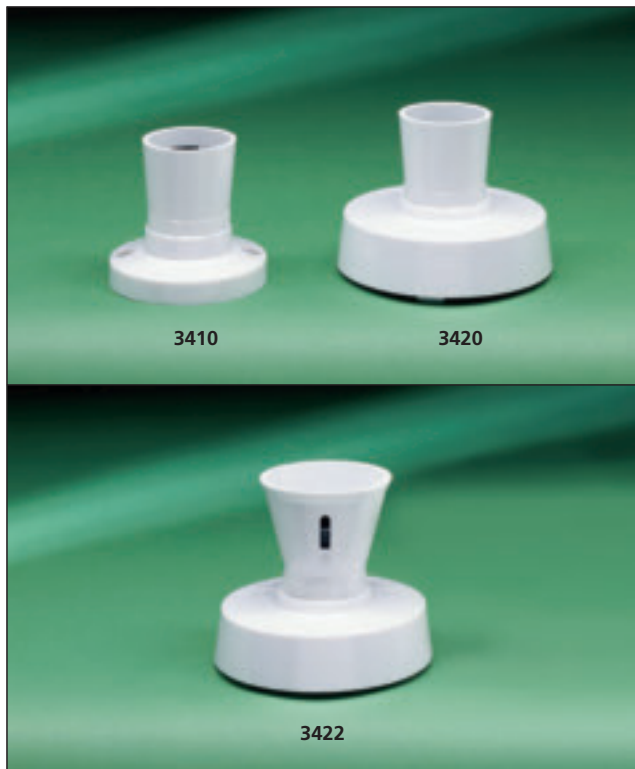
STANDARD CEILING HALO

PACK QTY

Ceiling Halo	10	3443/HALO
--------------	----	------------------

The Ceiling Rose Halo gives a neat finish should the ceiling be damaged.

- Outside diameter 120mm.



STANDARD STRAIGHT BATTEN LAMPHOLDERS

BS EN 61184, T2 RATING	PACK QTY	
Batten lampholder, 3 terminal direct wiring with short skirt	10	3410
Batten lampholder, integral terminal block with short skirt	10	3420
Batten lampholder, integral terminal block with Home Office skirt	10	3422
Dimensions	84mm x 162mm x 140mm	

- 50.8mm fixing centres.
- Non-rising terminals.
- Non-stick skirt.
- 3 sets of knockouts are supplied on units with integral terminal block.
- 3420, 3422 fitted with heat resistant tails.



STANDARD ANGLE BATTEN LAMPHOLDERS

BS EN 61184, T2 RATING	PACK QTY	
Angle batten lampholder, separate 4 way terminal block with Home Office skirt	10	3432
● Lampholder is fitted with heat-resistant tails. ● Supplied with integral backplate. ● 50.8mm fixing centres. ● Non-rising terminals. ● Non-rising skirt.		



STANDARD PENDANT SETS & LAMPHOLDERS

BS 67 & BS EN 61184, T2 RATING	PACK QTY	
Pendant lampholder, T2 rating with spring plungers	10	3442
Pendant set with 6" cord	10	3450
Pendant set with 9" cord	10	3450/9
<i>Pendant sets comprise ceiling rose (List No 3443) and pendant lampholder (List No. 3442), supplied with appropriate length of heat resistant 0.75mm² twin core circular cord.</i>		

- Lampholder is constructed from one-piece thermoplastic interior.



STANDARD JUNCTION BOXES

BS 6220	PACK QTY	
20A 4 terminal junction box, white	10	3462/WH
20A 4 terminal junction box, black	10	3462/BK
30A 3 terminal junction box, white	10	3463/WH
30A 3 terminal junction box, black	10	3463/BK

- Slotted pillar-type terminals accept a maximum 4 x 4.0mm² (30A) or 4 x 1.5mm² (20A) twin and earth cables.
- Shutters on cover close any entry holes not in use.
- Clear symbols indicate which entries are open and closed.



MINDER 90° SENSOR

IP55	PACK QTY	
90° Sensor	1	6852
Dimensions	102mm x 102mm x 182mm	
● Minder 90° can be swivelled vertically +90° -40° ● Sensor head can be swivelled horizontally +/- 65° ● Can be wall or ceiling mounted. ● Minder 90° offers rear-field "anti-creep" protection.		



MINDER 220° SENSOR

IP55	PACK QTY
220° Sensor	1 6878
Dimensions	102mm x 102mm x 182mm
● Minder 220° can be swivelled vertically +90° -40° ● Sensor head can be swivelled horizontally +/- 65° ● Can be wall or ceiling mounted. ● Minder 220° offers rear-field "anti-creep" protection.	



MINDER 280° SENSOR

IP55	PACK QTY
280° Sensor	1 6880
Dimensions	102mm x 102mm x 182mm
● Minder 280° can be swivelled vertically +90° -40° ● Sensor head can be swivelled horizontally +/- 65° ● Can be wall or ceiling mounted. ● Minder 280° offers rear-field "anti-creep" protection.	

Full technical information - see page 198.



ANCILLIARY ITEMS

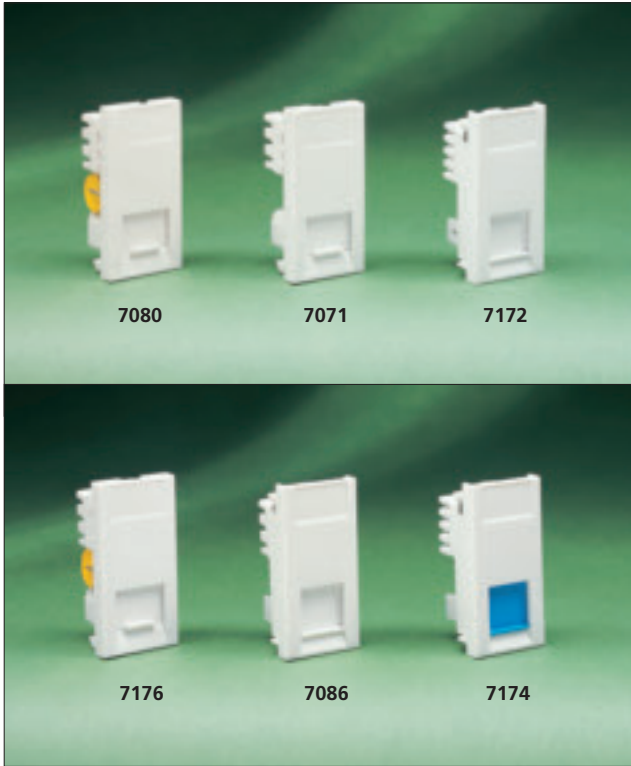
	PACK QTY	
Replacement standard short skirt	50	3401
1.5m long white pull cord & white acorn	1	6900
2m long red pull cord & red acorn	1	6900/1RD
2m long white pull cord with red acorn	1	6900/1
100m ball of white pull cord	1	6900/2
100m ball of red pull cord	1	6900/2RD
Ceiling Switch acorn, red	1	7410RD
Ceiling Switch acorn, white	1	7410WH
Neon indicator for 50A ceiling switch	1	7697

DATAPAK

Crabtree's Datapak range compliments the complete Capital and Platinum range of products.

The range consists of patch panels, patch leads and a wide variety of Communications, Data and co-axial outlets.





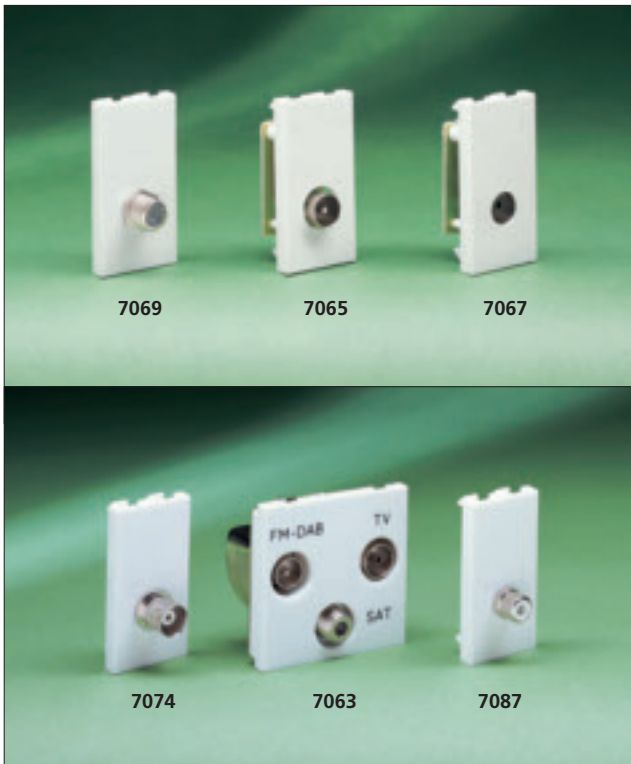
COMMUNICATION MODULES

	PACK QTY	
BT Master Voice	25	7080
BT Master Voice, Left Handed	25	7080/LH
BT secondary Voice, 6 wire	25	7071
RJ45 (single) module, 8 wire – Category 5e	25	7172
RJ45 ISDN terminated	25	7174
RJ11/12	25	7086
PABX Voice	25	7176
RJ45 (Twin) module	25	7173

Dimensions 25mm x 50mm (1 Module)

Also available in Black - Add suffix **BK** to list No.

ie: BT Master in Black = 7080/**BK**.



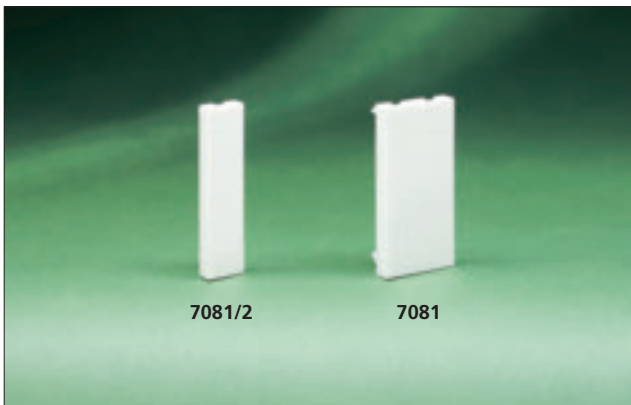
DATA AND CO-AXIAL MODULES

	PACK QTY	
BNC single module with 75 Ohm crimp connector	25	7074
TV outlet (male)	25	7065
TV outlet (female)	25	7067
F type Satellite	25	7069
Triplex Unit (TV, FM, Sat)	25	7063
Quadplexer with TV return (TV, TV return, FM, Sat1 & Sat 2)	10	7064
TV outlet screened, return	25	7060
Phono (Female)	25	7087

Also available in Black - Add suffix **BK** to list No.

ie: triplex unit in black = 7063/**BK**.

Dimensions 25mm x 50mm (1 Module)
(except 7063 – 50mm x 50mm
& 7064 – 75mm x 50mm)



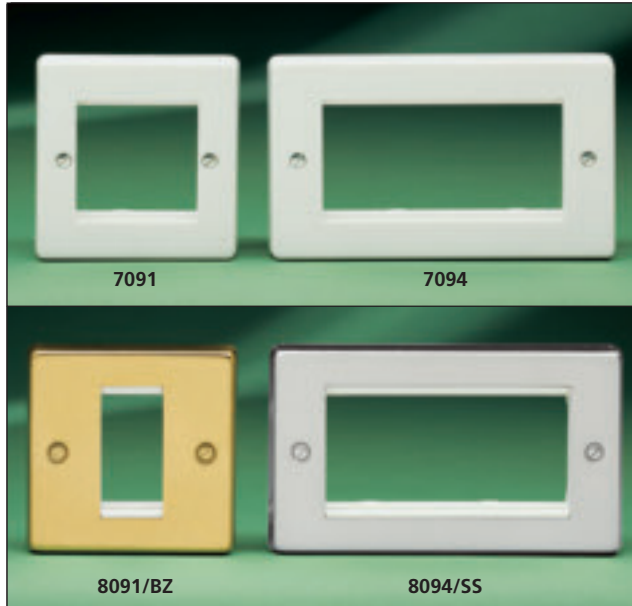
BLANK MODULES & ACCESSORIES

	PACK QTY	
1/2 module size	25	7081/2
1 module size	25	7081
2 module size	10	7082
IDC Tool	20	6915
IDC Crimp Tool	1	7915

Also available in Black - Add suffix **BK** to list No. ie: 1 module blank in black = 7081/**BK**.

Dimensions 7081/2 12.5mm x 50mm
7081 25mm x 50mm

See page 201 for further Technical details.



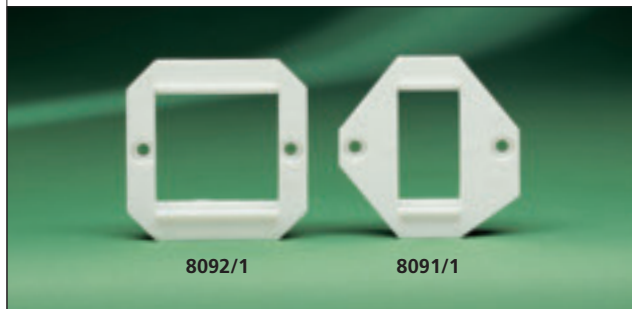
MOUNTING PLATES CAPITAL

BS 5733 WHERE APPLICABLE	PACK QTY	
2 module moulded	10	7091
4 module moulded	10	7094
1 module metal plate (fitted with grid)	5	8091/_ _
2 module metal plate (fitted with grid)	5	8092/_ _
4 module metal plate (fitted with grid)	5	8094/_ _

Dimensions 86mm x 86mm, 1 & 2 module
86mm x 146mm, 4 module

Mounting boxes 7091, 8091*, 8092*,
9041 surface, SB615 flush galv. or SB619 dry lining
7094, 8094*,
9040 surface, SB625 flush galv. or SB629 dry lining

* Metal plates complete with mounting grid and available in Satin Chrome (**SC**),
Bronze (**BZ**), Highly Polished Chrome (**HPC**) and Polished Brass (**PB**) finishes.
Metal plates complete with mounting grid are available with a black moulded
mounting grid - Add **BK** to list No. ie: 1 module plate with black grid = 8091/SCBK.



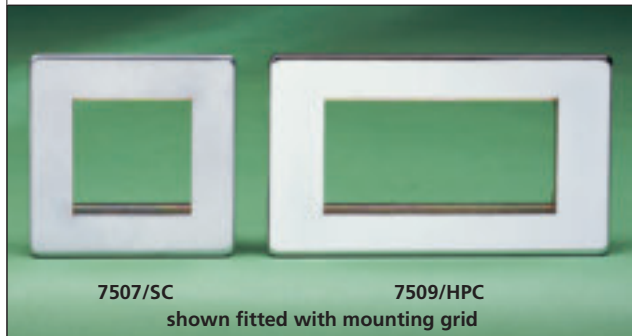
MOUNTING GRIDS – SEPARATE SALE

	PACK QTY	
1 module grid	10	8091/1
2 module grid	10	8092/1
4 module grid	10	8094/1

Separate sale grids enable communications modules to be mounted in OEMs
own decorative plates.

Supplied complete with earthing tag.

Available in black, Add **BK** to list No. ie: 1 module grid = 8091/1BK.



MOUNTING PLATES PLATINUM LOW PROFILE

BS 5733 WHERE APPLICABLE	PACK QTY	
2 module	10	7507/_ _
4 module	10	7509/_ _

Dimensions 2 module 88mm x 88mm, 4 module 88mm x 148mm

Finishes available are: Satin Chrome (**SC**) Highly Polished Chrome (**HPC**)
& Polished Brass (**PB**).

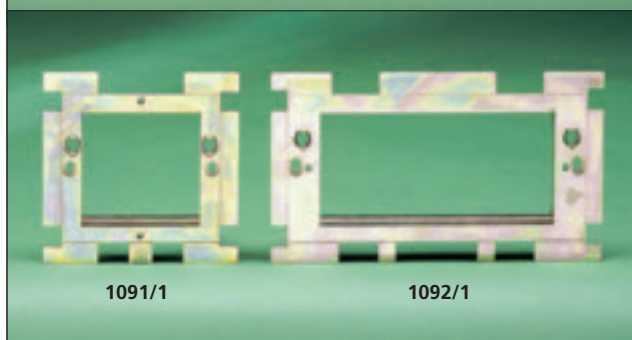


MOUNTING PLATES PLATINUM FLAT PLATE

BS 5733 WHERE APPLICABLE	PACK QTY	
2 module	10	8507/_ _
4 module	10	8509/_ _

Dimensions 86mm x 86mm 2 module, 86mm x 146mm 4 module

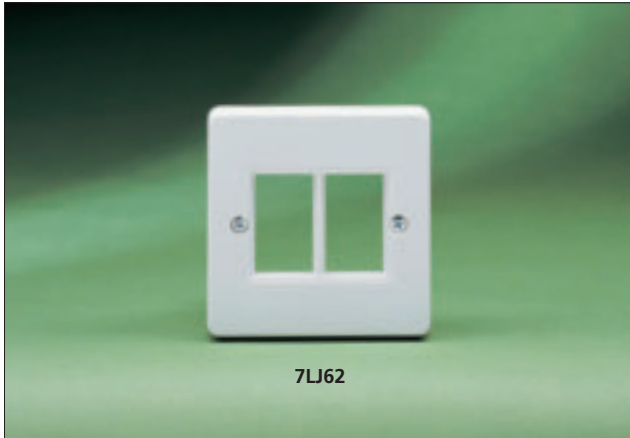
Finishes available are: Stainless Steel (**SS**) Polished Stainless Steel (**PSS**)
& Polished Brass (**PB**).



MOUNTING PLATES PLATINUM GRID

	PACK QTY	
2 module	10	1091/1
4 module	10	1092/1

Supplied complete with earth terminal.



MOUNTING PLATES LJU6C

	PACK QTY	
Mounting Plate 1 x LJU6C 1G	10	7LJ61
Mounting Plate 2 x LJU6C 1G	10	7LJ62
Mounting Plate 4 x LJU6C 2G	5	7LJ64

Dimensions 86mm x 86mm

Mounting boxes 9047 surface, SB655 flush galv. or SB619 dry lining

LJU6C cutout Dimensions 36.6mm x 22.2mm



CO-AXIAL SOCKET OUTLETS

BS 3041 WHERE APPLICABLE	PACK QTY	
1 way direct connection	10	7265
2 way direct connection	10	7266
1 way isolated UHF, VHF	10	7267
2 way isolated UHF, VHF	10	7268
1 way F type Satellite	10	7269
2 way F type Satellite	10	7270
Twin TV/Satellite	10	7271

Dimensions 86mm x 86mm

Mounting boxes 9047 surface, SB655 flush galv. or SB619 dry lining

Isolated UHF, VHF socket outlets for network systems (group aerials & sockets).

Isolated units only suitable on installations with earth bond.



TELEPHONE SOCKET OUTLETS

	PACK QTY	
IDC tool	20	6915
Single master	10	7283
Single secondary	10	7284
RJ11 Telephone socket	10	7286
Dual outlet adaptor	10	7288

Dimensions 86mm x 86mm

Mounting boxes 9047 surface, SB655 flush galv. or SB619 dry lining

BT approved by the Department for Trade and Industry.



PATCH PANELS

	PACK QTY	
18 port, 1u Cat5e UTP	1	7318
24 port, 1u Cat5e UTP	1	7324
48 port, 2u Cat5e UTP	1	7348
4 ring cable tidy, 1u	1	7305



PATCH LEADS - RJ45 to RJ45 CAT 5e

	PACK QTY	
0.5 metre	1	7501/2
1 metre	1	7501
2 metre	1	7502
3 metre	1	7503
5 metre	1	7505

Grey is standard lead colour. Other colours available are: Black (BK), Yellow (YW), Red (RD), Blue (BL) and Green (GN).

For Technical information see page 201. For Dimensions see page 252.

ANTI MICROBIAL

Crabtree have partnered with BioCote® to introduce a range of wiring accessories which offer a second level of protection against microbial cross-contamination.

The active ingredients used in BioCote® products are incorporated during the manufacturing process and are therefore present and active for the life of the product.

Infection control is becoming increasingly important within healthcare environments, the target being the prevention of Hospital Acquired Infections (HAIs).



CAPITAL PRODUCTS

	PACK	QTY
13A 1 gang DP socket	10	AM4304/D
13A 2 gang DP socket	5	AM4306/D
13A 2 gang DP socket, Outboard Rockers	5	AM4307
13A DP switched Fused Connection Unit	10	AM4827
13A DP switch FCU + neon	10	AM4827/3
13A Un-switched Fused Connection Unit	10	AM4828
13A Un-switched FCU + neon	10	AM4828/3
20A DP switch	10	AM4015
20A DP switch + neon	10	AM4015/3
10AX 2 way 1 gang switch Flush	10	AM4170
10AX 2 way 2 gang switch Flush	10	AM4172
10AX Intermediate 1 gang switch Flush	10	AM4175

- All Switched Sockets come complete with two Earth terminals.



CAPITAL INTERIORS

	PACK	QTY
1 gang SP	10	AM4314/1
1 gang DP Switched Socket	10	AM4314/1D
2 gang SP	5	AM4316/1
2 gang SP with provision for neon indicator	5	AM4316/13
2 gang DP Switched Socket	5	AM4316/1D
2 gang SP Switched Socket Red Rocker	5	AM4316/1RD
2 gang DP Switched Socket Red Rocker	5	AM4316/1D/RD
2A 3 pin unswitched shuttered	10	AM8075/1
Co-Axial Skt Twin Isolated Int	10	AM8268/1

- All Switched Sockets come complete with two Earth terminals.



ROCKERGRID

	PACK	QTY
10AX 1 way	10	AM4430
Fuse unit fitted 13A ASTA certified fuse link	10	AM4436
20AX 1 way	10	AM4450
20AX DP	10	AM4460
20AX DP with Red Rocker	10	AM4460/RD
20AX DP complete with key	10	AM4461
10A retractive	10	AM4489
Indicator - Red	10	AM4491
Blanking component	10	AM4492
20AX 2 way	10	AM4550
20AX 2 way and off	10	AM4552
20AX Retractive 2 way and off	10	AM4553
Rockergrid Moulded Plate 1 gang	20	AM5571
Rockergrid Moulded Plate 2 gang	20	AM5572
Rockergrid Moulded Plate 3 gang	10	AM5573
Rockergrid Moulded Plate 4 gang	10	AM5574

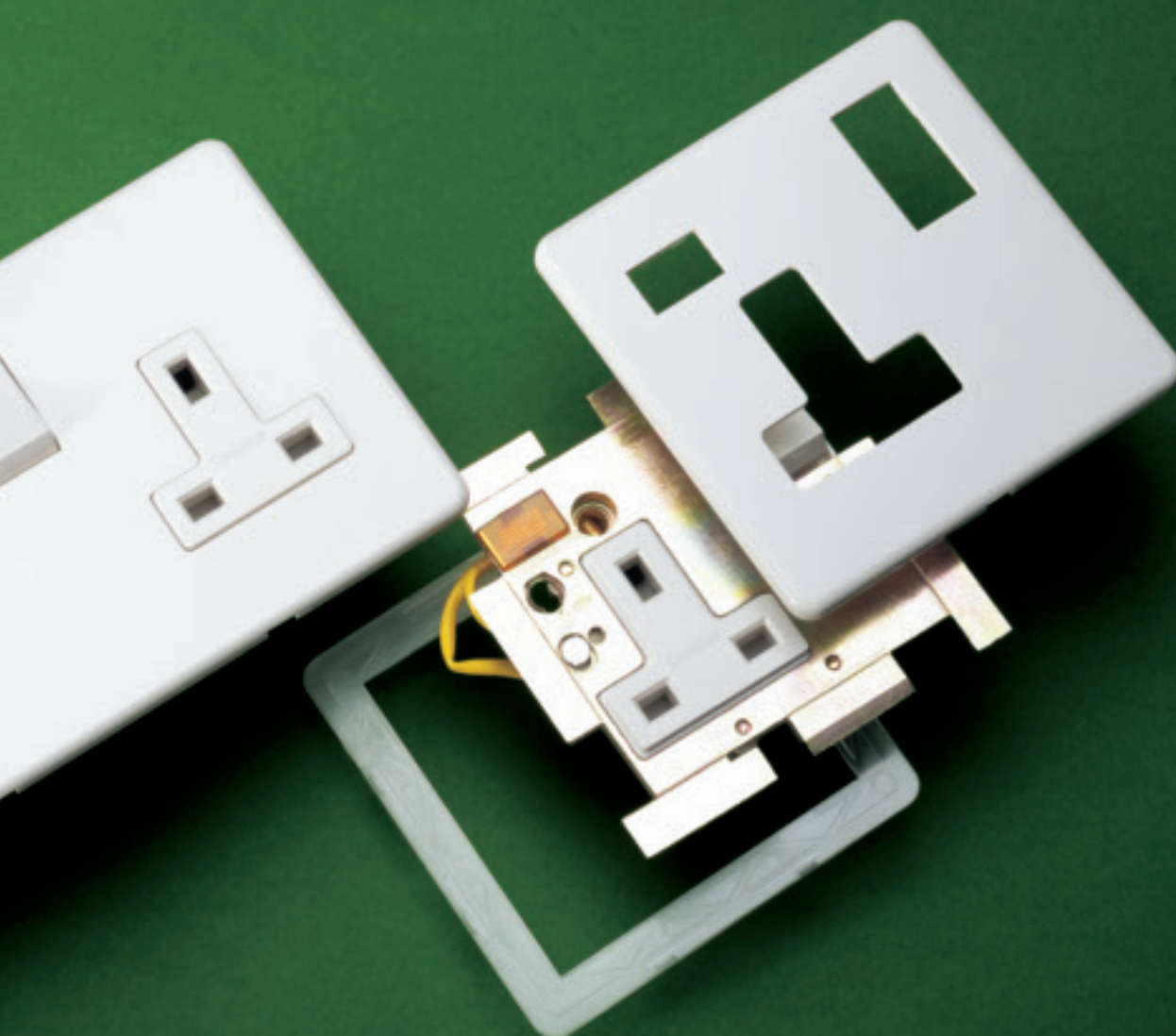
- Grid Yokes not supplied with moulded plates see page 69 for selection.





Platinum White Moulded

Crabtree Platinum White Moulded is a new addition to the already extensive range of Platinum Low Profile Wiring Accessories. A wide selection of Power, Control and Lighting accessories are now available in 'Screwless' Low Profile.



The front plate can be easily removed by using a flat bladed screwdriver. The Screwdriver should be inserted between the notch on the front plate and the ramp on the support frame.



The plate should now be gently eased away from the support frame.



Decoration can be safely completed without damage to the Wiring Accessory.



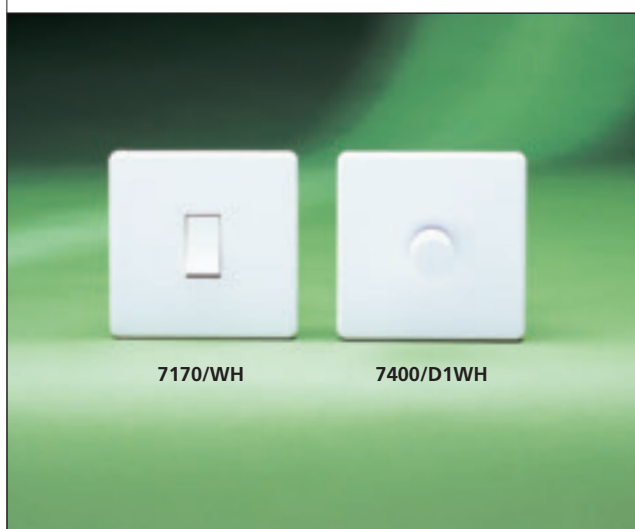
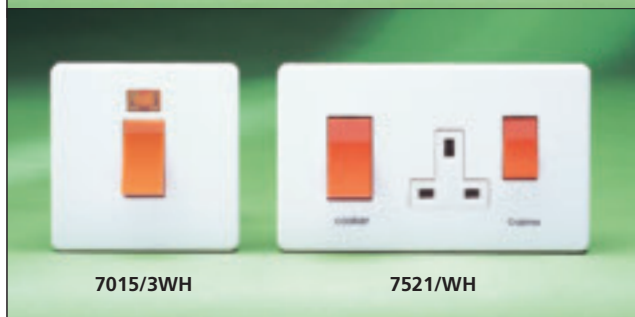
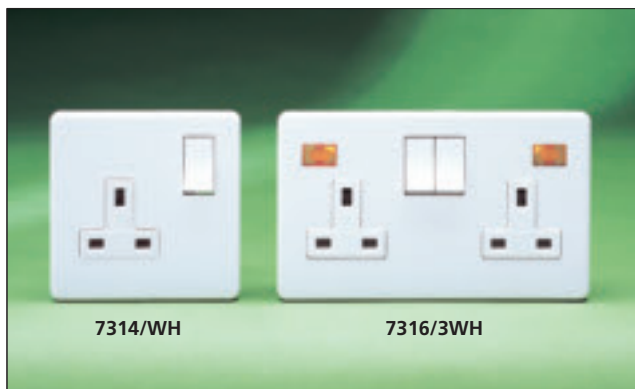
The front plate is easily clipped back into position on the clear plastic frame, surrounding the interior.



If required, the Platinum white moulded range can be upgraded by using standard Platinum low profile plates.



Three finishes are available: Satin Chrome, Polished Brass, and Highly Polished Chrome.



SOCKETS		BS1363
1 Gang 13A DP Switched Socket twin earth	7314/WH	
1 Gang 13A DP Switched Socket + neon twin earth	7314/3WH	
2 Gang 13A DP Switched Socket twin earth	7316/WH	
2 Gang 13A DP Switched Socket + neon twin earth	7316/3WH	
1 Gang 15A Round pin Socket	7272/WH	
1 Gang 5A Round pin Unswitched Socket	7340/WH	
Dimensions	1 gang 91 x 91mm 2 gang 151 x 91mm	
Installation Box depth	35mm	

FUSED CONNECTION UNIT		BS1363
13A DP Switched FCU	7832/WH	
13A DP Switched FCU + neon	7832/3WH	
Dimensions	1 gang 91 x 91mm	
Installation Box depth	35mm	

CONTROL SWITCHES		BS EN60669-1
6A TP ISOLATOR SWITCH		BS EN60669-1
6A Three Pole isolating switch marked	7017/WH	
20A DP CONTROL SWITCH		BS EN60669-1
20A DP Switch	7011/WH	
20A DP Switch + neon	7011/3WH	
32A DP CONTROL SWITCH		BS EN60669-1
32A DP Switch	7012/WH	
32A DP Switch + neon	7012/3WH	
45A DP CONTROL SWITCH		BS EN60669-1
45A DP Switch	7015/WH	
45A DP Switch + neon	7015/3WH	
45A COOKER CONTROL UNIT		BS 4177 & BS1363
45A 2 Gang Cooker Control Unit	7521/WH	
Dimensions	1 gang 91 x 91mm 2 gang 151 x 91mm	

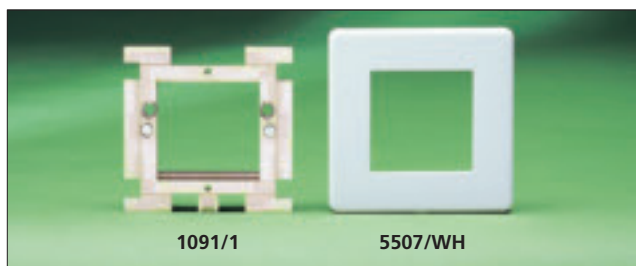
LIGHT SWITCHES		BS EN60669-1
10AX 1 Gang 2 Way plate Switch	7170/WH	
10AX 2 Gang 2 Way plate Switch	7172/WH	
10AX 3 Gang 2 Way plate Switch	7173/WH	
10AX 1 Gang Intermediate plate Switch	7175/WH	

DIMMERS		BS EN55014, BS EN60669-2
400W Dimmer 1 Gang 2 Way	7400/D1WH*	
400W Dimmer 2 Gang 2 Way	7400/D2WH*	
Dimensions	1 gang 91 x 91mm	
Installation Box depth	switches 1 & 2 gang 16mm, 3 gang 25mm	
Installation Box depth	dimmers 40mm	

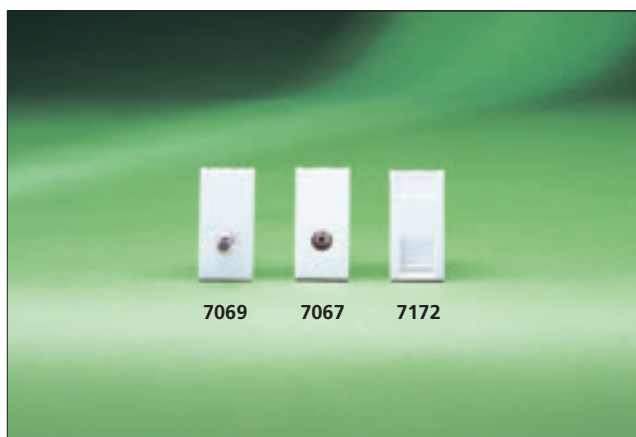
* Suitable for mains voltage GLS.
GU10 or similar Hispot halogen bulbs up to the rating on the rear of the product.
2 x 400W dimmer modules on a 1 gang plate should have a combined rating of 500W maximum.



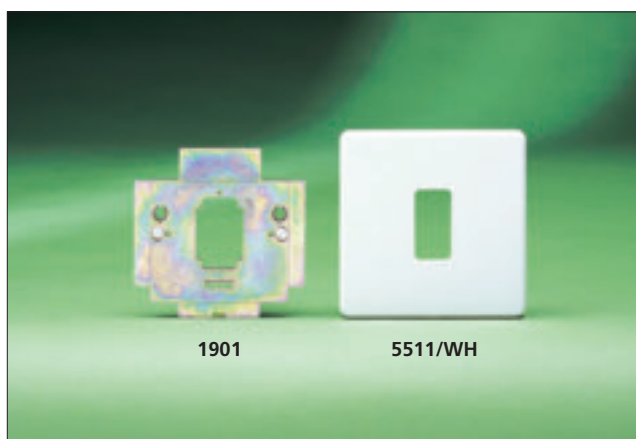
DUAL SHAVER SOCKET	BS EN61558
Shaver supply unit 240V	7411/WH
DATA ACCESSORIES	BS 3041
Single Coaxial direct connection	7765/WH
Single BT Secondary	7783/WH
Single BT Master	7784/WH
BLANK PLATES	BS 5733
1 Gang Blank plate	1091/1 + 5575/WH
2 Gang Blank plate	1092/1 + 5577/WH
Dimensions	1 gang 91 x 91mm 2 gang 151 x 91mm



COMMUNICATION PLATE	
2 Euro Module 1 Gang Communication Plate	1091/1 + 5507/WH
4 Euro Module 2 Gang Communication Plate	1092/1 + 5509/WH
Dimensions	1 gang 91 x 91mm 2 gang 151 x 91mm
Installation Box depth	35mm



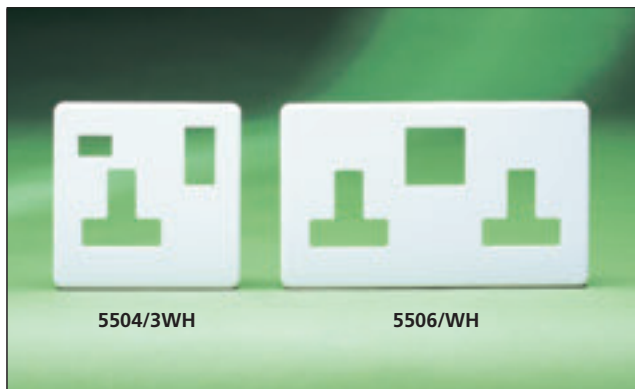
COMMUNICATION MODULES	
BT Master Euro Module	7080
RJ45 Cat 5e Euro Module	7172
TV Outlet (male)	7065
TV Outlet (female)	7067
F Type Satellite Euro Module	7069
Triplex unit (TV, FM, Sat)	7063
Blank 1 Module	7081
Blank 1/2 Module	7081/2
Dimensions	25 x 50mm (1 Module) (except 7063 - 50mm x 50mm)
For other Communication Modules please refer to Page 23.	



GRID PLATES	
1 Gang Plate for Rockergrid	5511/WH
2 Gang Plate for Rockergrid	5512/WH
3 Gang Plate for Rockergrid	5513/WH
4 Gang Plate for Rockergrid	5514/WH
GRID YOKES	
1 Gang Grid	1901
2 Gang Grid	1902
3 Gang Grid	1903
4 Gang Grid	1904
Dimensions	1-2 gang 91 x 91mm 3-4 gang 151 x 91mm



GRID SWITCHES	
Grid Switch 10AX 1 Way	4430
Grid Switch 10AX 2 Way	4530
Grid Switch 10A Retractive	4489
Grid Switch 20AX 1 Way	4450
Grid Switch 20AX 2 Way	4550
Grid Switch 20AX Double Pole	4460
Grid Switch 20AX Intermediate	4535
Installation Box depth	35mm
For other Rockergrid products please refer to Page 68.	



WHITE PLASTIC PLATES ONLY

SOCKET PLATES

1 Gang DP Switched Socket	5504/WH
1 Gang DP Switched Socket + neon	5504/3WH
2 Gang DP Switched Socket	5506/WH
2 Gang DP Switched Socket + neon	5506/3WH
1 Gang 15A Switched Socket	5515/WH
1 Gang 5A Unswitched Socket	7579/WH

Comes Complete with clear plate frame.



FUSED CONNECTION UNIT PLATES

13A DP Switched FCU	5508/WH
13A DP Switched FCU + neon	5508/3WH

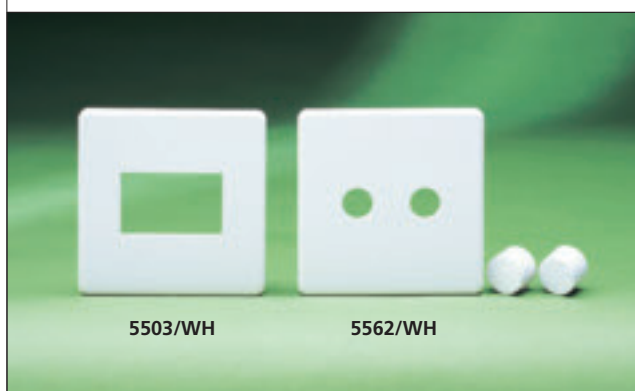
Comes Complete with clear plate frame.



CONTROL SWITCH PLATES

6AX Three Pole Isolating Switch marked	5505/WH
20A DP Switch	5520/WH
20A DP Switch + neon	5520/3WH
32A DP Switch	5532/WH
32A DP Switch + neon	5532/3WH
45A DP Switch	5545/WH
45A DP Switch + neon	5545/3WH
45A 2 Gang Cooker Control Unit	5546/WH

Comes Complete with clear plate frame.



LIGHT SWITCH PLATES

10AX 1 Gang 2 Way Plate Switch	5501/WH
10AX 2 Gang 2 Way Plate Switch	5502/WH
10AX 3 Gang 2 Way Plate Switch	5503/WH

DIMMER PLATES

1 Gang Dimmer Plate	5561/WH
2 Gang Dimmer Plate	5562/WH

Comes Complete with clear plate frame.



OTHER ACCESSORIES

Shaver Supply Unit	5510/WH
2 module 1 Gang Communication Plate	5507/WH
4 module 2 Gang Communication Plate	5509/WH
Co-axial	5565/WH
BT Master & Slave	5583/WH
1 Gang Blank Plate	5575/WH
2 Gang Blank Plate	5577/WH
1 Gang clear plastic frame	5543
2 Gang clear plastic frame	5544

Comes Complete with clear plate frame.

UPGRADE FROM WHITE PLASTIC TO METAL PLATE



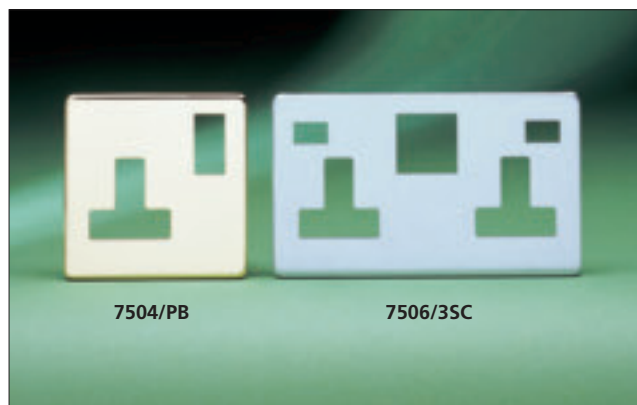
Platinum white moulded range can be upgraded to metal Platinum plates.



The plate should be gently eased away from the support frame.



The replacement front plate simply clips back onto the support frame.



7504/PB

7506/3SC

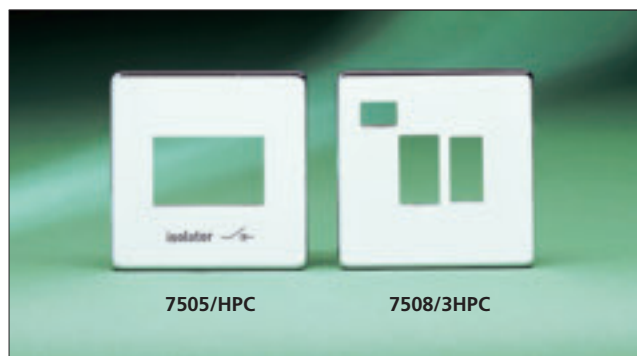
SOCKET PLATES

1 Gang DP Switched Socket Twin Earth	7504/_ _
1 Gang DP Switched Socket + neon Twin Earth	7504/3 _ _
2 Gang DP Switched Socket Twin Earth	7506/_ _
2 Gang DP Switched Socket + neon Twin Earth	7506/3 _ _
1 Gang 15A Round pin Socket	7515/_ _
1 Gang 5A Unswitched Socket	7579/_ _

FUSED CONNECTION UNIT PLATES

13A DP Switched FCU	7508/_ _
13A DP Switched FCU + neon	7508/3 _ _

Comes Complete with clear plate frame.

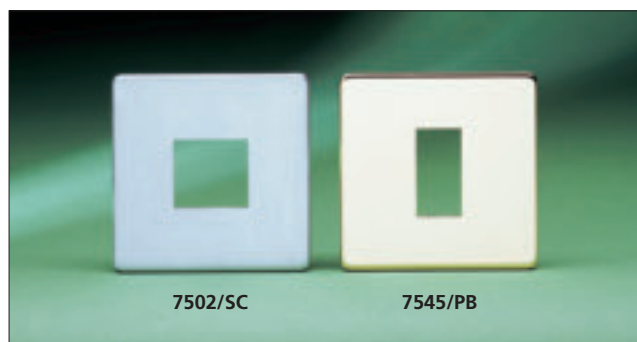


7505/HPC

7508/3HPC

CONTROL SWITCH PLATES

6AX Three Pole Isolating Switch marked	7505/_ _
20A DP Switch	7520/_ _
20A DP Switch + neon	7520/3 _ _
32A DP Switch	7532/_ _
32A DP Switch + neon	7532/3 _ _
45A DP Switch	7545/_ _
45A DP Switch + neon	7545/3 _ _
45A 2 Gang Cooker Control Unit	7546/_ _

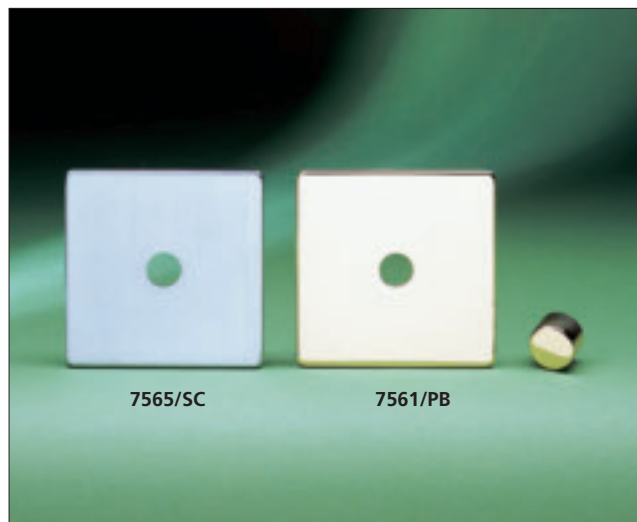


7502/SC

7545/PB

LIGHT SWITCH PLATES

10AX 1 Gang 2 Way Plate Switch	7501/_ _
10AX 2 Gang 2 Way Plate Switch	7502/_ _
10AX 3 Gang 2 Way Plate Switch	7503/_ _



7565/SC

7561/PB

OTHER ACCESSORIES

Shaver Supply Unit	7510/_ _
2 module 1 Gang Communication Plate	7507/_ _
4 module 2 Gang Communication Plate	7509/_ _
1 Gang Plate	7575/_ _
2 Gang Plate	7577/_ _
1 Gang Plate for Rockergrid	7511/_ _
2 Gang Plate for Rockergrid	7512/_ _
3 Gang Plate for Rockergrid	7513/_ _
4 Gang Plate for Rockergrid	7514/_ _
1 Gang Dimmer Plate	7561/_ _
2 Gang Dimmer Plate	7562/_ _
1 Gang Plate for BT Master & Secondary	7583/_ _
2 Gang Plate for Coax	7565/_ _

Indicate the finish you require by adding Suffix to List No. Satin Chrome (SC), Highly Polished Chrome (HPC), and Polished Brass (PB),



Seeklight for Platinum 7009 unit comes complete with clear frame & one LED



Seeklight fitted to a Platinum wiring Accessory



Unit works when the switch is turned off, enabling ease of location in the dark

PLATINUM

An extensive range of power, control and lighting accessories, available in a range of high quality metal finishes as either screw-fit flat plate or clip-on screwless low profile plate.

With no compromises between style and function, the Platinum range is slim, stylish and packed with solid Crabtree engineering.



COMPLETE ASSEMBLIES LOW PROFILE

FINISHES AVAILABLE

SC/WH-

Satin Chrome
White interior

HPC-

Highly Polished Chrome
Black interior

PB-

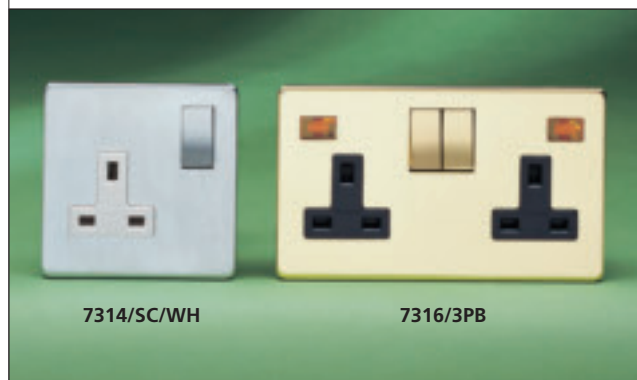
Polished Brass
Black interior

BKN-

Black Nickel
Black interior

- Indicate the finish you require by adding Suffix to List No.
ie: 13A 2 gang DP Switched Socket in Black Nickel = **7316/BKN**

- Fully assembled products come complete with display packaging



7314/SC/WH

7316/3PB

13A SWITCHED SOCKET OUTLET

BS1363

1 gang DP Switched Socket	7314/_ _
1 gang DP Switched Socket with Neon	7314/3_ _
2 gang DP Switched Socket	7316/_ _
2 gang DP Switched Socket with Neon	7316/3_ _

Dimensions 1 gang 88mm x 88mm
2 gang 148mm x 88mm

Installation Box depth 35mm

- All sockets are supplied as dual Earth



7832/HPC

7832/3BKN

13A FUSED CONNECTION UNIT

BS1363

DP Switched	7832/_ _
DP Switched with Neon	7832/3_ _

Dimensions 88mm x 88mm

Installation Box depth 35mm



7T72/PB

7172/SC

10AX PLATE SWITCH

BS EN 60669-1

1 gang 2 way	7170/_ _
2 gang 2 way	7172/_ _
3 gang 2 way	7173/_ _
1 gang Intermediate	7175/_ _

- 1-3 gang plate switches will accept Seeklight **7009**

Installation Box depth 1 & 2 gang 16mm, 3 gang 25mm

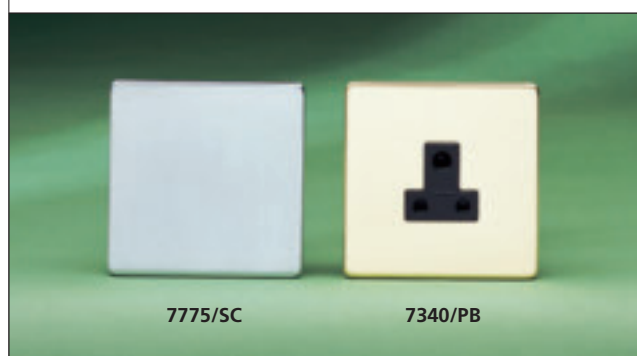
TOGGLE SWITCHES

BS EN 60669-1

1 gang 2 way	7T70/_ _
2 gang 2 way	7T72/_ _

Dimensions 88mm x 88mm

Installation Box depth 35mm



7775/SC

7340/PB

BLANK PLATES

BS5733

Single Blank	7775/_ _
Twin Blank	7777/_ _

Dimensions 1 gang 88mm x 88mm
2 gang 148mm x 88mm

5A ROUND PIN SOCKET

5A Round Pin Unswitched Socket	7340/_ _
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Dimensions 88mm x 88mm

Installation Box depth 35mm



COMPLETE ASSEMBLIES LOW PROFILE

DIMMER-ROTARY

BS EN 55014, BS EN 60669-2

250W 1 gang 2 way	7250/D1 _ _
250W 2 gang 2 way	7250/D2 _ _
400W 1 gang 2 way	7400/D1 _ _
400W 2 gang 2 way	7400/D2 _ _

Dimensions 1 & 2 gang 88mm x 88mm

Installation Box depth 40mm

Suitable for mains voltage GLS;
GU10 or similar HiSpot halogen bulbs up to the rating on the rear of the product.
2 x 400W dimmer modules on a 1 gang plate should have a combined rating of 500W maximum.

DIMMER-TOUCH

BS EN 55014, BS EN 60669-2

400W 1 gang 1 way	7400/TD1 _ _
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DIMMER-REMOTE

BS EN 55014, BS EN 60669-2

400W 1 gang 1 way	7400/RD1 _ _
-------------------	---------------------

Dimensions 1 & 2 gang 88mm x 88mm

Installation Box depth 40mm

Suitable for mains voltage GLS;
GU10 or similar HiSpot halogen bulbs up to the rating on the rear of the product.

CONTROL SWITCHES

6A TP ISOLATOR SWITCH

BS EN 60669-1

6A Triple Pole Fan Isolator	7017/ _ _
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20A DP CONTROL SWITCH

BS EN 60669-1

20A DP Control Switch	7011/ _ _
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20A DP Control Switch with Neon	7011/3 _ _
---------------------------------	-------------------

45A DP CONTROL SWITCH

BS EN 60669-1

45A DP Control Switch	7015/ _ _
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45A DP Control Switch with Neon	7015/3 _ _
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45A COOKER CONTROL UNIT

BS 4177 & BS1363

45A Cooker Control Unit	7521/ _ _
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45A Cooker Control Unit with Neon	7521/3 _ _
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DUAL SHAVER SOCKET

BS EN 61558

Dual Shaver Socket	7411/ _ _
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Dimensions 1 gang 88mm x 88mm
2 gang 148mm x 88mm

COMMUNICATION ACCESSORIES

BS 3041

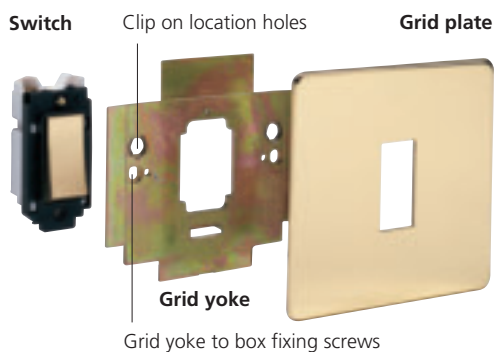
Single Co-axial	7765/ _ _
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BT Secondary Socket	7783/ _ _
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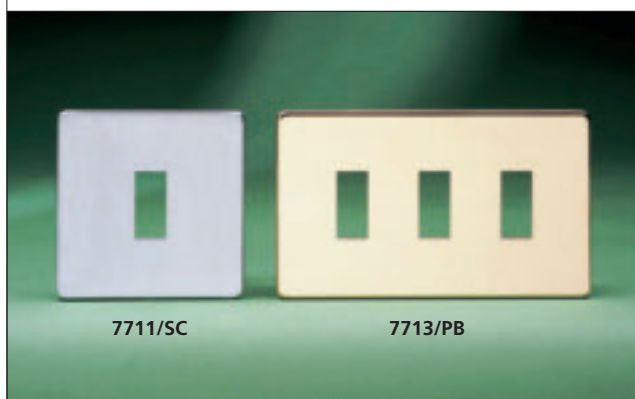
BT Master Socket	7784/ _ _
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Dimensions 1 gang 88mm x 88mm

PLATINUM GRID



Complete Assembly

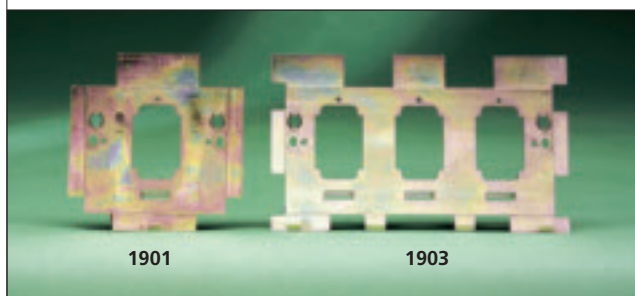


GRID PLATES - LOW PROFILE

Plate for 1 gang grid	7711/_ _
Plate for 2 gang grid	7712/_ _
Plate for 3 gang grid	7713/_ _
Plate for 4 gang grid	7714/_ _
Plate for 6 gang grid	7716/_ _
Plate for 8 gang grid	7718/_ _

Dimensions	1-2 gang 88mm x 88mm
	3-4 gang 148mm x 88mm
	6-8 gang 148mm x 148mm

All the following plates are available in Satin Chrome (SC), Polished Brass (PB) and Highly Polished Chrome (HPC)



GRID YOKES

1 gang Yoke	1901
2 gang Yoke	1902
3 gang Yoke	1903
4 gang Yoke	1904
6 gang Yoke	1906
8 gang Yoke	1908

When mounting grid yokes for use with the flat plate remove the outer fixing ears



GRID SWITCHES - NO OUTER TRIM

10AX 1 way	4430/7 _ _
10AX 2 way	4530/7 _ _
10A Retractive	4489/7 _ _
10A Retractive-Bell symbol	4490/7 _ _
10A Retractive 2 way and Off	4553/7 _ _
20AX 1 way	4450/7 _ _
20AX 2 way	4550/7 _ _
20AX Double Pole	4460/7 _ _
20AX Intermediate	4535/7 _ _
20AX 2 way & Off	4552/7 _ _

All the following Switches are available in Satin Chrome (SC), Highly Polished Chrome (HPC), Polished Brass (PB), Stainless Steel (SS), and Polished Stainless Steel (PSS)

Installation Box depth 35mm



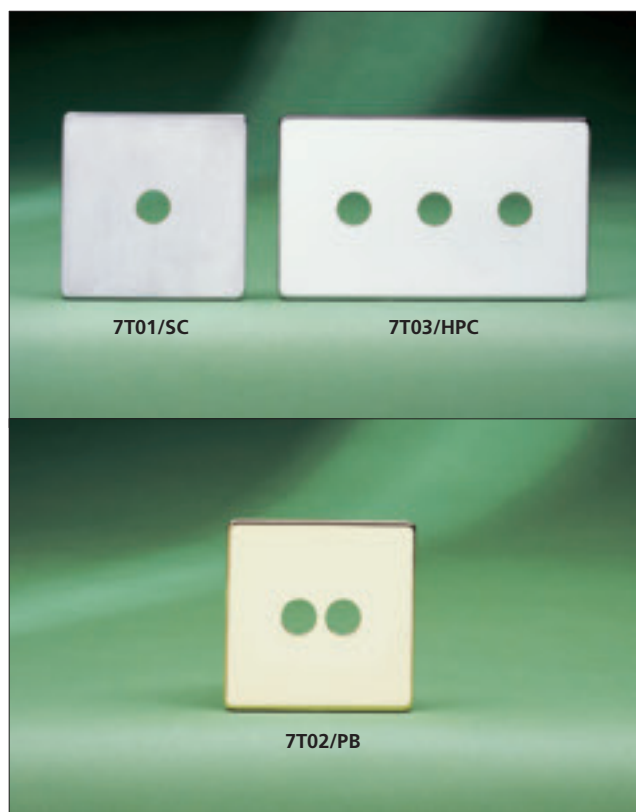
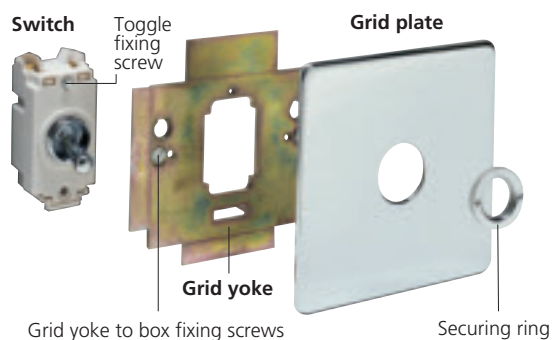
GRID KEY SWITCHES - NO OUTER TRIM

20AX 1 way Grid Key Switch	4451/7/WH *
20AX 2 way Grid Key Switch	4551/7/WH *
20AX DP 1 way Grid Key Switch	4461/7/WH *

* For Key Switches marked 'Emergency Light Test' Please add 'ELT' to the List No. eg. 4451/7/WH/ELT

• For Key Switches with a black front moulding, please remove the /WH from the List No. eg. 4451/7.

LOW PROFILE TOGGLE SWITCHES AND PLATES



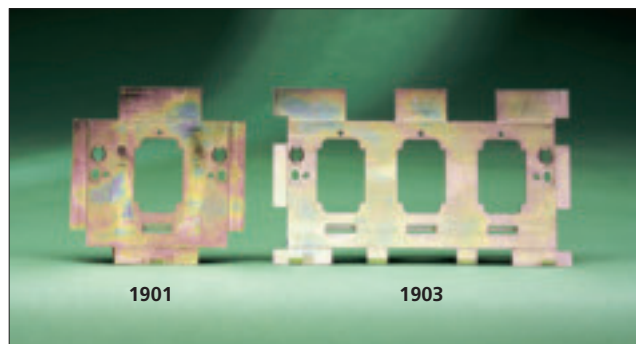
TOGGLE PLATES-LOW PROFILE

Plate for 1 gang grid	7T01/_ _
Plate for 2 gang grid	7T02/_ _
Plate for 3 gang grid	7T03/_ _
Plate for 4 gang grid	7T04/_ _

Dimensions	1-2 gang 88mm x 88mm
	3-4 gang 148mm x 88mm

All the following plates are available in Satin Chrome (SC), Polished Brass (PB) and Highly Polished Chrome (HPC)

All plates come complete with toggle securing ring in appropriate finish



GRID YOKES

1 gang Yoke	1901
2 gang Yoke	1902
3 gang Yoke	1903
4 gang Yoke	1904

When mounting grid yokes for use with the flat plate remove the outer fixing ears



TOGGLE SWITCHES

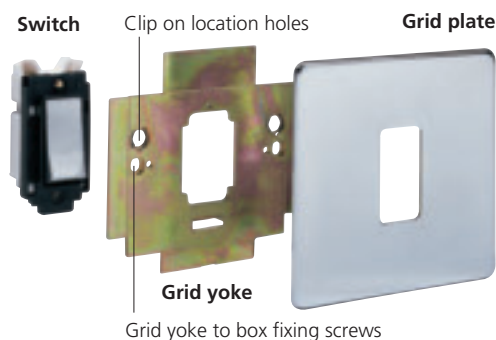
10AX 2 way Single Pole	5430/_ _
20AX 2 way Single Pole	5550/_ _
20AX 2 way and off Single Pole	5552/_ _

All the following switches are available in Satin Chrome (SC), Highly Polished Chrome (HPC), Polished Brass (PB), Stainless Steel (SS), and Polished Stainless Steel (PSS)

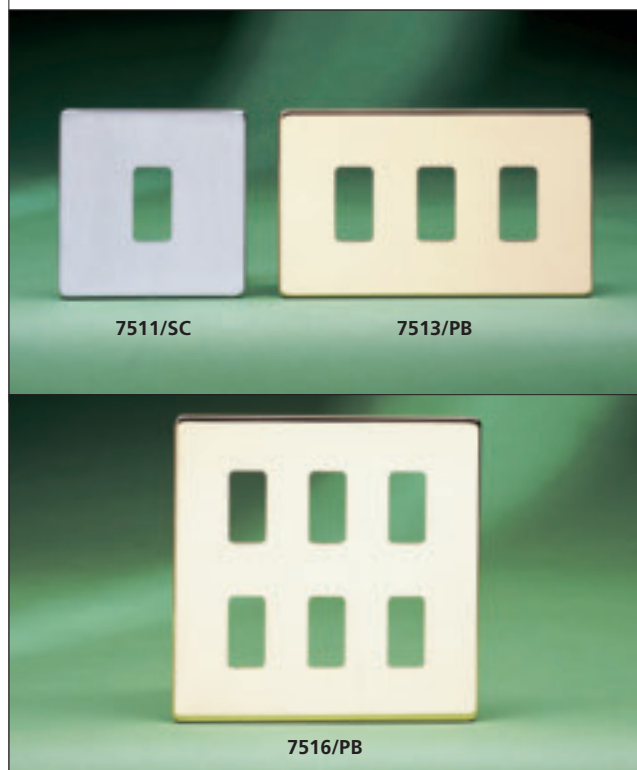
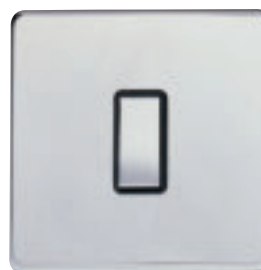
Installation Box depth 35mm

One fixing key supplied per pack of 10

ROCKERGRID FOR PLATINUM RANGE



Complete Assembly

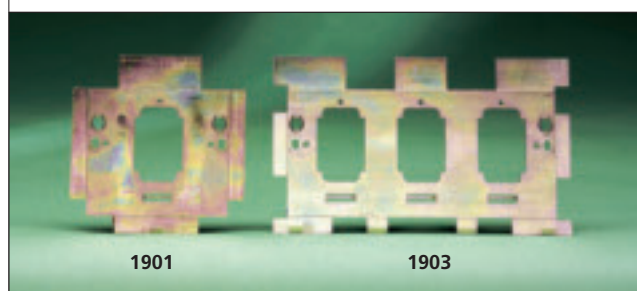


GRID PLATES - LOW PROFILE

Plate for 1 gang grid	7511/_ _
Plate for 2 gang grid	7512/_ _
Plate for 3 gang grid	7513/_ _
Plate for 4 gang grid	7514/_ _
Plate for 6 gang grid	7516/_ _
Plate for 8 gang grid	7518/_ _

Dimensions	1-2 gang 88mm x 88mm
	3-4 gang 148mm x 88mm
	6-8 gang 148mm x 148mm

All the following plates are available in Satin Chrome (**SC**), Polished Brass (**PB**) and Highly Polished Chrome (**HPC**)



GRID YOKES

1 gang Yoke	1901
2 gang Yoke	1902
3 gang Yoke	1903
4 gang Yoke	1904
6 gang Yoke	1906
8 gang Yoke	1908

When mounting Grid yokes for use with the Flat plate, remove the outer fixing ears



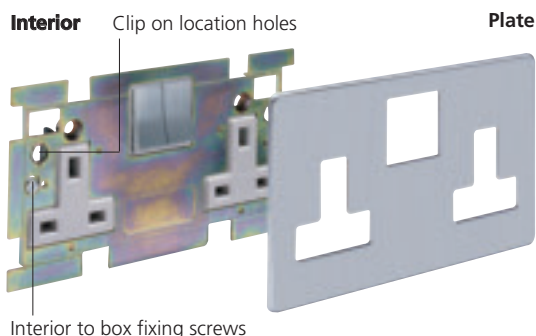
GRID SWITCHES

10AX 1 way	4430/6_ _
10AX 2 way	4530/6_ _
10A Retractive	4489/6_ _
20AX 1 way	4450/6_ _
20AX 2 way	4550/6_ _
20AX double Pole	4460/6_ _
20AX intermediate	4535/6_ _
20A 2 way & Off	4552/6_ _

All the following Switches are available in Satin Chrome (**SC/WH**), Stainless Steel (**SS/WH**), Highly Polished Chrome (**HPC**), Polished Brass (**PB**), and Polished Stainless Steel (**PSS**)

Installation Box depth 35mm

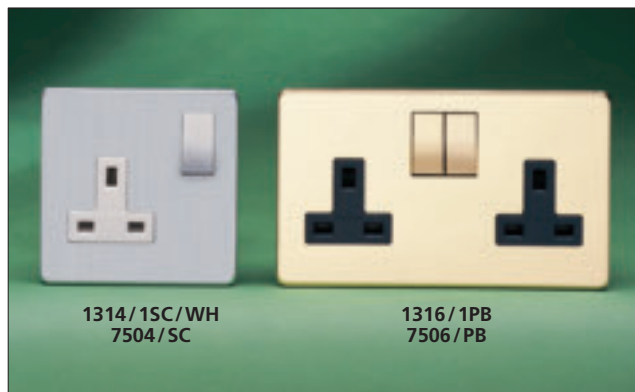
The full range of Rockergrid items are shown on pages 68 & 69 and will fit onto all the above plates.



SECOND FIX LOW PROFILE

- Finishes available:
 - HPC** - Highly Polished Chrome
 - Black moulded insert
 - SC/WH** - Satin Chrome
 - White moulded insert
 - PB** - Polished Brass
 - Black moulded insert

- Indicate the finish you require by adding suffix to List No.
ie: 13A 2 gang DP Switched Socket Interior in Satin Chrome = **1316/1SC/WH**
2 gang Switched Socket Plate in Satin Chrome = **7506/SC**
- All interiors are supplied with appropriate fixing grids



13A SWITCHED SOCKET

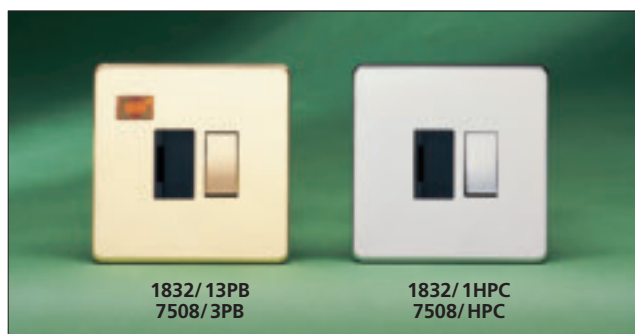
BS 1363

1 gang DP Switched Socket	Interior Plate	1314/1_ 7504/_
1 gang DP Switched Socket with Neon	Interior Plate	1314/13_ 7504/3_
2 gang DP Switched Socket	Interior Plate	1316/1_ 7506/_
2 gang DP Switched Socket with Neons	Interior Plate	1316/13_ 7506/3_

Dimensions 1 gang 88mm x 88mm 2 gang 88mm x 148mm

Installation Box depth 35mm

- All sockets are supplied as dual earth.

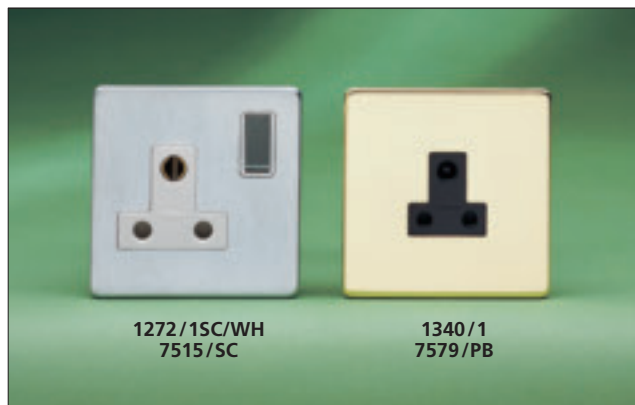


13A FUSED CONNECTION UNIT

BS 1363

13A Switched Fuse connection unit	Interior Plate	1832/1_ 7508/_
13A Switched Fuse connection unit with Neon	Interior Plate	1832/13_ 7508/3_
13A Switched FCU with cord outlet	Interior Plate	1837/1_ 7533/_
13A Switched FCU with cord outlet & Neon	Interior Plate	1837/13_ 7533/3_

Dimensions 1 gang 88mm x 88mm **Installation Box depth** 35mm



15A ROUND PIN SWITCHED SOCKET

BS 546

15A round pin Switched Socket	Interior Plate	1272/1_ 7515/_
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Dimensions 1 gang 88mm x 88mm

Installation Box depth 35mm

5A UNSWITCHED SOCKET

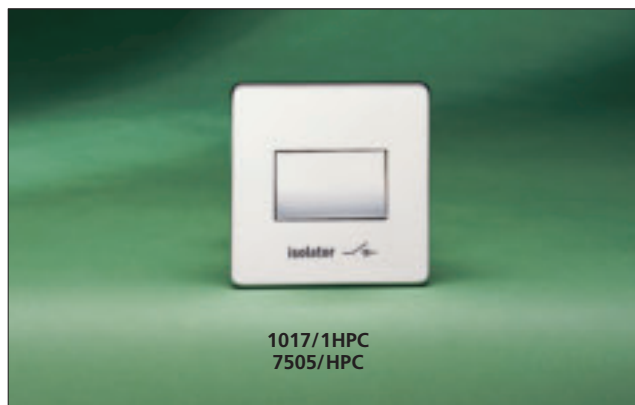
BS 546

5A round pin Unswitched Socket	Interior Plate	1340/1* 7579/_
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Dimensions 1 gang 88mm x 88mm

Installation Box depth 35mm

*Black moulded insert as standard. If required with white moulded insert add /WH.



6A TP ISOLATOR SWITCH

BS EN60669-1

6A Triple Pole Isolator Switch	Interior Plate	1017/1_ 7505/_
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Dimensions 1 gang 88mm x 88mm

Installation Box depth 35mm

2A UNSWITCHED SOCKET

2A round pin unswitched socket	Interior Plate	1075/1* 7560/_
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Dimensions 1 gang 88mm x 88mm

Installation Box depth 35mm

*Black moulded insert as standard. If required with white moulded insert add /WH.



LOW PROFILE

BS EN 60669-1

10AX PLATE SWITCH

1 gang 2 way 10AX Switch	Interior Plate	1170/1 __ 7501/ __
1 gang 1 way 10A Retractive Switch	Interior Plate	1096/1 __ 7501/ __
2 gang 2 way 10AX Switch	Interior Plate	1172/1 __ 7502/ __
3 gang 2 way 10AX Switch	Interior Plate	1173/1 __ 7503/ __

Dimensions 1 gang 88mm x 88mm

Installation Box depth 16mm 1 & 2 gang, 25mm 3 gang

● 1-3 gang plate switch will accept Seeklight **7009**



DIMMER-ROTARY

BS EN 55014, BS EN 60669-2

250W 1 gang 2 way	7250/D1 __
250W 2 gang 2 way	7250/D2 __
400W 1 gang 2 way	7400/D1 __
400W 2 gang 2 way	7400/D2 __

2 x 400W dimmer modules on a 1 gang plate should have a combined rating of 500W maximum.



DIMMER-TOUCH

BS EN 55014, BS EN 60669-2

400W 1 gang 1 way	7400/TD1 __
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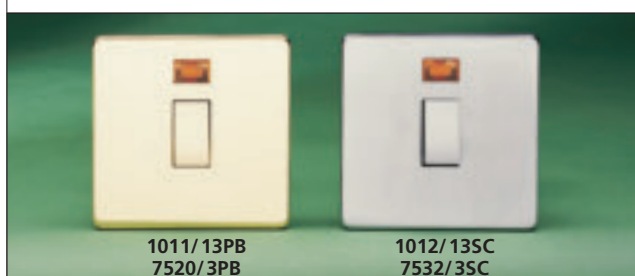
DIMMER-REMOTE

BS EN 55014, BS EN 60669-2

400W 1 gang 1 way	7400/RD1 __
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Dimensions 1 & 2 gang 88mm x 88mm **Installation Box depth** 40mm

Suitable for mains voltage GLS; GU10 or similar HiSpot halogen bulbs up to the rating on the rear of the product.



20A DP CONTROL SWITCH

BS EN60669-1

20A DP Control Switch	Interior Plate	1011/1 __ 7520/ __
20A DP Control Switch with Neon	Interior Plate	1011/13 __ 7520/3 __

32A DP CONTROL SWITCH

BS EN60669-1

32A DP Control Switch	Interior Plate	1012/1 __ 7532/ __
32A DP Control Switch with Neon	Interior Plate	1012/13 __ 7532/3 __

45A DP CONTROL SWITCH

BS EN60669-1

45A DP Control Switch	Interior Plate	1512/1 __ 7545/ __
45A DP Control Switch with Neon	Interior Plate	1512/13 __ 7545/3 __

Dimensions 1 gang 88mm x 88mm

Installation Box depth 35mm



45A DP COOKER CONTROL UNIT

BS 4177 & BS1363

Cooker control unit	Interior Plate	1522/1 __ 7546/ __
Cooker control unit with neon	Interior Plate	1522/13 __ 7546/3 __

Dimensions 88mm x 148mm

Installation Box depth 35mm





LOW PROFILE

SHAVER SUPPLY UNIT

BS EN 61558

Shaver Supply Unit

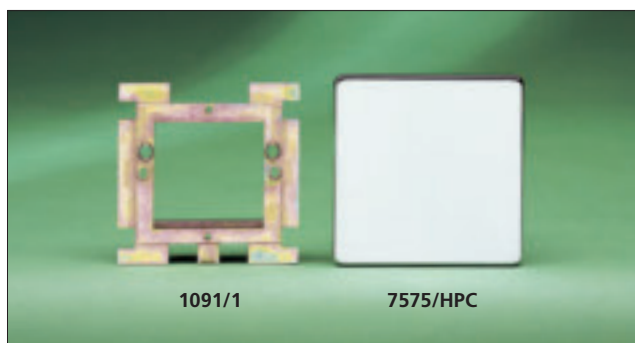
Interior
Plate

1410/1*
7510/_ _

Dimensions 88mm x 148mm

Installation Box depth 55mm

* Black moulded insert as standard, if required with white moulded insert add /WH



BLANK PLATES

BS 5733

1 gang Blank Plate

Grid
Plate

1091/1
7575/_ _

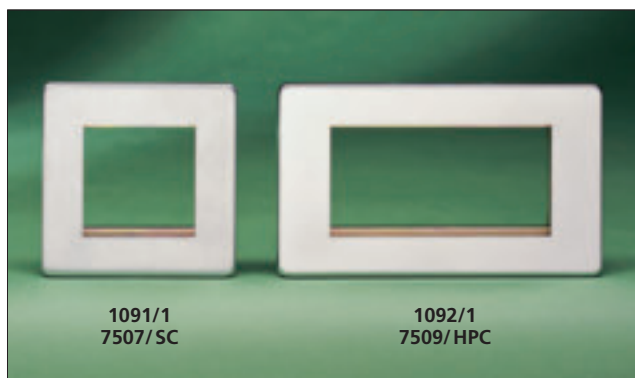
2 gang Blank Plate

Grid
Plate

1092/1
7577/_ _

Dimensions 1 gang 88mm x 88mm 2 gang 88mm x 148mm

Installation Box depth 35mm



COMMUNICATION PLATES

1 gang Communication Module Frame

Grid
Plate

1091/1
7507/_ _

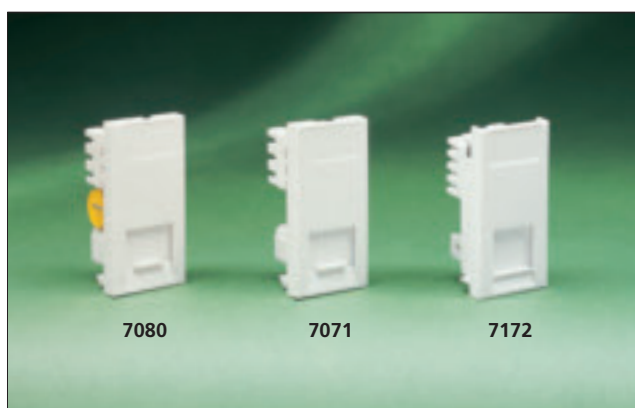
2 gang Communication Module Frame

Grid
Plate

1092/1
7509/_ _

Dimensions 1 gang 88mm x 88mm 2 gang 88mm x 148mm

Installation Box depth 35mm



COMMUNICATION MODULES

PACK QTY

BT Master Voice	25	7080
BT secondary Voice, 6 wire	25	7071
RJ45 (single) module, 8 wire – Category 5e	25	7172
RJ45 ISDN terminated	25	7174

DATA AND CO-AXIAL MODULES

TV outlet (male)	25	7065
TV outlet (female)	25	7067
F type Satellite	25	7069
Triplex Unit (TV, FM, Sat)	25	7063
TV outlet screened, return	25	7060
Phono (Female)	25	7087

BLANK MODULES & ACCESSORIES

1/2 module size	25	7081/2
1 module size	25	7081

Dimensions 25mm x 50mm (1 Module)

(except 7063 – 50mm x 50mm)

7081/2 12.5mm x 50mm

7081 25mm x 50mm

Add **BK** for Black - ie: **7172/BK**

A full selection of communication modules is shown on Page 23.





COMPLETE ASSEMBLIES FLAT PLATE

FINISHES AVAILABLE

PB-
Polished Brass
Black interior

SS/WH-
Stainless Steel
White interior

PSS-
Polished Stainless Steel
Black interior

- Fully assembled products come complete with display packaging
- Indicate the finish you require by adding suffix to List No.
ie: 13A 2 gang DP Switched Socket in Stainless Steel = **8316/SS/WH**



13A SWITCHED SOCKET OUTLET

BS1363

FLAT PLATE

1 gang DP Switched Socket

8314/_ _

2 gang DP Switched Socket

8316/_ _

Dimensions 1 gang 86mm x 86mm
2 gang 146mm x 86mm

Installation Box depth 35mm



13A FUSED CONNECTION UNIT

BS1363

FLAT PLATE

DP Switched

8832/_ _

DP Switched with Neon

8832/3_ _

Dimensions 86mm x 86mm

Installation Box depth 35mm



10AX PLATE SWITCH

BS EN 60669-1

FLAT PLATE

1 gang 2 way

8170/_ _

2 gang 2 way

8172/_ _

3 gang 2 way

8173/_ _

Dimensions 86mm x 86mm

Installation Box depth 1 & 2 gang 16mm, 3 gang 25mm

- 1-3 gang plate switches will accept Seeklight **7009**



20A DP CONTROL SWITCH

BS EN 60669-1

FLAT PLATE

20A DP Control Switch

8011/_ _

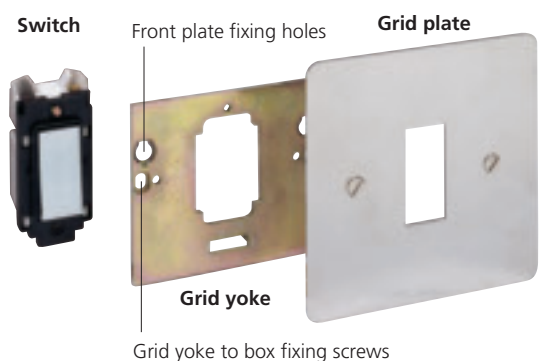
20A DP Control Sw + Neon

8011/3_ _

Dimensions 86mm x 86mm

Installation Box depth 35mm

PLATINUM GRID



Complete Assembly

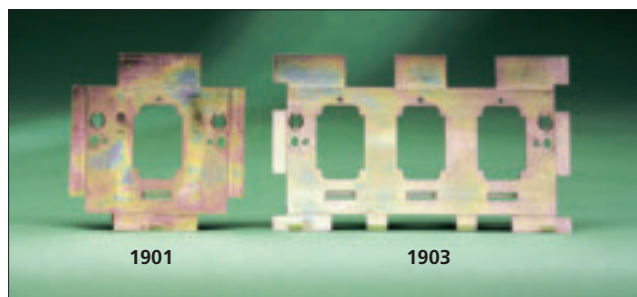


GRID PLATE - FLAT PLATE

Plate for 1 gang grid	8711/_ _
Plate for 2 gang grid	8712/_ _
Plate for 3 gang grid	8713/_ _
Plate for 4 gang grid	8714/_ _
Plate for 6 gang grid	8716/_ _
Plate for 8 gang grid	8718/_ _

Dimensions	1-2 gang 86mm x 86mm
	3-4 gang 146mm x 86mm
	6-8 gang 146mm x 146mm

All the following plates are available in Stainless Steel (**SS**), Polished Brass (**PB**) and Polished Stainless Steel (**PSS**)



GRID YOKES

1 gang Yoke	1901
2 gang Yoke	1902
3 gang Yoke	1903
4 gang Yoke	1904
6 gang Yoke	1906
8 gang Yoke	1908

When mounting grid yokes for use with the flat plate remove the outer fixing ears



GRID SWITCHES - NO OUTER TRIM

10AX 1 way	4430/7 _ _
10AX 2 way	4530/7 _ _
10A Retractive	4489/7 _ _
10A Retractive-Bell symbol	4490/7 _ _
10A Retractive 2 way and Off	4553/7 _ _
20AX 1 way	4450/7 _ _
20AX 2 way	4550/7 _ _
20AX Double Pole	4460/7 _ _
20AX Intermediate	4535/7 _ _
20AX 2 way & Off	4552/7 _ _

All the following Switches are available in Satin Chrome (**SC**), Highly Polished Chrome (**HPC**), Polished Brass (**PB**), Stainless Steel (**SS**), and Polished Stainless Steel (**PSS**)

Installation Box depth 35mm



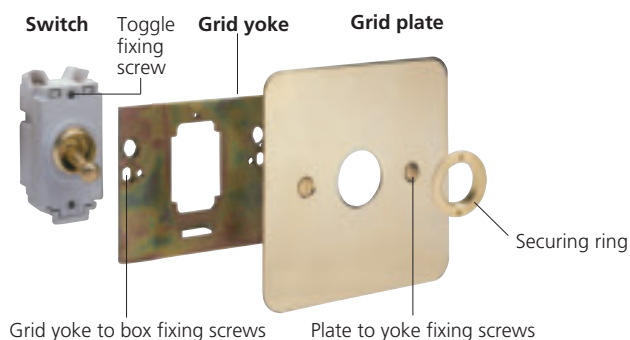
GRID KEY SWITCHES - NO OUTER TRIM

20AX 1 way Grid Key Switch	4451/7/WH*
20AX 2 way Grid Key Switch	4551/7/WH*
20AX DP 1 way Grid Key Switch	4461/7/WH*

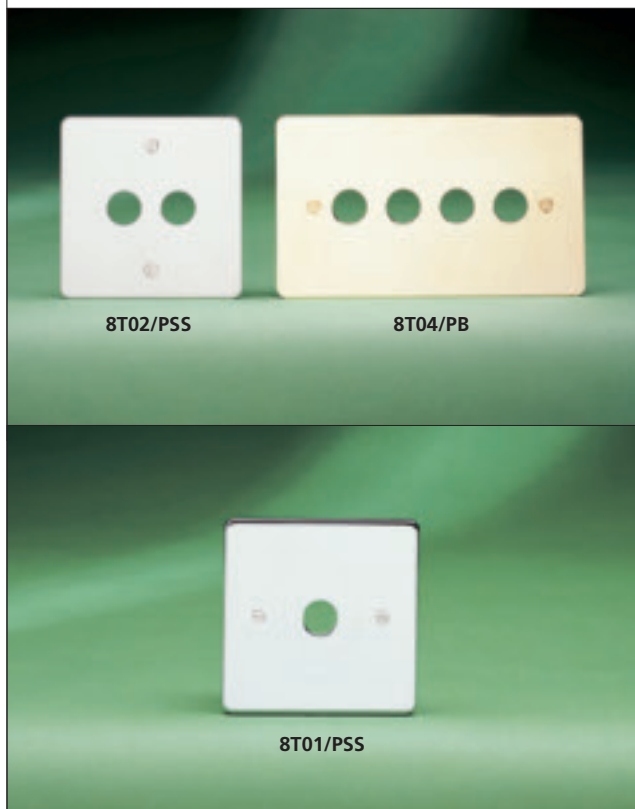
* For Key Switches marked 'Emergency Light Test' Please add '**ELT**' to the List No. eg. **4451/7/WH/ELT**

• For Key Switches with a black front moulding, please remove the /WH from the List No. eg. **4451/7**.

TOGGLE SWITCHES AND PLATES



Complete Assembly



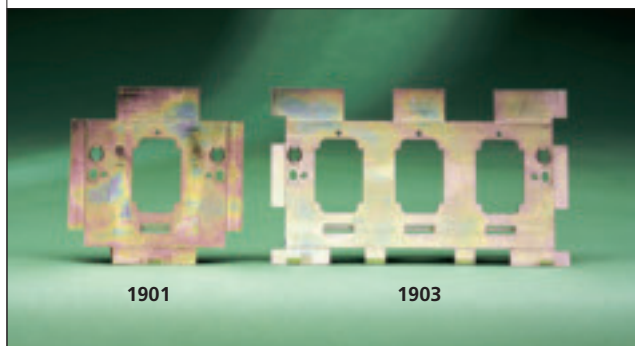
TOGGLE PLATES-FLAT PLATE

Plate for 1 gang grid	8T01/_ _
Plate for 2 gang grid	8T02/_ _
Plate for 3 gang grid	8T03/_ _
Plate for 4 gang grid	8T04/_ _

Dimensions 1-2 gang 86mm x 86mm
3-4 gang 146mm x 86mm

All the following plates are available in Stainless Steel (**SS**), Polished Brass (**PB**) and Polished Stainless Steel (**PSS**)

All plates come complete with toggle fixing screw in appropriate finish



GRID YOKES

1 gang Yoke	1901
2 gang Yoke	1902
3 gang Yoke	1903
4 gang Yoke	1904

When mounting grid yokes for use with the flat plate remove the outer fixing ears



TOGGLE SWITCHES

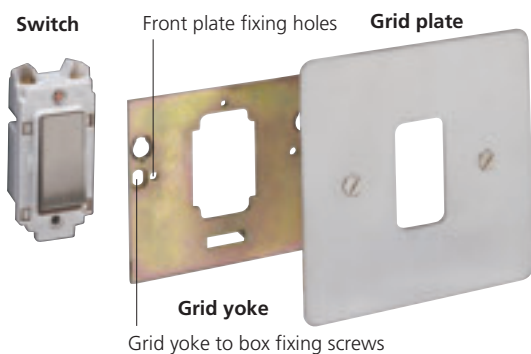
10AX 2 way Single Pole	5430/_ _
20AX 2 way Single Pole	5550/_ _
20AX 2 way and off Single Pole	5552/_ _

All the following switches are available in Satin Chrome (**SC**), Highly Polished Chrome (**HPC**), Polished Brass (**PB**), Stainless Steel (**SS**), and Polished Stainless Steel (**PSS**)

Installation Box depth 35mm

One fixing key supplied per pack of 10

ROCKERGRID FOR PLATINUM RANGE



Complete Assembly

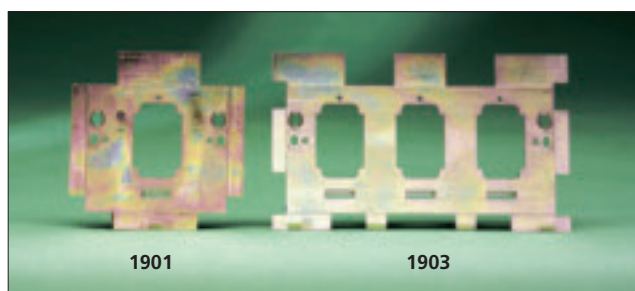
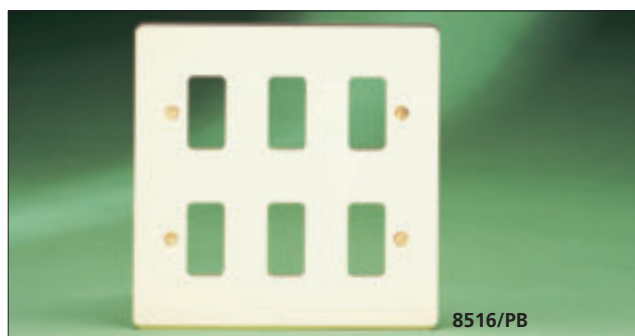


GRID PLATES - FLAT PLATE

Plate for 1 gang grid	8511/_ _
Plate for 2 gang grid	8512/_ _
Plate for 3 gang grid	8513/_ _
Plate for 4 gang grid	8514/_ _
Plate for 6 gang grid	8516/_ _
Plate for 8 gang grid	8518/_ _

Dimensions	1-2 gang 86mm x 86mm
	3-4 gang 146mm x 86mm
	6-8 gang 146mm x 146mm

All the following plates are available in Stainless Steel (**SS**), Polished Brass (**PB**) and Polished Stainless Steel (**PSS**)



GRID YOKES

1 gang Yoke	1901
2 gang Yoke	1902
3 gang Yoke	1903
4 gang Yoke	1904
6 gang Yoke	1906
8 gang Yoke	1908

When mounting Grid yokes for use with the Flat plate, remove the outer fixing ears



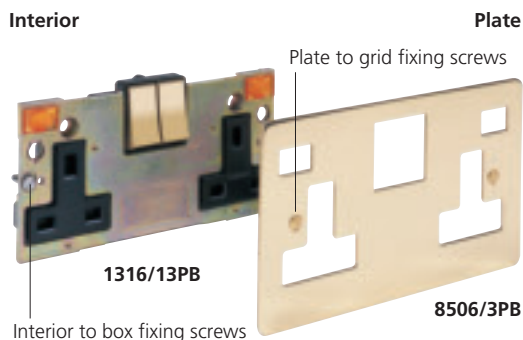
GRID SWITCHES

10AX 1 way	4430/6_ _
10AX 2 way	4530/6_ _
10A Retractive	4489/6_ _
20AX 1 way	4450/6_ _
20AX 2 way	4550/6_ _
20AX double Pole	4460/6_ _
20AX intermediate	4535/6_ _
20A 2 way & Off	4552/6_ _

All the following Switches are available in Satin Chrome (**SC/WH**), Stainless Steel (**SS/WH**), Highly Polished Chrome (**HPC**), Polished Brass (**PB**), and Polished Stainless Steel (**PSS**)

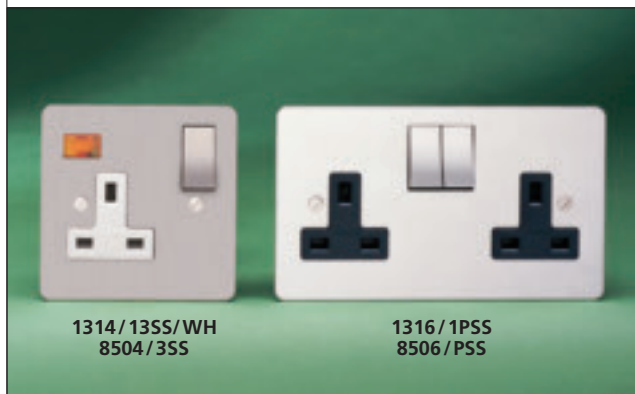
Installation Box depth 35mm

The full range of Rockergrid items are shown on pages 68 & 69 and will fit onto all the above plates.



SECOND FIX FLAT PLATE

- Standard Finishes:
 - PSS** - Polished Stainless Steel
- Black moulded insert
 - SS/WH** - Stainless Steel
- White moulded insert
 - PB** - Polished Brass
- Black moulded insert
- Indicate the finish you require by adding suffix to List No.
ie 13A 2 gang DP Switched Socket Interior + Neon in Polished Brass = **1316/13PB**
2 gang Switched Socket Plate + Neon in Polished Brass = **8506/3PB**
- All interiors are supplied with appropriate fixing grids



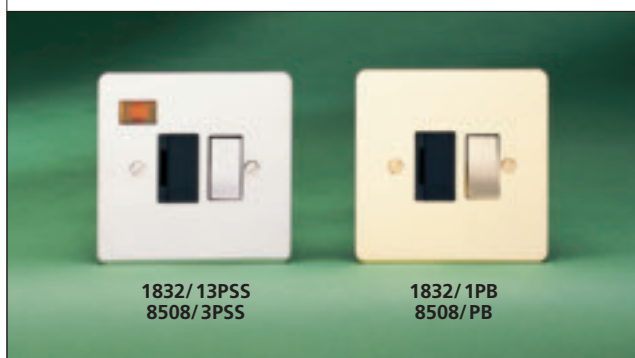
13A SWITCHED SOCKET

BS 1363

1 gang DP switched socket	Interior	1314/1 _ _
	Plate	8504/ _ _
1 gang DP switched socket with neon	Interior	1314/13 _ _
	Plate	8504/3 _ _
2 gang DP switched socket	Interior	1316/1 _ _
	Plate	8506/ _ _
2 gang DP switched socket with neons	Interior	1316/13 _ _
	Plate	8506/3 _ _

Dimensions 1 gang 86mm x 86mm, 2 gang 86mm x 146mm

Installation Box depth 35mm



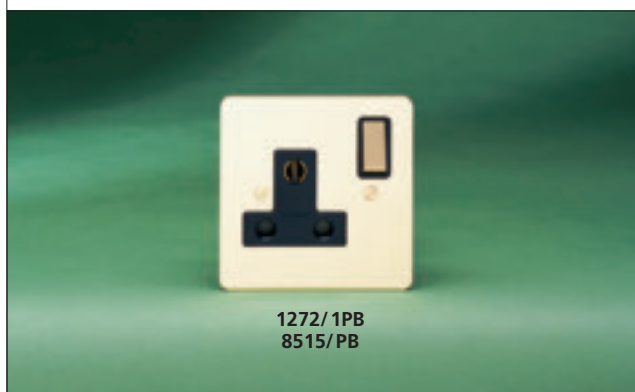
13A FUSED CONNECTION UNIT

BS 1363

13A switched fuse connection unit	Interior	1832/1 _ _
	Plate	8508/ _ _
13A switched fuse connection unit with neon	Interior	1832/13 _ _
	Plate	8508/3 _ _
13A switched FCU with cord outlet	Interior	1837/1 _ _
	Plate	8533/ _ _
13A switched FCU with cord outlet & neon	Interior	1837/13 _ _
	Plate	8533/3 _ _

Dimensions 1 gang 86mm x 86mm

Installation Box depth 35mm



2, 5 & 15A ROUND PIN SOCKET

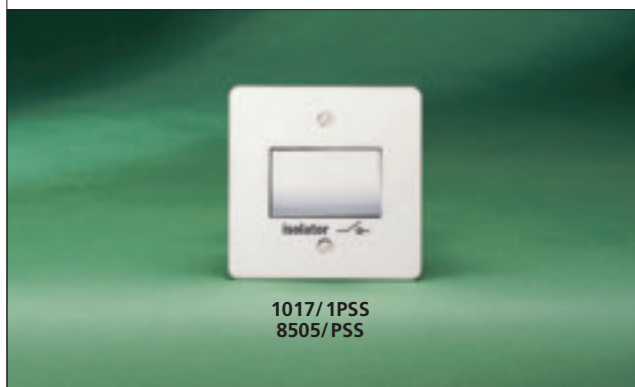
BS 546

2A round pin unswitched socket	Interior	1075/1*
	Plate	8560/ _ _
5A round pin unswitched socket	Interior	1340/1*
	Plate	8579/ _ _
15A round pin switched socket	Interior	1272/1 _ _
	Plate	8515/ _ _

Dimensions 1 gang 86mm x 86mm

Installation Box depth 35mm

* Black moulded insert as standard, if required with White moulded insert add /WH



6A TP ISOLATOR SWITCH

BS EN 60669-1

6A triple pole isolator switch	Interior	1017/1 _ _
	Plate	8505/ _ _

Dimensions 1 gang 86mm x 86mm

Installation Box depth 35mm

SHAVER SUPPLY UNIT

BS EN 61558

Shaver supply unit	Interior	1410/1*
	Plate	8510/ _ _

Dimensions 86mm x 146mm

Installation Box depth 55mm

* Black moulded insert as standard, if required with White moulded insert add /WH



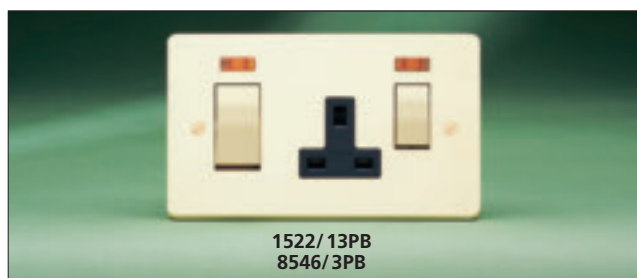
FLAT PLATE		BS EN 60669-1
10AX PLATE SWITCH		
1 gang 2 way 10AX switch	Interior Plate	1170/1 _ _ 8501/ _ _
1 gang 1 way 10A retractive switch	Interior Plate	1096/1 _ _ 8501/ _ _
2 gang 2 way 10AX switch	Interior Plate	1172/1 _ _ 8502/ _ _
3 gang 2 way 10AX switch	Interior Plate	1173/1 _ _ 8503/ _ _
Dimensions 1 gang 86mm x 86mm		
Installation Box depth 16mm 1 & 2 gang, 25mm 3 gang		
● 1-3 gang plate switches will accept Seeklight 7009		



DIMMER-ROTARY		BS EN 55014, BS EN 60669-2
250W 1 gang		8250/D1 _ _
250W 2 gang		8250/D2 _ _
400W 1 gang		8400/D1 _ _
400W 2 gang		8400/D2 _ _
Suitable for Tungsten Loads. Other options available please contact Technical Services.		
Dimensions 1 & 2 gang 86mm x 86mm Installation Box depth 40mm		
2 x 400W dimmer modules on a 1 gang plate should have a combined rating of 500W maximum.		



20A DP CONTROL SWITCH		BS EN 60669-1
20A DP control switch	Interior Plate	1011/1 _ _ 8520/ _ _
20A DP control switch with neon	Interior Plate	1011/13 _ _ 8520/3 _ _
32A DP CONTROL SWITCH		BS EN 60669-1
32A DP control switch	Interior Plate	1012/1 _ _ 8532/ _ _
32A DP control switch with neon	Interior Plate	1012/13 _ _ 8532/3 _ _
45A DP CONTROL SWITCH		BS EN 60669-1
45A DP control switch	Interior Plate	1512/1 _ _ 8545/ _ _
45A DP control switch with neon	Interior Plate	1512/13 _ _ 8545/3 _ _
Dimensions 1 gang 86mm x 86mm		
Installation Box depth 35mm		



45A DP COOKER CONTROL UNIT		BS 4177 & BS1363
Cooker control unit	Interior Plate	1522/1 _ _ 8546/ _ _
Cooker control unit with neons	Interior Plate	1522/13 _ _ 8546/3 _ _
Dimensions 86mm x 146mm		
Installation Box depth 35mm		



COMMUNICATION PLATES		
1 gang communication module frame	Interior Plate	1091/1 _ _ 8507/ _ _
2 gang communication module frame	Interior Plate	1092/1 _ _ 8509/ _ _
Communication 'Datapak' accessories shown on page 23		
BLANK PLATES		BS 5733
1 gang blank plate		1091/1 + 8585/ _ _
2 gang blank plate		1092/1 + 8577/ _ _
Dimensions 1 gang 86mm x 86mm, 2 gang 86mm x 146mm		
Installation Box depth 35mm		

CAPITAL

METAL PLATE

The sophistication of Satin Chrome and Highly Polished Chrome, the elegance of Bronze and Polished Brass, along with durable Stainless Steel and Polished Stainless Steel finishes, provide stylish options to specifiers of a comprehensive matching range of wiring accessories.





Polished Stainless Steel



Satin Chrome



Polished Brass



Stainless Steel



Highly Polished Chrome

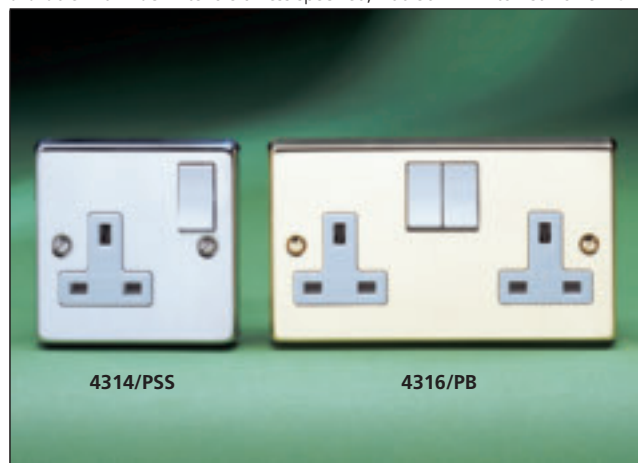


Bronze



Unique labyrinth switch design minimises visible arc flash and prevents front access to live parts whilst wide concave rockers are easy to operate.

All the following list numbers are available in Satin Chrome (**SC**), Bronze (**BZ**), Highly Polished Chrome (**HPC**), Polished Brass (**PB**), Stainless Steel (**SS**) and Polished Stainless Steel (**PSS**). Indicate the finish you require by adding suffix to List No. ie: 4314 – 1 gang switch socket in Bronze = 4314/**BZ**. Products are also available with Black interiors unless specified, Add Suffix **BK** to List No. ie: 4316/**SC** 13A 2 gang Switched Socket in Satin Chrome with Black interior = 4316/**SCBK**.

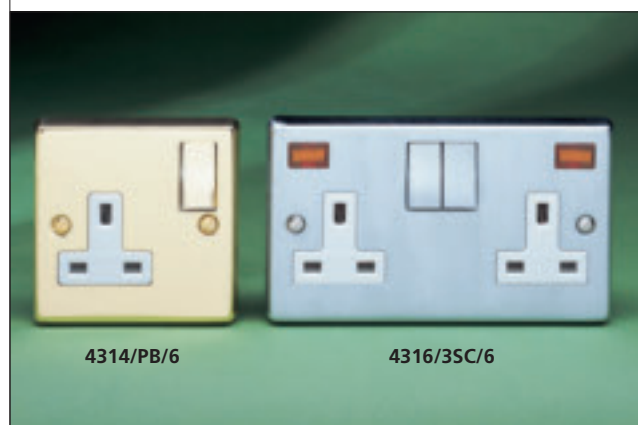


13A FLUSH SOCKET OUTLETS

BS 1363	PACK	QTY
1 gang SP switched	10	4314/_ _
2 gang SP switched	5	4316/_ _
1 gang SP switched fitted with neon indicator	10	4314/3 _
2 gang SP switched fitted with neon indicator	5	4316/3 _

Dimensions	1 gang 86mm x 86mm 2 gang 146mm x 86mm
Mounting boxes	1 gang 9221/BG surface, SB615 flush galv. or SB619 dry lining 2 gang 9223/BG surface, SB625 flush galv. or SB629 dry lining

Double pole switched versions are available to order – Add suffix **D** to List No.
ie Double pole 4314/**BZ** = 4314/**DBZ**.



13A FLUSH SOCKET OUTLETS WITH METAL ROCKERS

BS 1363	PACK	QTY
1 gang SP switched	10	4314/_ _/6
2 gang SP switched	5	4316/_ _/6
1 gang SP switched fitted with neon indicator	10	4314/3 _/6
2 gang SP switched fitted with neon indicator	5	4316/3 _/6

Dimensions	1 gang 86mm x 86mm 2 gang 146mm x 86mm
Mounting boxes	1 gang 9221/BG surface, SB615 flush galv. or SB619 dry lining 2 gang 9223/BG surface, SB625 flush galv. or SB629 dry lining

Double Pole switched versions available to order-Add suffix **D** to List No.-
ie: Double Pole 4316/3SC/6 = 4316/3**DSC**/6.

For Black Interior, Add Suffix **BK** to List No. ie: 4314/**SCBK**/6.



13A FLUSH FUSED CONNECTION UNITS

BS 1363	PACK	QTY
Unswitched	10	4831/_ _
Unswitched with neon	10	4831/3 _
DP switched	10	4832/_ _
DP switched with neon indicator	10	4832/3 _
Unswitched with cord outlet	10	4836/_ _
DP switched with cord outlet	10	4837/_ _
DP switched with cord outlet and neon indicator	10	4837/3 _

Dimensions 86mm x 86mm
Mounting boxes 9221/BG surface, SB615 flush galv. or SB619 dry lining
All fused connection units:
Fused on the line side with 13A fuse link ASTA certified and marked to BS 1362.
For spare fuse links see page 8.
Cord outlet suitable for flexible cord up to 10mm outside diameter.
Two earthing terminals are fitted to the unit.



13A FLUSH FUSED CONNECTION UNITS WITH METAL ROCKER

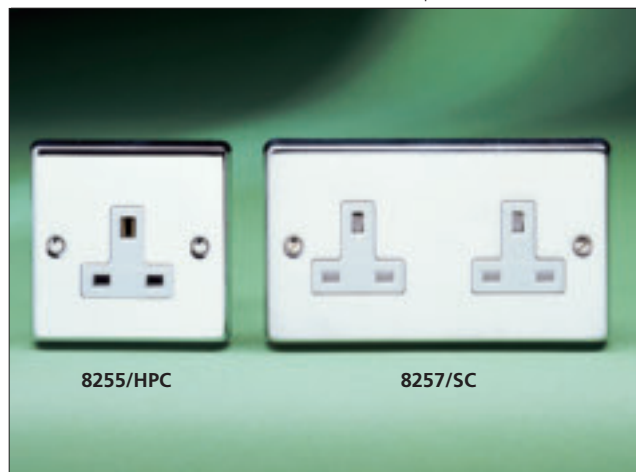
BS 1363	PACK	QTY
DP switched	10	4832/_ _/6
DP switched with neon indicator	10	4832/3 _/6
DP switched with cord outlet	10	4837/_ _/6
DP switched with cord outlet & neon indicator	10	4837/3 _/6

Dimensions 86mm x 86mm
Mounting boxes 9221/BG surface, SB615 flush galv. or SB619 dry lining
For Black Interior, Add Suffix **BK** to List No. ie: 4832/3**SCBK**/6.

For full specification details of finishes see Technical Data page 202.

All the following list numbers are available in Satin Chrome (SC), Bronze (BZ), Highly Polished Chrome (HPC), Polished Brass (PB), Stainless Steel (SS), and Polished Stainless Steel (PSS). Indicate the finish you require by adding suffix to list No. ie 2340 – 5A 3 pin switched in Satin Chrome = 2340/SC.

Products are also available with Black interior unless specified. Add suffix BK to List No. ie 2340/SC 5A 3 pin switched socket with Black interior = 2340/SC/BK.



13A UNSWITCHED SOCKET OUTLET

BS 1363		PACK QTY	
1 gang unswitched	10	8255/_ _	
2 gang unswitched	5	8257/_ _	
Dimensions	1 gang 86mm x 86mm 2 gang 146mm x 86mm		
Mounting boxes	1 gang 9221/BG surface, SB615 flush galv. or SB619 dry lining 2 gang 9223/BG surface, SB625 flush galv. or SB629 dry lining		



13A HINGED FLOOR SOCKET

BS 1363		PACK QTY	
1 gang unswitched	1	8256/_ _	
Dimensions	83mm x 89mm		
Mounting boxes	SB615 flush galvanised.		

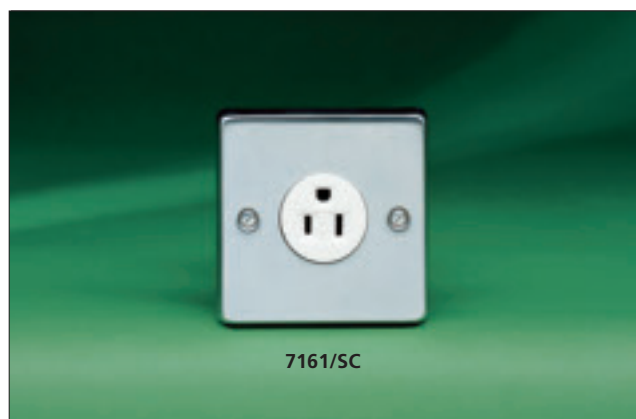
Available in Satin Chrome (SC), Highly Polished Chrome (HPC), and Polished Brass (PB).
Not available with Black Interior.



2A, 5A, 15A FLUSH SOCKET OUTLETS

		PACK QTY	
2A 3 pin unswitched	10	8075/_ _ *	
5A 3 pin switched	10	2340/_ _	
15A 3 pin switched	10	2372/_ _ #	
Dimensions	86mm x 86mm		
Mounting boxes	9221/BG surface, SB615 flush galv. or SB619 dry lining		

* Unshuttered version available for export only – Add suffix E to List No. ie 8075/BZE.
Not available with Black Interior.



15A 125V AMERICAN STANDARD FLUSH SOCKET OUTLETS

NEMA CONFIGURATION 5–15		PACK QTY	
1 gang	10	7161/_ _	
2 gang - Vertical	5	7162/_ _	
Dimensions	1 gang 86mm x 86mm 2 gang 86mm x 146mm		
Mounting boxes	1 gang 9047 surface, SB655 flush galv. or SB619 dry lining 2 gang 9048 surface, SB665 flush galv. or SB629 dry lining		

Not available with Black Interior.

For full specification details of finishes see Technical Data page 202.

All the following list numbers are available in Satin Chrome (SC), Bronze (BZ), Highly Polished Chrome (HPC), Polished Brass (PB), Stainless Steel (SS), and Polished Stainless Steel (PSS). Indicate the finish you require by adding suffix to List No. ie 6170 - 1 gang Plate Switch in Bronze = 6170/BZ. Products are also available with Black interiors, Add suffix BK to List No. ie 6170 - 1 gang 2 way Plate Switch in Satin Chrome with Black interior = 6170/SCBK.



10AX PLATE SWITCHES

BS EN 60669-1	PACK	QTY
1 gang 2 way	10	6170/_ _
2 gang 2 way	10	6172/_ _
3 gang 2 way	10	6173/_ _
1 gang Intermediate	10	6175/_ _
1 gang retractive (press) 10A	10	6096/_ _

Dimensions 86mm x 86mm

Mounting boxes 9043 surface, SB623 flush galv. or SB619 dry lining

Two way switches can be wired as one way.

Fully rated for fluorescent or inductive loads. (Except 6096, 10A only)

Retractive switch can be wired for normally open (N/O) or normally closed (N/C) circuits.

Seeklight facility available, see page 34 for details.



DIMMER SWITCHES - FLUSH

BS EN 60669-2	PACK	QTY
1 gang Dimmer 250W	1	1250W/_ _
1 gang Dimmer 400W	1	1400W/_ _
2 gang Dimmer 250W	1	2250W/_ _
2 gang Dimmer 400W	1	2400W/_ _

Suitable for tungsten mains voltage & GU10 or similar HiSpot halogen bulb.

Other options available, please contact Technical Services.

Dimensions 1-2 gang 86mm x 86mm

Mounting boxes 1-2 gang 9221/BG surface, SB615 flush galv. or SB619 dry lining

2 x 400W dimmer modules on a 1 gang plate should have a combined rating of 500W maximum.



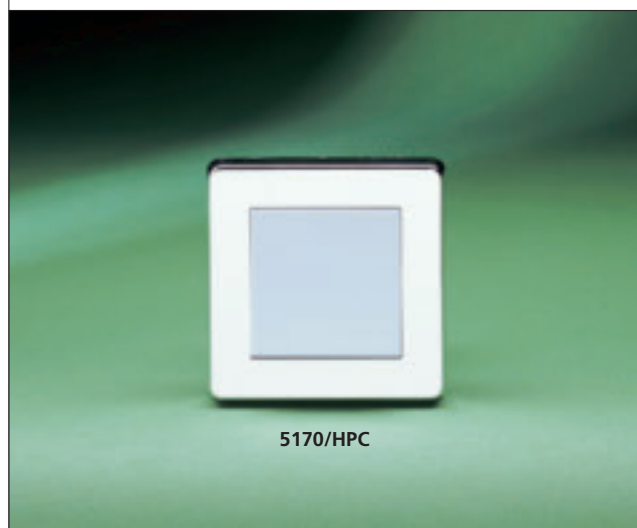
TOGGLE SWITCHES - FLUSH

BS EN 60669-1	PACK	QTY
1 gang 10AX 2 way	1	6141/_ _
2 gang 10AX 2 way	1	6142/_ _
1 gang 20AX 2 way	1	6151/_ _
1 gang 20AX 2 way and Off	1	6125/_ _
2 gang 20AX 2 way	1	6152/_ _

Other options available, See pages 68 & 69.

Dimensions 1-2 gang 86mm x 86mm

Mounting boxes 1-2 gang 9221/BG surface, SB615 flush galv. or SB619 dry lining



10A CORINTHIAN METALISED PLATE SWITCH

BS EN 60669-1	PACK	QTY
10AX 1 gang 2 way SP	10	5170/_ _
10AX 2 gang 2 way SP	10	5172/_ _
10AX 3 gang 2 way SP	10	5173/_ _
20AX 1 gang Intermediate	10	5175/_ _
10AX 1 gang retractive Press	10	5177/_ _

Dimensions 86mm x 86mm

Mounting boxes

Only available in Polished Brass (PB) & Highly Polished Chrome (HPC).

Not available in Black.

All the following list numbers are available in Satin Chrome (SC), Bronze (BZ), Highly Polished Chrome (HPC), Polished Brass (PB), Stainless Steel (SS), and Polished Stainless Steel (PSS). Indicate the finish you require by adding suffix to List No. ie 4011 - 20A DP Control Switch in Satin Chrome = 4011/SC. Products are also available with Black interiors, Add suffix BK to List No. ie 4011/SC - 20A DP Control Switch in Satin Chrome with Black interior = 4011/SCBK.



6017/BZ

6A TP CONTROL SWITCH

BS EN 60669-1 BS EN 60947-3	PACK QTY
6A Three Pole Isolating switch	10 6017/_ _

Provides local isolation of Fans with or without timers, whilst the rest of the circuit remains live.

Enables repair or routine maintenance of Fans. 240V only.

Dimensions 86mm x 86mm

Mounting boxes 9043 surface, SB623 flush galv. or SB619 dry lining

For Technical details see page 199.

Not available with Black Interior.



4018/HPC

5A CARD SWITCH

	PACK QTY
5A Card Switch	5 4018/_ _

Dimensions 86mm x 94mm

Mounting boxes SB615 flush galv. or SB619 dry lining

Controls energy consumption in installations such as hotels by ensuring that appliances are not left on when rooms are unoccupied.

The switch is operated by a door entry card and controls the supply to a room via a suitably rated contactor.

Will accept door entry cards up to 86mm x 54mm x 1mm.

Mounting Box must be 35mm in Depth



4011/BZ

4014/3SC

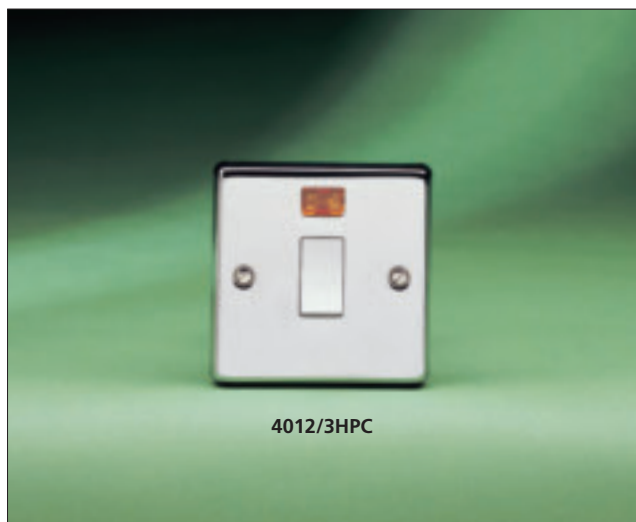
20A DP CONTROL SWITCHES

BS EN 60669-1	PACK QTY
DP switch	10 4011/_ _
DP switch with neon indicator	10 4011/3 _ _
DP switch with neon indicator marked 'Water Heater'	10 4011/31 _ _
DP switch with neon indicator and cord outlet	10 4014/3 _ _

Dimensions 86mm x 86mm

Mounting boxes 9047 surface, SB655 flush galv. or SB619 dry lining

Cord outlet suitable for flexible cord up to 10mm outside diameter.



4012/3HPC

32A DP CONTROL SWITCH

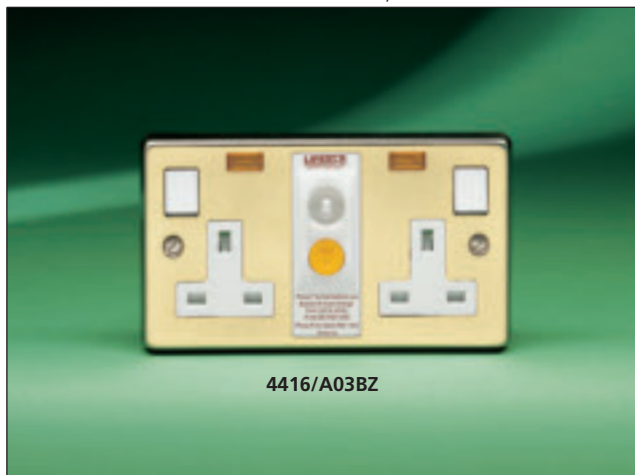
BS EN 60669-1	PACK QTY
DP switch with neon indicator	10 4012/3 _ _

Dimensions 86mm x 86mm

Mounting boxes 9041 surface, SB615 flush galv. or SB619 dry lining

Two earthing terminals are fitted to the switches.

All the following list numbers are available in Satin Chrome (SC), Bronze (BZ), Highly Polished Chrome (HPC), Polished Brass (PB), Stainless Steel (SS), and Polished Stainless Steel (PSS). Indicate the finish you require by adding suffix to List No. ie 4522/3 - Cooker Switch in Bronze = 4522/3BZ. Products are also available with Black interiors, Add suffix BK to List No. ie 4522/3SC - Cooker Control Switch in Satin Chrome with Black interior = 4522/3SCBK.



4416/A03BZ

13A SAFETY SOCKETS – RCD PROTECTION

BS 7288	PACK QTY
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FLUSH

2 gang switched with neon indicator 30mA tripping current	1	4416/A03_ _
--	---	-------------

Dimensions	146mm x 86mm
Mounting boxes	9048 surface, SB665 flush galv. or SB629 dry lining

See page 119 for further information.

All available with two earth terminals to enable installation to comply with section 607 (wiring regulations).

Not available with Black Interior.



4522/3BZ

45A DP SLIM LINE COOKER CONTROL UNIT

BS 4177 & BS 1363	PACK QTY
-------------------	----------

45A DP main switch and 13A Switched socket outlet Faceplate marked 'COOKER'	1	4522/3_ _
---	---	-----------

45A DP main switch and 3A Switched socket outlet Faceplate marked 'HOB'	1	4522/3_ _/HB
---	---	--------------

Dimensions	146mm x 86mm
Mounting boxes	9054 surface, SB625 flush galv. or SB629 dry lining

- Same plate size as standard twin socket.
- Large capacity tunnel terminals on live and neutral take up to 10mm² cable.
- Two earth terminals are fitted.
- Separate double pole switching for both cooker and socket.

For Black Interior, Add Suffix BK to List No. ie: 4522/3SCBK.



4512/SC

4512/3SC

50A DP CONTROL SWITCHES

BS EN 60669-1	PACK QTY
---------------	----------

DP switch	5	4512/_ _
-----------	---	----------

DP switch with neon indicator	5	4512/3_ _
-------------------------------	---	-----------

Dimensions	86mm x 146mm
Mounting boxes	9040 surface, SB625 flush galv. or SB629 dry lining

BS EN 60947-3 rating 240V 50A category of duty AC22.

For associated cable outlets see page 10.

For Black Interior, Add Suffix BK to List No. ie: 4512/3SCBK.



2167/BKN

METAL CAPPED 50A CEILING SWITCHES

BS EN 60669-1	PACK QTY
---------------	----------

1 way DP with neon and mechanical indicator	1	2167/_ _
--	---	----------

Mounting boxes	Integral pattress for surface mounting. Can be mounted to a large circular conduit box.
-----------------------	--

Complies with the requirements of the IEE Wiring Regulations (BS 7671) for use as an isolating device.

Terminals will accept up to 10mm² cable.

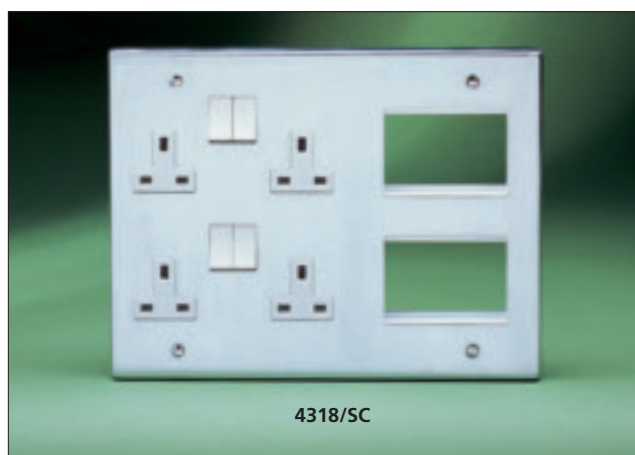
Standard pull cord/acorn is 1.5m long, in white.

Suitable for use with 25mm x 16mm trunking.

Rated for non-inductive loads only.

Available in the following finishes: Satin Chrome (SC), Polished Brass (PB), Highly Polished Chrome (HPC) & Black Nickel (BKN).

All the following list numbers are available in Satin Chrome (**SC**), Bronze (**BZ**), Highly Polished Chrome (**HPC**), Stainless Steel (**SS**) and Polished Stainless Steel (**PSS**). Indicate the finish you require by adding suffix to List No. ie 8265 – Co-axial socket in Bronze = 8265/**BZ**.



4318/SC

MULTI MEDIA PLATE

	PACK QTY	
Multi Media Plate	1	4318/_ _
The plate comprises 2 Dual Earth, Double pole, twin switched sockets and has provision for up to six Euro modules.		
The following finishes are available, please add suffix to List No. Satin Chrome (SC), Stainless Steel (SS), Polished Brass (PB), Highly Polished Chrome (HPC) and White (WH).		
Dimensions	267mm x 207mm	
Mounting boxes	Deep - 254mm x 194mm x 56mm	
	Shallow - 253mm x 193mm x 35mm	
	See Page 84 for more details	



8092/BZ
fitted with modules

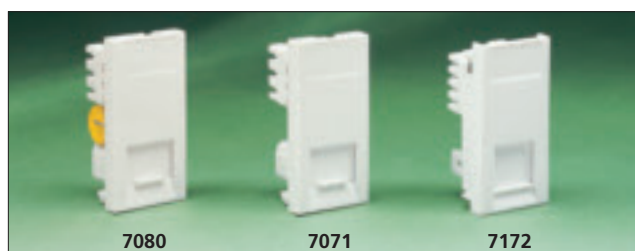
8092/SC
fitted with modules

COMMUNICATIONS PLATES

BS 5733 WHERE APPLICABLE	PACK QTY	
1 module metal plate (fitted with grid)	5	8091/_ _
2 module metal plate (fitted with grid)	5	8092/_ _
4 module metal plate (fitted with grid)	5	8094/_ _
Dimensions	86mm x 86mm, 1 & 2 module 86mm x 146mm, 4 module	
Mounting boxes	8091*, 8092*-9041 surface, SB615 flush galv. or SB619 dry lining	
	8094*-9040 surface, SB625 flush galv. or SB629 dry lining	

The metal plates listed above accept any of the Datapak range of modules.
See page 23 for full product selection details.

For Black Interior, (Grid), Add Suffix **BK** to List No. ie: 8091/**SCBK**.



7080

7071

7172



7069

7065

7067



7074

7063

7069

COMMUNICATION MODULES

	PACK QTY	
BT Master Voice	25	7080
BT Master Voice, Left Handed	25	7080/LH
BT secondary Voice, 6 wire	25	7071
RJ45 (single) module, 8 wire – Category 5e	25	7172

DATA AND CO-AXIAL MODULES

BNC single module with 75 Ohm crimp connector	25	7074
TV outlet (male)	25	7065
TV outlet (female)	25	7067
F type Satellite	25	7069
Triplex Unit (TV, FM, Sat)	25	7063
Quadplexer with TV return (TV, TV Return, FM, Sat 1 & Sat 2)	10	7064
TV outlet screened, return	25	7060
Phono (Female)	25	7087

BLANK MODULES & ACCESSORIES

1/2 module size	25	7081/2
1 module size	25	7081
IDC Tool	20	6915
IDC Crimp Tool	1	7915

Also available in Black - Add suffix **BK** to List No. ie: triplex unit in Black = 7063/**BK**.

Dimensions 25mm x 50mm, (1 module) (except 7063 - 50mm x 50mm & 7064 - 75mm x 50mm)

For full specification details of finishes see Technical Data page 201.

All the following list numbers are available in Satin Chrome (**SC**), Bronze (**BZ**), Highly Polished Chrome (**HPC**), Polished Brass (**PB**) Stainless Steel (**SS**) and Polished Stainless Steel (**PSS**). Indicate the finish you require by adding suffix to List No. ie 8265 Co-axial socket in Bronze = 8265/**BZ**. Products are also available with Black interiors, Add Suffix **BK** to List No. ie: 8283/SC 1 gang Telephone Master = 8283/**SCBK**.



TELEPHONE PLATES

BS 7671	PACK QTY	
Telephone Master	10	8283/ __
Telephone Secondary	10	8284/ __

Dimensions 86mm x 86mm
Mounting boxes 9047 surface, SB655 flush galv. or SB619 dry lining



CO-AXIAL SOCKET OUTLETS

BS 3041 WHERE APPLICABLE	PACK QTY	
1 way direct connection	10	8265/ __
2 way direct connection	10	8266/ __
1 way isolated UHF, VHF	1	8267/ __
2 way isolated UHF, VHF	1	8268/ __

Dimensions 86mm x 86mm
Mounting boxes 9047 surface, SB655 flush galv. or SB619 dry lining
Isolated units only suitable on installations with earth bond.



SHAVER SUPPLY UNIT

BS EN 61558	PACK QTY	
240V 50Hz input	1	2411/ __
115V 50Hz } output		
230V 50Hz }		

Dimensions 86mm x 146mm
Mounting boxes 9053 surface, SB628 flush galv. or SB631 dry lining

Not available with Black Interior



BLANKING PLATES

BS 5733 WHERE APPLICABLE	PACK QTY	
1 gang	20	6575/ __
2 gang	20	6577/ __

Dimensions 1 gang 86mm x 86mm
 2 gang 146mm x 86mm

For full specification details of finishes see Technical Data page 202.



4832/HPC/DW

4832/HPC/TD

4832/3HPC/HG

4832/3SC/FF

4832/3SC/EF

4832/3SC/WM

4011/3HPC/HB

4011/3HPC/TD

4316/SCRD

PRODUCT MARKING SERVICE

A wide range of markings can be added to 13A fused connection units and double pole control switches. The majority of these markings are consistent in style, colour and position with the standard Tampo-printed 'water heater' marking on List No.4011/31_ _ . All of the markings offer the same high level of durability.

To order any of the markings listed below, add suffix to List No. ie 4832/SC marked 'fridge freezer' = 4832/SC/FF.

MARKING	SUFFIX	MARKING	SUFFIX
air condition	AC	cooker hood	HD
alarm	AL	heating	HG
bathroom	BA	hair dryer	HI
bell transformer	BE	heating isolator	HS
bathroom extract fan	BEF	heater	HT
bathroom heater	BH	immersion heater	IH
boiler	BO	kitchen extract fan	KEF
boiler supply	BOS	light	LG
boost	BST	lift	LI
British Telecom	BT	loft light	LL
caravan	CA	microwave	MW
CCTV	CCTV	night immersion	NI
central heating	CH	off peak	OFFP
cooker	CK	outside light	OL
cupboard light	CL	on peak	ONP
convector heater	CNH	oven	OV
day boost	DB	pelmet light	PEL
detector	DE	plinth heater	PLH
downflow heater	DH	refrigerator	RF
door bell	DO	security alarm	SA
dish washer	DW	smoke detector	SD
dryer	DY	security equipment	SE
emergency circuit	EC	shower	SH
extractor fan	EF	security light	SL
extractor hood	EH	shower pump	SP
fire alarm	FA	storage heater	ST
for cleaners use only	FCO	steam cabinet	STC
fan coil unit	FCU	tumble dryer	TD
feature fire	FE	towel rail	TR
fridge/freezer	FF	TV amplifier	TVA
fan heater	FH	underfloor heating	UH
fire	FI	vent fan	VF
fan	FN	water heater	WA
fridge	FR	water cooler	WC
freezer	FZ	waste disposal	WD
gas ignition	GI	washing machine	WM
hand dryer	HA	washer	WS
hob	HB		

These popular markings are offered on a fast track service in the standard wiring accessories colour. For price and delivery information on other markings not listed above, contact our Technical Services Department.

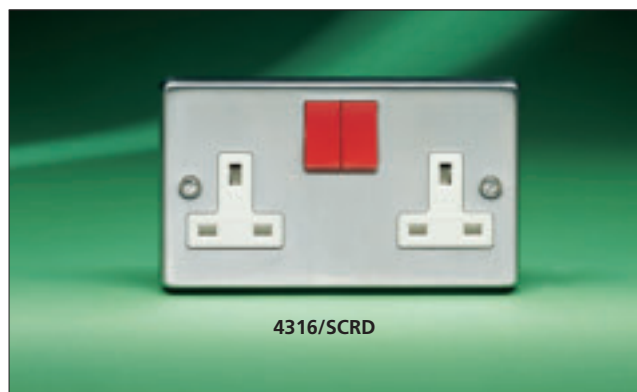
RED ROCKERS

For applications where essential supply systems are in use, sockets and fused connection units with red rockers are available to order. These are ideal for use in hospitals, computer installations, etc.

To order, add suffix to List No.

ie 4316/SC with red rockers = 4316/SC/RD.

For Rockergrid switches with red rockers see Rockergrid section page 68-69.



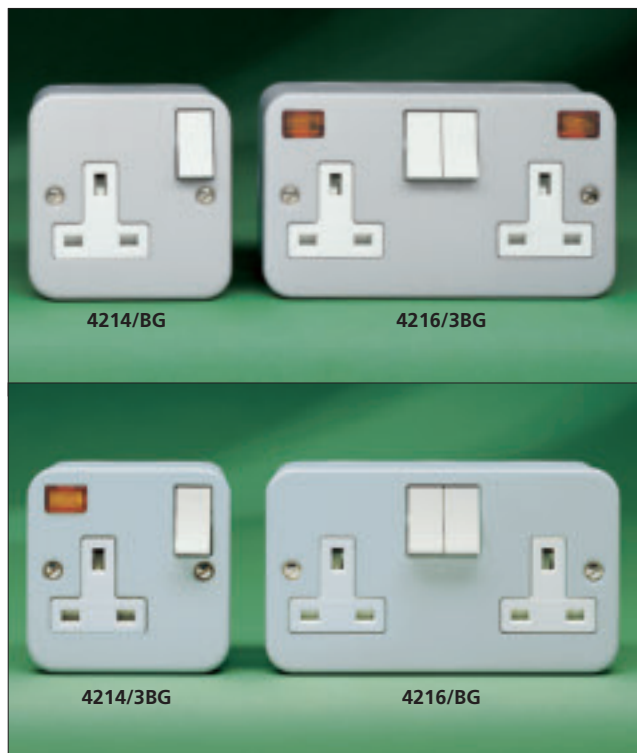
CAPITAL

METALCLAD

In tough conditions the sturdily built Capital Metalclad range is ideal for use in industry, commerce and the home.



- Tough durable finish which is resistant to premature ageing, discolouration and corrosion.
- Finishing process is highly automated and controlled to ensure a consistent level of performance.
- Production line tested for quality of gloss finish and uniform coverage of coating.

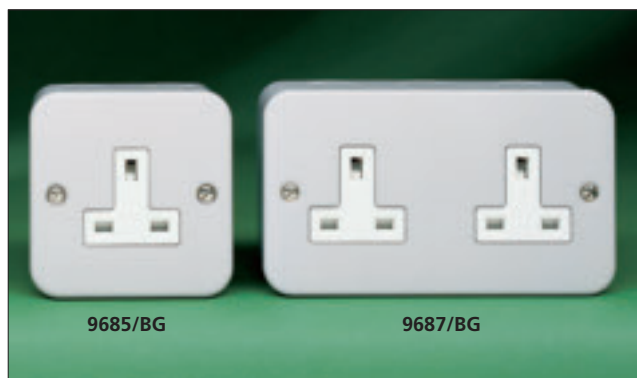


13A SWITCHED SOCKET OUTLETS

BS 1363	PACK QTY	
1 gang SP	10	4214/BG
2 gang SP	5	4216/BG
1 gang SP with neon indicator	10	4214/3BG
2 gang SP with neon indicator	5	4216/3BG

Dimensions	1 gang 86.7mm x 86.7mm x 44mm
	2 gang 143.9mm x 86.9mm x 44mm

For sockets with plain boxes – Add suffix **P** to List No.
 eg 4216/BG with plain box = 4216/**PBG**.
 Double pole available to order – Add suffix **D** to List No.
 eg Double pole 4216/BG = 4216/**DBG**.



13A UNSWITCHED SOCKET OUTLETS

BS 1363	PACK QTY	
1 gang unswitched	10	9685/BG
2 gang unswitched	5	9687/BG

Dimensions	1 gang 86.7mm x 86.7mm x 44mm
	2 gang 143.9mm x 86.9mm x 44mm

For sockets with plain boxes – Add suffix **P** to List No.
 eg 4216/BG with plain box = 4216/**PBG**.



13A FUSED CONNECTION UNITS

BS 1363 WHERE APPLICABLE	PACK QTY	
Unswitched	10	4841/BG
Unswitched with neon indicator	10	4841/3BG
DP switched	10	4842/BG
DP switched with neon indicator	10	4842/3BG
Unswitched with cord outlet	10	4846/BG
DP switched with cord outlet	10	4847/BG
DP switched with cord outlet and neon indicator	10	4847/3BG

Dimensions	86.7mm x 86.7mm x 44mm
-------------------	------------------------

For fused connection units with plain boxes – Add suffix **P** to List No.
 eg 4842/BG with plain box = 4842/**PBG**.
 Fused on the line side with a 13A fuse link ASTA certified and marked to BS 1362.
 For spare fuse links see page 8.
 Cord outlets suitable for flexible cord up to 10mm outside diameter.
 Two earthing terminals are fitted to the unit.

For full specification details of finishes see Technical Data page 202.



4416/A03BG



4426/A03BG

13A SAFETY SOCKET WITH RCD PROTECTION

BS 7288	PACK	QTY
2 gang switched with neon indicator 30mA tripping current flush mounting	1	4416/A03BG
2 gang switched with neon indicator 30mA tripping current surface mounting	1	4426/A03BG
Dimensions	Flush –146mm x 86mm Surface –142mm x 82mm x 44mm	
Mounting boxes	4414 & 4416 series 9223/BG surface, SB665 flush galv or SB629 dry lining	

For boxes less knockouts see page 84. For further information see page 119.

All available with two earth terminals to enable installation to comply with section 607 (wiring regulations).



2240/BG



2272/BG

5A, 15A SWITCHED SOCKET OUTLETS

BS 546	PACK	QTY
5A shuttered SP	10	2240/BG
15A shuttered SP	10	2272/BG
Dimensions	86.7mm x 86.7mm x 44mm	

For boxes less knockouts see page 84.



4581/BG



4583/BG

10AX SWITCHES

BS EN 60669-1	PACK	QTY
10AX 1 gang 2 way	10	4581/BG
10AX 2 gang 2 way	10	4582/BG
10AX 3 gang 2 way	10	4583/BG
Dimensions	86.7mm x 86.7mm x 44mm	



4020/3BG



4021/3BG

20A DP CONTROL SWITCHES

BS EN 60669-1	PACK	QTY
DP Switch with neon indicator	10	4020/3BG
DP Switch with neon indicator and cord outlet	10	4021/3BG
Dimensions	86.7mm x 86.7mm x 44mm	

Cord outlet suitable for flexible cord up to 10mm outside diameter.

Surface box fitted with earth terminal.

For switches with plain boxes add suffix **P** to List No. ie 4020/3BG with plain box = 4020/3PBG.



4512/BG



4512/3BG

50A DP CONTROL SWITCHES

BS EN 60669-1	PACK	QTY
DP Switch	10	4512/BG
DP Switch with neon indicator	10	4512/3BG
Dimensions	142mm x 82mm x 42mm	

BS EN 60947-3 rating 240V 50A category of duty AC22.

For full specification details of finishes see Technical Data page 202.



4587/BG

10A TP CONTROL SWITCHES

BS EN 60669-1, BS EN60947-3		PACK QTY
10A Three Pole Isolating Switch	10	4587/BG
<i>Provides local isolation of fans with or without timers whilst the rest of the circuit remains live. Enables repair or routine maintenance of fans. 240V only.</i>		
Dimensions	86.7mm x 86.7mm x 44mm	
<i>For full details of compliance with BS EN 60947-3 see Technical Data page 199.</i>		



1932

TRIPLE POLE & NEUTRAL 415V, 50HZ AC

		PACK QTY
32A with Switched Neutral, for surface mounting	1	1932
32A with Switched Neutral, for flush mounting	1	1932/F
● Terminal capacity 10mm.		
Dimensions	133mm x 114mm x 61mm	



4216/BG/RD

RED ROCKERS

For applications where essential supply systems are in use, sockets and fused connection units with red rockers are available to order. These are ideal for use in hospitals, computer installations, etc.

PART NO	PACK QTY	
Single switched socket	10	4214/BG/RD
Twin switched socket	5	4216/BG/RD

For Rockergrid switches with red rockers see Rockergrid section page 68.



3899BG

3809BG

BLANKING PLATES FOR SURFACE REPLACEMENT BOXES

PART NO	PACK QTY	
For List No 9214/BG	5	3809BG
For List No 9211/BG	10	3899BG

For full specification details of finishes see Technical Data page 202.

ROCKERGRID

MODULAR SYSTEM

Rockergrid provides the design versatility of a modular switch range whilst incorporating Capital styling and safety features which benefit the user and installer alike.





Polished Brass



Satin Chrome



Highly Polished Chrome



Polished
Stainless Steel



Bronze



White



Birch Grey



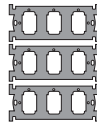
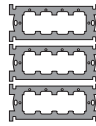
- Unique labyrinth switch design minimises visible arc flash and prevents front access to live parts.
- Positive drive switch action prevents balancing between the 'on' and 'off' position and gives reliable indication of the contact position.
- Silver alloy contacts for longer life and low contact resistance.

SELECTION TABLE

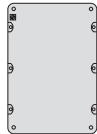
PLATES

Gang	       							
	1	2	3	4	6	8	9	12
Surface BIRCH GREY Engraved 'Water Heater'	6581/BG 6581/1BG	6582/BG 6582/1BG	6583/BG	6584/BG	6586/BG	6588/BG	6589/BG	6580/BG
Flush MOULDED WHITE WHITE METAL BRONZE Engraved 'Water Heater'	5571	5572	5573	5574	5576	6578/WH	6579/WH	6570/WH
SATIN CHROME Engraved 'Water Heater'	6571/BZ 6571/1BZ	6572/BZ 6572/1BZ	6573/BZ	6574/BZ	6576/BZ	6578/BZ	6579/BZ	6570/BZ
HIGHLY POLISHED CHROME	6571/SC 6571/1SC	6572/SC 6572/1SC	6573/SC	6574/SC	6576/SC	6578/SC	6579/SC	6570/SC
POLISHED STAINLESS STEEL	6571/HPC	6572/HPC	6573/HPC	6574/HPC	6576/HPC	6578/HPC	6579/HPC	6570/HPC
POLISHED BRASS	6571/PSS	6572/PSS	6573/PSS	6574/PSS	6576/PSS	6578/PSS	6579/PSS	6570/PSS
	6571/PB	6572/PB	6573/PB	6574/PB	6576/PB	6578/PB	6579/PB	6570/PB

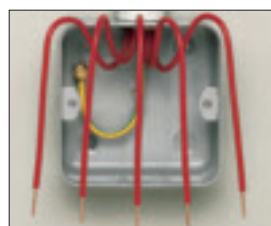
GRIDS

								
Flush or surface	6901	6902	6903	6904	2 x 6903	2 x 6904	3 x 6903	3 x 6904

BOXES

								
Flush or surface	9201/BG	9201/PBG	9203/BG	9203/PBG	9206/BG	9206/PBG	9209/BG	9209/PBG
with knock-outs	9201/BG	9201/PBG	9203/BG	9203/PBG	9206/BG	9206/PBG	9209/BG	9209/PBG
without knock-outs	9201/PBG	9201/PBG	9203/PBG	9203/PBG	9206/PBG	9206/PBG	9209/PBG	9209/PBG
Flush only	SB615	SB615	SB625	SB625				

ASSEMBLY



1 Install box and enter cables.

- Boxes, grids & switches common to flush & surface installations.



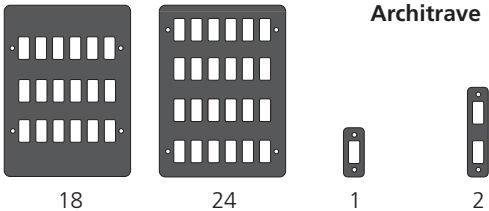
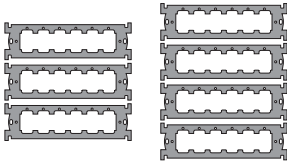
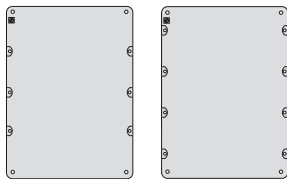
2 Remove 'ears' from grid for surface installations.

- When Flush mounting do not remove 'ears'.



3 Fix switches into grid.

- Single screw switch fixing.
- Fingerproof shrouding around terminals.

			
6580/18BG	6580/24BG		
6570/18WH	6570/24WH	6591/WH	6592/WH
6570/18BZ	6570/24BZ	6591/BZ	6592/BZ
6570/18SC	6570/24SC	6591/SC	6592/SC
6570/18HPC	6570/24HPC	6591/HPC	6592/HPC
6570/18PSS	6570/24PSS	6591/PSS	6592/PSS
6570/18PB	6570/24PB	6591/PB	6592/PB
			
3 x 6906	4 x 6906	1367	1368
		Supplied fitted to architrave plate	
9209/18BG	9209/24BG		
9209/18PBG	9209/24PBG		
		9341/GV	9342/GV

* Metal rocker finishes: Satin Chrome (**SC/WH**), Bronze (**BZ**), Polished Brass (**PB**), Highly Polished Chrome (**HPC**), Polished Stainless Steel (**PSS**) and Stainless Steel (**SS/WH**).

SWITCHES

		ROCKER	
		MOULDED	METAL
10AX	1 way	4430	4430/6_ _ *
10AX	2 way	4530	4530/6_ _ *
10A	Retractive	4489	4489/6_ _ *
10A	Retractive marked with bell symbol	4490	4490/6_ _ *
10A	Retractive 2 way and off	4553	4553/6_ _ *
20AX	1 way	4450	4450/6_ _ *
20AX	1 way key switch c/w key	4451	
20AX	2 way	4550	4550/6_ _ *
20AX	2 way key switch c/w key	4551	
20AX	2 way and off	4552	4552/6_ _
20AX	Intermediate	4535	4535/6_ _ *
20AX	Double pole	4460	4460/6_ _ *
20AX	Double pole marked 'ON'	4469	4469/6_ _ *
20AX	Double pole key switch c/w key	4461	

Switches are available in Black (BK) eg: 4460/BK, 4460/6PBBK

ACCESSORIES

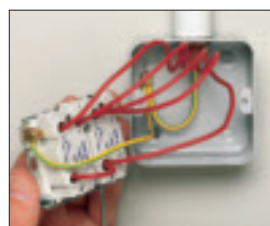
Cord outlet	4435
13A fused connection unit	4436
Neon indicator (Red)	4491
Neon indicator (Green)	4493
Neon indicator (Amber)	4494
Socket outlet 2.5–16A	4499†
Blanking component	4492
Spare key	6940 (Metal)

Accessories are available in Black (BK) eg: 4436/BK

† Available for export use only.

Switch modules:

- Tough impact-resistant thermoplastic moulded construction.
- Metal plate switch modules incorporate double insulation.
- Suitable for panel mounting and OEM applications.
- IP66 protected Rockergrid switch enclosures are available, see Weatherseal section page 77.



4 Connect wires to relevant switches & earth terminals.

- Large capacity, easy-to-wire terminals.
- Diagrammatic marking on rear of switch.



5 Fix wired switch/grid assembly into box.

- Automatic grid alignment with horizontal adjustment.



6 Fix face plate onto grid.

- Robust impact resistant construction, high quality moulded & metal parts.



10AX SWITCHES – MOULDED ROCKER

BS EN 60669-1	PACK	QTY
1 way SP	10	4430
2 way SP	10	4530
Retractive 10A	10	4489
Retractive – bell symbol 10A	10	4490
Retractive 2 way and off 10A	10	4553

Available as made to order in Black (**BK**) eg: 4530/**BK**

Fully rated for fluorescent and inductive loads (except List No. **4553**).

4490 Retractive switch can be wired for normally open (N/O) or normally closed (N/C) circuits. (except List No. **4553**)



20AX SWITCHES – MOULDED ROCKER

BS EN 60669-1	PACK	QTY
1 way	10	4450
1 way complete with key	10	4451
1 way with key marked "Emergency Lighting Test"	10	4451/ELT
DP	10	4460
Various markings - See page 71	10	4460/_ _
DP complete with key	10	4461
DP with key marked "Emergency Lighting Test"	10	4461/ELT
DP marked 'ON'	10	4469
Intermediate	10	4535
2 way	10	4550
2 way complete with key	10	4551
2 way with key marked "Emergency Lighting Test"	10	4551/ELT
2 way and off	10	4552
Spare key	10	6940

Available as made to order in Black (**BK**) eg: 4550/**BK**

Fully rated for fluorescent and inductive loads (except List No. **4552**).



ACCESSORIES – MOULDED

BS 5733 WHERE APPLICABLE	PACK	QTY
Grid adaptor to suit Dimmer module	10	4480
Cord outlet – 10mm diameter aperture, complete with earthing terminal and cable clamp	10	4435
Fuse unit fitted with 13A ASTA certified fuse link	10	4436
Indicator – Red	10	4491
Blanking component	10	4492
Indicator – Green	10	4493
Indicator – Amber	10	4494
Socket outlet 2.5–16A	10	4499*

Available as made to order in Black (**BK**)

* Not for use inside the UK where IEE Regulations (BS 7671) are applicable.



OTHER SWITCH VARIATIONS

The following modules are available with black mouldings.

Black rockers	4430/BK	4491/BK
	4450/BK	4493/BK
	4490/BK	4550/BK
Red rockers	4430/RD	4530/RD
	4460/RD	4550/RD
	4490/RD	4535/RD

For panel cut-out details see dimensions on page 250.

All the following metal plate switches are available with Satin Chrome (**SC/WH**), Bronze (**BZ**), High Polished Chrome (**HPC**) Polished Brass (**PB**) Polished Stainless Steel (**PSS**) and Stainless Steel (**SS/WH**) rockers. Indicate the finish you require by adding the suffix to List No. eg 4430/6 with Bronze rocker = 4430/6**BZ**.



10AX SWITCHES – METAL PLATE ROCKER

BS EN 60669-1	PACK	QTY
1 way	10	4430/6 _ _
Retractive 10A	10	4489/6 _ _
Retractive 2 way and off 10A	10	4553/6 _ _
2 way	10	4530/6 _ _

Available with White moulding Trim eg: 4530/6SC/WH

Available with Black moulding Trim eg: 4530/6SC

Fully rated for fluorescent and inductive loads.

Retractive switches can be wired for normally open (N/O) or normally closed (N/C) circuits.



20AX SWITCHES – METAL PLATE ROCKER

BS EN 60669-1	PACK	QTY
1 way	10	4450/6 _ _
DP 1 way	10	4460/6 _ _
Intermediate	10	4535/6 _ _
2 way	10	4550/6 _ _
2 way and off	10	4552/6 _ _

Available with White moulding Trim eg: 4530/6SC/WH

Available with Black moulding Trim eg: 4530/6SC

Fully rated for fluorescent and inductive loads.



TOGGLE SWITCH

BS EN 60669-1	PACK	QTY
10AX 2 way Single Pole	5	5430/ _ _
20AX 2 way Single Pole	5	5550/ _ _
20AX 2 way and Off Single Pole	5	5552/ _ _

One Fixing Key supplied per pack.

For cut-out Dimensions, see page 250.



DIMMERS

	PACK	QTY
250W	10	4425
400W	10	4440

• Dimmer modules come complete with Grid adaptor.



GRIDS

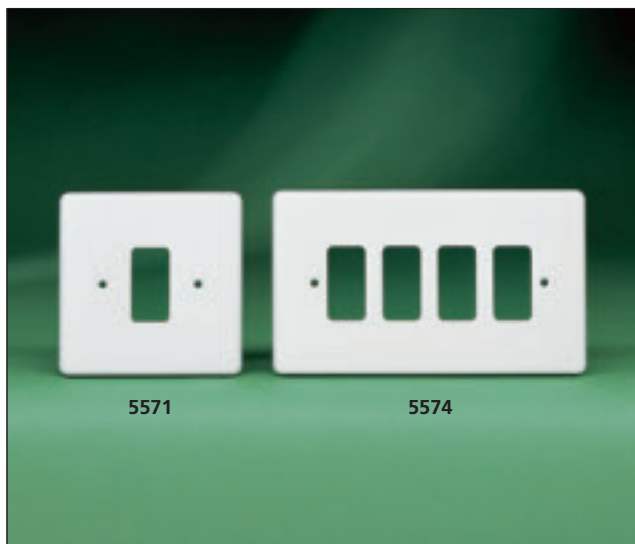
1 gang	20	6901
2 gang	20	6902
3 gang	10	6903
4 gang	10	6904
6 gang	10	6906

Dimensions 1–2 gang 81mm x 58mm 3–4 gang 141mm x 58mm
6 gang 202mm x 58mm

When required for surface mounting assemblies, the fixing ears should be removed or bent inwards at 90°.

Complete with earth terminal.

For full specification details of finishes see Technical Data page 202.



FLUSH MOULDED PLATES

	PACK QTY	
1 gang	20	5571
2 gang	20	5572
3 gang	10	5573
4 gang	10	5574
6 gang	1	5576

Dimensions 1–2 gang 86mm x 86mm
3–4 gang 146mm x 86mm
6 gang 147mm x 147mm



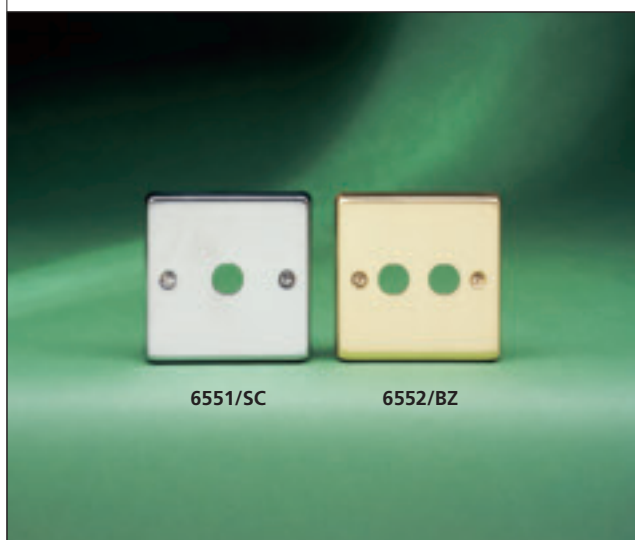
FLUSH METAL PLATES

	PACK QTY	
1 gang	20	6571/_ _
1 gang faceplate printed 'water heater'	20	6571/1_ _
2 gang	20	6572/_ _
2 gang faceplate printed 'water heater'	20	6572/1_ _
3 gang	10	6573/_ _
4 gang	10	6574/_ _
6 gang	1	6576/_ _
8 gang	1	6578/_ _ *
9 gang	1	6579/_ _ *
12 gang	1	6570/_ _ *
18 gang	1	6570/18_ _ *
24 gang	1	6570/24_ _ *
1 gang architrave complete with grid	10	6591/_ _ *
2 gang architrave complete with grid	10	6592/_ _ *

Dimensions 1–2 gang 86mm x 86mm 18 gang 207mm x 267mm
3–4 gang 146mm x 86mm 24 gang 207mm x 267mm
6–8 gang 147mm x 147mm 1 gang architrave 35mm x 86mm
9–12 gang 147mm x 207mm 2 gang architrave 35mm x 146mm

Add to List No. – **BZ** for Bronze finish, **SC** for Satin Chrome finish, **HPC** for Highly Polished Chrome finish, **PB** for Polished Brass finish, **PSS** for Polished Stainless Steel finish.

*Available in White Finish. Add **WH** to List No.



PLATES TO ACCEPT TOGGLE SWITCH

	PACK QTY	
1 Gang	10	6551/_ _
2 Gang	10	6552/_ _

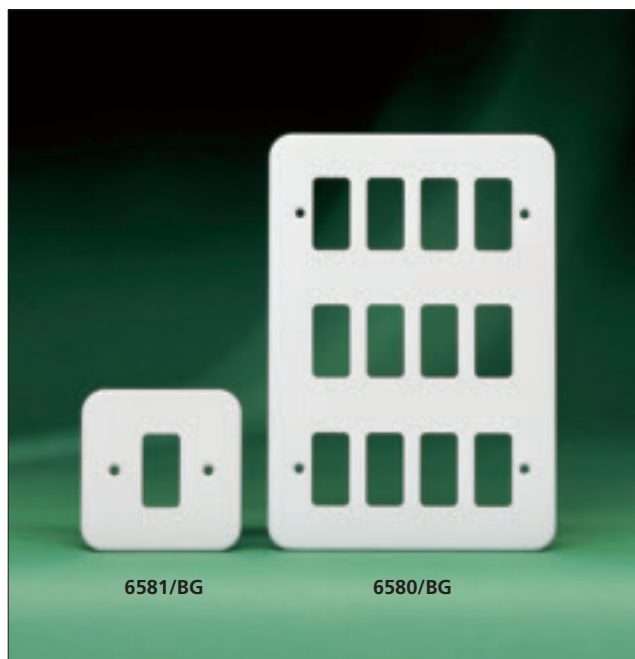
Dimensions 1–2 gang 86mm x 86mm

Add to List No. – **BZ** for Bronze finish, **SC** for Satin Chrome finish, **PB** for Polished Brass, **HPC** for Highly Polished Chrome.

For cut-out Dimensions, See page 250.

For fully assembled units, see page 54.

For full specification details of finishes see Technical Data page 202.
For panel cut out detail, see dimensions on page 250.



SURFACE METALCLAD PLATES

	PACK QTY	
1 gang	20	6581/BG
1 gang faceplate printed 'water heater'	20	6581/1BG
2 gang	20	6582/BG
2 gang faceplate printed 'water heater'	20	6582/1BG
3 gang	10	6583/BG
4 gang	10	6584/BG
6 gang	1	6586/BG
8 gang	1	6588/BG
9 gang	1	6589/BG
12 gang	1	6580/BG
18 gang	1	6580/18BG
24 gang	1	6580/24BG
Dimensions		
1–2 gang 77mm x 77mm	9–12 gang 137mm x 197mm	
3–4 gang 137mm x 77mm	18 gang 197mm x 257mm	
6–8 gang 137mm x 137mm	24 gang 197mm x 257mm	



BOXES

	PACK QTY	
1 and 2 gang surface or flush	10	9201/BG*
3 and 4 gang surface or flush	5	9203/BG*
6 and 8 gang surface or flush	1	9206/BG*
9 and 12 gang surface or flush	1	9209/BG*
18 gang surface or flush	1	9209/18BG*
24 gang surface or flush	1	9209/24BG*
1 gang architrave flush only	10	9341/GV
2 gang architrave flush only	10	9342/GV
Dimensions		
9201/BG	73mm x 73mm x 40mm	
9203/BG	133mm x 73mm x 40mm	
9206/BG	133mm x 133mm x 40mm	
9209/BG	133mm x 194mm x 40mm	
9209/18BG	194mm x 254mm x 56mm	
9209/24BG	194mm x 254mm x 56mm	
9341/GV	27mm x 70mm x 35mm	
9342/GV	27mm x 130mm x 35mm	

16mm knock-outs in 1 and 2 gang box and architrave boxes.
20mm and 25mm knock-outs in 3–24 gang boxes.

Note: BG boxes fitted with earth terminal. Spare earth terminal (List No. **6989**) see page 84.

* For boxes less knockouts list no. example 9201/PBG



20AX DOUBLE POLE SWITCH MARKING

"boiler"	4460/BO	"cooker hood"	4460/HD
"dishwasher"	4460/DW	"extractor fan"	4460/EF
"fridge"	4460/FR	"freezer"	4460/FZ
"fridge freezer"	4460/FF	"hob"	4460/HB
"heating system"	4460/HT	"microwave"	4460/MW
"tumble dryer"	4460/TD	"waste disposal"	4460/WD
"washer dryer"	4460/WDR	"washing machine"	4460/WM
"water heater"	4460/WA		

• can be used with 13A fuse units to build bespoke kitchen/utility room control panel.

All of the above are supplied in pack quantities of 10.

For full specification details of finishes see Technical Data page 202.

For panel cut out detail, see dimensions on page 250.



WEATHERSEAL

WATER & DUST PROTECTED

Water and dust protected to IP66, Weatherseal is ideal for all environments.

Most items can be purchased complete with shallow enclosure, or in modular form for fitting separately in one to six gang enclosures in any combination.

Crabtree's new range of water and dust protected IP56 accessories features Sockets, Switches and Communication enclosures.



- Socket outlets will retain their IP56 rating when used with any standard 13A plug.
- 1 gang, 2 gang and retractable surface switches all retain their IP56 rating even when in use.
- Communication enclosures will accept Euro modules featured in the Datapak range.



20AX SURFACE SWITCHES

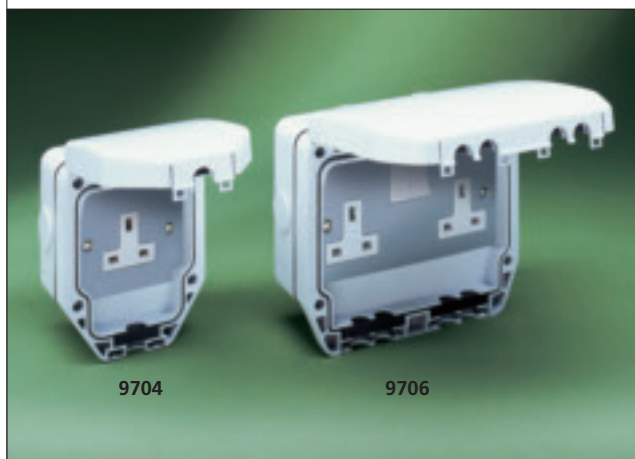
IP56 BSEN 60669-1	PACK QTY	
1 gang 2 Way	1	9700
2 gang 2 Way	1	9702
Retractive 10A	1	9703

Dimensions 1 gang 96mm x 96mm x 81mm

Supplied as ready assembled units.

Knockouts - 1 gang 4x 20mm Dia

- Available Summer 2007.



13A SURFACE SOCKET, SRCD & FCU

IP56 BS1363-2	PACK QTY	
1 gang Unswitched Socket	1	9704
2 gang DP Switched Socket	1	9706
2 gang Switched SRCD	1	9708
1 gang Switched FCU c/w cord outlet	1	9707

Dimensions 1 gang 96mm x 126mm x 81mm
2 gang 164mm x 143mm x 81mm

The Sockets retain their IP56 rating when used with any standard 13A plug.

Supplied as ready assembled units

Knockouts - 1 gang 4x 20mm Dia

2 gang 6x 20mm Dia

- Available Summer 2007.



COMMUNICATION & DATA ENCLOSURE

IP56 BS5733 Where applicable	PACK QTY	
1 gang 2 module Datapak enclosure	1	9722
2 gang 4 module Datapak enclosure	1	9724

Dimensions 1 gang 96mm x 126mm x 81mm
2 gang 164mm x 143mm x 81mm

See Page 23 for Datapak accessories.

Knockouts - 1 gang 4x 20mm Dia

2 gang 6x 20mm Dia

- Available Summer 2007.



RCD PROTECTED 13A SOCKETS

SOCKET BS 1363 RCD BS EN 61008	PACK QTY	
40A 30mA RCD protecting one 13A socket	1	9571
40A 30mA RCD protecting two 13A sockets	1	9572

Dimensions 3 gang size 296mm x 102mm x 104mm
4 gang size 199mm x 199mm x 104mm

Sockets incorporate transparent flap which automatically snaps shut when the plug is withdrawn.

RCD terminals accept 25mm² cable.

RCD is Type AC operation. Type A available, see page 120.

Will give BS 5490 IP66 protection when **9599** plug is used.

The individual switches and sockets listed on this page are supplied as ready assembled units on shallow enclosures. The switched socket combination unit and RCD protected socket outlets are pre-wired and supplied as ready assembled units on appropriate enclosures.



10A SURFACE SWITCHES

BS 3676 BS 5490 IP66	PACK QTY	
1 gang 1 way	4	9561
2 gang 1 way	2	9562

Dimensions	1 gang 101mm x 101mm x 76mm
	2 gang 197mm x 101mm x 76mm

Padlock off facility provided. See page 114 for suitable padlock.
Terminals accepted 2.5mm² cable.



13A PLUGS, SURFACE SOCKETS & COMBINATION UNITS

	PACK QTY	
Single socket outlet	4	9565
Switched socket combination	2	9567

Dimensions	1 gang size 101mm x 101mm x 76mm
	2 gang size 197mm x 101mm x 76mm

Sockets incorporate transparent flap which automatically snaps shut when the plug is withdrawn.

Terminals accept maximum 10mm² cable.

Will give BS 5490 IP66 protection when **9599** is used in combination with either **9565**, **9565/L**, **9567** or **9567/L**.



RCD PROTECTED 16A 240V SOCKET

SOCKET BS 4343 RCD BS EN 61008	PACK QTY	
40A 30mA RCD protecting 16A 2P + E 240V splashproof socket	1	9579

RCD terminals accept 25mm² cable.

RCD is Type AC operation. Type A available, see page 120.

Common to 110V and 240V BS 4343 splashproof sockets IP44 protection is maintained when plug is inserted. IP66 is maintained when cover flap is closed.



RCD COVER MODULE

	PACK QTY	
2 gang RCD cover with neon assembly and RCD mounting cradle	2	9570/2

Should be assembled in deep enclosures.

- Suitable for any 2 module RCD from the Lifestar range – see page 120.

Polycarbonate is a highly durable material which is ideal for use in most environments, however seek advice before installing in environments where chemicals or harsh cleaners are likely to be used.

MODULAR SELECTION

The popular items listed on the page opposite in ready-assembled form can also be built up from separate modules to allow greater stock flexibility, whilst additional separate switch, socket and cover modules with enclosures up to 6 gang size enable the installer to provide high IP-rated combinations to suit individual applications.



9567 or 9567/L + 9562/ES



9566/E + 9569/L + 9561/2L + 9567/L + 9570/2 + 224/030
Multi-gang enclosures enable any combination

The table below lists the modular equivalents to the popular items supplied as ready assembled units.

READY-ASSEMBLED UNITS		MODULAR EQUIVALENT SELECTION		
DESCRIPTION	LIST No	COVER MODULE(S)	ENCLOSURE	RCD
10A switch – 1 gang 1 way	9561	9561/1L	9561/ES	–
10A switch – 2 gang 1 way	9562	9561/1L x 2	9562/ES	–
13A single socket outlet	9565	9565/L	9561/ES	–
13A switched socket	9567	9567/L	9562/ES	–
13A single socket with 40A 30mA RCD	9571	9570/2 + 9565/L	9563/E	224/030
13A twin socket with 40A 30mA RCD	9572	9570/2 x 1 + 9565/L x 2	9564/E	224/030
16A 2P + E 240V socket – BS 4343	9579	9570/2 + 9569/L	9563/E	224/030

The table below lists module selection details for some additional popular combinations.

DESCRIPTION	COVER MODULE(S)	ENCLOSURE	RCD
13A twin socket outlet with single switch	9565/L x 2 + 9561/DL	9563/E	–
13A twin-switched socket outlet	9567/L x 2	9564/E	–
13A single-switched socket with 40A 30mA RCD	9570/2 x 1 + 9567/L	9564/E	224/030



9569/L

9591/L

9593/L

SOCKET MODULES

BS 4343	PACK	QTY
16A 2P + E 240V splashproof socket	4	9569/L
16A 2P + E 110V splashproof socket	4	9591/L
16A 3PN + E 415V splashproof socket	4	9593/L

Should be assembled in deep enclosures.

IP44 protection is maintained when plug is inserted, on 110V and 240V sockets.

IP66 is maintained when plug is inserted, on 415V sockets.



9565/L

9567/L

13A SOCKET MODULES

	PACK	QTY
13A single unswitched socket	8	9565/L
13A switch/socket combination	2	9567/L

Can be assembled in shallow enclosures.



The selection table below lists some of the popular IP66 combinations which can be assembled from the Weatherseal and Rockergrid ranges.

ROCKERGRID MODULE SELECTION

DESCRIPTION	ROCKERGRID module(s)	WEATHERSEAL cover module	WEATHERSEAL enclosure
6A 2 gang 1 way switch single module size	4430 x 2	9582/RG	9561/ES
6A retractive switch	4489	9581/RG	9561/ES
13A switched FCU	4460 + 4436	9582/RG	9561/ES
13A unswitched FCU + neon	4436 + 4494	9582/RG	9561/ES
20A intermediate switch	4535	9581/RG	9561/ES
20A DP switch + neon	4460 + 4494	9582/RG	9561/ES
20A DP key switch	4461	9581/RG	9561/ES
20A 2 gang 1 way switch – single module size	4450 x 2	9582/RG	9561/ES

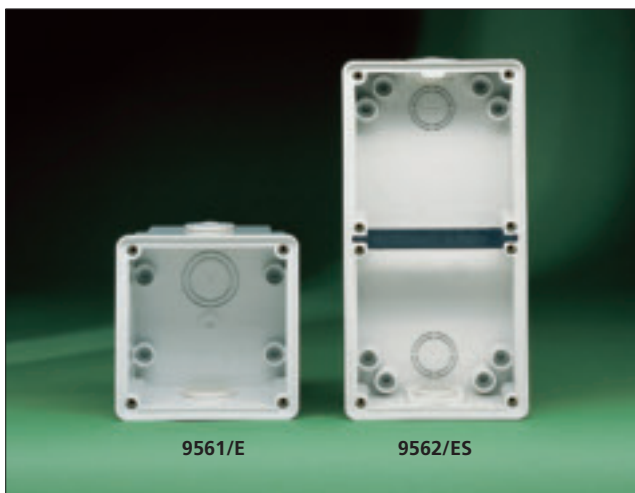
See page 68 for full range of Rockergrid switches.



SWITCH MODULES

	PACK QTY	
10A 1 way switch	4	9561/1L
20A DP switch	4	9561/DL
32A TP switch	4	9573/L
32A TP switch – yellow/red	4	9573/RL

Can be assembled in shallow enclosures.



ENCLOSURES

	PACK QTY	
1 gang	4	9561/E
1 gang shallow	8	9561/ES
2 gang	2	9562/E
2 gang shallow	4	9562/ES
3 gang	3	9563/E
4 gang	1	9564/E
6 gang	1	9566/E

Dimensions (mm)	H	W	D	H	W	D
1 gang enclosure	103	102	63	3 gang enclosure	296	102 x 63
1 gang shallow enclosure	101	101	40	4 gang enclosure	199	199 x 63
2 gang enclosure	198	102	63	6 gang enclosure	296	199 x 63
2 gang shallow enclosure	197	101	40			



	REAR KNOCK-OUTS	SIDE CONDUIT ENTRIES	32/25 REDUCER	25/20 REDUCER	DIVIDER	BRIDGE
9561/E	1x32/25	1x25, 1x32	1	1	–	–
9561, 9565 9561/ES	1x25/20	2x25	–	1	–	–
9562/E†	1x25, 1x32	1x25, 1x32	1	1	–	1
9562, 9567 9562/ES	2x25/20	2x25	–	1	–	1
9563/E*	2x25, 1x32	1x25, 1x32	1	1	–	2
9564/E*	2x25 1x32, 1x40	2x25, 4x32	1	1	2	2
9566/E*	2x25 2x32, 2x40	2x25, 4x32	1	1	4	3

* Also supplied with 1 neutral & 1 earth connector. † Also supplied with 1 earth connector.

To maintain IP66 rating, cover all fixing screws with caps provided.

Seal bridge/divider slots with suitable silicon sealant – Dow Corning RTV-732.

Check all conduit entry points are tight before use.

Threaded conduit entries can be fitted to all popular metal and moulded metric conduit using a variety of proprietary adaptors (less locking ring), reducers, and adhesive where appropriate: eg for fitting 20mm moulded conduit to **9567** use Marshall-Tufflex MA8 adaptor (less locking ring), MR2 reducer and MSC2 sealing cement.

Polycarbonate is a highly durable material which is ideal for use in most environments, however seek advice before installing in environments where chemicals or harsh cleaners are likely to be used.

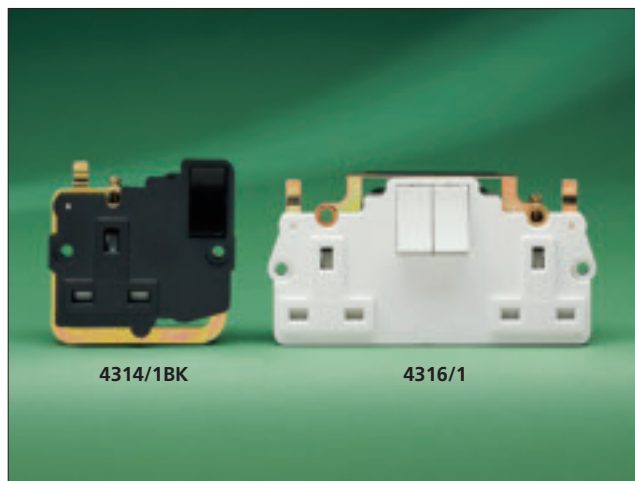
INTERIORS & PANEL MOUNTING

Interiors and panel mounting products, which complement the extensive Capital and Rockergrid ranges, are available to suit many applications.

The Capital range of Switched Sockets and Fused Control Units are available with metal capped rockers.

Most Capital Products can also be supplied in black as standard – ideal for brassware manufacturers.



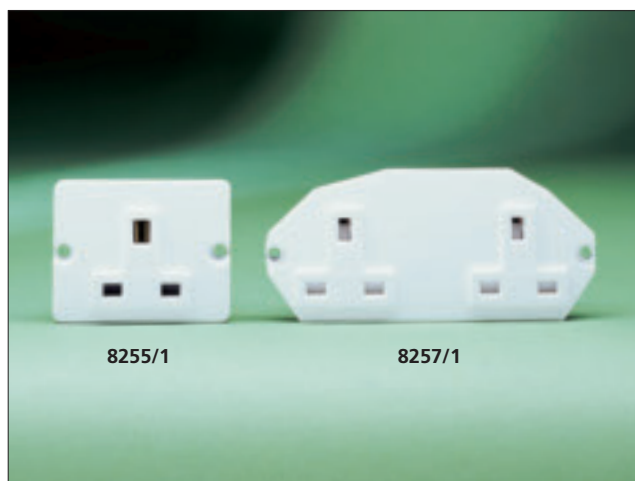


13A SWITCHED SOCKET OUTLETS

	PACK QTY	
1 gang SP	10	4314/1
2 gang SP	5	4316/1
1 gang SP complete with neon and lens	10	4314/13
2 gang SP complete with neon and lens	5	4316/13

Black mouldings also available – Add suffix **BK** to List No.
Double pole switching also available to order – Add suffix **D** to List No.
eg 4314/1 switched in Black = 4314/1**DBK**

● Supplied Complete with two earth terminals



13A UNSWITCHED SOCKET OUTLETS

	PACK QTY	
1 gang unswitched	10	8255/1
2 gang unswitched	5	8257/1
1 gang round socket with side entry terminals and north/south fixings	10	7259*

The 7259 panel mounting socket is suitable for use in any panel or trunking material up to 2.5mm thickness and can be incorporated into a minimum overall internal depth of only 22.5mm.

Black mouldings also available, Add Suffix **BK** to List No. eg 8255/1**BK**.

* Not available in Black.



FUSED CONNECTION UNITS

	PACK QTY	
13A unswitched	10	4831/1
13A DP switched	10	4832/1
13A DP switched complete with neon and lens	10	4832/13
13A unswitched with cord outlet	10	4836/1
13A DP switched with cord outlet	10	4837/1
13A DP switched with cord outlet complete with neon and lens	10	4837/13

Black interiors also available – Add suffix **BK** to List No. eg 4832/1 switched in Black = 4832/1**BK**



13A SAFETY SOCKET WITH RCD PROTECTION

	PACK QTY	
BS 7288		
2 gang switched with neon indicator 30mA tripping current	1	4416/A103

See page 119 for further information.

● Supplied Complete with two earth terminals

For panel cut-out details see page 249, 250 & 251.



4314/16/SC

4316/16BK/PB

METAL CAPPED ROCKERS 13A SWITCHED SOCKET OUTLETS

	PACK QTY	
1 gang SP	10	4314/16/_ _
2 gang SP	5	4316/16/_ _
1 gang SP complete with neon and lens	10	4314/136/_ _
2 gang SP complete with neon and lens	5	4316/136/_ _

Black mouldings also available – Add suffix **BK** to List No.

Double pole switching also available to order – Add suffix **D** to List No.

eg 4314/1 switched = 4314/16**DBK/SC**

Finishes available are: Satin Chrome (**SC**), Bronze (**BZ**), Polished Brass (**PB**), Highly Polished Chrome (**HPC**) & Stainless Steel (**SS**).

● Supplied Complete with two earth terminals



4831/13

4832/16BK/PB

METAL CAPPED ROCKERS FUSED CONNECTION UNITS

	PACK QTY	
13A DP switched	10	4832/16/_ _
13A DP switched complete with neon and lens	10	4832/136/_ _
13A DP switched with cord outlet	10	4837/16/_ _
13A DP switched with cord outlet complete with neon and lens	10	4837/136/_ _

Black interiors also available – Add suffix **BK** to List No.

Finishes available are: Satin Chrome (**SC**), Bronze (**BZ**), Polished Brass (**PB**), Highly Polished Chrome (**HPC**) & Stainless Steel (**SS**).



2272/1

2240/1

2A, 5A, 15A ROUND PIN SOCKET OUTLETS

	PACK QTY	
5A shuttered SP	10	2240/1*
15A shuttered SP	10	2272/1
2A 3 pin unswitched shuttered	10	8075/1*

* Black mouldings also available – Add suffix **BK** to List No.



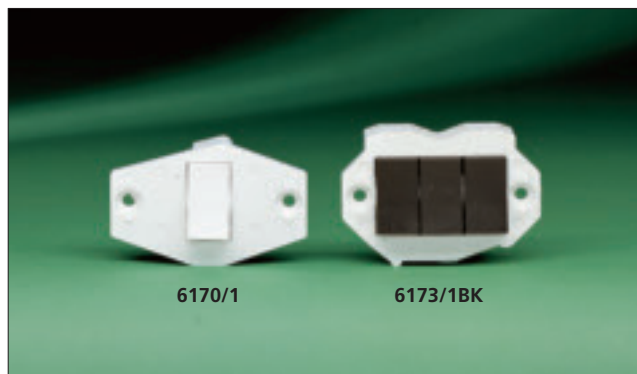
4522/1

45A DP 'SLIMLINE' COOKER CONTROL UNITS

	PACK QTY	
45A DP main switch and 13A switch socket outlet	5	4522/1
45A DP main switch and 13A switch socket outlet with neon indicators	5	4522/13

Black interiors also available – Add suffix **BK** to List No.

For panel cut-out details see page 249, 250 & 251.



10AX SWITCHES

	PACK QTY	
1 gang retractive marked 'press'	10	6096/1
1 gang 2 way	10	6170/1
2 gang 2 way	10	6172/1
3 gang 2 way	10	6173/1
1 gang intermediate	10	6175/1

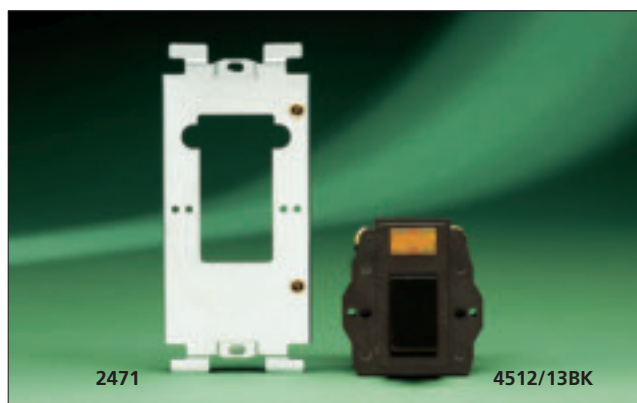
Interiors with Black rockers available – Add suffix **BK** to List No.



20A/32A DP SWITCHES

	PACK QTY	
20A DP	10	4011/1
20A DP complete with neon and lens	10	4011/13
32A DP	10	4012/1
32A DP complete with neon and lens	10	4012/13

Interiors with Black rockers available – Add suffix **BK** to List No.



50A DP SWITCHES

	PACK QTY	
50A DP	10	4512/1
50A DP with neon indicator	10	4512/13

Black interiors also available – Add suffix **BK** to List No.

When specifying the above items a mounting grid, Part No. **2471**, is also required.
Grid fitted with earth terminal.



CO-AXIAL SOCKET OUTLETS

	PACK QTY	
1 way direct connection	1	8265/1
2 way direct connection	1	8266/1
1 way isolated VHF, UHF	1	8267/1
2 way isolated VHF, UHF	1	8268/1

Isolated units only suitable on installations with earth bond.

Black interiors also available – Add suffix **BK** to List No.



TELEPHONE OUTLETS

	PACK QTY	
Master	10	8283/1
Secondary	10	8284/1

Black interiors also available – Add suffix **BK** to List No.

Supplied with loose earth terminal.

For panel cut-out details see pages 249, 250 & 251.

INSTALLATION BOXES & SERVICE ITEMS

The comprehensive range of white moulded patresses offers a facility to surface mount Capital wiring accessories

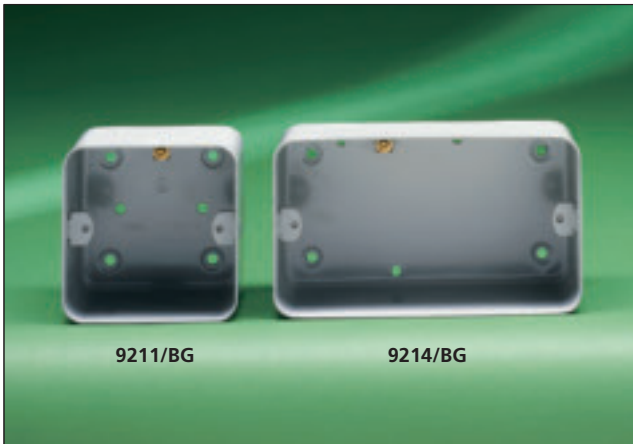




SURFACE MOULDED BOXES FOR CAPITAL WIRING ACCESSORIES

BS 5733	PACK	QTY
20mm deep		
For Capital single gang moulded architrave switches Will accept 16mm x 16mm mini-trunking	10	4005
Dimensions 33mm x 87mm x 20mm		
For Capital double gang moulded architrave switches Will accept 16mm x 16mm mini-trunking	10	4006
Dimensions 33mm x 147mm x 20mm		
34mm deep		
For 50A Capital switches and Rockergrid 3 and 4 gang moulded assemblies Fitted with cable clamp	5	9040*
Dimensions 87mm x 147mm x 34mm		
44mm deep		
For 15A socket outlets, 32A DP switches and Rockergrid 1 and 2 gang moulded assemblies	10	9041
Dimensions 87mm x 87mm x 44mm		
20mm deep		
With earth terminal For 10AX Capital moulded and metalplate,	10	9043
Dimensions 87mm x 87mm x 20mm		
29mm deep		
Dual box for two single gang size accessories Fixed dividing barrier with knockouts	5	9044*
Dimensions 174mm x 87mm x 29mm		
For single gang size moulded accessories	10	9047
Dimensions 87mm x 87mm x 29mm		
For double gang size moulded accessories	5	9048*
Dimensions 147mm x 87mm x 29mm		
With earth terminal For Capital 4 to 6 gang switches	5	9048/1*
Dimensions 147mm x 87mm x 29mm		
32mm deep		
Multipurpose box for single gang size accessories	5	9049*
Dimensions 88mm x 165mm x 32mm		
Multipurpose box for double gang size accessories	2	9050*
Dimensions 148mm x 165mm x 32mm		
45mm deep		
For 45A cooker control units Fitted with cable clamp	1	9052*
Dimensions 169mm x 115mm x 45mm		
49mm deep		
For shaver supply unit Will accept 25mm x 16mm mini-trunking	5	9053*
Dimensions 87mm x 147mm x 49mm		
45mm deep		
For slimline cooker control units Will accept 25mm x 16mm mini-trunking Fitted with cable clamp	5	9054*
Dimensions 89mm x 147mm x 45mm		
20mm deep		
2 gang Surface conversion patresses Converts 1 gang Flush box to 2 gang Surface	5	9406
Dimensions 147mm x 87mm x 20mm		

* Can be secured to flush mounting steel boxes having 60.3mm accessory fitting centres



9211/BG

9214/BG



9228/BG



9221/PBG

9223/BG



6988

6989

REPLACEMENT STEEL BOXES FOR CAPITAL SURFACE WIRING ACCESSORIES

BS 5733	PACK QTY	
43mm deep 20mm knockouts Replacement box for 5, 13 and 15A single gang size surface accessories	10	9211/BG
As above less knockouts	10	9211/PBG
Dimensions 82.3mm x 82.3mm x 41.6mm		
43mm deep 20mm knockouts Replacement box for 13A gang size surface accessories	5	9214/BG
As above less knockouts	5	9214/PBG
Dimensions 139.5mm x 82.6mm x 41.5mm		

MULTI MEDIA PLATE BACK BOX

56mm deep 20/25mm knockouts Multi media plate back box	1	9226/BG
Dimensions 254mm x 194mm x 56mm		
35mm deep 20mm knockouts Multi media plate back box	1	9228/BG
Dimensions 253mm x 193mm x 35mm		

SURFACE STEEL BOXES FOR CAPITAL FLUSH WIRING ACCESSORIES

BS EN 60669-1	PACK QTY	
36mm deep With 20mm knockouts For surface mounting single gang size flush accessories	10	9221/BG
As above less knockouts	10	9221/PBG
Dimensions 86mm x 86mm x 36mm		
36mm deep With 20mm knockouts For surface mounting double gang size flush accessories	5	9223/BG
As above less knockouts	5	9223/PBG
Dimensions 146mm x 86mm x 36mm		

When using these boxes to mount Rockergrid assemblies spacers should be used to ensure correct depth alignment of grid.

SPARE EARTH TERMINALS

Brass (for use with 4 lug metal box)	100	6988
Brass	100	6989



ACCESSORY FIXING SCREWS M3.5mm

PACK QTY			
Platinum long fixing screw 50mm	100	735050	
20mm long (vandal resistant)	100	735009/*/VR	
25mm long (vandal resistant)	100	735010/*/VR	
30mm long (vandal resistant)	100	735011/*/VR	
25mm long	735010*	20mm long	100 735032
30mm long	735011*	23mm long	100 735038
50mm long	735012*	25mm long	100 735033
40mm long	735013*	30mm long	100 735023

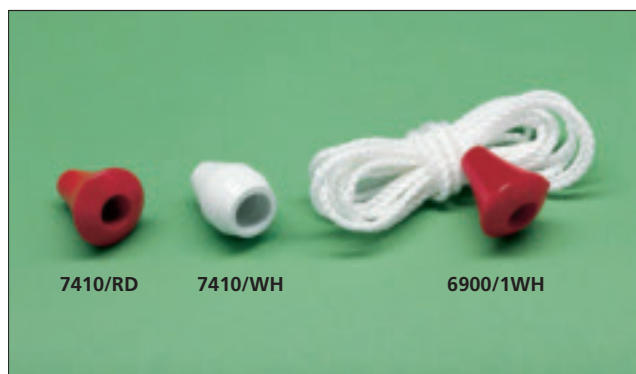
* Add finish required i.e.735010SC.



SUNDRY SCREWS & SPACERS

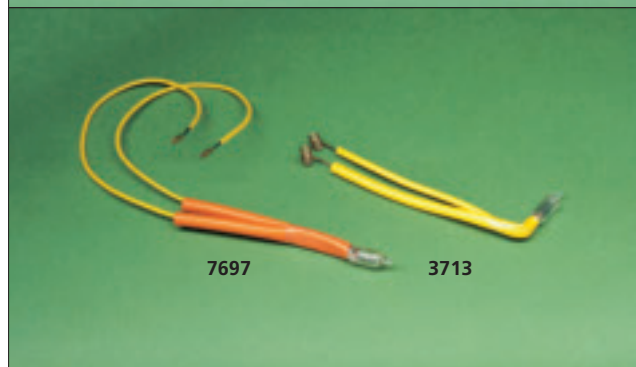
PACK QTY			
Rockergrid switch to grid	100	706097	
Capital 50A switch to grid & grid to box 4950/BG series	100	735006/ZP	
Rockergrid grid to box	100	735007/ZP	
Capital plate to box on 4214 & 4216 ranges	100	735008/*	
Rockergrid plate to grid	100	705094/*	
Rockergrid plate to grid (vandal-resistant)	100	705094/*/VR	
Screwdriver for Rockergrid VR screws	1	6913	

*All screws are available to match the appropriate Capital and Diamond metal plate finishes – see product section.



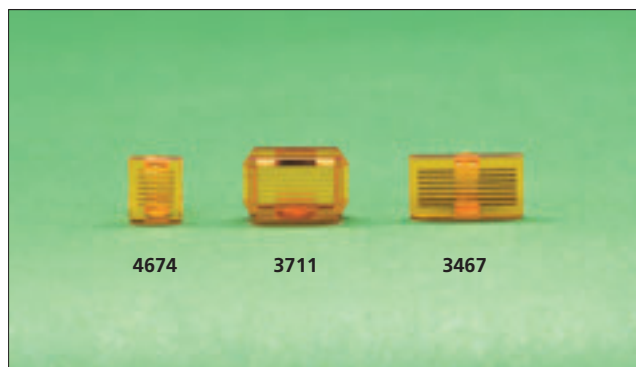
CAPITAL CEILING SWITCH ACCESSORY ITEMS

1.5m long white pull cord and acorn	6900
2m long red pull cord and acorn	6900/1RD
2m long white pull cord with red acorn	6900/1WH
100m ball of white pull cord	6900/2
100m ball of red pull cord	6900/2RD
Ceiling switch acorn red	7410/RD
Ceiling switch acorn white	7410/WH



CAPITAL NEON INDICATORS

For 32A TP & N switches (4514, 4513 & 4515 series)	6509
For 13A moulded & metal plate sockets, 13A fuse connection units, 20A, 32A, 45A capital switches	3713
For 13A safetysockets & slimline cooker control units	100215
For all 50A DP switches & large plate cooker control unit	7695
For 50A ceiling switch	7697



CAPITAL NEON LENSES

For all 50A DP switches & large plate cooker control unit (larger lens) & 32A TP & N switches	3467
For 13A moulded & metal plate sockets, fuse connection units, 20A capital switches & slimline cooker control unit (smaller lens)	3711
For slimline cooker control unit (large lens) & capital 45A switches	3767
For 50A ceiling switch & large plate cooker control unit (smaller lens)	4674

LUMINAIRE SUPPORT COUPLERS

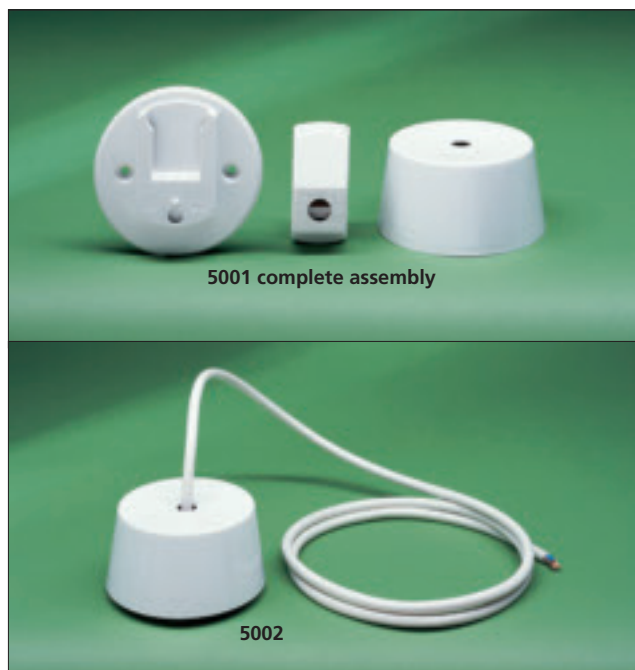
Crabtree luminaire support couplers, LSCs, provide flexibility and versatility to meet the demands of many domestic, commercial and industrial lighting applications.

The range conforms to BS 7001 and BS 5733 and provides an effective plug-in connection with arrangements including 3 and 4 pin versions.



Ceiling assembly cover secures to outlet with assembly offering either standard or safety lampholder options

Ceiling outlet can be easily assembled to pattern and plug provides a simple plug in connection



CEILING ASSEMBLIES 3 PIN

Description	List No
3 pin	5001
3 pin with 2m 1.0mm ² Heat Resistant (HR) cable	5002
3 pin with 2m 1.0mm ² Low Smoke (LSF) cable	5017
3 pin with 3m 1.0mm ² Heat Resistant (HR) cable	5002/3
3 pin with 3m 1.0mm ² Low Smoke (LSF) cable	5017/3
3 pin with 5m 1.0mm ² Heat Resistant (HR) cable	5002/5
3 pin with 5m 1.0mm ² Low Smoke (LSF) cable	5017/5

- Ceiling assemblies supplied as outlet, LSC plug and cover.
- Other lengths and cable options available upon request.

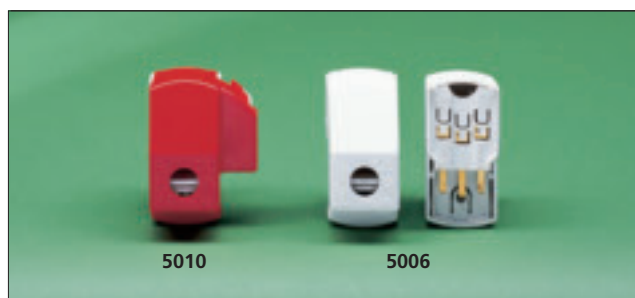


CEILING ASSEMBLIES 4 PIN

Description	List No
4 pin	5009
4 pin with 2m 1.0mm ² Heat Resistant (HR) cable	5018
4 pin with 2m 1.0mm ² Low Smoke (LSF) cable	5019
4 pin with 3m 1.0mm ² Heat Resistant (HR) cable	5018/3
4 pin with 3m 1.0mm ² Low Smoke (LSF) cable	5019/3
4 pin with 5m 1.0mm ² Heat Resistant (HR) cable	5018/5
4 pin with 5m 1.0mm ² Low Smoke (LSF) cable	5019/5
Cover only for LSC ceiling assembly	5001/CVR

PENDANT SETS

Description	List No
Surface mounting pattress	5005



LSC PLUGS

Description	List No
3 pin	5006
4 pin (with red cover)	5010

- Cable clamp to grip outer cable insulation for maximum support.
- 4 pin LSC plug has a red cover as standard.
- Prewired versions are available, please contact Technical Services.



CEILING OUTLETS & INTERIORS

Description	List No
3 pin ceiling outlet	5003
4 pin ceiling outlet	5011

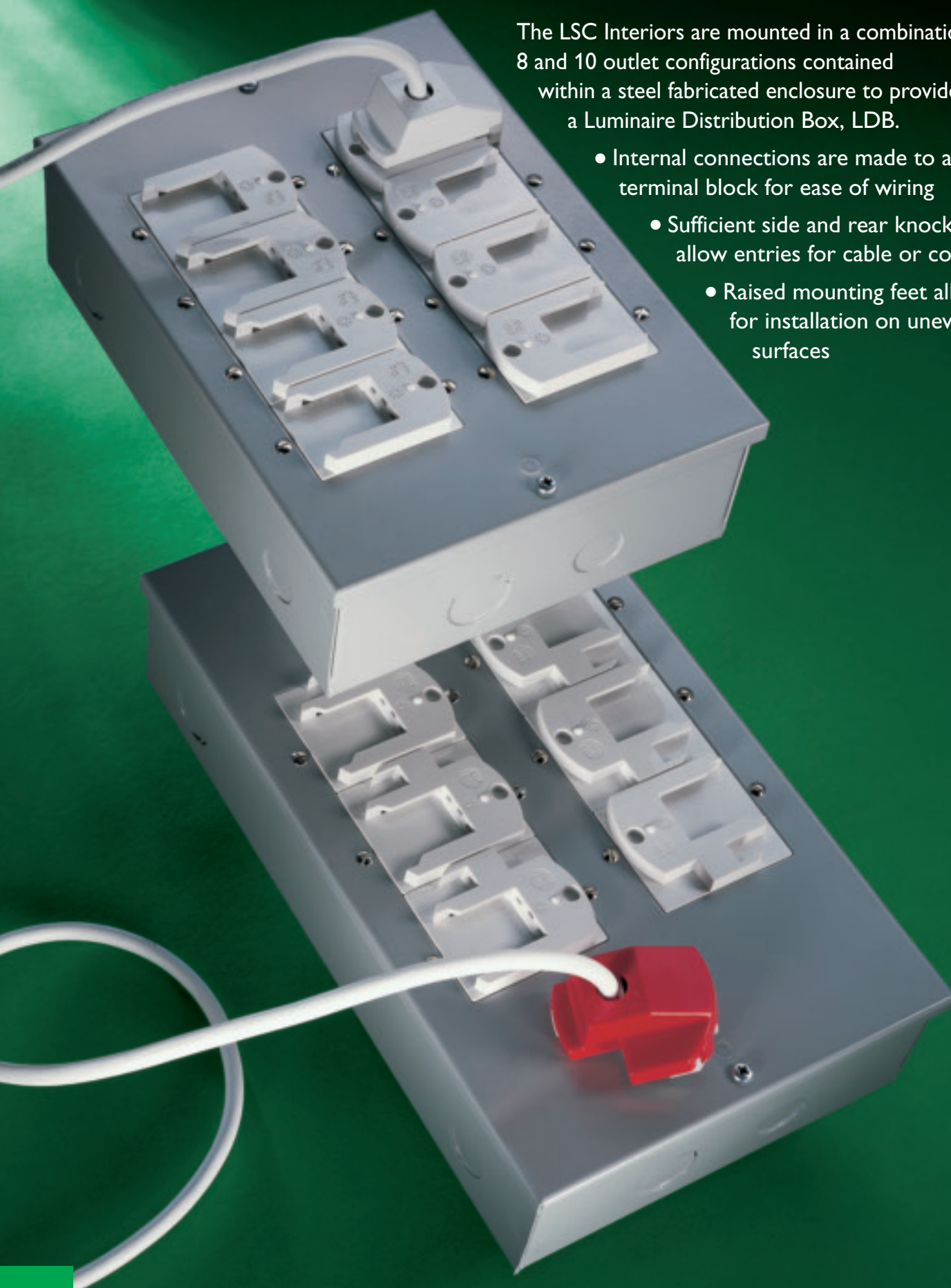
- For further details on 5 and 7 pin interiors see Technical page 201.
- Interiors are installed into Crabtree Luminaire Distribution Boxes, LDBs.

For further details of pattress see Technical page 201.

LUMINAIRE DISTRIBUTION BOXES

The LSC Interiors are mounted in a combination of 6, 8 and 10 outlet configurations contained within a steel fabricated enclosure to provide a Luminaire Distribution Box, LDB.

- Internal connections are made to a terminal block for ease of wiring
- Sufficient side and rear knockouts allow entries for cable or conduit
- Raised mounting feet allow for installation on uneven surfaces





5022/3

3 PIN LUMINAIRE DISTRIBUTION BOXES

Description	List No
3 pin 6 way	5020/3
3 pin 8 way	5021/3
3 pin 10 way	5022/3



5020/4

4 PIN LUMINAIRE DISTRIBUTION BOXES

Description	List No
4 pin 6 way	5020/4
4 pin 8 way	5021/4
4 pin 10 way	5022/4



5010

5006

LSC PLUGS

Description	List No
3 pin	5006
3 pin C/W 2m HR cable	5006/2
3 pin C/W 3m HR cable	5006/3
3 pin C/W 4m HR cable	5006/4
4 pin (with red cover)	5010
4 pin C/W 2m HR cable	5010/2
4 pin C/W 3m HR cable	5010/3
4 pin C/W 4m HR cable	5010/4

- Cable clamp to grip outer cable insulation for maximum support.
- 4 pin LSC plug has a red cover as standard.
- 3 pin LSC plugs can be installed into all LSC interiors.
- Different lengths & types of cable are available please contact Technical Services.

For Dimensions see page 252.



WARWICK

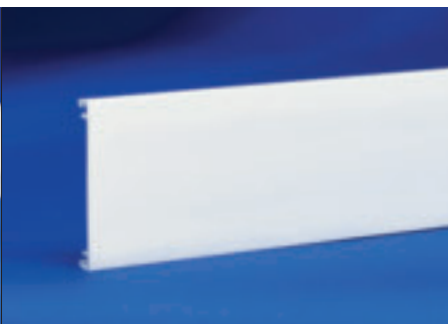
PVC modular trunking range which can be mounted at either Dado or Skirting level, available in 2 different sizes (50mm x 170mm) or (50mm x 212mm).

QUICK GUIDE TO FIVE PVC PROFILES

	WARWICK 1 Ref No	WARWICK 2 Ref No	WARWICK 3 Ref No	WARWICK 4 Ref No	WARWICK 5 Ref No
Trunking Pack	BCL1	BCL2	BCL3	BCL4	BCL5
Internal Bend	BCL1/IB	BCL2/IB	BCL3/IB	BCL4/IB	BCL5/IB
External Bend	BCL1/EB	BCL2/EB	BCL3/EB	BCL4/EB	BCL5/EB
Flat Angle 90° (Downward)	BCL1/FAD	BCL2/FAD	BCL3/FAD	BCL4/FAD	BCL5/FAD
Flat Angle 90° (Upward)	–	BCL2/FAU	–	BCL4/FAU	BCL5/FAU
Flat Tee (Downward)	BCL1/FTD	BCL2/FTD	BCL3/FTD	BCL4/FTD	BCL5/FTD
Flat Tee (Upward)	–	BCL2/FTU	–	BCL4/FTU	BCL5/FTU
Stop End - Left	BCL1/SEL	BCL2/SEL	BCL3/SEL	BCL4/SEL	BCL5/SEL
Stop End - Right	–	BCL2/SER	–	BCL4/SER	BCL5/SER
Coupler Pack	BCL1/CP	BCL2/CP	BCL3/CP	BCL4/CP	BCL5/CP
Angled Cable Retainer	BCL/ACR	BCL/ACR	–	BCL/ACR	–
Standard Cable Retainer	BCL/SCR	BCL/SCR	BCL/SCR	BCL/SCR	BCL/SCR
Square Cable Retainer	–	BCL/SQCR	BCL/SQCR	BCL/SQCR	BCL/SQCR
Single Gang Accessory Box - 30mm deep	BCL/SGB	BCL/SGB	BCL/SGB	BCL/SGB	BCL/SGB
Twin Gang Accessory Box - 30mm deep	BCL/TGB	BCL/TGB	BCL/TGB	BCL/TGB	BCL/TGB


ANGLED COVER SECTION

Pack Quantity 5 x 3m

BCL/ACS

MAIN COVER

Pack Quantity 5 x 3m

BCL/MC

SQUARE COVER SECTION

Pack Quantity 5 x 3m

BCL/SCS

BASE EXTENSION

Pack Quantity 5 x 3m

BCL/BE

VERTICAL MOUNT ADAPTOR PLATE

Pack Quantity 1

BCL/ADPL

RCD HOUSING

Pack Quantity 1
(RCD not Included)

BCL/RCD

METAL SCREENING

Should metal screening be required, aluminium sections can be supplied for both top and bottom sections of the trunking to ensure "spiking" does not occur. If screened data/telephone cables are being used within the wiring system internal metal screening is not needed.

ANGLED SECTION SCREEN

BCL/ASS

Supplied in 1m lengths

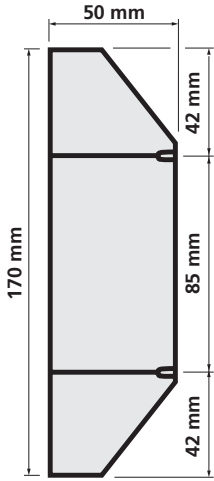
SQUARE SECTION SCREEN

BCL/SSS

Supplied in 1m lengths

The above metal screen sections are suitable for profiles 1,2 & 3

For Technical information see page 203. Dimensions see page 253.



- Profile assembly includes:
- Base Section
 - 2 x Angled Covers
 - 1 x Main Cover
- Overall Size: • 170mm x 50mm



TRUNKING PACK
Pack Quantity 1 x 3m lengths

BCL1



INTERNAL BEND
Pack Quantity 1

BCL1/IB



EXTERNAL BEND
Pack Quantity 1

BCL1/EB



FLAT ANGLE
Pack Quantity 1

BCL1/FAD



FLAT TEE
Pack Quantity 1

BCL1/FTD



STOP END
Pack Quantity 1

BCL1/SEL



COUPLER PACK
Pack Quantity 1

BCL1/CP



ANGLED CABLE RETAINER
Pack Quantity 10

BCL/ACR



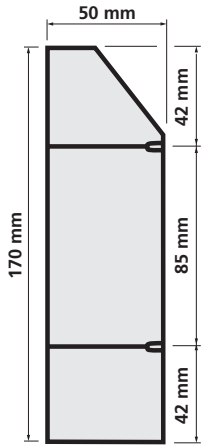
SINGLE GANG ACCESSORY BOX
Pack Quantity 10

BCL/SGB



TWIN GANG ACCESSORY BOX
Pack Quantity 5

BCL/TGB



- Profile assembly includes:
- Base Section
 - 1 x Angled Cover
 - 1 x Main Cover
 - 1 x Square Cover
- Overall Size: • 170mm x 50mm



TRUNKING PACK

Pack Quantity 1 x 3m lengths

BCL2



INTERNAL BEND

Pack Quantity 1

BCL2/IB



EXTERNAL BEND

Pack Quantity 1

BCL2/EB



FLAT ANGLE (DOWNWARD)

Pack Quantity 1

BCL2/FAD



FLAT ANGLE (UPWARD)

Pack Quantity 1

BCL2/FAU



FLAT TEE (UPWARD)

Pack Quantity 1

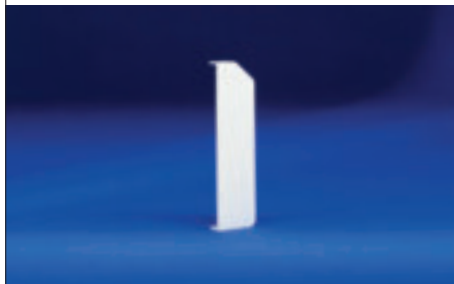
BCL2/FTU



FLAT TEE (DOWNWARD)

Pack Quantity 1

BCL2/FTD



STOP END (LEFT)

Pack Quantity 1

BCL2/SEL



STOP END (RIGHT)

Pack Quantity 1

BCL2/SER



COUPLER PACK

Pack Quantity 1

BCL2/CP



ANGLED CABLE RETAINER

Pack Quantity 10

BCL/ACR



SQUARE CABLE RETAINER

Pack Quantity 10

BCL/SQCR



SINGLE GANG ACCESSORY BOX

Pack Quantity 10

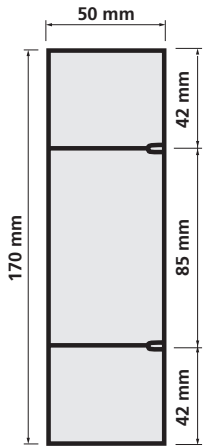
BCL/SGB



TWIN GANG ACCESSORY BOX

Pack Quantity 5

BCL/TGB



- Profile assembly includes:
- Base Section
 - 2 x Square Covers
 - 1 x Main Cover

Overall Size: • 170mm x 50mm



TRUNKING PACK

Pack Quantity 1 x 3m lengths

BCL3



INTERNAL BEND

Pack Quantity

BCL3/IB



EXTERNAL BEND

Pack Quantity 1

BCL3/EB



FLAT ANGLE

Pack Quantity 1

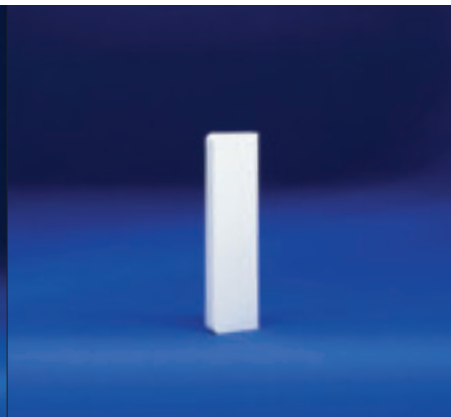
BCL3/FAD



FLAT TEE

Pack Quantity 1

BCL3/FTD



STOP END

Pack Quantity 1

BCL3/SEL



COUPLER PACK

Pack Quantity 1

BCL3/CP



SQUARE CABLE RETAINER

Pack Quantity 10

BCL/SQCR



SINGLE GANG ACCESSORY BOX

Pack Quantity 10

BCL/SGB

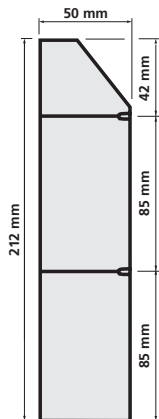


TWIN GANG ACCESSORY BOX

Pack Quantity 5

BCL/TGB

For Technical information see page 203. Dimensions see page 253.



- Profile assembly includes:
- Base Section
 - 1 x Base Extension
 - 1 x Angled Cover
 - 2 x Main Covers
- Overall Size: • 212mm x 50mm



TRUNKING PACK

Pack Quantity 1 x 3m lengths

BCL4



INTERNAL BEND

Pack Quantity 1

BCL4/IB



EXTERNAL BEND

Pack Quantity 1

BCL4/EB



FLAT ANGLE (DOWNWARD)

Pack Quantity 1

BCL4/FAD



FLAT ANGLE (UPWARD)

Pack Quantity 1

BCL4/FAU



FLAT TEE (DOWNWARD)

Pack Quantity 1

BCL4/FTD



FLAT TEE (UPWARD)

Pack Quantity 1

BCL4/FTU



STOP END (LEFT)

Pack Quantity 1

BCL4/SEL



STOP END (RIGHT)

Pack Quantity 1

BCL4/SER



COUPLER PACK

Pack Quantity 1

BCL4/CP



ANGLED CABLE RETAINER

Pack Quantity 10

BCL/ACR



SINGLE GANG ACCESSORY BOX

Pack Quantity 10

BCL/SGB

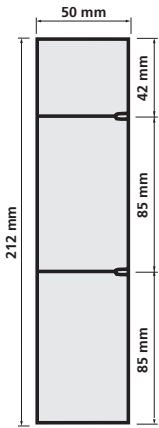


TWIN GANG ACCESSORY BOX

Pack Quantity 5

BCL/TGB

For Technical information see page 203. Dimensions see page 253.



- Profile assembly includes:
- Base Section
 - 1 x Base Extension
 - 1 x Square Cover
 - 2 x Main Covers
- Overall Size: • 212mm x 50mm



TRUNKING PACK
Pack Quantity 1 x 3m lengths

BCL5



INTERNAL BEND
Pack Quantity 1

BCL5/IB

EXTERNAL BEND
Pack Quantity 1

BCL5/EB

FLAT ANGLE (DOWNWARD)
Pack Quantity 1

BCL5/FAD



FLAT ANGLE (UPWARD)
Pack Quantity 1

BCL5/FAU

FLAT TEE (DOWNWARD)
Pack Quantity 1

BCL5/FTD

FLAT TEE (UPWARD)
Pack Quantity 1

BCL5/FTU



STOP END (LEFT)
Pack Quantity 1

BCL5/SEL

STOP END (RIGHT)
Pack Quantity 1

BCL5/SER

COUPLER PACK
Pack Quantity 1

BCL5/CP



SQUARE CABLE RETAINER
Pack Quantity 10

BCL/SQCR

SINGLE GANG ACCESSORY BOX
30mm Deep Pack Quantity 10

BCL/SGB

TWIN GANG ACCESSORY BOX
30mm Deep Pack Quantity 5

BCL/TGB

For Technical information see page 203. Dimensions see page 253.

FLOOR BOX DISTRIBUTION

The Britmac range of cable management products have been utilised in the design and installation of electrical systems in commercial and industrial projects for many years. The comprehensive Grosvenor Fast-fit floor box provides a wide choice from which to select the most appropriate for a specific application.

Grosvenor units can be supplied fitted with accessories, pre-wired to customers' requirements and fully factory tested in the UK prior to delivery.

The products are supported by a nationwide team of Sales Engineers and Stockists.



Large capacity cable routing guides ensure cables exit the box safely and neatly.



The lid hinge design ensures that the lid will always self close. A simple snap-out facility enables the lid to be removed for easy access to the accessory plates.



A pre-wired floor box tested in-house ensures the highest quality and continuity of finished product as well as saving time and money during site installation.



3 COMPARTMENT FLOOR BOX & ACCESSORIES

TRIM COLOUR

LIST No

Grey

GR03G

- The most popular size of raised access floor box for use in commercial office applications where power, voice and data services are required.
- Utilises 87mm wide accessory plates.

For Floor Box Dimensions See page 204.



SWITCHED 13A SOCKETS

LIST No

13A 2 Gang switched socket Reg. 607

GB3SS2/BG

13A 2 Gang switched socket CLEAN EARTH

GB3SS2CE/BG

13A 2 Gang switched socket NON-STD Reg. 607

GB3SSN2/BG

13A 2 Gang switched socket NON-STD CLEAN EARTH

GB3SSN2CE/BG

13A 2 Gang switched safety socket 30mA

GB3SRCD30/BG

- 607 has dual earth terminals
- Clean Earth has a normal and an isolated earth.



UNSWITCHED 13A SOCKETS

LIST No

13A 2 Gang unswitched socket Reg. 607

GB3S2/BG

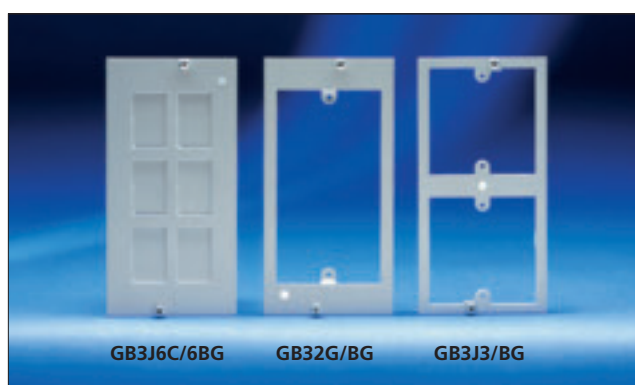
13A 2 Gang unswitched socket CLEAN EARTH

GB3S2CE/BG

13A 2 Gang unswitched socket NON-STD

GB3SN2/BG

- 607 has dual earth terminals
- Clean Earth has a normal and an isolated earth.



DATA AND COMMUNICATIONS

LIST No

Accessory plate 4 knockout LJU6C/RJ45

GB3J6C/BG

Accessory plate to accept 6x LJU6C/RJ45

GB3J6C/6BG

Accessory plate to accept 2x 1G standard accessory

GB3J3/BG

Accessory plate to accept 2G standard accessory

GB32G/BG

Blank plate

GB3BP/BG

Accessory plate to accept 4x Alpha

GB3ALPHA/BG

Accessory plate to accept 2x Euro module

GB3EURO/BG

(Will accept 4x Crabtree communication modules 25mm x 50mm). See page 23.

- All plates 87mm x 173mm.
- All accessory plates are supplied with fixing screws.





GR04G



GBSS2/BG GBSSN2/BG



GBJ6C/BG GBBP/BG



GBEURO/BG GBALPHA/BG

4 COMPARTMENT FLOOR BOX & ACCESORIES

TRIM COLOUR	LIST No
Grey	GR04G

- Compact 4 compartment unit - utilises 66mm wide accessories.
- 4 compartment units can provide an attractive and economical solution for applications, where power, voice and data systems are to be accessed, particularly where both clean and utility power outlets are required or where more than one type of data system is required.

For Floor Box Dimensions See page 204.

SWITCHED 13A SOCKETS

	LIST No
13A 2 Gang switched socket Reg. 607	GBSS2/BG
13A 2 Gang switched socket CLEAN EARTH	GBSS2CE/BG
13A 2 Gang switched socket NON-STD Reg. 607	GBSSN2/BG
13A 2 Gang switched socket NON-STD CLEAN EARTH	GBSSN2CE/BG

- Power sockets supplied with rear entry terminals as standard.
- 607 sockets have dual earth system.
- Clean earth have a normal and an isolated earth.
- Only two 13A 2 gang Sockets can be fitted per Floor Box.

DATA AND COMMUNICATIONS

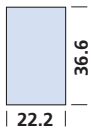
	LIST No
Plate to accept 4 LJU6C voice or 4 RJ45 data outlets	GBJ6C/BG
Blank plate for on-site piercing	GBBP/BG
Plate to accept 4x Alpha	GBALPHA/BG
Plate to accept 2x Euro modules (Will accept 4x Crabtree communication modules 25mm x 50mm). See page 23.	GBEURO/BG

- All plates 66mm x 173mm.
- All accessory plates are supplied with fixing screws.

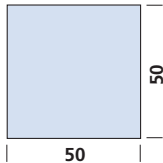
13A accessory plates are supplied with the appropriate interior fitted.

KNOCKOUT DIMENSIONS

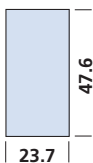
LJU6C/RJ45



EURO



ALPHA





CURRENT RANGE

GROSVENOR LID REPLACEMENT 3 & 4 GANG

Lid assembly, Grey	200013GY
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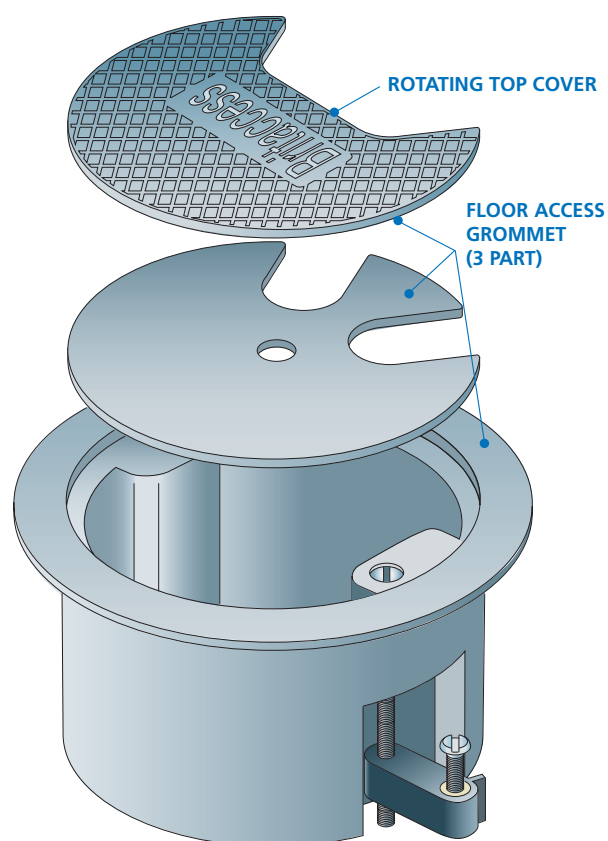
GROSVENOR SPARES

Trim piece (plain), Grey	98950-1/A/2
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Trim piece (handle), Grey - Complete	98347-1/A/2
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Cable flap, Grey	98351-1/H/1
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Cable retainer, Black	98496-2/E/1
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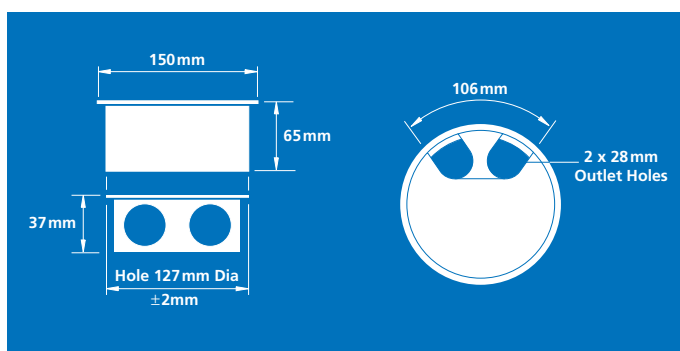
FLOOR GROMMET

In the modern office environment where flexibility is vital, the BRITACCESS floor grommet can accommodate most requirements for accessing cables on flexible conduits up to cable managed desks etc.

If the requirement is for a basic access point the top element will satisfy that need. To allow a desk module to pass through from a floor void whether it be a 3 core flexible cable or a flexible conduit, the BRITACCESS grommet is suitable for the job.

FLOOR ACCESS GROMMET

Top Grommet Only	BAG150
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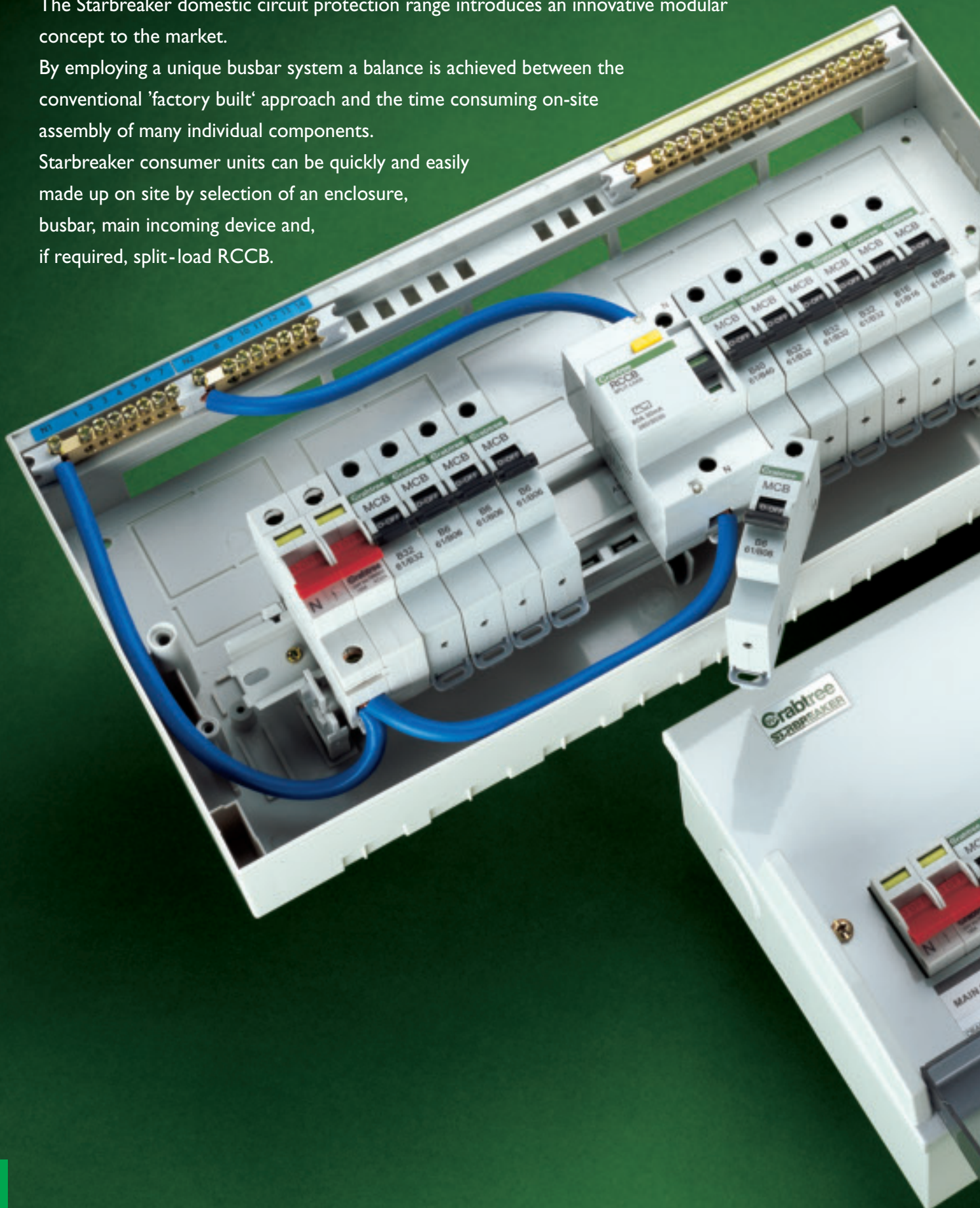
STARBREAKER

DOMESTIC CIRCUIT PROTECTION

The Starbreaker domestic circuit protection range introduces an innovative modular concept to the market.

By employing a unique busbar system a balance is achieved between the conventional 'factory built' approach and the time consuming on-site assembly of many individual components.

Starbreaker consumer units can be quickly and easily made up on site by selection of an enclosure, busbar, main incoming device and, if required, split-load RCCB.







415/0A



420/0A



830/2A



915/0M

915/0W

ENCLOSURES

The range of enclosures from 4 to 20 modules as all insulated and 4 to 40 modules as metal cased with a new improved steel front cover, all finished in a stylish semi-matt finish.

- Type tested to BS 5486 Part 13: 1989 and BS EN 60439-3 when fully assembled.
- All enclosures are supplied ready prepared for the unique busbar to be easily fitted into place.
- Each enclosure is supplied complete with:
 - 35mm metal DIN rail.
 - Factory-fitted 16mm² flexible neutral connection.
 - Installation instructions, unique circuit identification labels and user guide.
 - 16mm² earth and neutral bar terminal assembly.
- The neutral lead fitted to all enclosures facilitates siting the main incoming device on the left hand side. If siting is required on the right this lead should be replaced by one of suitable length (16mm²). In split-load applications the RCCB neutral connections must also be reversed.
- Suitable for use with control modules.

ALL INSULATED ENCLOSURES

	H	W	D	
4 Modular ways	160	117	102	404/0A*
6 Modular ways	230	190	120	406/0A
9 Modular ways	230	243	120	409/0A
12 Modular ways	230	294	120	412/0A
15 Modular ways	230	344	120	415/0A
20 Modular ways	230	439	120	420/0A

- Large selection of knock-outs suiting any cable routing – also readily accommodates mini-trunking.

* Includes Busbar.

SURFACE METAL CASED

	H	W	D	
4 Modular ways	185	129	100	804/0A*
6 Modular ways	210	188	122	806/0A
9 Modular ways	210	242	122	809/0A
12 Modular ways	210	292	122	812/0A
15 Modular ways	210	343	122	815/0A
20 Modular ways	210	439	122	820/0A
24 Modular ways 2 Bank	450	292	122	824/2A
30 Modular ways 2 Bank	450	343	122	830/2A
40 Modular ways 2 Bank	450	439	122	840/2A

- Raised keyhole slots for easy mounting on uneven surfaces.
- Ample wiring space.
- Adequate knock-outs in robust metal box for side or rear entry of wiring.

* Includes Busbar.

FLUSH METAL CASED

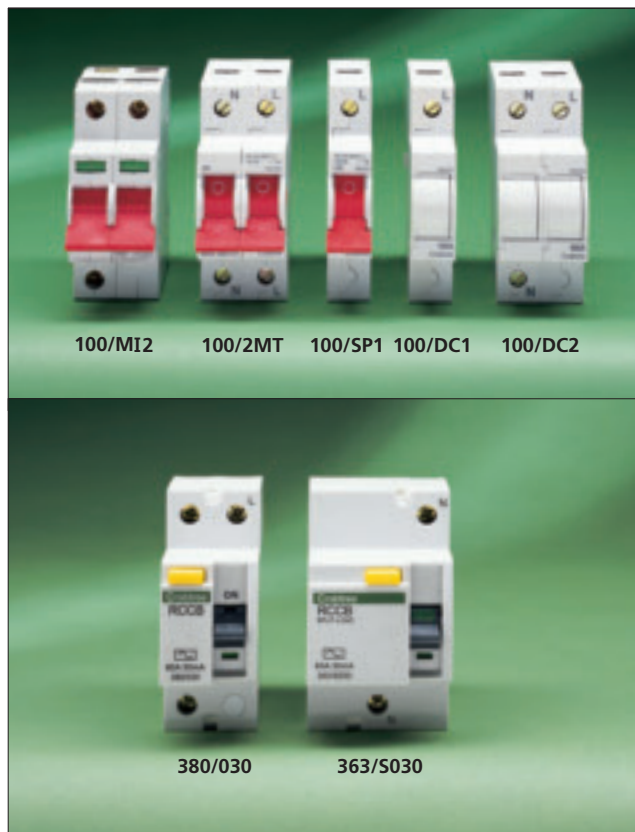
	H	W	D	
9 Modular ways	250	281	122	809/0AF
12 Modular ways	250	332	122	812/0AF
15 Modular ways	250	393	122	815/0AF
20 Modular ways	250	478	122	820/0AF

- Adequate knock-outs in robust metal box for side or rear entry of wiring.

SPINE BACKPLATE CHASSIS

15 Module, Grey Metal cover	915/0M
15 Module, White PVC cover & shield	915/0W
20 Module, PVC cover & shield with 435mm centres	920/0W/435

- Designed for installation into meter cabinets (eg Clifton).
- Provide a method of updating such installations with MCB and RCCB protection.
- Available in standard Metal format or with extended PVC front plate and shield.
- For Dimensions see page 255.



MAIN INCOMING & SPLIT-LOAD DEVICES

DESCRIPTION	RATING	MODULES	LIST No
Main switch disconnecter	40A DP	2	40/MI2
Main switch disconnecter	63A DP	2	63/MI2
Main switch disconnecter	100A DP	2	100/MI2
Main switch disconnecter	100A SP	1	100/SP1
Main switch disconnecter c/w tap off terminal	100A DP	2	100/2MT
Direct connection unit	100A DP	2	100/DC2
Direct connection unit	100A SP	1	100/DC1

- 100A main switches to BS EN 60947-3
- 50mm² terminal capacity.

DESCRIPTION	RATING	LIST No	RCD TYPE AC	RCD TYPE A
Main incoming RCCB	25A DP, 30mA	325/030		325/A030
Main incoming RCCB	40A DP, 30mA	340/030		340/A030
Main incoming RCCB	40A DP, 100mA	340/100		-
Main incoming RCCB	63A DP, 30mA	363/030		-
Main incoming RCCB	80A DP, 30mA	380/030		380/A030
Main incoming RCCB	80A DP, 100mA	380/100		-
Main incoming RCCB	100A DP, 30mA	310/030		310/A030
Main incoming RCCB	100A DP, 100mA	310/100		-
Main incoming TD RCCB	100A DP, 100mA	310/100TD		-
Split-load RCCB	63A DP, 30mA	363/S030		363/A030
Split-load RCCB	63A DP, 100mA	363/S100		-
Split-load RCCB	80A DP, 30mA	380/S030		380/A030
Split-load RCCB	80A DP, 100mA	380/S100		380/A100

- BS EN 61008; IEC 1008.
- Electro-mechanical.
- 50mm² terminal capacity.

OUTGOING DEVICES

MINIATURE CIRCUIT BREAKERS

CURRENT RATING (A)	MODULES	LIST No	Type B	Type C
6	1	61/B06		61/C06
10	1	61/B10		61/C10
16	1	61/B16		61/C16
20	1	61/B20		61/C20
32	1	61/B32		61/C32
40	1	61/B40		61/C40
50	1	61/B50		61/C50

- BS EN 60898; 6kA – 240V 50Hz.
- Type B classification (3–5In). Type C classification (5–10In).
- 16mm² terminal capacity.

Replacement MCBs for Starbreaker consumer units pre July 1992

- SB6000 range to BS 3871.
- Suffix List No. **610/** __ with the required rating between 6A and 40A.
eg **610/32** = 32A single pole Type 1 MCB.

RESIDUAL CURRENT CIRCUIT BREAKERS WITH OVERCURRENT PROTECTION (RCBO)

CURRENT RATING (A)	SINGLE MODULE LIST No
6	61/C10630
10	61/C11030
16	61/C11630
20	61/C12030
32	61/C13230
40	61/C14030
50	61/C15030

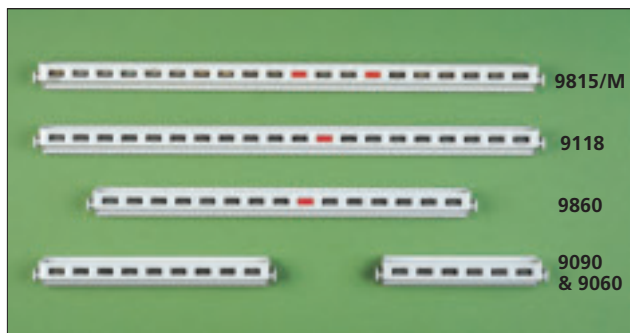
- BS EN 61009; IEC 1009.
- 1 module device 35mm² terminal capacity.

CAUTION

These devices are electronic units and should be disconnected from the supply during insulation and earth fault loop impedance testing.

Full Technical Information see page 205–211.





STARBREAKER BUSBAR SELECTION

Busbars are supplied ready assembled in a variety of configurations to cater for the majority of arrangements from main incomer to split-load, twin and multi tariff.

Once in position the busbar is suspended at a height which allows 25mm² cable to be routed underneath.

Other arrangements of split busbar are available to order.

MAIN INCOMING

Modular ways	List No	100A double pole main switch incomer		RCCB main incomer	
		MCB ways	Layout	MCB ways	Layout
6	9060	4		4	
9	9090	7		7	
12	9120	10		10	
15	9150	13		13	
20	9200	18		18	

SPLIT-LOAD & DUAL TARIFF

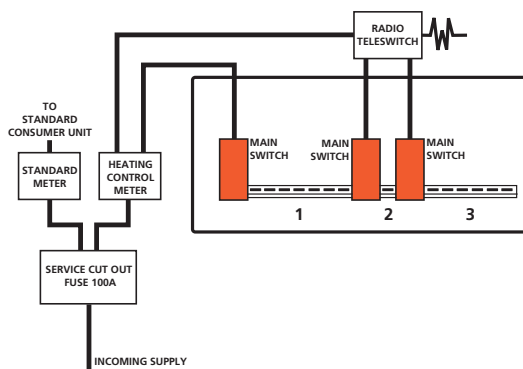
Modular ways	List No	100A double pole main switch + 63A or 80A split-load RCCB		100A double pole main switch + 100A double pole main switch	
		MCB ways	Layout	MCB ways	Layout
9	9530	2 + 2		3 + 2	
12	9560	2 + 5		3 + 5	
12	9650	3 + 4		4 + 4	
12	9740	4 + 3		5 + 3	
12	9830	5 + 2		6 + 2	
15	9680	3 + 7		4 + 7	
15	9770	4 + 6		5 + 6	
15	9860	5 + 5		6 + 5	
15	9950	6 + 4		7 + 4	
15	9104	7 + 3		8 + 3	
20	9811	5 + 10		6 + 10	
20	9910	6 + 9		7 + 9	
20	9109	7 + 8		8 + 8	
20	9118	8 + 7		9 + 7	
20	9127	9 + 6		10 + 6	
20	9136	10 + 5		11 + 5	

KEY Main switch Incoming RCCB Split Load RCCB

The 100A Double Pole main switch can be replaced by a main incoming RCCB without impacting on the number of MCB ways available

MULTI TARIFF HEATING CONTROL

Modular ways	List No	100A double pole main switch + 100A double pole main switch + 100A double pole main switch
		MCB ways Layout
15	9414/M	4 + 1 + 4 
20	9815/M	8 + 1 + 5 
20	9716/M	7 + 1 + 6 



Multi-tariff heating provides 3 tariffs catering for total heating applications

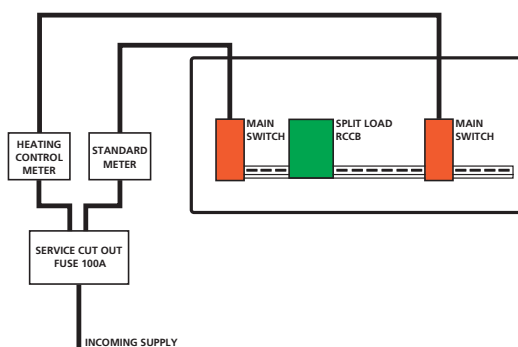
- 1 Direct heating appliances
- 2 Bottom Immersion Heater
- 3 Storage heating

NOTE

15 module enclosures will accommodate this facility, however the enclosure is not fitted with three neutral bars. In this instance the bottom immersion heater neutral should be connected directly to the bottom neutral terminal on the appropriate main switch.

SPLIT-LOAD DUAL TARIFF

Modular ways	List No	100A double pole main switch + 63A or 80A split-load RCCB + 100A double pole main switch
		MCB ways Layout
15	9233/ST	2 + 3 + 3 
20	9837/ST	5 + 2 + 6 
20	9675/ST	3 + 6 + 4 

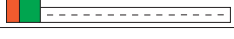


Combining the added safety of a split-load RCCB and the economy heating tariff into one combined unit offers an all-round saving of space and installation time.

SPLIT-LOAD DUAL RCCB

Modular ways	List No	100A double pole main switch + 63A or 80A split-load RCCB + 80A double pole RCCB incomer
		MCB ways Layout
15	9355/ST	4 + 4 
20	9387/ST	7 + 6 

2 BANK SPLIT-LOAD DUAL RCCB

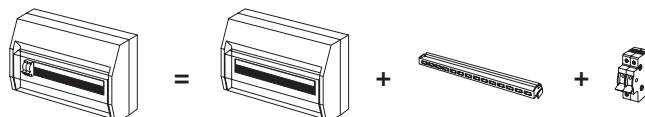
Modular ways	List No	100A double pole main switch + 63A or 80A split-load RCCB
		MCB ways Layout
12	9380/D	7 
15	9311/D	10 
20	9316/D	15 

KEY  Main switch  Incoming RCCB  Split Load RCCB

The 100A Double Pole main switch can be replaced by a main incoming RCCB without impacting on the number of MCB ways available

ALL-INSULATED

The following selection tables enable easy identification of the components required to build a variety of consumer units.



SURFACE

Available MCB ways	Rating	Consumer unit List No	Surface moulded enclosure	Busbar	Main incoming device	Split-load RCCB
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Main switch consumer units

(100A double pole main switch control for all MCB ways)

2	40A	402/2	404/0A	-	40/MI2	-
4	100A	404/2	406/0A	9060	100/MI2	-
7	100A	407/2	409/0A	9090	100/MI2	-
10	100A	410/2	412/0A	9120	100/MI2	-
13	100A	413/2	415/0A	9150	100/MI2	-
18	100A	418/2	420/0A	9200	100/MI2	-



407/2

RCCB consumer units

(Double pole RCCB control for all MCB ways)

2	40A 30mA	402/343	404/0A	-	340/030	-
2	63A 30mA	402/363	404/0A	-	363/030	-
4	40A 30mA	404/343	406/0A	9060	340/030	-
4	80A 30mA	404/383	406/0A	9060	380/030	-
7	40A 30mA	407/343	409/0A	9090	340/030	-
7	80A 30mA	407/383	409/0A	9090	380/030	-
10	80A 30mA	410/383	412/0A	9120	380/030	-
10	100A 30mA	410/313	412/0A	9120	310/030	-
13	80A 30mA	413/383	415/0A	9150	380/030	-
13	100A 30mA	413/313	415/0A	9150	310/030	-
18	80A 30mA	418/383	420/0A	9200	380/030	-
18	100A 30mA	418/313	420/0A	9200	310/030	-



407/383

Split-load consumer units

(100A double pole main switch control for all MCB ways, double pole RCCB control for selected MCB ways)

2 + 2	63A 30mA	404/2263	409/0A	9530	100/MI2	363/S030
2 + 5	63A 30mA	407/2263	412/0A	9560	100/MI2	363/S030
3 + 4	63A 30mA	407/2363	412/0A	9650	100/MI2	363/S030
4 + 3	63A 30mA	407/2463	412/0A	9740	100/MI2	363/S030
5 + 2	63A 30mA	407/2563	412/0A	9830	100/MI2	363/S030
3 + 7	63A 30mA	410/2363	415/0A	9680	100/MI2	363/S030
4 + 6	63A 30mA	410/2463	415/0A	9770	100/MI2	363/S030
5 + 5	63A 30mA	410/2563	415/0A	9860	100/MI2	363/S030
6 + 4	63A 30mA	410/2663	415/0A	9950	100/MI2	363/S030
7 + 3	63A 30mA	410/2763	415/0A	9104	100/MI2	363/S030
6 + 6	80A 30mA	412/2683B	Assembled Only			
5 + 10	63A 30mA	415/2563	420/0A	9811	100/MI2	363/S030
6 + 9	63A 30mA	415/2663	420/0A	9910	100/MI2	363/S030
7 + 8	63A 30mA	415/2763	420/0A	9109	100/MI2	363/S030
8 + 7	63A 30mA	415/2863	420/0A	9118	100/MI2	363/S030
9 + 6	63A 30mA	415/2963	420/0A	9127	100/MI2	363/S030
10 + 5	63A 30mA	415/2163	420/0A	9136	100/MI2	363/S030



404/2263



412/2683B

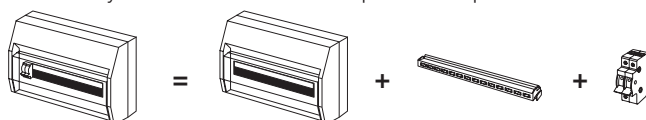
Factory-built consumer units are available to order – Add B to the consumer unit List No. eg 404/2B.

For 80A split-load consumer units, use **380/S030** or **380/S100** split-load RCCBs.

The above RCCBs are Type AC. Type A RCCBs are available – Add **A** to the consumer unit List No. eg 410/A2663.

ALL-INSULATED

The following selection tables enable easy identification of the components required to build a variety of consumer units.



SURFACE

Available MCB ways	Rating	Consumer unit List No	Surface moulded enclosure	Busbar	Main incoming device	RCCB
Dual tariff consumer units						
(100A double pole main switch control for each tariff)						
3 + 2	100A	405/232	409/0A	9530	100/MI2 x 2	-
3 + 5	100A	408/232	412/0A	9560	100/MI2 x 2	-
4 + 4	100A	408/242	412/0A	9650	100/MI2 x 2	-
5 + 3	100A	408/252	412/0A	9740	100/MI2 x 2	-
6 + 2	100A	408/262	412/0A	9830	100/MI2 x 2	-
4 + 7	100A	411/242	415/0A	9680	100/MI2 x 2	-
5 + 6	100A	411/252	415/0A	9770	100/MI2 x 2	-
6 + 5	100A	411/262	415/0A	9860	100/MI2 x 2	-
7 + 4	100A	411/272	415/0A	9950	100/MI2 x 2	-
8 + 3	100A	411/282	415/0A	9104	100/MI2 x 2	-
6 + 10	100A	416/262	420/0A	9811	100/MI2 x 2	-
7 + 9	100A	416/272	420/0A	9910	100/MI2 x 2	-
8 + 8	100A	416/282	420/0A	9109	100/MI2 x 2	-
9 + 7	100A	416/292	420/0A	9118	100/MI2 x 2	-
10 + 6	100A	416/212	420/0A	9127	100/MI2 x 2	-
11 + 5	100A	416/2112	420/0A	9136	100/MI2 x 2	-

Multi tariff consumer units

(100A double pole main switch control for each tariff)

4 + 1 + 4	100A	409/242124	415/0A	9414/M	100/MI2 x 3	-
8 + 1 + 5	100A	414/282125	420/0A	9815/M	100/MI2 x 3	-
7 + 1 + 6	100A	414/272126	420/0A	9716/M	100/MI2 x 3	-

Split-load dual tariff consumer units

(100A double pole main switch control for all MCB ways, 63A double pole RCCB control for selected MCB ways, 100A double pole main switch control for storage heating MCBs)

2 + 3 + 3	63A 30mA	408/22623	415/0A	9233/ST	100/MI2 x 2	363/S030
5 + 2 + 6	63A 30mA	413/25626	420/0A	9837/ST	100/MI2 x 2	363/S030
3 + 6 + 4	63A 30mA	413/23624	420/0A	9675/ST	100/MI2 x 2	363/S030

Split-load dual RCCB consumer units

(100A double pole main switch control for all MCB ways, 63A split-load RCCB control for selected MCB ways, 80A main switch RCCB control for selected MCB ways)

4 + 4	63A 100mA 80A 30mA	408/26484	415/0A	9355/ST	100/2MT	363/S100 380/030
7 + 6	63A 100mA 80A 30mA	413/26786	420/0A	9387/ST	100/2MT	363/S100 380/030

The above RCCBs are Type AC. Type A RCCBs are available – Add **A** to the consumer unit List No. eg 413/A26786.

Split-load with time delay RCCB incomer

(100A 100mA time delay double pole RCCB control for all MCB ways, 63A or 80A 30mA double pole RCCB control for selected MCB ways)

5 + 5		410/3563TDB	415/0A	9860	310/100TD	363/S030
5 + 5		410/3583TDB	415/0A	9860	310/100TD	380/S030



411/262



409/242124



408/22623



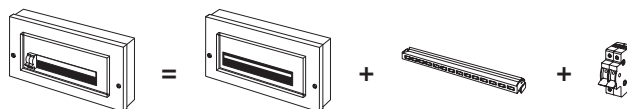
408/26484



410/3563TDB

METAL CASED

The following selection tables enable easy identification of the components required to build a variety of consumer units.



SURFACE

Available MCB ways	Rating	Consumer unit List No	Surface metal enclosure	Busbar	Main incoming device	Split-load RCCB
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Main switch consumer units

(100A double pole main switch control for all MCB ways)

2	40A	802/2	804/0A	-	40/MI2	-
4	100A	804/2	806/0A	9060	100/MI2	-
7	100A	807/2	809/0A	9090	100/MI2	-
10	100A	810/2	812/0A	9120	100/MI2	-
13	100A	813/2	815/0A	9150	100/MI2	-
18	100A	818/2	820/0A	9200	100/MI2	-



807/2

RCCB consumer units

(Double pole RCCB control for all MCB ways)

2	40A 30mA	802/343	804/0A	-	340/030	-
2	63A 30mA	802/363	804/0A	-	363/030	-
4	40A 30mA	804/343	806/0A	9060	340/030	-
4	80A 30mA	804/383	806/0A	9060	380/030	-
7	40A 30mA	807/343	809/0A	9090	340/030	-
7	80A 30mA	807/383	809/0A	9090	380/030	-
10	80A 30mA	810/383	812/0A	9120	380/030	-
10	100A 30mA	810/313	812/0A	9120	310/030	-
13	80A 30mA	813/383	815/0A	9150	380/030	-
13	100A 30mA	813/313	815/0A	9150	310/030	-
18	80A 30mA	818/383	820/0A	9200	380/030	-
18	100A 30mA	818/313	820/0A	9200	310/030	-



810/383

Split-load consumer units

(100A double pole main switch control for all MCB ways, 63A double pole RCCB control for selected MCB ways)

2 + 2	63A 30mA	804/2263	809/0A	9530	100/MI2	363/S030
2 + 5	63A 30mA	807/2263	812/0A	9560	100/MI2	363/S030
3 + 4	63A 30mA	807/2363	812/0A	9650	100/MI2	363/S030
4 + 3	63A 30mA	807/2463	812/0A	9740	100/MI2	363/S030
5 + 2	63A 30mA	807/2563	812/0A	9830	100/MI2	363/S030
3 + 7	63A 30mA	810/2363	815/0A	9680	100/MI2	363/S030
4 + 6	63A 30mA	810/2463	815/0A	9770	100/MI2	363/S030
5 + 5	63A 30mA	810/2563	815/0A	9860	100/MI2	363/S030
6 + 4	63A 30mA	810/2663	815/0A	9950	100/MI2	363/S030
7 + 3	63A 30mA	810/2763	815/0A	9104	100/MI2	363/S030
5 + 10	63A 30mA	815/2563	820/0A	9811	100/MI2	363/S030
7 + 8	63A 30mA	815/2763	820/0A	9109	100/MI2	363/S030
6 + 9	63A 30mA	815/2663	820/0A	9910	100/MI2	363/S030
8 + 7	63A 30mA	815/2863	820/0A	9118	100/MI2	363/S030
9 + 6	63A 30mA	815/2963	820/0A	9127	100/MI2	363/S030



810/2363

Factory-built consumer units are available to order – Add B to the consumer unit List No. eg 807/2B.

Factory-built flush mounting consumer units are available to order – Add FB to the consumer unit List No.

For 80A split-load consumer units use **380/S030** or **380/S100** split-load RCCBs.

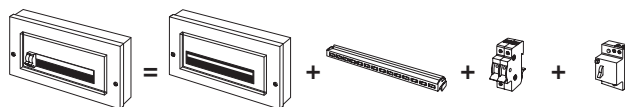
The above RCCBs are Type AC. Type A RCCBs are available – Add **A** to the consumer unit List No. eg 810/A2663.

Note The split arrangements in split-load configurations represent circuits unprotected and protected respectively
eg 3 + 6 = 3 MCB ways unprotected and 6 MCB ways protected by the RCCB.

100mA version RCCB's available replace final digit 3 with 1 i.e. 810/2363 would become 810/2361

METAL CASED

The following selection tables enable easy identification of the components required to build a variety of consumer units.



SURFACE

Available MCB ways	Rating	Consumer unit List No	Surface metal enclosure	Busbar	Main incoming device	Split-load RCCB
Dual tariff consumer units						
(100A double pole main switch control for each tariff)						
3 + 2	100A	805/232	809/0A	9530	100/MI2 x 2	-
3 + 5	100A	808/232	812/0A	9560	100/MI2 x 2	-
4 + 4	100A	808/242	812/0A	9650	100/MI2 x 2	-
5 + 3	100A	808/252	812/0A	9740	100/MI2 x 2	-
6 + 2	100A	808/262	812/0A	9830	100/MI2 x 2	-
4 + 7	100A	811/242	815/0A	9680	100/MI2 x 2	-
5 + 6	100A	811/252	815/0A	9770	100/MI2 x 2	-
6 + 5	100A	811/262	815/0A	9860	100/MI2 x 2	-
7 + 4	100A	811/272	815/0A	9950	100/MI2 x 2	-
8 + 3	100A	811/282	815/0A	9104	100/MI2 x 2	-
6 + 10	100A	816/262	820/0A	9811	100/MI2 x 2	-
7 + 9	100A	816/272	820/0A	9910	100/MI2 x 2	-
8 + 8	100A	816/282	820/0A	9109	100/MI2 x 2	-
10 + 6	100A	816/212	820/0A	9127	100/MI2 x 2	-
9 + 7	100A	816/292	820/0A	9118	100/MI2 x 2	-
11 + 5	100A	816/2112	820/0A	9136	100/MI2 x 2	-

Multi tariff consumer units

(100A double pole main switch control for each tariff)

4 + 1 + 4	100A	809/242124	815/0A	9414/M	100/MI2 x 3	-
8 + 1 + 5	100A	814/282125	820/0A	9815/M	100/MI2 x 3	-
7 + 1 + 6	100A	814/272126	820/0A	9716/M	100/MI2 x 3	-

Split-load dual tariff consumer units

(100A double pole main switch + 63A/80A double pole RCCB control for selected MCB ways, 100A double pole main switch control for storage heating MCBs)

2 + 3 + 3	63A 30mA	808/22623	815/0A	9233/ST	100/MI2 x 2	363/S030
5 + 2 + 6	63A 30mA	813/25626	820/0A	9837/ST	100/MI2 x 2	363/S030
5 + 2 + 6	80A 30mA	813/25826	820/0A	9837/ST	100/MI2 x 2	380/S030
3 + 6 + 4	63A 30mA	813/23624	820/0A	9675/ST	100/MI2 x 2	363/S030
3 + 6 + 4	80A 30mA	813/23824	820/0A	9675/ST	100/MI2 x 2	380/S030

Split-load dual RCCB consumer units

(100A double pole main switch control for all MCB ways, 63A/80A split-load RCCB control for selected MCB ways, 80A main switch RCCB control for selected MCB ways)

4 + 4	63A 100mA 80A 30mA	808/26484	815/0A	9355/ST	100/2MT	363/S100 380/030
4 + 4	80A 100mA 80A 30mA	808/28484	815/0A	9355/ST	100/2MT	363/S100 380/030
7 + 6	63A 100mA 80A 30mA	813/26786	820/0A	9387/ST	100/2MT	363/S100 380/030
7 + 6	80A 100mA 80A 30mA	813/28786	820/0A	9387/ST	100/2MT	380/S100 380/030

Factory-built consumer units are available to order – Add B to the consumer unit List No. eg 808/232B.

Factory-built flush mounting consumer units are available to order – Add FB to the consumer unit List No.

The above RCCBs are Type AC. Type A RCCBs are available – Add A to the consumer unit List No. eg 813/A26786.



808/242



814/282125



808/22623

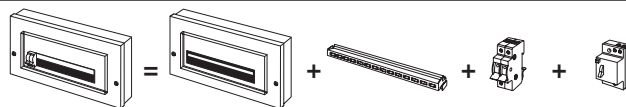


813/26786

METAL CASED

The following selection tables enable easy identification of the components required to build a variety of consumer units.

2 BANK CONSUMER UNITS



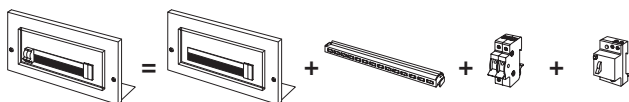
823/26383

Available MCB ways	Rating	Consumer unit List No	Surface metal enclosure	Busbar	Main incoming device	Split-load RCCB
(100A double pole main switch control for all MCB ways, 63A/80A double pole RCCB control for selected MCB ways, 80A double pole RCCB control for selected MCB ways)						
10 + 10	80A 30mA	820/283	824/2A	9120 x 2	100/2MT	380/030
7 + 10	63A 30mA 80A 30mA	817/26383	824/2A	9380/D 9120	100/2MT	363/S030 380/030
7 + 10	63A 100mA 80A 30mA	817/26183	824/2A	9380/D 9120	100/2MT	363/S100 380/030
13 + 13	80A 30mA	826/283	830/2A	9150 x 2	100/2MT	380/030
10 + 13	63A 30mA 80A 30mA	823/26383	830/2A	9311/D 9150	100/2MT	363/S030 380/030
10 + 13	63A 100mA 80A 30mA	823/26183	830/2A	9311/D 9150	100/2MT	363/S100 380/030
18 + 18	80A 30mA	836/283	840/2A	9200 x 2	100/2MT	380/030
15 + 18	63A 30mA 80A 30mA	833/26383	840/2A	9316/D 9200	100/2MT	363/S030 380/030
15 + 18	63A 100mA 80A 30mA	833/26183	840/2A	9316/D 9200	100/2MT	363/S100 380/030

Factory-built consumer units are available to order – Add B to the consumer unit List No. eg 820/283B.

For 2 bank and dual RCCB consumer units, the Type A RCCB makes reference to the 30mA downstream device.

SPINE BACKPLATE CONSUMER UNITS



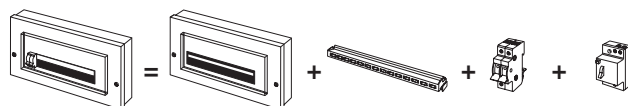
910/2483

Available MCB ways	Rating	Consumer unit List No	Chassis	Busbar	Main incoming device	Split-load RCCB
Main switch spine unit (100A double pole main switch control for all MCB ways)						
13	100A	913/2*	915/0*	9150	100/MI2	
RCCB spine unit (Double pole RCCB control for all MCB ways)						
13	80A 30mA	913/383*	915/0*	9150	380/030	
Split-load spine units (100A double pole main switch control for all MCB ways, 80A double pole RCCB control for selected MCB ways)						
3 + 7	80A 30mA	910/2383*	915/0*	9680	100/MI2	380/S030
4 + 6	80A 30mA	910/2483*	915/0*	9770	100/MI2	380/S030
5 + 5	80A 30mA	910/2583*	915/0*	9860	100/MI2	380/S030
6 + 4	80A 30mA	910/2683*	915/0*	9950	100/MI2	380/S030
3 + 7	80A 100mA	910/2381*	915/0*	9680	100/MI2	380/S100
4 + 6	80A 100mA	910/2481*	915/0*	9770	100/MI2	380/S100
5 + 5	80A 100mA	910/2581*	915/0*	9860	100/MI2	380/S100
6 + 4	80A 100mA	910/2681*	915/0*	9950	100/MI2	380/S100

* Add **M** for Grey Metal front plate or **W** for White PVC front plate.

METAL CASED

The following selection tables enable easy identification of the components required to build a variety of consumer units.



FLUSH

Available MCB ways	Rating	Consumer unit List No	Surface metal enclosure	Busbar	Main incoming device	Split-load RCCB
Main switch consumer units						
(100A double pole main switch control for all MCB ways)						
7	100A	807/2F	809/0AF	9090	100/MI2	-
10	100A	810/2F	812/0AF	9120	100/MI2	-
13	100A	813/2F	815/0AF	9150	100/MI2	-



807/2F

RCCB consumer units

(Double pole RCCB control for all MCB ways)

7	40A 30mA	807/343F	809/0AF	9090	340/030	-
7	80A 30mA	807/383F	809/0AF	9090	380/030	-
10	40A 30mA	810/343F	812/0AF	9120	340/030	-
10	80A 30mA	810/383F	812/0AF	9120	380/030	-
13	80A 30mA	813/383F	815/0AF	9150	380/030	-



807/383F

Split-load consumer units

(100A double pole main switch control for all MCB ways, 63A double pole RCCB control for selected MCB ways)

2 + 5	63A 30mA	807/2263F	812/0AF	9560	100/MI2	363/S030
3 + 4	63A 30mA	807/2363F	812/0AF	9650	100/MI2	363/S030
3 + 7	63A 30mA	810/2363F	815/0AF	9680	100/MI2	363/S030
4 + 6	63A 30mA	810/2463F	815/0AF	9770	100/MI2	363/S030
5 + 5	63A 30mA	810/2563F	815/0AF	9860	100/MI2	363/S030
6 + 4	63A 30mA	810/2663F	815/0AF	9950	100/MI2	363/S030



810/2363F

Factory-built consumer units are available to order - Add B to the consumer unit List No. eg: 807/2FB

ASSEMBLED GARAGE UNITS

All Insulated Garage Unit

2	40A 30mA	402/343GU	Supplied fitted with two type B MCBs 6A & 32A
2	63A 30mA	402/363GU	Supplied fitted with two type B MCBs 6A & 32A



402/343GU

Metalclad Garage Unit

2	63A 30mA	802/363GU	Supplied fitted with two type B MCBs 6A & 32A
---	----------	------------------	---



802/363GU



302/TD1 303/TS24 303/TQ7 301/S7

CONTROL MODULES

TIMESWITCHES

DESCRIPTION	MODULES	LIST No
1 channel 7 day/24hr digital	2	302/TD1
2 channel 7 day/24hr digital	2	302/TD2
24hr analogue synchronous	3	303/TS24
24hr analogue quartz	3	303/TQ24
7 day analogue quartz	3	303/TQ7
1–7 min staircase	1	301/S7

- All timers have 16A resistive contact rating.
- Power reserve: 150hr – quartz timers.
250hr – digital timers.



CIK22-02 CIK24-40 CIK63-40

SILENT OPERATION INSTALLATION CONTACTORS

Description	Pole Configuration			LIST No
	N/O	N/C		
20A Double Pole	2	0	1 Mod	CIK22-20 CIK22-11 CIK22-02
	1	1		
	0	2		
24A Four Pole	4	0	2 Mod	CIK24-40 CIK24-31 CIK24-22 CIK24-04
	3	1		
	2	2		
	0	4		
40A Four Pole	4	0	3 Mod	CIK40-40 CIK40-31 CIK40-22 CIK40-04
	3	1		
	2	2		
	0	4		
63 A Four Pole	4	0	3 Mod	CIK63-40 CIK63-31 CIK63-22 CIK63-04
	3	1		
	2	2		
	0	4		
9mm Ventilation module			0.5 Mod	301/CS
Auxiliary Contacts	1	1		CHHSLA11 CHHSLA20
	2	0		

- Ventilation module 301/CS must be fitted every 2 contactors when mounting contactors side by side.



301/B6 301/B8 301/B12

BELL TRANSFORMER

DESCRIPTION	MODULES	LIST No
12V bell transformer	2	303/B12
6V bell transformer	1	301/B6
8V bell transformer	1	301/B8
12V bell transformer	1	301/B12

- With overload protection.

TWILIGHT SWITCH

DESCRIPTION	MODULES	LIST No
2–2000 lux c/w sensor	3	303/P2

- Sensor to IP54.
- Control modules can be installed in Starbreaker enclosures either as part of the consumer unit or separately mounted.



ACCESSORIES

Way blanking plate	443
Way blanking plate - MCB style	CSB1
MCB Locking Device	MCBLD
Way blanking plate for 915/0W	943W
Brass padlock and keys	748
Insulating Grommet	741

For Technical details see page 205 & 185.

DOMESTIC CIRCUIT PROTECTION

The Loadstar range of domestic circuit protection has built-in flexibility without compromise.



MAIN SWITCH CONSUMER UNITS

No of outgoing MCB Ways	Rating	Insulated	Surface Metalclad
1	63A	18LC1	
2	40A	18LC2	
2	63A	18LC2/63	18PS2
5	100A	18LC5	18PS5
8	100A	18LC8	18PS8
11	100A	18LC11	18PS11
14	100A	18LC14	18PS14
19	100A	18LC19	18PS19

Supplied with Main Switch and Busbar.
Flush Metalclad versions available on request.



RCCB CONSUMER UNITS

No of outgoing MCB Ways	Rating	Insulated	Metalclad
1	63A 30mA	18LC1/63/30	
2	63A 30mA	18LC2/63/30	18PR2/63/30
5	80A 30mA	18LC5/80/30	18PR5/80/30
8	80A 30mA	18LC8/80/30	18PR8/80/30
11	80A 30mA	18LC11/80/30	18PR11/80/30
14	80A 30mA	18LC14/80/30	18PR14/80/30
19	80A 30mA	18LC19/80/30	18PR19/80/30

Supplied with RCCB Incomer and Busbar.



SPLIT LOAD CONSUMER UNITS - FLEXIBLE

No of outgoing MCB Ways	Rating	Insulated	Metalclad
9	80A 30mA	18LC9SL	18PRSL09
12	80A 30mA	18LC12SL	18PRSL12
17	80A 30mA	18LC17SL	18PRSL17

2 BANK ALL INSULATED

No of outgoing MCB Ways	Description	List No
20	Split Load TOP M.S. + 10 BTM RCD + 10	18LC220SL
24	Enclosure Only	18LC224



ACCESSORIES

Description	List No
Busbar Replacement MS+5	18LC5BK
Busbar Replacement MS+8	18LC8BK
Busbar Replacement MS+11	18LC11BK
Busbar Replacement MS+14	18LC14BK
Busbar Replacement MS+19	18LC19BK
Busbar Replacement RCD+5	18LC5RCDBK
Busbar Replacement RCD+8	18LC8RCDBK
Busbar Replacement RCD+11	18LC11RCDBK
Busbar Replacement RCD+14	18LC14RCDBK
Busbar Replacement 9 way Split Load	18LC9SLBK
Busbar Replacement 12 way Split Load	18LC12SLBK
Busbar Replacement 17 way Split Load	18LC17SLBK
Way Blanking Plate	443



6KA SINGLE POLE MCBs

MCB Rating	Modules	List No
6	1	6M1B06
10	1	6M1B10
16	1	6M1B16
20	1	6M1B20
25	1	6M1B25
32	1	6M1B32
40	1	6M1B40
50	1	6M1B50

- Type B classification (3-5 In)
- BS EN 60898; 6kA - 240V 50Hz



TRIPLE POLE & NEUTRAL 415V, 50HZ AC

Description	List No
32A With Switched Neutral, for surface mounting in a metal enclosure	1932
32A With Switched Neutral, for flush mounting in a metal enclosure	1932/F

- Terminal Capacity 10mm

Approximate Dimensions

Surface: Height 133mm, Width 114mm, Depth 61mm.
 Flush: Height 150mm, Width 125mm, Depth 61mm.



100A DP DOMESTIC SWITCH FUSE

Description	List No
BSEN 60947-3 100A Switch Fuse	191002

Approximate Dimensions: Height 305mm, Width 178mm, Depth 76mm.

The Crabtree 100A DP Domestic Switch Fuse has a robust steel construction and is complete with a 100A Double Pole incoming Isolator feeding a CANMASTER fuse holder which can be fused at either 80A or 100A.

Busman Fuses - OSD80 & OSD100.

The unit is designed to accept an Industry standard BS88 gG 100A fuse.
 Isolator Terminal capacity is 50mm².

LIFESTAR**RESIDUAL CURRENT DEVICES**

Crabtree RCDs comply fully with BS EN 61008 to Type A and Type AC classification.

TYPE A

Pulsating dc (half wave rectified) waveform



Pulsating dc (chopped) waveform



Pulsating dc (chopped) waveform with a constant dc component

TYPE AC

Normal ac waveform

Lifestar offers you the protection of Residual Current Devices (RCDs) for any industrial, commercial or domestic application. RCDs rated from 13A to 100A are available in sensitivities from 10mA to 300mA providing safe, secure protection against fire or shock risks caused by earth fault currents.



Suitable for screw fixing or DIN rail mounting.

Wide range of enclosures available for separately mounting RCCBs, MCBs and RCBOs.

13A SAFETY SOCKETS WITH RCD PROTECTION

The Lifestar safety socket is available in 2 gang versions with 30mA sensitivity, enabling products to be precisely matched to specific applications. All safety sockets incorporate pulsating dc fault current protection (Type A operation).

- Double pole operation, 3mm contact gap.
- Trip free mechanism for automatic disconnection of supply.
- Enables mounting in standard 25mm deep box (moulded variant).
- Mechanical indication of contact position.
- Unique labyrinth switch design minimises visible arc flash and prevents front access to live parts.
- Surface mounted units supplied with Birch Grey mounting box.
- Interior units available for mounting into OEM equipment.
- Comply with BS 7288.
- RCD sockets are all passive control electromechanical operation and will not trip on loss of mains supply.



4406/A03

MOULDED

PACK QTY

2 gang switched with neon indicator, 30mA tripping current 1 **4406/A03**

Dimensions 146mm x 86mm

Mounting boxes 9048 surface, SB665 flush galv. or SB629 dry lining



4416/A03BZ

FLUSH METAL PLATE*

PACK QTY

2 gang switched with neon indicator, 30mA tripping current 1 **4416/A03_***

Dimensions 146mm x 86mm

Mounting boxes 9223/BG surface, SB625 flush galv. or SB629 dry lining

* Metal plate variants available in Satin Chrome (SC), Bronze (BZ) and Polished Stainless Steel (PSS) – Add suffix to List No. eg 4416/A03SC.
For further specification details of finishes see page 202.



4416/A103

INTERIOR

PACK QTY

2 gang switched with neon indicator, 30mA tripping current 1 **4416/A103**



4426/A03BG

SURFACE METALCLAD

PACK QTY

2 gang switched with neon indicator, 30mA tripping current 1 **4426/A03BG**

Dimensions 142mm x 82mm x 44mm

For boxes less knockouts see page 84.



4416/A03BG

FLUSH METALCLAD

PACK QTY

2 gang switched with neon indicator, 30mA tripping current 1 **4416/A03BG**

Dimensions 146mm x 86mm

Mounting boxes 9223/BG surface, SB625 flush galv. or SB629 dry lining



All complete with two earth terminals to enable installation to comply with section 607 (wiring regulations).



228/030



246/030



221/100TD

241/100TD



223/A010

244/A030

RESIDUAL CURRENT CIRCUIT BREAKERS

TYPE AC 

SENSITIVITY

2 POLE

CURRENT RATING (A)	MODULES	30mA	100mA	300mA
32	2	223/030	-	-
40	2	224/030	224/100	224/300
63	2	226/030	226/100	226/300
80	2	228/030	228/100	-
100	2	221/030	221/100	221/300

4 POLE

CURRENT RATING (A)	MODULES	30mA	100mA	300mA
32	4	243/030	-	-
40	4	244/030	244/100	244/300
63	4	246/030	246/100	246/300
100	4	241/030	241/100	241/300

TIME DELAY - RCCB

TYPE AC 

SENSITIVITY

2 POLE

CURRENT RATING (A)	MODULES	100mA
100	2	221/100TD

4 POLE

CURRENT RATING (A)	MODULES	100mA
100	4	241/100TD

RESIDUAL CURRENT CIRCUIT BREAKERS

TYPE A 

SENSITIVITY

2 POLE

CURRENT RATING (A)	MODULES	10mA	30mA
16	2	216/A010	-
32	2	223/A010	-
40	2	-	224/A030
63	2	-	226/A030
80	2	-	228/A030
100	2	-	221/A030

4 POLE

CURRENT RATING (A)	MODULES	10mA	30mA
40	4	-	244/A030
63	4	-	246/A030
100	4	-	241/A030

These units are not interchangeable with the RCCBs now available in the Starbreaker range illustrated on page 105.

- BS EN 61008; IEC 1008.
- Terminal capacities: – 50mm².



MODULAR ENCLOSURES

3 MODULE

DESCRIPTION	LIST No
General purpose enclosure (IP20)	744/3
● Complete with DIN rail. ● Features sealable cover. ● Supplied with cut-out of 2 module size. ● Converts to 3 module by removing half blanks.	
All purpose enclosure (IP65)	CBE/3
● Complete with DIN rail. ● Features sealable cover and hinged protective cover. ● Polycarbonate construction. ● Accessories available. ● Self-adhesive way label provided.	

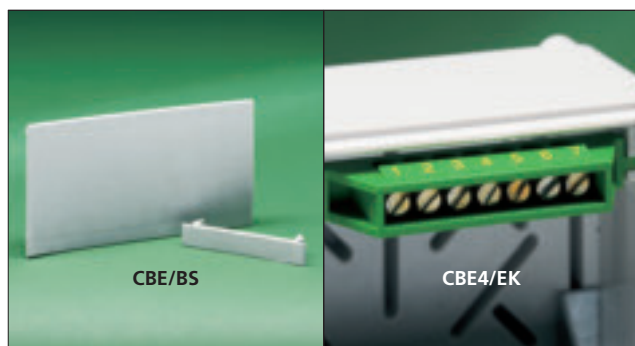
Note

Max cable capacity 10mm². For increased cable sizes use 4 module enclosure List No. **CBE/4** (up to 25mm²).



4 MODULE

DESCRIPTION	LIST No
General purpose enclosure (IP20)	744/4
● Complete with DIN rail and earth bar. ● Features sealable cover.	
All purpose enclosure (IP65)	CBE/4
● Suitable for all ratings. ● Complete with DIN rail. ● Features sealable cover and hinged protective cover. ● Polycarbonate construction. ● Accessories available. ● Self-adhesive way label provided.	
Fabricated steel enclosure (IP20)	844/4
● Suitable for all ratings. ● Complete with DIN rail and earth terminal. ● Supplied with blank plate for converting to 3 module opening.	



ACCESSORIES FOR ALL PURPOSE ENCLOSURES

EARTH TERMINAL	LIST No
5 way, 3 module	CBE3/EK
7 way, 4 module	CBE4/EK
NEUTRAL TERMINAL	
5 way, 3 module	CBE3/NK
7 way, 4 module	CBE4/NK
Blanking strip	CBE/BS
External fixing bracket	ME/FB

Dimensions see page 257-258.



MCBS AND DISTRIBUTION BOARDS

Devices

- 6kA and 10kA Ranges
- 6A to 63A
- Single, Double and Triple Pole
- Type B, C & D
- Single and Double module RCBOs
- 35mm² Cable Terminals
- BS EN 60898

System

- 125A and 250A TP Boards
- Incoming Switch Disconnectors up to 250A
MCCBs up to 200A
RCCBs up to 100A
- IP31 and IP66 Metal Enclosures for TP Boards
- IP31 Metal and IP65 Insulated Enclosures for SP Boards
- DIN Rail/Service Centres available 'Built in' or 'Add on'
- Paint Finish, Epoxy Powder, Light Grey RAL 7035
 - Custom Built 'Specials' Service



18LS08

LOADSTAR STANDARD 'L' BOARD 125A MAX INCOMER

No of Ways	Surface	Flush
4	18LS04	18LF04
6	18LS06	18LF06
8	18LS08	18LF08
12	18LS12	18LF12
16	18LS16	18LF16
20	18LS20	18LF20
24	18LS24	18LF24

- Incoming options - **order separately**:
125A Switch Disconnector TP/4P - 50mm²
100A RCCB 4P - 50mm²
Direct Cable - 50/70mm²
- Busbars rated 200A
- Full compliment of Neutral and Earth terminals plus spares:
Incoming maximum 70mm²
Outgoing maximum 25mm²
- Facility included to allow fixture of Double Earth bars - High Integrity Earth to regulation 607 section 543
- Clean Earth kit available
- All boards supplied as standard with hinged outer door and catch - lock extra - and removable top/bottom gland plates



18LF08

ADD-ON 12 WAY LOADSTAR 'L' BOARD

No of Ways	Surface
12	18LS12A
Vertical Connection Kit (Inc. conns.)	18LK12V

- 18LS12A 'Add-on' Board is designed to fit above 16, 20 & 24 way 'L' Boards, to create 28, 32 & 36 way TP Boards
- 18LK12V kit connects 18LS12A to 16, 20 & 24 way Boards

LOADSTAR 'L' BOARD METER PACK

An 'Add-on' Assembly, 245mm high, to be fitted below an 'L' Board, comprising Enclosure with slotted front plate and hinged door, Digital meter, pulsed output, offering Amps, Volts and Kwh readout, 3 off current transformers, 125A with associated fuses and wiring.

	LIST No
125A CTs	18ML125



18LS08D

LOADSTAR BOARD 125A WITH INTEGRAL DIN RAIL

No of Ways	Surface
4	18LS04D
8	18LS08D
12	18LS12D
16	18LS16D
20	18LS20D

All the facilities of the Standard board above, plus:

- DIN rail to accommodate up to 18 modules of control devices - Contactor, Timer etc.
- DIN Rail easily removed to assist cabling.
- All devices - incomer, MCBs & Control equipment - behind common front plate and outer door.

LOADSTAR IP66 125A BOARD

No of Ways	H	W	D	Surface
4	800	500	215	IP18LS04
6	800	500	215	IP18LS06
8	800	500	215	IP18LS08
12	1000	500	215	IP18LS12
16	1000	500	215	IP18LS16

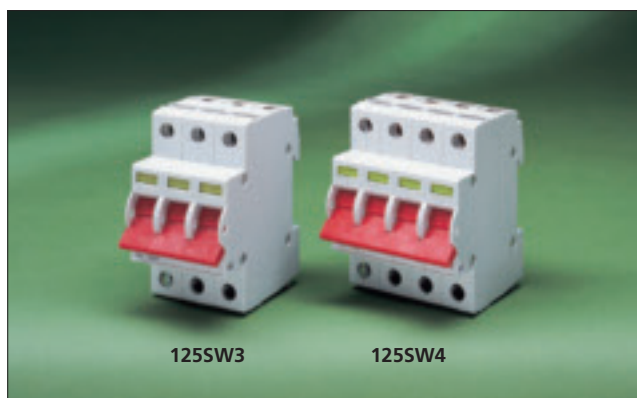
Boards consist of IP66 steel enclosure door, with 'L' Board interior. Incomer, kit and MCB extra as for 'L' Boards above.



18AS2



18DIN18



125SW3

125SW4



18LKD50

18R100/30/4



18LK125



18LKD70
(fitted)

DINRAIL, ROWBOARD, SERVICE CENTRES

Rowboard:

- Suitable for 'Stand-Alone' use or 'Add-On' above Standard 'L' type board.
- Each row will accommodate 18 off 18mm module wide DIN Rail mounted devices.
- Main Neutral and Earth Bars included, along with provision for additional 'Mini' Neutral and Earth bars.

No of Rows	Surface	Flush
1	18AS1	18AF1
2	18AS2	18AF2
3	18AS3	18AF3
4	18AS4	18AF4
5	18AS5	18AF5

Service Centre/DIN Rail Board:

- Suitable **only** for fixture above or below Standard 'L' Type board.
- Equipped with easily removed DIN Rail to accommodate 18 or 36, 18mm module wide DIN Rail mounted devices.

See page 114 for DIN Rail Control Devices

18 Module	18DIN18
36 Module (2 Rows of 18)	18DIN36

Cable Spreader Box

Add on Enclosure, 243mm high, Blank front cover plate	18SB
---	-------------

LOADSTAR STANDARD 'L' BOARD: INCOMING OPTIONS

Order Device and Kit (where required) separately.

Switch Disconnecter, modular (50mm ²)	Device	Kit
40A TP	40SW3	
63A TP	63 SW3	None
100A TP	100SW3	Required
125A TP	125SW3	
100A DP	100SW2	18LKTPSP
125A DP	125SW2	18LKTPSP
40A 4P	40SW4	18LK125
63A 4P	63SW4	18LK125
100A 4P	100SW4	18LK125
125A 4P	125SW4	18LK125

RCCB (50mm ²)	Device	Kit
40A 4P 30mA	18R40/30/4	18LK125
100mA	18R40/100/4	18LK125
300mA	18R40/300/4	18LK125
63A 4P 30mA	18R63/30/4	18LK125
100mA	18R63/100/4	18LK125
300mA	18R63/300/4	18LK125
100A 4P 30mA	18R100/30/4	18LK125
100mA	18R100/100/4	18LK125
300mA	18R100/300/4	18LK125
100A 2P 100mA Time Delay	221/100TD	18LK125
100A 4P 100mA Time Delay	241/100TD	18LK125

Special oversize Incoming Cable connection kit for use with TP Sw Disc above.

Accomodate up to 120mm² TP Sw Disc only. **18LK120**

Direct Connection	Device	Kit
Incoming Cable Connection (50mm ²)	18LKD50	None
Outgoing Cable Connection Kit/Shroud (50mm ²) (Set of 3 Cable Clamps + Shroud)	18LKD70	Required

125A TP to SP conversion

	Device	Kit
DP Switch Disconnecter (See above)	-	18LKTPSP
or RCCB (See above & Page 120)	-	18LKTPSP



LOADSTAR STANDARD 'H' BOARD 250A MAX INCOMER

No of Ways	Surface (250A)	Flush (200A)
4	18HS04	18HF04
6	18HS06	18HF06
8	18HS08	18HF08
12	18HS12	18HF12
16	18HS16	18HF16
20	18HS20	18HF20
24	18HS24	18HF24

Boards are supplied, as standard, as shown. The Front plate and door to cover the lower half of the board are supplied as part of the 'Incoming Kit' - page 127.

- Incoming options - order separately:
 - 200A Switch Disconnecter TP - 120mm² (Cable Clamps)
 - 250A Switch Disconnecter TP - 185mm² (Cable Sockets)
 - 200A MCCB TP/4P - 150mm² (Cable Clamps)
 - Direct Cable - 150mm² (Cable Clamps)
- Busbars rated 250A
- Full compliment of Neutral and Earth terminals plus spares:
 - Incoming maximum 120mm²
 - Outgoing maximum 25mm²
- Facility included to allow fixture of Double Earth bars - High Integrity Earth to regulation 607 section 543
- Clean Earth kit available
- All boards supplied as standard with hinged outer door and catch - lock extra - and removable top/bottom gland plates

ADD-ON 12 WAY LOADSTAR 'H' BOARD

No of Ways	Surface
12	18HS12A
Vertical Connection Kit (Inc. conns.)	18HK12V

- 18HS12A 'Add-on' Board is designed to fit above 16, 20 & 24 way 'H' Boards, to create up to 28, 32 & 36 way TP Boards
- 18HK12V kit connects 18HS12A to 16, 20 & 24 way Boards

LOADSTAR 'H' BOARD METER PACK

An 'Add-on' Assembly, 245mm high, to be fitted below an 'H' Board, comprising Enclosure with slotted front plate and hinged door, Digital meter, pulsed output, offering Amps, Volts and Kwh readout, 3 off current transformers, 250A with associated fuses and wiring.

	LIST No
250A CTs	18MH250

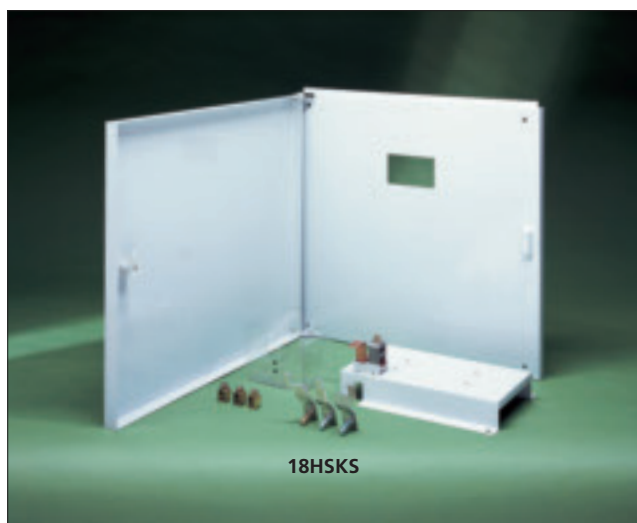
LOADSTAR IP66 125A BOARD

No of Ways	H	W	D	Surface
4	800	500	215	IP18LS04
6	800	500	215	IP18LS06
8	800	500	215	IP18LS08
12	1000	500	215	IP18LS12
16	1000	500	215	IP18LS16

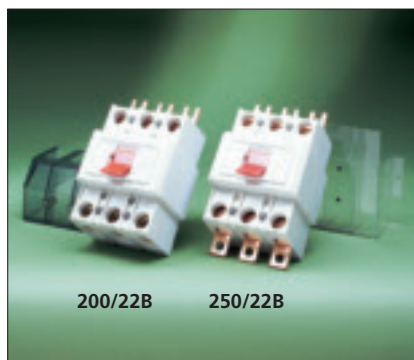
Boards exclude Incomers & MCBs - See Pages 125 & 129
Paint finish, shade 697 to BS 381C.

LOADSTAR IP66 200A BOARD

Please Contact Crabtree Technical Sales for Details.


18DIN18
(fitted above
'H' Board)


18HSKS

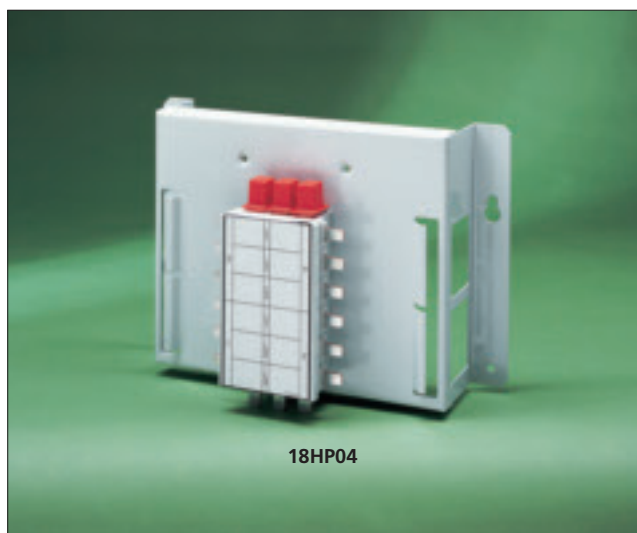


200/22B

250/22B



7PDJN3200



18HP04

DINRAIL, ROWBOARD, SERVICE CENTRES

Rowboard:

- Suitable for 'Stand-Alone' use or 'Add-On' above Standard 'H' type board.
- Each row will accept 18 off 18mm module wide DIN Rail mounted devices.
- Main Neutral and Earth Bars included, along with provision for additional 'Mini' Neutral and Earth bars.

No of Rows	Surface	Flush
1	18AS1	18AF1
2	18AS2	18AF2
3	18AS3	18AF3
4	18AS4	18AF4
5	18AS5	18AF5

Service Centre/DIN Rail Board:

- Suitable only for fixture above Standard 'H' Type board.
 - Equipped with easily removed DIN Rail to accommodate 18 or 36, 18mm module wide DIN Rail mounted devices.
- See page 114 for DIN Rail Control Devices

18 Module	18DIN18
36 Module (2 Rows of 18)	18DIN36

Cable Spreader Box

Add on Enclosure, 243mm high, Blank front cover plate	18SB
---	-------------

LOADSTAR STANDARD 'H' BOARD: INCOMING OPTIONS

Order Device and Surface/Flush Kit separately.

Switch Disconnecter	Device	Surface Kit
200A, TP, 120mm ² max via clamps	200/22B	18HSKS
250A, TP, 185mm ² max via sockets	250/22B	18HSKS

MCCB

'J' Frame, 200A, TP, MCCB	7PBJN3200	18HSKJ
'J' Frame, 200A, TP, Sw Disc.	7PDJ3200	18HSKJ
'J' Frame, 200A, 4P, MCCB	7PBJN3N200	18HSKJ
'J' Frame, 200A, 4P, Sw Disc.	7PDJ3N200	18HSKJ

Direct Connection

150mm ² Incoming Cable-Direct	Device	Flush Kit
	N/A	18HSKD
	Device	Flush Kit
200/250A, TP, Sw Disc.	As Above	18HFKS
200A, 'J' Frame MCCB/Sw Disc.	As Above	18HFKJ
150mm ² Direct Cable	N/A	

'H' Board Incomer. Kits include appropriate mounting plate, connections, shrouds, Front Plate and Door, as required.

Flush Kits Alternative

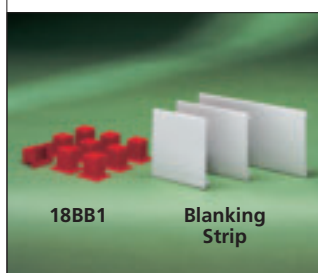
Switch Disconnecter	18HFKS
MCCB	18HFKJ
Direct	18HFKD

PAN ASSEMBLIES 250A TP

No of TP ways	List No	List No
4	18HP04	16
8	18HP08	20
12	18HP12	24

- 250A TP Busbar with half DIN Rail fixings for MCBs.
- Add Incoming Kit required to accommodate Incoming supply - see below.

Cable Connection Kits	Kit
50mm ² cable, 3 Clamps & Shroud	18LKD70



SP MCB DISTRIBUTION BOARDS STEEL IP31

Board supplied with 125A DP Switch Disconnecter.
MCBs to be specified and ordered separately.

No of outgoing MCB Ways	Surface	Flush
5	18SN05	18FN05
8	18SN08	18FN08
11	18SN11	18FN11
14	18SN14	18FN14
19	18SN19	18FN19

- Board supplied with hinged metal door and catch. Lock extra.
- Board supplied with integral Neutral and Earth bars.
- 125A Single Pole fixed busbar with integral shield.

SP MCB DISTRIBUTION BOARDS INSULATED IP65

Board supplied with DP Switch Disconnecter, or 30mA DP RCD.
MCBs to be specified and ordered separately.

No of outgoing MCB Ways	Inc. Isol.	Inc. RCD
3 (125mmw) c/w 63A Isol or 63A RCD	IP1803SW	IP1803EL
7 (200mmw) c/w 100A Isol or 80A RCD	IP1807SW	IP1807EL
10 (250mmw) c/w 100A Isol or 80A RCD	IP1810SW	IP1810EL

- Pre Assembled IP65 sealing membranes.
- Transparent hinged covers - sealable.
- 200mm high, 120mm deep.
- Flame/Impact resistant polystyrene, colour RAL 7035.
- Integral Neutral and Earth Bars.
- Busbar can be cut to length to suit either total number of SP Ways as MCBs only or MCBs and 18mm module wide DIN rail devices.

INDIVIDUAL MCB ENCLOSURES IP31

	Insulated	Metalclad
2 Modules wide	18GP2S	18GP2M
4 Modules wide	18GP4S	18GP4M

GENERAL LOADSTAR ACCESSORIES TP & SP

	List No
Cylinder Lock & Key (TP+SP Metal IP31 Boards)	16CL
MCB Locking device (excl. lock)	MCBLD
Padlock & Key for use with MCBLD	748
Padlockable Cylinder Lock & Key (TP Boards)	16PL
Clean Earth Bar Kit 'L' & 'H' Boards only. (4 to 12 way=1 kit, 16 to 24 way=2 kits).	18CEBK
Blanking Strip - 2 lengths each 12 modules wide	18CB12
Blanking Strip - 4 lengths each 3 modules wide	18CB3
Blanking Strip - 12 Individual 1 module wide pieces	18CB2
Blanking Strip - 6 Individual 1 module wide pieces	18CB1
Busbar cross connector insulator - pack of 9	18BB1
Clip In Blank SP Moulding	CSBC
SP MCB size Blank (shields MCB & Busbar Terminal)	CSB1
Cable clamp assembly (70mm ²) - pack of 3	17CC
Spare TP DB Gland Plate	18GP

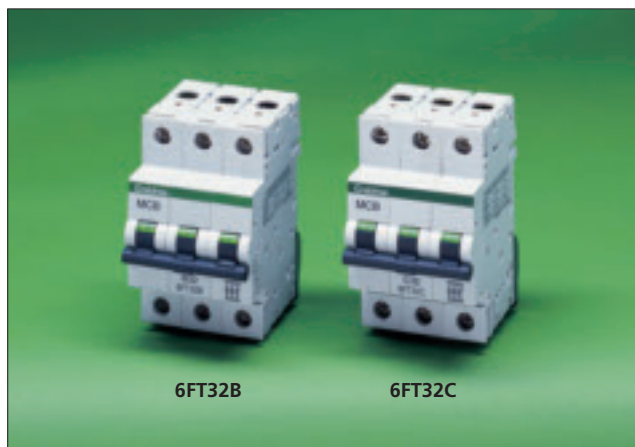
ADDITIONAL EARTH BAR KITS

Additional Earth Bars to fit Standard 'L' and 'H' boards

No of Ways	List No	No of Ways	List No
4	18EB04	16	18EB16
6	18EB06	20	18EB20
8	18EB08	24	18EB24
12	18EB12		

Earth and Neutral bar, 10mm² cable max, for use with DIN Rail

	NEUTRAL	EARTH
7 Terminals	CLNB07	CLEB07
12 Terminals	CLNB12	CLEB12
15 Terminals	CLNB15	CLEB15



SINGLE POLE MCBs

RATING AMPS	6kA			10kA		
	B TYPE	CTYPE	D TYPE	B TYPE	CTYPE	D TYPE
6A	6FS06B	6FS06C	6FS06D	6HS06B	6HS06C	6HS06D
10A	6FS10B	6FS10C	6FS10D	6HS10B	6HS10C	6HS10D
16A	6FS16B	6FS16C	6FS16D	6HS16B	6HS16C	6HS16D
20A	6FS20B	6FS20C	6FS20D	6HS20B	6HS20C	6HS20D
25A	6FS25B	6FS25C	6FS25D	6HS25B	6HS25C	6HS25D
32A	6FS32B	6FS32C	6FS32D	6HS32B	6HS32C	6HS32D
40A	6FS40B	6FS40C	6FS40D	6HS40B	6HS40C	6HS40D
50A	6FS50B	6FS50C	6FS50D	6HS50B	6HS50C	6HS50D
63A	6FS63B	6FS63C	6FS63D	6HS63B	6HS63C	6HS63D

DOUBLE POLE MCBs

RATING AMPS	6kA			10kA		
	B TYPE	CTYPE	D TYPE	B TYPE	CTYPE	D TYPE
6A	6FD06B	6FD06C	6FD06D	6HD06B	6HD06C	6HD06D
10A	6FD10B	6FD10C	6FD10D	6HD10B	6HD10C	6HD10D
16A	6FD16B	6FD16C	6FD16D	6HD16B	6HD16C	6HD16D
20A	6FD20B	6FD20C	6FD20D	6HD20B	6HD20C	6HD20D
25A	6FD25B	6FD25C	6FD25D	6HD25B	6HD25C	6HD25D
32A	6FD32B	6FD32C	6FD32D	6HD32B	6HD32C	6HD32D
40A	6FD40B	6FD40C	6FD40D	6HD40B	6HD40C	6HD40D
50A	6FD50B	6FD50C	6FD50D	6HD50B	6HD50C	6HD50D
63A	6FD63B	6FD63C	6FD63D	6HD63B	6HD63C	6HD63D

TRIPLE POLE MCBs

RATING AMPS	6kA			10kA		
	B TYPE	CTYPE	D TYPE	B TYPE	CTYPE	D TYPE
6A	6FT06B	6FT06C	6FT06D	6HT06B	6HT06C	6HT06D
10A	6FT10B	6FT10C	6FT10D	6HT10B	6HT10C	6HT10D
16A	6FT16B	6FT16C	6FT16D	6HT16B	6HT16C	6HT16D
20A	6FT20B	6FT20C	6FT20D	6HT20B	6HT20C	6HT20D
25A	6FT25B	6FT25C	6FT25D	6HT25B	6HT25C	6HT25D
32A	6FT32B	6FT32C	6FT32D	6HT32B	6HT32C	6HT32D
40A	6FT40B	6FT40C	6FT40D	6HT40B	6HT40C	6HT40D
50A	6FT50B	6FT50C	6FT50D	6HT50B	6HT50C	6HT50D
63A	6FT63B	6FT63C	6FT63D	6HT63B	6HT63C	6HT63D

RCBOs SINGLE MODULE

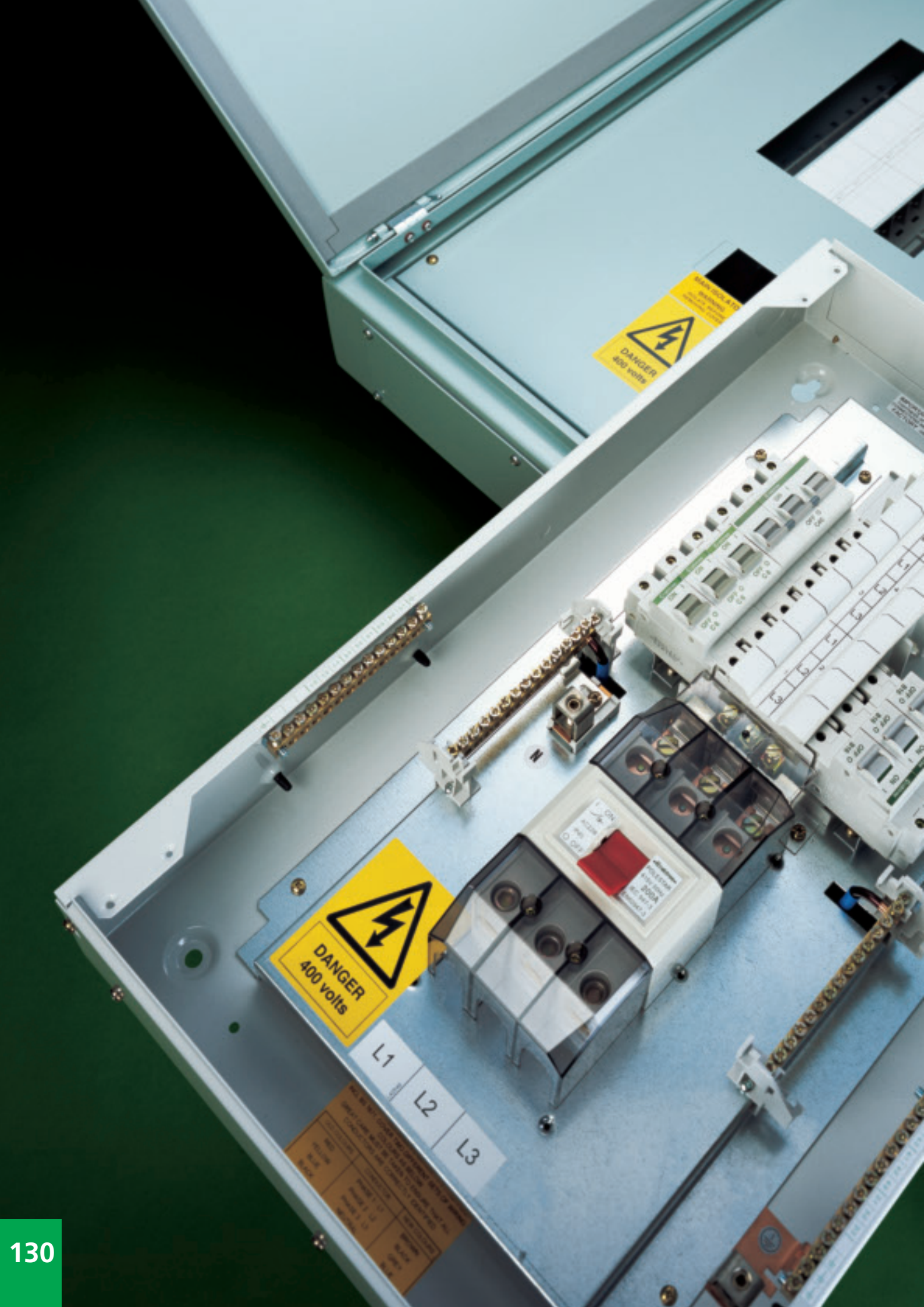
	6KA	10KA
RATING		
6A	6FSR06/30C	6HSR06/30C
10A	6FSR10/30C	6HSR10/30C
16A	6FSR16/30C	6HSR16/30C
20A	6FSR20/30C	6HSR20/30C
32A	6FSR32/30C	6HSR32/30C
40A	6FSR40/30C	6HSR40/30C

18mm wide, suitable for use in Loadstar Distribution Boards 30mA sensitivity, 'C' characteristic, unswitched Neutral.

RCBOs DOUBLE MODULE

	6KA	10KA
RATING		
6A	6FDR06/30C	6HSDR06/30C
10A	6FDR10/30C	6HSDR10/30C
16A	6FDR16/30C	6HSDR16/30C
20A	6FDR20/30C	6HSDR20/30C
32A	6FDR32/30C	6HSDR32/30C
40A	6FDR40/30C	6HSDR40/30C

36mm wide, NOT suitable for use in Loadstar Distribution Boards 30mA sensitivity, 'C' characteristic, Switched Neutral.



MCBS AND DISTRIBUTION BOARDS

- 16kA, 6A to 63A
- Single, Double and Triple Pole
- Type B, C and D
- Switched Neutral RCBO
- 25mm wide module
- BS EN 60898

System

- IP31 and IP66 Enclosures
- TP Boards rated 200A
- SP Boards rated 100A
- Paint Finish, Epoxy Powder, Light Grey RAL 7035 for standard boards and shade 697 to BS381C for IP66
- Custom Built 'Specials' Service



1806 Enclosure



1806/21A



1806/33A



1818/21A

MAIN SWITCH DISCONNECTOR

MCB ways	LIST No
6	1806/21A
9	1809/21A
13	1813/21A
18	1818/21A
26	1826/21A

- 100A double pole main switch control for all MCB ways.
- 100A Busbar.
- 18 and 26 way distribution boards supplied in 2 bank format.

MAIN INCOMING RCCB



MCB ways	RCCB rating	type	LIST No
6	80A 30mA	AC	1806/33A
9	80A 30mA	AC	1809/33A
13	80A 30mA	AC	1813/33A

6	80A 100mA	AC	1806/31A
9	80A 100mA	AC	1809/31A
13	80A 100mA	AC	1813/31A

- 80A double pole RCCB control for all MCB ways.
- 100A Busbar.

SINGLE RCCB SPLIT-LOAD



Total MCB ways	RCCB ways	RCCB rating	RCCB type	LIST No
11	7	80A 30mA	AC	1811/S43A
11	6	80A 30mA	AC	1811/S53A
11	4	80A 30mA	AC	1811/S73A
11	7	80A 100mA	AC	1811/S41A
11	6	80A 100mA	AC	1811/S51A
11	4	80A 100mA	AC	1811/S71A

- 100A double pole main switch control for all MCB ways.
- 100A Busbar.

DUAL RCCB SPLIT-LOAD



Total MCB ways	RCCB ways	RCCB rating	RCCB type	LIST No
8	3+5	63A 100mA & 80A 30mA	AC	1808/S313A
8	4+4	63A 100mA & 63A 30mA	AC	1808/S413A
8	5+3	80A 100mA & 63A 30mA	AC	1808/S513A

- 100A double pole main switch control for all MCB ways.

DIRECT CABLE CONNECTION

MCB ways	LIST No
6	1806/1A
9	1809/1A
13	1813/1A

- Supplied as a busbar connected unit where isolation is provided outside of board.
- Distribution board rating 100A.

CONTROL MODULE

	LIST No
13 x 18mm spaces with DIN Rail. Inc. Neutral & Earth	1813/MSE

- This Unit fits above 1813 Ref. enclosures.



1812/0B



IP1806/0B



18DIN18
fitted above
1812/0B



125/21BA



200/22B

PRIMARY DISTRIBUTION BOARDS

Triple Pole MCB ways	Surface IP31	Surface IP66
4	1804/0B	IP1804/0B
6	1806/0B	IP1806/0B
8	1808/0B	IP1808/0B
10	1810/0B	n/a
12	1812/0B	IP1812/0B
16	1816/0B	IP1816/0B
20	1820/0B	n/a
24	1824/0B	n/a

- Both boards readily accept incoming devices below.
- All distribution boards rated at 200A.
- Includes all phase, neutral and earth busbars.
- Facility included to allow fixture of Double Earth Bars, High Integrity Earth to Regulation 607, Section 543.
- All boards supplied as standard with hinged outer door & catch, (lock extra), and removable top/bottom gland plates.
- For Flush board add suffix F, IP31 only.

IMPORTANT

Under no circumstances should cable connections be made direct to the phase busbars. A suitable main incoming device must be fitted to ensure adequate busbar support ie: Isolator or 1600/1B.

Spreader box	LIST No
for use where larger incoming cables are required	18SB
Control Module	
18 - off 18mm wide modules	18DIN18

POLESTAR METER PACK

An 'Add-on' Assembly, 210mm high, to fit below a board, comprising:
Enclosure with slotted front plate and door.
Digital Meter, pulsed output, offering Amps, Volts and Kwh readout.
3 off 125A or 250A Current Transformers, with associated fuses and wiring.

	LIST No
125A CTs	18ML125
200A CTs	18MH200

INCOMERS:

SWITCH DISCONNECTORS

Single Phase & Switched Neutral	LIST No
125A single phase & neutral switch disconnector	125/21BDP
200A single phase & neutral switch disconnector	200/22BDP

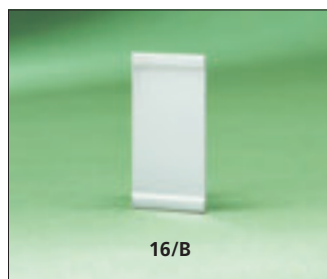
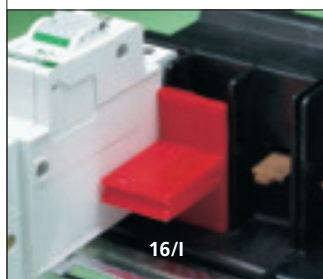
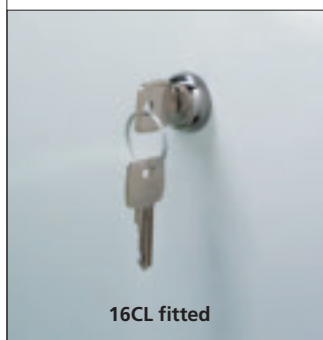
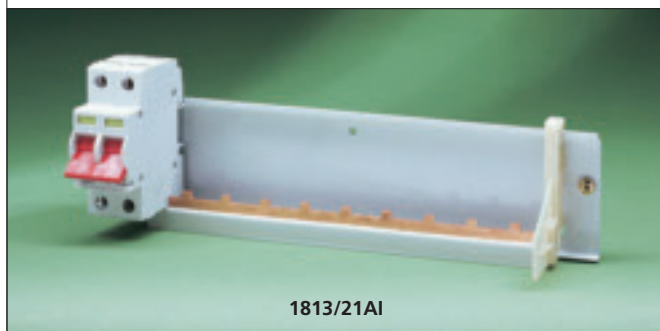
Triple Pole	LIST No
125A Modular triple pole switch disconnector	125/21BA
125A Heavy duty triple pole switch disconnector	125/21B
200A Heavy duty triple pole switch disconnector	200/22B

- 125A Modular has 50mm² capacity
- 125A Heavy Duty has 70mm² capacity
- 200A Heavy Duty has 120mm² capacity

100A TRIPLE POLE & NEUTRAL RCCBs

Sensitivity (mA)	Rating (A)	LIST No
100	100	641/100B
30	100	641/030B

- Type AC.
- Complete with supply and load side terminal shrouds.
- Terminals accept up to 50mm² cable.



BACKPLATES

PRIMARY BACKPLATE ASSEMBLIES TRIPLE POLE

		LIST No
Triple Pole MCB ways	Standard	Short
4	1804/0BI	1804/0BIS
6	1806/0BI	1806/0BIS
8	1808/0BI	1808/0BIS
10	1810/0BI	1810/0BIS
12	1812/0BI	1812/0BIS
16	1816/0BI	1816/0BIS

- For use in customers own enclosures.
- Complete with 200A rated three phase busbars.
- Neutral and earth busbar assemblies included for OBI units only

Important

Under no circumstances should cable connections be made direct to the phase busbars. A suitable mains incoming device must be fitted to ensure adequate busbar support (Isolator on Standard, 1600/1B on Short).

		LIST No
Incoming Busbar connecting assembly		1600/1B

- Direct cable termination assembly for TP Boards & Backplates.
- Busbar connecting assembly terminals accept up to 120mm² cable.
- Complete with terminal shroud.

PRIMARY BACKPLATE ASSEMBLIES SINGLE POLE

Single pole MCB ways	Main Switch Disconnecter	Direct Cable Connection
6	1806/21AI	1806/1AI
9	1809/21AI	1809/1AI
13	1813/21AI	1813/1AI

ACCESSORIES

LIST No		
Busbar paralleling assembly	Converts TP & N board to SP & N operation	16/P
Door locking assembly	For Metal IP31 SP & TP Boards	16CL
Universal MCB locking device	Suitable for all Crabtree MCBs	MCBLD
Padlock & 2 keys	For use with MCB handle locking device	748
Way blanking plate	Covers one (SP) MCB way	16/B
Insulating tag	Insulates spare (SP) MCB way on line busbar	16/I
Neutral link	Affords disconnection of neutral for testing	16/N
Spare TP DB Gland Plate		18GP

ENCLOSURES

		LIST No
General purpose (3 x 18mm module) enclosure		1603/MSE

ADDITIONAL EARTH BAR KITS

No. of Ways	LIST No	No. of Ways	LIST No
4	18EB04	10	18EB10
6	18EB06	12	18EB12
8	18EB08	16	18EB16

CLEAN EARTH BAR KITS

		LIST No
(4 to 12 Way 1 Kit, 16 Way 2 Kits)		18CEBK



60B/32

60B/40



62B/10



63C/16

63C/32



602C/323

MINIATURE CIRCUIT BREAKERS (MCB)

Current Rating (A)	Single Pole		
	Type B LIST No	Type C LIST No	Type D LIST No
6	60B/06	60C/06	60D/06
10	60B/10	60C/10	60D/10
16	60B/16	60C/16	60D/16
20	60B/20	60C/20	60D/20
32	60B/32	60C/32	60D/32
40	60B/40	60C/40	60D/40
50	60B/50	60C/50	60D/50
63	60B/63	60C/63	60D/63

Current Rating (A)	Double Pole		
	Type B LIST No	Type C LIST No	Type D LIST No
6	62B/06	62C/06	62D/06
10	62B/10	62C/10	62D/10
16	62B/16	62C/16	62D/16
20	62B/20	62C/20	62D/20
32	62B/32	62C/32	62D/32
40	62B/40	62C/40	62D/40
50	62B/50	62C/50	62D/50
63	62B/63	62C/63	62D/63

Current Rating (A)	Triple Pole		
	Type B LIST No	Type C LIST No	Type D LIST No
6	63B/06	63C/06	63D/06
10	63B/10	63C/10	63D/10
16	63B/16	63C/16	63D/16
20	63B/20	63C/20	63D/20
32	63B/32	63C/32	63D/32
40	63B/40	63C/40	63D/40
50	63B/50	63C/50	63D/50
63	63B/63	63C/63	63D/63

- BS EN 60 898.
- Type B (3–5In), C (5–10In), D (10–20In) classification.
- Short circuit duty rating: Type B/C 16000A 240V/415V 50Hz.
Type D 10000A 240V/415V 50Hz.
- Terminal capacity up to 25mm² cable.
- 25mm modular width.

RESIDUAL CURRENT CIRCUIT BREAKERS WITH OVERCURRENT PROTECTION (RCBO)

Double Pole		Type AC  normal ac sensitivity
MCB Type C		
Current rating (A)	LIST No	
6	602C/063	
10	602C/103	
16	602C/163	
20	602C/203	
32	602C/323	
40	602C/403	

- Standard compliance BS EN 61009; IEC 1009.
- Short circuit duty rating 10000A 240V 50Hz.
- Electromechanical RCD, 30mA. Double pole operation.
- Terminal capacity up to 25mm² cable.

INDIVIDUAL SWITCH DISCONNECTORS

	LIST No
125A TP Switch disconnecter	125SW3
125A TP Switch disconnecter heavy duty	125/3MS
200A TP Switch disconnecter	200/3MS

- BS EN60947-3.
- Switch disconnectors suitable for individual and panel mounting applications.
- Complete with terminal shrouds.
- Maximum cable capacities 125A – 50mm²,
200A – 120mm².
- 200A fitted with Allen headed terminals enabling incoming cable to be more effectively secured (Allen key supplied).





SWITCH DISCONNECTORS AND FUSE SWITCHES

Fuse Switch Range

- 20A to 800A
- SP & N TP & N and 4 P
- Modular Range of Enclosures with built in Cable spreading room
- Removable door, opens through 180° for all round access
- Neutrals, fully rated
- Includes HRC fuses, up to 125A rating
- BS EN 60947-3
- Paint finish Epoxy Powder, Light Grey RAL 7035

Switch Disconnecter Range

- 20A to 125A
- SP & N TP & N and 4 P
- Metal Enclosures with hinged door, IP4X
- Insulated Enclosures, IP65





20/32



63/100



125/160/200



315/400

FUSE COMBINATION UNIT 20A-32A

20A	SP&N TP&N 4P	supplied with 20A fuses	190201NF 190203NF 190204F
32A	SP&N TP&N 4P	supplied with 32A fuses	190321NF 190323NF 190324F
Accessories	Cable Spreader Box Copper Isolator Link Each		19032CSB 19LK32
Modular width	4		
Terminals	20A-32A	16mm ² Max	Cable Clamp
Spreading room	up to 10mm ² 4 Core *		

FUSE COMBINATION UNIT 63A-100A

63A	SP&N TP&N 4P	supplied with 63A fuses	190631NF 190633NF 190634F
100A	SP&N TP&N 4P	supplied with 100A fuses	191001NF 191003NF 191004F
Accessories	Cable Spreader Box Copper Isolator Link Each 63A Copper Isolator Link Each 100A Castell Lock (factory fitted)		19100CSB 19LK63 19LK200 Suffix CLK
Modular width	5		
Terminals	63A-100A	63A-Cable Clamp 25mm ² 100A- M8 Hole	
Spreading room	up to 70mm ² 4 Core *		
Cable lug palm copper size	20mm wide Maximum		

FUSE COMBINATION UNIT 125A-200A

125A	SP&N TP&N 4P	supplied with 125A fuses	191251NF 191253NF 191254F
160A	SP&N TP&N 4P	no fuses supplied	191601N 191603N 191604
200A	SP&N TP&N 4P	no fuses supplied	192001N 192003N 192004
Accessories	Cable Spreader Box Copper Isolator Link Each Castell Lock (factory fitted)		19200CSB 19LK200 Suffix CLK
Modular width	6		
Terminals	125A-200A		M8
Spreading room	up to 150mm ² 4 Core *		
Cable lug palm copper size	20mm wide Maximum		

FUSE COMBINATION UNIT 315A-400A

315A	TP&N 4P	no fuses supplied	193153N 193154
400A	TP&N 4P	no fuses supplied	194003N 194004
Accessories	Cable Spreader Box Copper Isolator Link Each Castell Lock (factory fitted)		19400CSB 19LK400 Suffix CLK
Modular width	8		
Terminals	315A-400A		M10
Spreading room	up to 300mm ² 4 Core *		
Cable lug palm copper size	45mm wide Maximum		

* Spreading Room is allowed for at one end only. To fit a 4 core cable at both ends an additional Cable spreader box will be required. 1 Module = 52.5mm



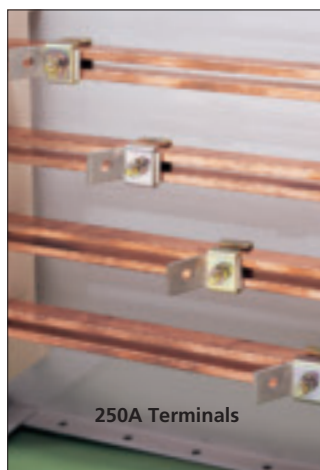
630/800



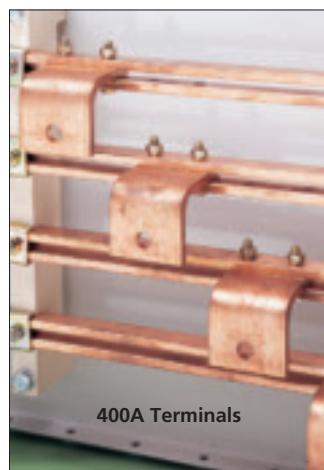
Cable Spreader Boxes



1949BB



250A Terminals

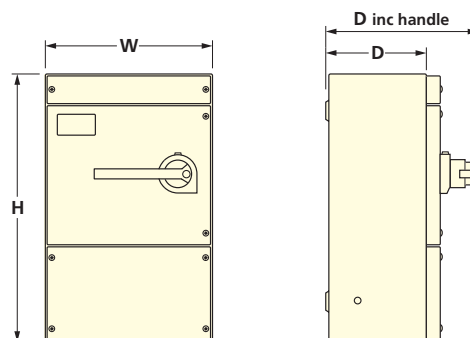


400A Terminals

FUSE COMBINATION UNIT 630A-800A

630A	TP&N 4P	no fuses supplied	196303N 196304
800A	TP&N 4P	no fuses supplied	198003N 198004
Accessories	Cable Spreader Box Copper Isolator Link Each Brass Gland Plate Castell Lock (factory fitted)		19800CSB 19LK800 19800BGP Suffix CLK
Modular width			12
Terminals	630A-800A		M12
Spreading room	up to 630mm ² 4 Core *		
Cable lug palm copper size	63mm wide Maximum		

FUSESTAR DIMENSION DETAILS



	D	H	W	D inc. handle
20-32A	220	210	136	200
63A	420	263	188	263
100A	420	263	188	263
125-200A	525	315	241	305
315-400A	735	420	241	305
630-800A	850	620	293	355

BUS BAR CHAMBER

400A	TP&N	16 Mod.	1949BB
Dimensions	H 368	W 840	D 190
Terminals Pre fitted	4 x 250A & 400A Supplied		M8
Fault rated			31.5kA 1Sec

SWITCH MOUNTING & BLANK FILLER PLATES

20A-32A	4 MOD	1932MTG
63A-100A	5 MOD	19125MTG
125A-200A	6 MOD	19200MTG
315A-400A	8 MOD	19400MTG
1 Mod	Blank Filler Plate	191BL
2 Mod	Blank Filler Plate	192BL
4 Mod	Blank Filler Plate	194BL
8 Mod	Blank Filler Plate	198BL

Note: Bus Bar chamber supplied with 2 x 4 Mod, 2 x 2 Mod & 2 x 1 Mod
Blank Filler Plates 1 - Mod = 52.5

250A	Bus Bar Terminal Each	19TMBB
-------------	-----------------------	---------------



Steel Enclosure Hinged Door



Insulated enclosure Yellow/Red Handle



Insulated enclosure Black / Grey Handle



Accessories

SWITCH DISCONNECTOR STEEL ENCLOSURE

Rating (A)	Box Size	TP&N/SP&N	TP&SWN
20	1	190203NSW1	190204SW1
32	1	190323NSW1	190324SW1
40	1	190403NSW1	190404SW1
63	1	190633NSW1	190634SW1
63	2	190633NSW2	190634SW2
100	2	191003NSW2	191004SW2
125	2	191253NSW2	191254SW2

• Hinged Door

SWITCH DISCONNECTOR INSULATED ENCLOSURE

Rating (A)	Box Size	Yellow/Red Handle	Black/Grey Handle
16	A	15416/11	15416/12
25	A	15425/11	15425/12
32	B	15432/11	15432/12
40	B	15440/11	15440/12
63	C	15463/11	15463/12
80	D	15480/11	15480/12
100	D	154100/11	154100/12
125	E	154125/11	154125/12

• Gland Fixings are Metric sizes

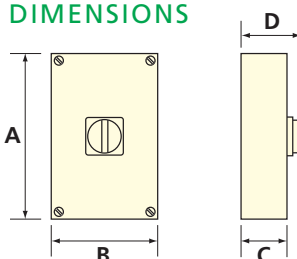
• Optional Switched Neutral

15416/11 & 15416/12 have Non-interlocked handles.

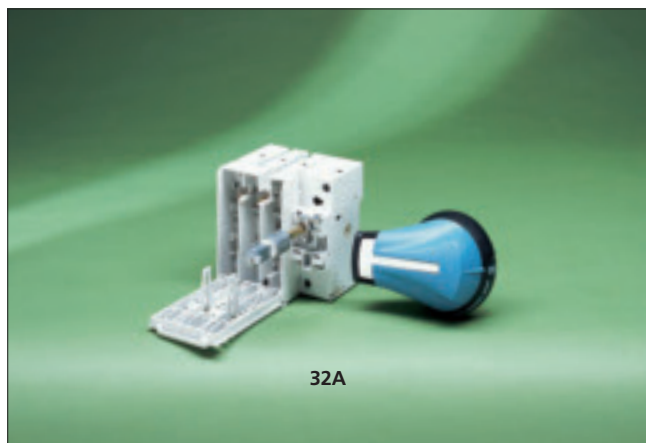
ACCESSORIES

Description	LIST No.
Neutral Link 63amp	19963
125amp	199125
Auxiliary Switch 10amp	19701
Terminal Shrouds	
SP 16-63amps (set of 2)	19811
TP 16-63amps (set of 2)	19813
SP 63-125amps (set of 2)	19821
TP 63-125amps (set of 2)	19823
Switched 4th Pole	
16A	198164
32A	198324
40A	198404
63A	198634
80A	198804
100A	1981004
125A	1981254

DIMENSIONS



BOX	A	B	C	D
A	130	85	75	105
B	175	125	100	137
C	250	175	100	135
D	310	200	135	170
E	410	200	135	170
1	220	158	136	172.5
2	325	158	136	172.5



SKELETON FUSE SWITCH ASSEMBLIES FOR USE WITH SYSTEM POWERSTAR

FOR USE IN FUSE SWITCH PANEL BOARD ONLY.

Triple Pole and Integrated Neutral link Fuse Switch, complete with shaft, handle and terminal shroud for outgoing cables.

Rating	Format	LIST No
63A	TP & N	19KP0633N
100A	TP & N	19KP1003N
160A	TP & N	19KP1603N
200A	TP & N	19KP2003N

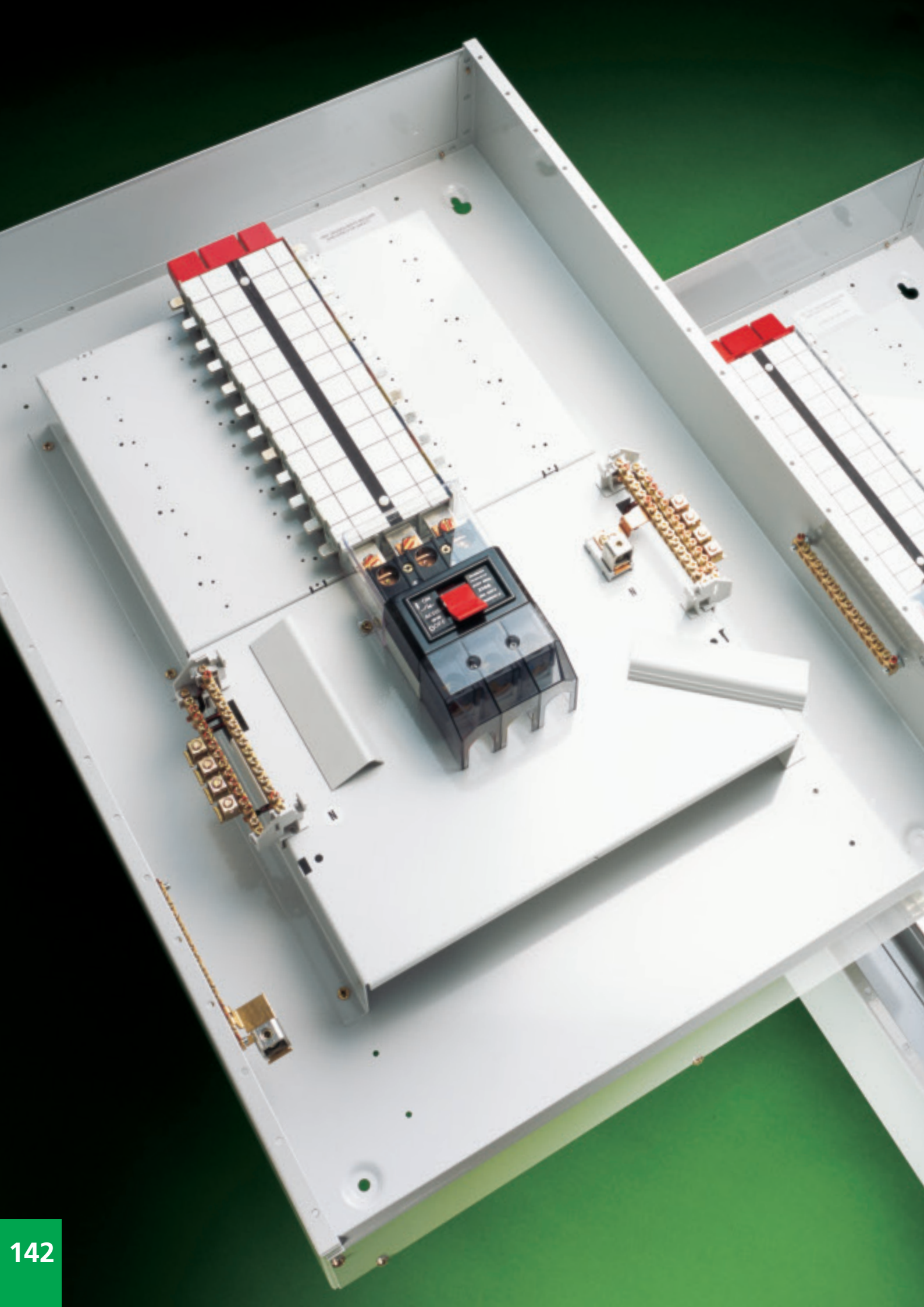
FOR USE IN ELEMENTS OF SYSTEM POWERSTAR, OTHER THAN PANEL BOARDS.

For use in Fuse Switches complete with shaft, handle and terminal shroud for outgoing cables.

Rating	Format	LIST No
32A	TP & N	19K0323N
63A	TP & N	19K0633N
100A	TP & N	19K1003N
160A	TP & N	19K1603N
200A	TP & N	19K2003N
315A	TP & N	19K3153N
400A	TP & N	19K4003N
630A	TP & N	19K6303N
800A	TP & N	19K8003N

Rating	Format	LIST No
32A	4P	19K0324
63A	4P	19K0634
100A	4P	19K1004
160A	4P	19K1604
200A	4P	19K2004
315A	4P	19K3154
400A	4P	19K4004
630A	4P	19K6304
800A	4P	19K8004

• 63A to 200A 4P Fuse Switch Cannot be used in System Powerstar Form 4 Panel Boards



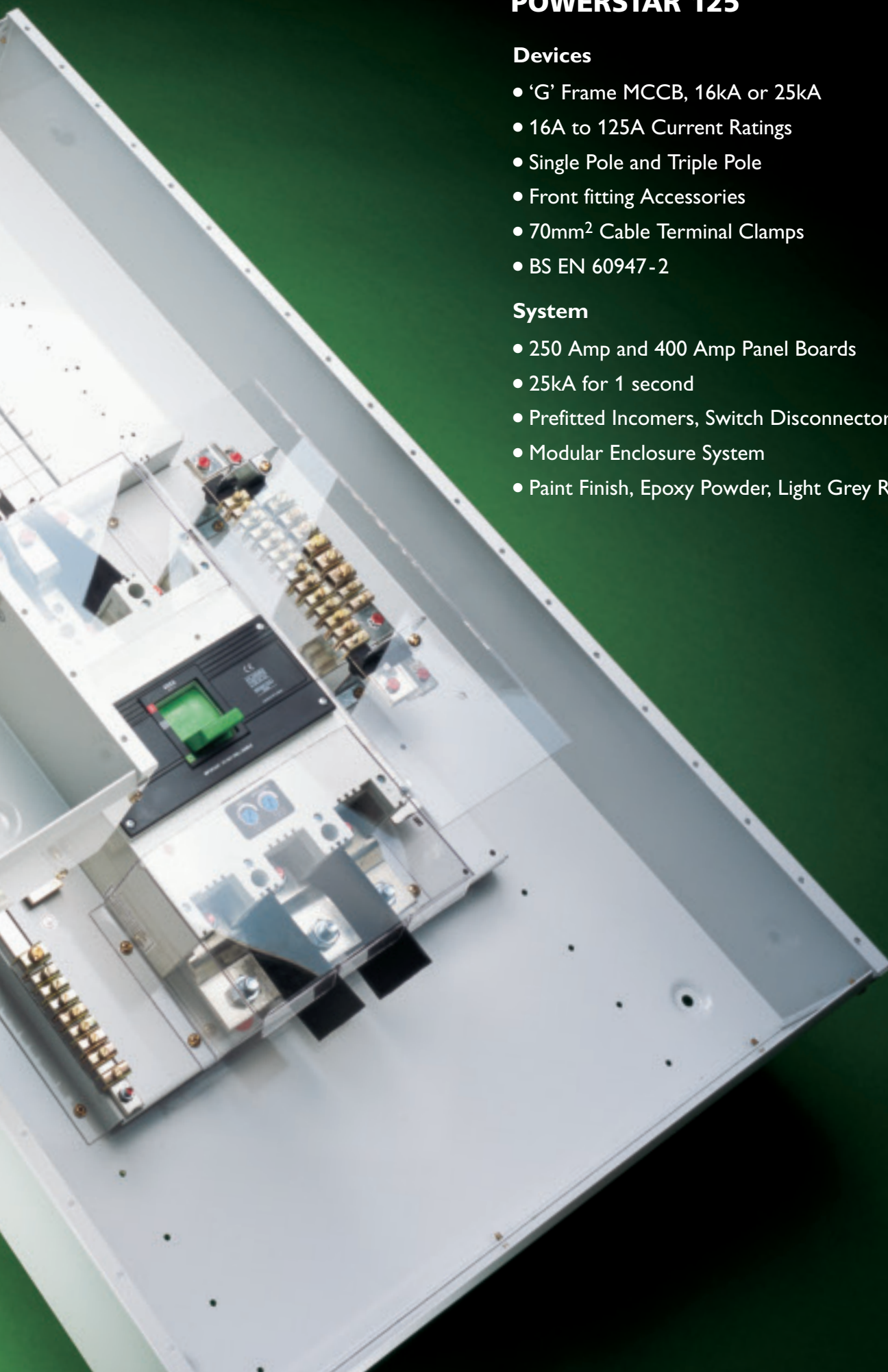
POWERSTAR 125

Devices

- 'G' Frame MCCB, 16kA or 25kA
- 16A to 125A Current Ratings
- Single Pole and Triple Pole
- Front fitting Accessories
- 70mm² Cable Terminal Clamps
- BS EN 60947-2

System

- 250 Amp and 400 Amp Panel Boards
- 25kA for 1 second
- Prefitted Incomers, Switch Disconnecter or MCCB
- Modular Enclosure System
- Paint Finish, Epoxy Powder, Light Grey RAL 7035





17G2508SW



17G2008MB



17G2508DC

250A SWITCH-DISCONNECTOR CONTROLLED

Incomer Fitted	Outgoing ways	Modular Height	Height (mm)	LIST No
250A	6	17	896	17G2506SW
	8	17	896	17G2508SW
	12	20	1054	17G2512SW
	16	23	1211	17G2516SW

- 250A TP Switch Disconnecter fitted
- Conforms to BS EN 60439
- 250A Busbars
- Busbar fault rated 25kA-1 sec
- IP31 (41 with door) Ingress Protection
- Earth and neutral terminals for each SP way
- 630mm wide x 165mm deep
- 120 mm² 4 Core Max on Incoming Terminals
- 70 mm² 4 Core Max on Outgoing Terminals

200A MCCB CONTROLLED

Incomer Fitted	Outgoing ways	Modular Height	Height (mm)	LIST No
200A	6	17	896	17G2006MB
	8	17	896	17G2008MB
	12	20	1054	17G2012MB
	16	23	1211	17G2016MB

- 200A TP MCCB fitted
- Conforms to BS EN 60439
- 250A Busbars
- Busbar fault rated 25kA-1 sec
- IP31 (41 with door) Ingress Protection
- Earth and neutral terminals for each SP way
- 630mm wide x 165mm deep
- 120 mm² 4 Core Max on Incoming Terminals
- 70 mm² 4 Core Max on Outgoing Terminals

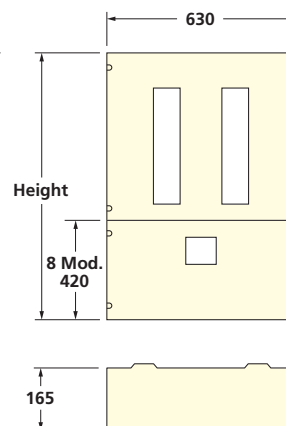
250A DIRECT CONNECTION

Inc. Terminals only	Outgoing ways	Modular Height	Height (mm)	LIST No
250A	6	17	896	17G2506DC
	8	17	896	17G2508DC
	12	20	1054	17G2512DC
	16	23	1211	17G2516DC

- (Cable socket not supplied)
- Conforms to BS EN 60439
 - 250A Busbars
 - Busbar fault rated 25kA-1 sec
 - IP31 (41 with door) Ingress Protection
 - Earth and neutral terminals for each SP way
 - 630mm wide x 165mm deep
 - 120 mm² 4 Core Max on Incoming Terminals
 - 70 mm² 4 Core Max on Outgoing Terminals

DIMENSIONS 200/250A BOARDS

LIST No	Total Mod. Height	Mod Height Outgoing ways only	Total Height (mm)
17G2506SW	17	9	896
17G2508SW	17	9	896
17G2512SW	20	12	1054
17G2516SW	23	15	1211
17G2006MB	17	9	896
17G2008MB	17	9	896
17G2012MB	20	12	1054
17G2016MB	23	15	1211
17G2506DC	17	9	896
17G2508DC	17	9	896
17G2512DC	20	12	1054





400A SWITCH-DISCONNECTOR CONTROLLED

Incomer Fitted	Outgoing ways	Modular Height	Height (mm)	LIST No
400A	6	20	1054	17G4006SW
	8	20	1054	17G4008SW
	12	23	1211	17G4012SW
	16	26	1369	17G4016SW

- 400A TP Switch Disconnecter fitted
- Conforms to BS EN 60439
- 400A Busbars
- Busbar fault rated 25kA-1 sec
- IP31 (41 with door) Ingress Protection
- Earth and neutral terminals for each SP way
- 630mm wide x 165mm deep
- 240mm² 4 Core Max on Incoming Terminals
- 70 mm² 4 Core Max on Outgoing Terminals.

400A MCCB CONTROLLED

Incomer Fitted	Outgoing ways	Modular Height	Height (mm)	LIST No
400A	6	20	1054	17G4006MB
	8	20	1054	17G4008MB
	12	23	1211	17G4012MB
	16	26	1369	17G4016MB

- 400A TP MCCB fitted
- Conforms to BS EN 60439
- 400A Busbars
- Busbar fault rated 25kA-1 sec
- IP31 (41 with door) Ingress Protection
- Earth and neutral terminals for each SP way
- 630mm wide x 165mm deep
- 240mm² 4 Core Max on Incoming Terminals
- 70 mm² 4 Core Max on Outgoing Terminals.

400A DIRECT CONNECTION

Inc. Terminals only	Outgoing ways	Modular Height	Height (mm)	LIST No
400A	6	20	1054	17G4006DC
	8	20	1054	17G4008DC
	12	23	1211	17G4012DC
	16	26	1369	17G4016DC

- (Cable sockets not supplied)
- Conforms to BS EN 60439
 - 400A Busbars
 - Busbar fault rated 25kA-1 sec
 - IP31 (41 with door) Ingress Protection
 - Earth and neutral terminals for each SP way
 - 630mm wide x 165mm deep
 - 240mm² 4 Core Max on Incoming Terminals
 - 70 mm² 4 Core Max on Outgoing Terminals.

DIMENSIONS 400A BOARDS

LIST No	Total Mod. Height	Mod Height Outgoing ways only	Total Height (mm)	
17G4006SW	20	9	1054	
17G4008SW	20	9	1054	
17G4012SW	23	12	1211	
17G4016SW	26	15	1369	
17G4006MB	20	9	1054	
17G4008MB	20	9	1054	
17G4012MB	23	12	1211	
17G4016MB	26	15	1369	
17G4006DC	20	9	1054	
17G4008DC	20	9	1054	
17G4012DC	23	12	1211	
17G4016DC	26	15	1369	





ADD-ON 160/200A MCCB OUTGOING HOUSING

Rating (A)	Height (mm)	LIST No
1 off 'J' MCCB	8	420
		17G200MB1

NB: MCCB to be ordered separately

- Includes all interconnections
- Accepts J/JM Frame TP MCCBs up to 200A
- Fits above 400A Panel Boards Only
- 630mm wide x 165mm deep

J FRAME MCCB (for use in the above)

Rating (A)	'J' 3 Pole LIST No	'J' 3 Pole LIST No
160	7PBJN3160	7PBJN3M160
200	7PBJN3200	7PBJN3M200

POWERSTAR 125 METER PACK

An 'Add-on' Assembly, 210mm high, to fit below a board, comprising:
Enclosure with slotted front plate and door.

Digital Meter, pulsed output, offering Amps, Volts and Kwh readout.

3 off 250A or 400A Current Transformers, with associated fuses and wiring.

	LIST No
200/250A	17GM250
400A	17GM400

SINGLE POLE DISTRIBUTION BOARD

Outgoing 1P ways	Modular Height	Height (mm)	LIST No
19	4	210	17G19DB

- 125A Busbar
- Accepts Loadstar MCBs
- 630mm wide x 165mm deep

CONTROL MODULE ENCLOSURE

18mm wide modules	Modular Height	Height (mm)	LIST No
24 mod. DIN Rail	4	210	17G24SS

- Accepts all DIN rail mounted devices

CABLE SPREADER BOX

	Modular Height	Height (mm)	LIST No
Empty enclosure c/w Blank Front Plate	4	210	17GCSB

POWERSTAR 125 ACCESSORIES

Description	LIST No	LIST No
Door kits with catch		
4 mod	17G04DR	12 mod
8 mod	17G08DR	15 mod
9 mod	17G09DR	17 mod
11 mod	17G11DR	20 mod
		17G12DR
		17G15DR
		17G17DR
		17G20DR

Overall doors available up to 20 mod.

2 doors can be used for 23 and 26 mod units.

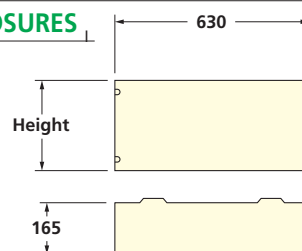
200A/250A Inc. = 8 Mod, 400A = 11 Mod.

6/8 way = 9 Mod, 12 way = 12 Mod, 16 way = 15 Mod.

Door Cylinder lock	16CL
Door Padlock device	16PL
Blanking piece single pole 'G' Frame	KPXBG
70mm ² Cable Clamp Assembly for Neutral bar in 200/250A Boards - Set of 3	17CC

DIMENSIONS 'ADD-ON' ENCLOSURES

LIST No	Height (mm)	Mod. Height	
17G19DB	210	4	
17G24SS	210	4	
17GCSB	210	4	
17GM250/400	210	4	
17G200MB1	420	8	





1 Pole 'G' MCCB

1 POLE G FRAME MCCBs

Rating (A)	16kA LIST No
16	7PBGB116
20	7PBGB120
25	7PBGB125
32	7PBGB132
40	7PBGB140
50	7PBGB150
63	7PBGB163
80	7PBGB180
100	7PBGB1100
125	7PBGB1125

- Conforms to BS EN 60947-2
- 16kA Icu at 240V ac
- Fixed magnetic
- Fixed thermal
- Double insulated
- Terminal Capacity 70mm²



3 Pole 'G' MCCB

3 POLE G FRAME MCCBs

Rating (A)	16kA LIST No	25kA LIST No
16	7PBGB316	7PBGN316
25	7PBGB320	7PBGN320
25	7PBGB325	7PBGN325
32	7PBGB332	7PBGN332
40	7PBGB340	7PBGN340
50	7PBGB350	7PBGN350
63	7PBGB363	7PBGN363
80	7PBGB380	7PBGN380
100	7PBGB3100	7PBGN3100
125	7PBGB3125	7PBGN3125

- Conforms to BS EN 60947-2
- 16/25kA Icu at 415V ac
- Fixed magnetic
- Fixed thermal
- Double insulated
- Large range of accessories
- Terminal Capacity 70mm²



KPXBG

POWERSTAR G FRAME MCCBs ACCESSORIES

Description	LIST No
Dolly padlocking facility	7PAGDLD
Padlock to fit	748
Set of 2 interphase barriers	7PAG1B
1P Terminal Shroud	7PAGS1
3P Terminal Shroud	7PAGS3
1P Blanking piece 'G' frame	KPXBG

AUXILIARY EQUIPMENT*

Auxiliary Contacts	
1 x 1 n.o./n.c. Volt Free	7PAGA1
2 x 1 n.o./n.c. Volt Free	7PAGA2
Shunt Release and Auxiliary Contact	
12-36V dc. 18-30V ac	7PAGT030
110-120V ac	7PAGT110
220-240V ac	7PAGT240



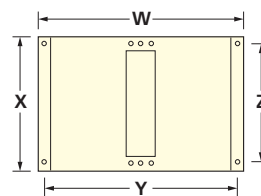
17GLPA408

POWERSTAR 125 PAN ASSEMBLIES

6 Way 400A	17GLPA406
8 Way 400A	17GLPA408
12 Way 400A	17GLPA412
16 Way 400A	17GLPA416

- Busbar only c/w pre-drilled MCCB mounting plate
- Excluding Neutral and Earth
- M8 threaded inserts at both ends of Busbar

	W	X	Y	Z
6 Way	440	237	420	184
8 Way	440	315	420	263
12 Way	440	473	420	420
16 Way	440	630	420	578





SYSTEM POWERSTAR

A modular, wall and floor standing Panel Board System offering:

- Form 2 MCCB, max 200A outgoer
- Form 4 MCCB, max 250A outgoer
- Form 4 Fuse Switch max 200A outgoer
- Incoming units MCCB and Fuse Switch up to 800A
- 400A and 800A Panel Board Busbars
- 800A Horizontal Busbars
 - 35kA and 50kA for 1 second
 - Paint finish Epoxy Powder, Light Grey RAL 7035

Form 2

SYSTEM POWERSTAR FORM 2 FEATURES

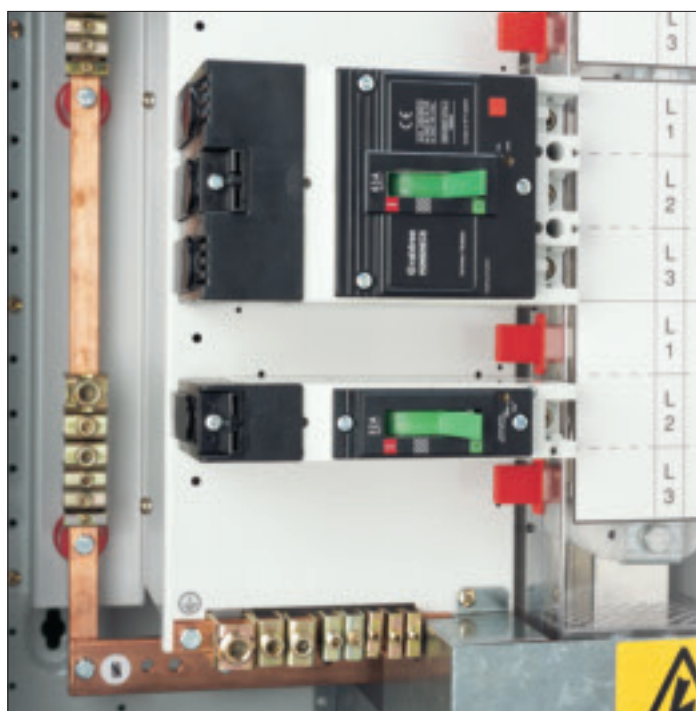
Enclosures

- Modular range of Enclosures, 768mm wide, 265mm deep
- Complementary 'Add on' Cableways, 288mm wide.

Incomers

Complete assemblies, comprising Enclosure, Form 2 shielding, Connections, Front Plate/Door, to accommodate:

- Single 'N' MCCB 800A
- Single 'L' MCCB 630A
- Double 'L' MCCB 630A c/w horizontal Busbars
- Single 'F' or 'J' MCCB 200/250A
- Single 400A Fuse Switch
- Single 200A Fuse Switch



F Frame MCCBs

- 25A - 250A
- 3 Pole
- 35/50 kA Icu at 415 V ac
- Fixed Magnetic
- Fixed Thermal
- 3x M8 Studs
- 3x 150mm² Cable Clamps



J Frame MCCBs

- 16A - 200A
- 25 kA Icu at 415 V ac
- 1 and 3 Pole
- Fixed Magnetic
- Adjustable Thermal
- 6x 150mm² Cable Clamps

Panel Board Range

- 'J' or 'F' frame MCCB
- 4, 8, 12 or 16 way TP
- IP 3X

Busbars

- 400A or 800A TP
- 35kA - 1 second
- Fully enclosed
- Unused ways fully shrouded

Neutral / Earth

- 'Wrap Round' style Neutral allows cable termination adjacent to appropriate phase
- Socket head screw terminal clamps 16mm² to 120mm²

A typical Form 2 MCCB Panel Board, to BS EN 60439-1

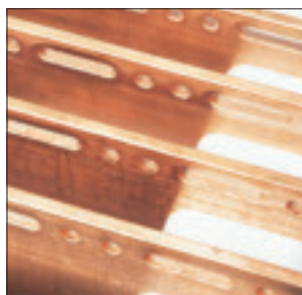
Doors

- Doors fit to Enclosure frame to ensure integrity when closed
- Full range of 'twin' doors, lockable if required to enclose all Panel Boards and MCCB Incomers



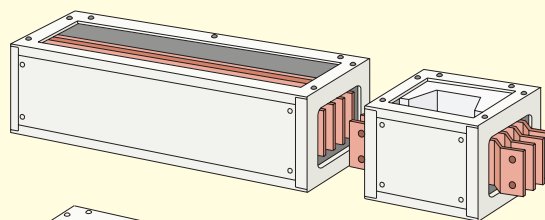
Horizontal Busbars

- 800A, 4 Pole, 50kA - 1 Second
- 192mm, high Enclosure (1 mod) integrates with all system enclosures
- Cableway version has compartmented busbars to allow 'Through' cable access
- Pre-punched profile accommodates all sets of connections



Horizontal Busbar System

- 800A, 4 Pole, 50kA - 1 second
- 768mm wide, 4 Mod.
- 192mm high, 1 Mod.
- Pre-Punched Busbar accommodates all connections

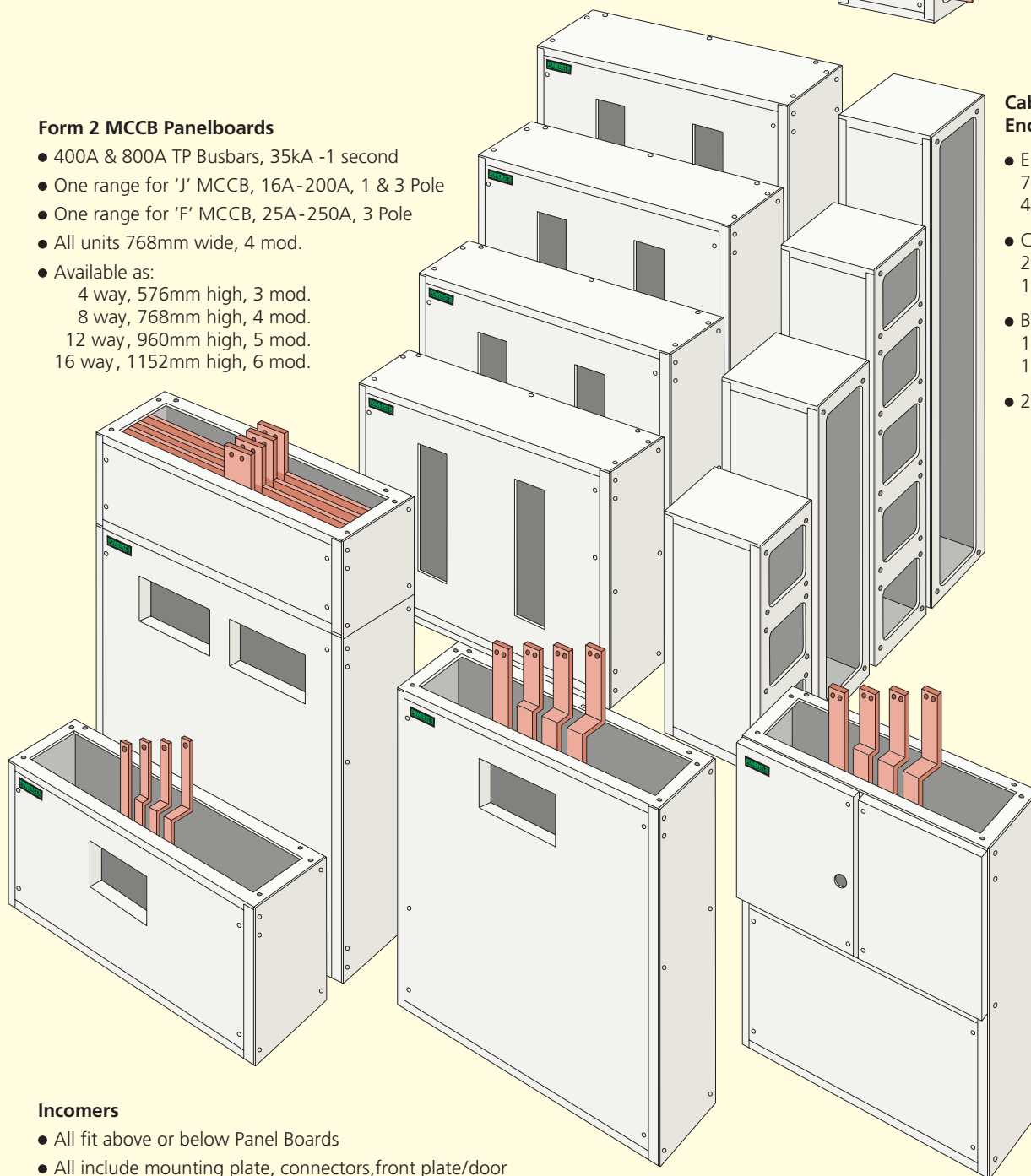


Form 2 MCCB Panelboards

- 400A & 800A TP Busbars, 35kA -1 second
- One range for 'J' MCCB, 16A-200A, 1 & 3 Pole
- One range for 'F' MCCB, 25A-250A, 3 Pole
- All units 768mm wide, 4 mod.
- Available as:
 - 4 way, 576mm high, 3 mod.
 - 8 way, 768mm high, 4 mod.
 - 12 way, 960mm high, 5 mod.
 - 16 way, 1152mm high, 6 mod.

Cableways & Enclosures

- Enclosures 768mm wide, 4 Mod.
- Cableways 288mm wide, 1½ Mod.
- Both Available 1-6 mod. 192mm-1152mm
- 265mm deep

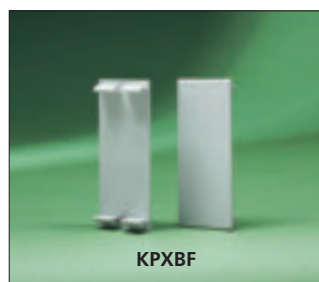
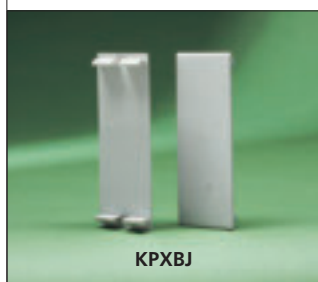
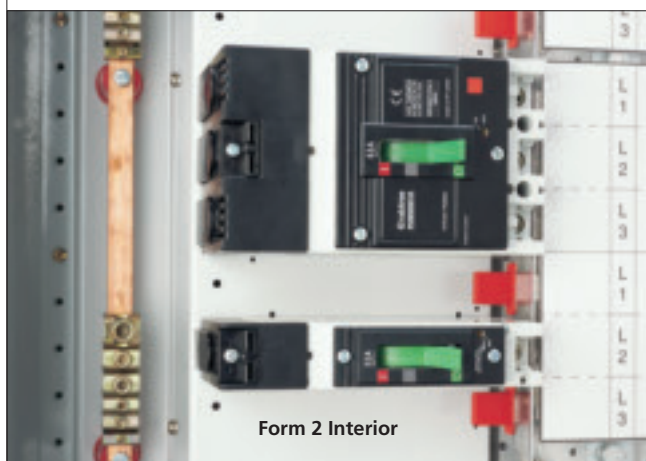


Incomers

- All fit above or below Panel Boards
- All include mounting plate, connectors, front plate/door
- All suitable for -but exclude- appropriate MCCB/Fuse Switch
- All 768mm wide, 4 Mod.

- 1- 'J' or 'F' MCCB, 576mm high, 3 Mod.
- 1- 'L' MCCB-630A max, 768mm high, 4 Mod.
- 1- 'N' MCCB-800A max, 960mm high, 5 Mod.
- 2- 'L' MCCB-630A max, c/w 800A busbar & Connections, 960mm high, 5 Mod.

- 1- 200A Fs Sw, 576mm high, 3 mod.
- 1- 400A Fs Sw, 768mm high, 4 mod.



SYSTEM POWERSTAR FORM 2 MCCB 'J' & 'F' FRAME PANEL BOARDS

'J' Frame 16A to 200A SP and TP MCCB 25kA

See page 161 for 'J' MCCB details

Triple Pole Ways	Modular Height	Height mm	400A Busbars	800A Busbars
4	3	576	KP2J404	KP2J804
8	4	768	KP2J408	KP2J808
12	5	960	KP2J412	KP2J812
16	6	1152	KP2J416	KP2J816

'F' Frame 25A to 250A TP only MCCB 35 or 50kA

See page 162 for 'F' MCCB details

Triple Pole Ways	Modular Height	Height mm	400A Busbars	800A Busbars
4	3	576	KP2F404	KP2F804
8	4	768	KP2F408	KP2F808
12	5	960	KP2F412	KP2F812
16	6	1152	KP2F416	KP2F816

- Fully enclosed Busbars, 35kA 1 second ASTA Certification.
- See page 226 for Cabling information.
- All Panel Boards supplied with 2 Gland/End Plates and 2-side Plates, prefitted.

FORM 2 PANEL BOARD ACCESSORIES

Door Kit c/w Catch, for 4W Panel Board, 3 Mod Encl.	KPXD03
Door Kit c/w Catch, for 8W Panel Board, 4 Mod Encl.	KPXD04
Door Kit c/w Catch, for 12W Panel Board, 5 Mod Encl.	KPXD05
Door Kit c/w Catch, for 16W Panel Board, 6 Mod Encl.	KPXD06
Cylinder Lock & Key - in lieu of catch	16CL

Blanking Piece for 'J' MCCB-Single Pole Space	KPXBJ
Blanking Piece for 'F' MCCB-Single Pole Space	KPXBF

Add on 'Flag' Busbar extension & Shield -400A Board	KPXEX4*
Add on 'Flag' Busbar extension & Shield -800A Board	KPXEX8*
Gland/End Plate, Steel (standard), Enclosure width	KXEEPS
Gland/End Plate, Brass, Enclosure width	KXEEPB
Gland/End Plate, Aluminium (4mm), Enclosure width	KXEEPA
Gland/End Plate, Steel Standard, Cableway width	KXCEPS
Gland/End Plate, Brass, Cableway width	KXCEPB
Gland/End Plate, Aluminium (4mm), Cableway width	KXCEPA
Cross Strap, Standard, Enclosure width	KXECSS
Cross Strap, Standard, Cableway width	KXCCSS

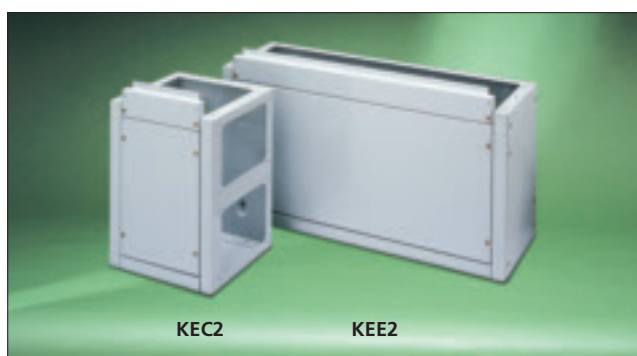
* Required if connecting to both ends of Panelboard's Busbar system.

HORIZONTAL BUSBAR SYSTEM & CONNECTIONS

An 800A 4 Pole, Busbar system that uses enclosures the same width and depth as Form 2 Panel Boards. The Busbars are pre-punched to accommodate various sets of copper connections allowing horizontal as well as vertical extension of Panel Board units. Fault rated, 50kA for 1 second -ASTA.

Horizontal 800A 4 Pole Main Busbar	KBHF08
Cableway Busbar (allows cables to pass through)	KBHC08
800A Horizontal Busbar connecting links	KBHL08
Connections from J/F Frame Form 2 400A Panel Board to 800A Horizontal Busbar	KCP2408
Connections from J/F Frame Form 2 800A Panel Board to 800A Horizontal Busbar	KCP2808
Vertical connection kit to couple 2 Form 2 Boards, 400A	KPXC24
Vertical connection kit to couple 2 Form 2 Boards, 800A	KPXC28

Busbar supplied with 1-Gland/End Plate, 2-Side Plates and 1-Cross Strap.



INCOMING UNITS, FORM 2 MCCB PANEL BOARDS

These units use the same modular enclosures as the Form 2 Panel Boards. Incoming assemblies include appropriate Form 2 shielding, preformed copper interconnections, front plate/door, but NOT the device itself.

MCCB Neutral Links supplied with Incoming Housing, whilst Fuse Switch Neutral Links are supplied with the Switch itself.

Suitable for fixture below or above the Form 2 Panel Boards.

	Mod Height	Height mm	
Assembly to accommodate 1- 'N' Frame, TP MCCB, Max rating 800A. Front Flat Terminal MCCB only See page 164 for MCCB details	5	960	KI2N1
Assembly to accommodate 1- 'L' Frame, TP/4P MCCB, Max rating 630A. See page 163 for MCCB details	4	768	KI2L1
Assembly to accommodate 2- 'L' Frame, TP/4P MCCB, Max rating 630A Includes horizontal Busbar and all connections. See page 163 for MCCB details	5	960	KI2L2
Assembly to accommodate 1- 'J' Frame, TP/4P MCCB, Max rating 200A. See page 161 for MCCB details	3	576	KI2J1
Assembly to accommodate 1- 'F' Frame, TP MCCB, Max rating 250A. See page 162 for MCCB details	3	576	KI2F1
Assembly to accommodate 1- 315/400 Amp, TP&N/4P Fuse Switch See page 141 for Fuse Switch details	4	768	KI2S4
Assembly to accommodate 1- 63, 100, 200 Amp, TP&N/4P Fuse Switch See page 141 for Fuse Switch details	3	576	KI2S2

- All Incoming Units supplied with 1-Gland/End Plate, 2-Side Plates and 1-Cross Strap.
- To accommodate 4 Pole MCCBs the prefitted Neutral Link must be removed.
- Fuse Switches supplied with Neutral Link, Handle & Terminal Shroud.
- See page 226 for cabling information.

INDIVIDUAL ENCLOSURES AND CABLEWAYS

Enclosures are 768mm wide (4 mod). Cableways are 288mm wide (1½ mod). Both units are 265mm deep and have slotted sides to allow horizontal access to any adjacent unit. Both are supplied with screw fixed front cover plates.

Modular Height	Height mm	Cableway 288mm W	Enclosure 768mm W	Side Plate
1	192	KEC1	KEE1	KXESP1
2	384	KEC2	KEE2	KXESP2
3	576	KEC3	KEE3	KXESP3
4	768	KEC4	KEE4	KXESP4
5	960	KEC5	KEE5	KXESP5
6	1152	KEC6	KEE6	KXESP6

- Enclosures supplied with 1-Gland/End Plate, 2 Side Plates and 1-Cross Strap.
- Cableways supplied with 1-Gland/End Plate and 1-Cross Strap.

Form 4

SYSTEM POWERSTAR FORM 4 FEATURES

Enclosures

- Modular range of Enclosures, 768mm wide, 260mm deep
- Complementary 'Add on' Cableways, 288mm wide.

Incomers

Complete assemblies, comprising Enclosure, Form 4 shielding, Connections, Front Plate/Door, to accommodate:

- Single 'N' MCCB 800A
- Single 'L' MCCB 630A
- Single 'F' or 'J' MCCB 200/250A
- Single 800A Fuse Switch
- Single 400A Fuse Switch
- Single 200A Fuse Switch



Fuse Switch

- 63A, 100A, 160A & 200A
- TP & N only
- Neutral Link supplied with Fuse Switch Assembly
- Door Interlock Handle supplied with Fuse Switch Assembly

'J' MCCB

- 16A-200A
- 25kA Icu at 415V ac
- Neutral Link prefitted in Panel Board
- Door Interlock Handle to be ordered separately
- 4 Pole or Switched Neutral option available

'F' MCCB

- 25A-250A
- 35/50kA Icu at 415V ac
- Neutral Link prefitted in Panel Board
- Door Interlock Handle to be ordered separately



Panel Board Range

- Fuse Switch or MCCB
- 6 or 10 way TPN
- IP 4X

Busbars

- 800A 4 Pole
- 50kA-1 second
- Fully enclosed
- Unused ways fully shrouded

Each device on a System Powerstar Form 4 Panel, MCCB or Fuse Switch:

- Occupies its own compartment
- Is Housed behind its own Hinged Door
- Is operated via a Door mounted Interlocked Handle
- Has fully shrouded Busbar Terminals

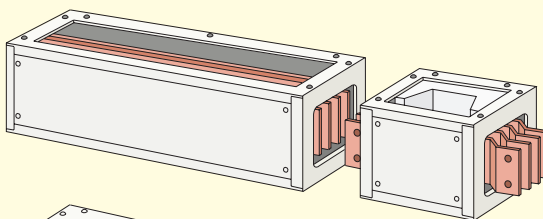
In other words...
it is a Genuine Form 4, Type 2,
to BS EN 60439-1

Horizontal Busbars

- 800A, 4 Pole, 50kA-1 Second
- 192mm, high Enclosure (1 mod) integrates with all system enclosures
- Cableway version has compartmented busbars to allow 'Through' cable access
- Pre-punched profile accommodates all sets of connections

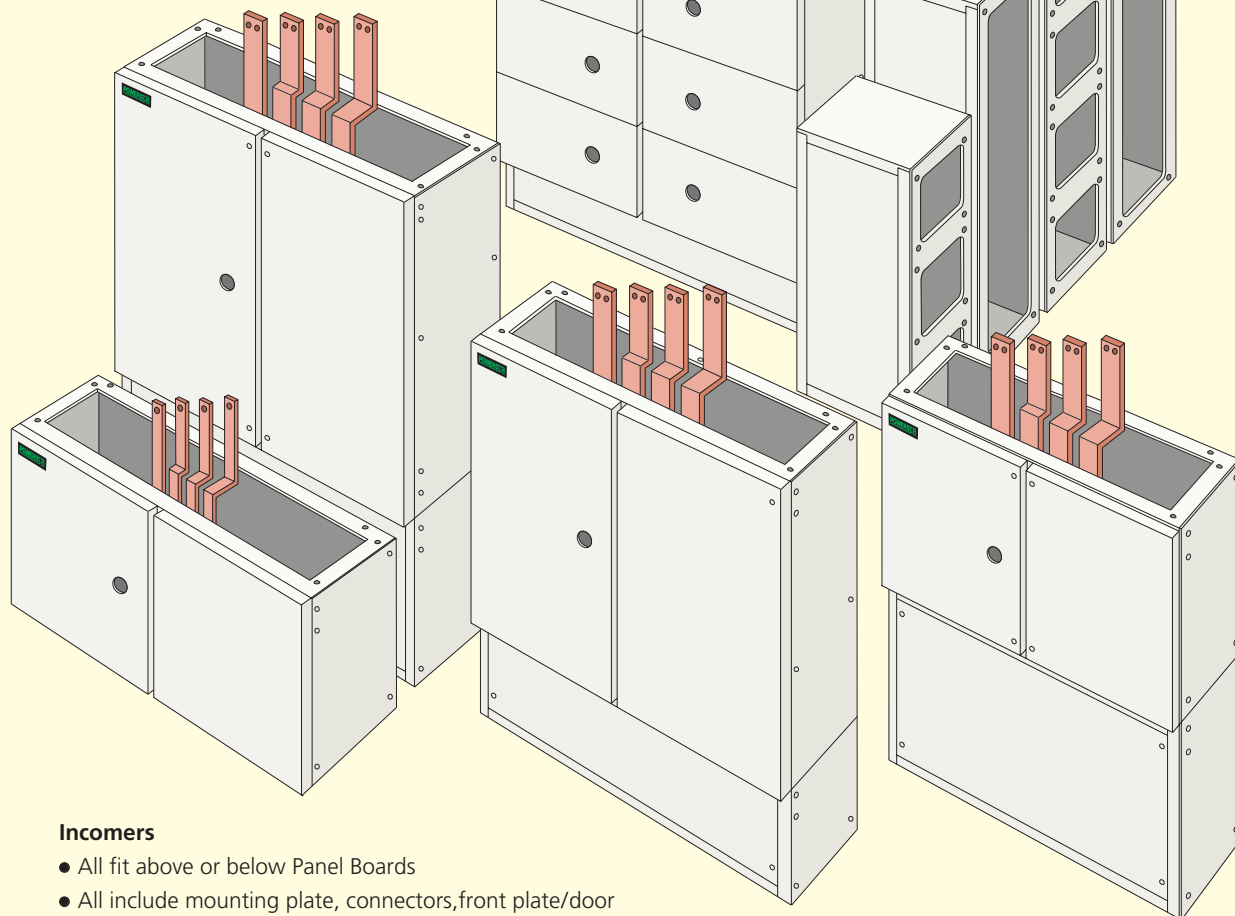
Horizontal Busbar System

- 800A, 4 Pole, 50kA - 1 second
- 768mm wide, 4 Mod.
- 192mm high, 1 Mod.
- Pre-Punched Busbar accommodates all connections



Form 4 MCCB Panelboards

- 800A, 4 Pole Busbars 50kA - 1 second
- One range Fuse Switch, 63A-200A, TP&N
- One range 'F' MCCB, 25A-250A, TP&N
- One range 'J' MCCB, 16A-200A, TP&N
- All units 768mm wide, 4 mod.
- Available as:
 - 6 way, 768mm high, 4 Mod.
 - 10 way, 1152mm high, 6 mod.



Cableways & Enclosures

- Enclosures
768mm wide,
4 Mod.
- Cableways
288mm wide,
1 1/2 Mod.
- Both Available
1-6 mod.
192mm-1152mm
- 265mm deep

Incomers

- All fit above or below Panel Boards
- All include mounting plate, connectors, front plate/door
- All suitable for -but exclude- appropriate MCCB/Fuse Switch
- All 768mm wide, 4 Mod.

- 1 - 'J' or 'F' MCCB, 576mm high, 3 Mod.
- 1 - 'L' MCCB-630A max, 768mm high, 4 Mod.
- 1 - 'N' MCCB-800A max, 960mm high, 5 Mod.
- 1 - 200A Fs Sw, 576mm high, 3 Mod.
- 1 - 400A Fs Sw, 768mm high, 4 Mod.
- 1 - 800A Fs Sw, 960mm high, 5 Mod.



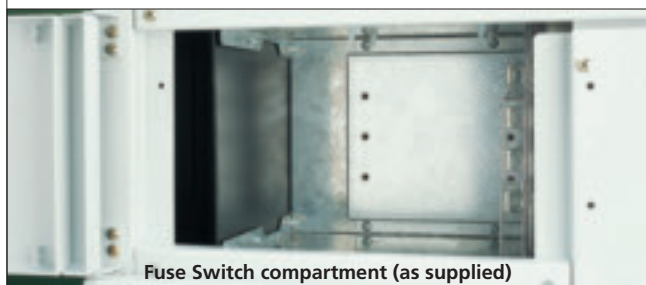
KP4F810



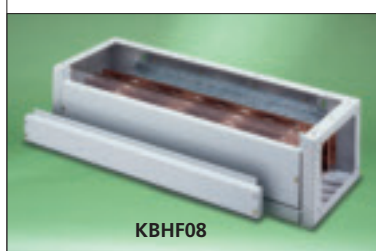
KP4S806



MCCB compartment (as supplied)



Fuse Switch compartment (as supplied)



KBHF08



KBHC08

FORM 4 MCCB & FUSE SWITCH PANEL BOARDS

'F' Frame MCCBs 25A to 250A TP 35 or 50kA

Number of Ways	Modular Height	Height mm	
6	4	768	KP4F806
10	6	1152	KP4F810

See page 162 for 'F' MCCB details

Order door interlocked handle with MCCB

'J' Frame MCCBs 16A to 200A TP or 4P 25kA

Number of Ways	Modular Height	Height mm	
6	4	768	KP4J806
10	6	1152	KP4J810

See page 161 for 'J' MCCB details

Order door interlocked handle with MCCB

Fuse Switch 63A to 200A TP&N

Number of Ways	Modular Height	Height mm	
6	4	768	KP4S806
10	6	1152	KP4S810

See page 141 for Fuse Switch details

Door interlocked handle and neutral link are supplied with the Fuse Switch

- Fully enclosed 4 Pole 800A Busbars, 50kA for 1 second-ASTA.
- Each device (MCCB or Fuse Switch) within its own compartment, is operated by door interlocked handle. Form 4 Type 2, BSEN 60439-1
- MCCB Panel Boards include Neutral link assembly pre-fitted to each outgoing way. On 'J' Frame boards this link can be removed to accommodate 4P MCCBs.
- See page 226 for Cabling information.
- All Panel Boards supplied with 2 Gland/End Plates and 2-Side Plates, prefitted.

CABLING ACCESSORIES, SPARES

Add on 'Flag' Busbar extension kit	KPXEF4*
Gland/End Plate, Steel (standard), Enclosure width	KXEEPS
Gland/End Plate, Brass, Enclosure width	KXEEPB
Gland/End Plate, Aluminium (4mm), Enclosure width	KXEEPA

*Required if connecting to both ends of Panel Board's Busbar system.

Gland/End Plate, Steel (Standard), Cableway width	KXCEPS
Gland/End Plate, Brass, Cableway width	KXCEPB
Gland/End Plate, Aluminium (4mm), Cableway width	KXCEPA
Cross Strap, Standard, Enclosure width	KXCCSS
Cross Strap, Standard, Cableway width	KXCCSS

HORIZONTAL BUSBAR SYSTEM & CONNECTIONS

An 800A 4 Pole, Busbar system that uses enclosures the same width and depth as Form 2 Panel Boards. The Busbars are pre-punched to accommodate various sets of copper connections allowing horizontal as well as vertical extension of Panel Board units. Fault rated, 50kA for 1 second-ASTA.

Horizontal 800A 4 Pole Main Busbar	KBHF08
Cableway Busbar (allows cables to pass through)	KBHC08
800A Horizontal Busbar connecting links	KBHL08

Connections from all Form 4 Panel Boards to 800A Horizontal Busbar **KCP4808**

Busbar supplied with 1-Gland/End Plate, 2-Side Plates and 1 Cross Strap.



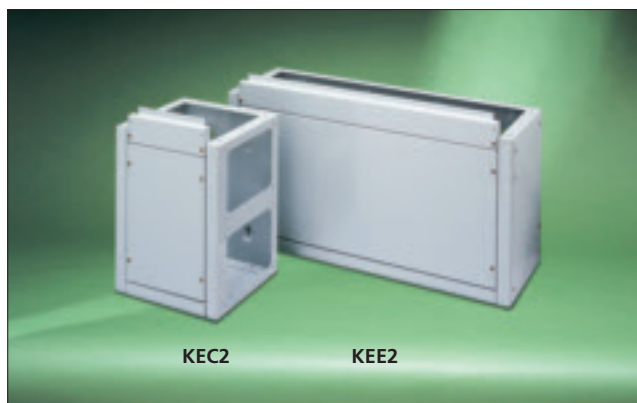
KI4N1



KI4S4



KBHF08 fitted above
KP4FB06 using KCP4808



KEC2

KEE2

INCOMING UNITS, FORM 4 MCCB & FUSE SWITCH PANEL BOARDS

These units use the same modular enclosures as the Form 4 Panel Boards. The Incoming MCCB assemblies include Neutral link, Form 4 shielding and all preformed interconnections. Incoming Fuse Switch assemblies include Form 4 shielding and all preformed interconnections. They do Not, however, include the incoming device - this must be ordered separately. As with the Panel Board, the incoming device is housed within its own compartment, behind a hinged door and is operated by a door mounted interlocked operating handle.

Incoming assemblies are suitable for fixture above or below Form 4 Panel Boards.

	Mod Height	Height mm	
Assembly to accommodate			
1- 'N' Frame, TP MCCB, Max rating 800A	5	960	KI4N1
Front Flat Terminal MCCB only			
See page 164 for MCCB details			
Order Door Interlocked handle with MCCB			
Assembly to accommodate			
1- 'L' Frame, TP/4P MCCB, Max rating 630A	4	768	KI4L1
See page 163 for MCCB details			
Order Door Interlocked handle with MCCB			
Assembly to accommodate			
1- 'F' Frame, TP MCCB, Max rating 250A	3	576	KI4F1
See page 162 for MCCB details			
Order Door Interlocked handle with MCCB			
Assembly to accommodate			
1- 'J' Frame, TP/4P MCCB, Max rating 200A	3	576	KI4J1
See page 161 for MCCB details			
Order Door Interlocked handle with MCCB			
Assembly to accommodate			
1- 800 Amp, TPN/4P Fuse Switch	5	960	KI4S8
See page 141 for Fuse Switch details			
Door Interlocked handle supplied with Fuse Switch			
Assembly to accommodate			
1- 400A, TPN/4P Fuse Switch	4	768	KI4S4
See page 141 for Fuse Switch details			
Door Interlocked handle supplied with Fuse Switch			
Assembly to accommodate			
1- 200A, TPN/4P Fuse Switch	3	576	KI4S2
See page 141 for Fuse Switch details			
Door Interlocked handle supplied with Fuse Switch			
• To accommodate 4 Pole MCCBs the prefitted Neutral Link must be removed. • Fuse Switches supplied with Neutral Link, Handle & Terminal Shroud. • All Incoming Units supplied with 1-Gland/End Plate, 2-Side Plates and 1-Cross Strap. • See page 226 for Cabling information			

INDIVIDUAL ENCLOSURES AND CABLEWAYS

Enclosures are 768mm wide (4 mod). Cableways are 288mm wide (1½ mod). Both units are 265mm deep and have slotted sides to allow horizontal access to any adjacent unit. Both are supplied with screw fixed front cover plates.

Modular Height	Height mm	Cableway 288mm W	Enclosure 768mm W	Side Plate
1	192	KEC1	KEE1	KXESP1
2	384	KEC2	KEE2	KXESP2
3	576	KEC3	KEE3	KXESP3
4	768	KEC4	KEE4	KXESP4
5	960	KEC5	KEE5	KXESP5
6	1152	KEC6	KEE6	KXESP6

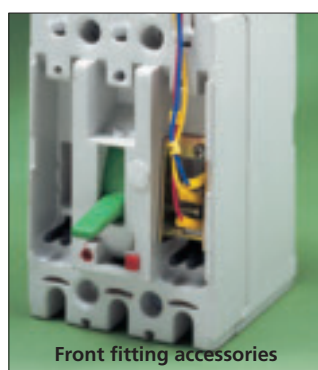
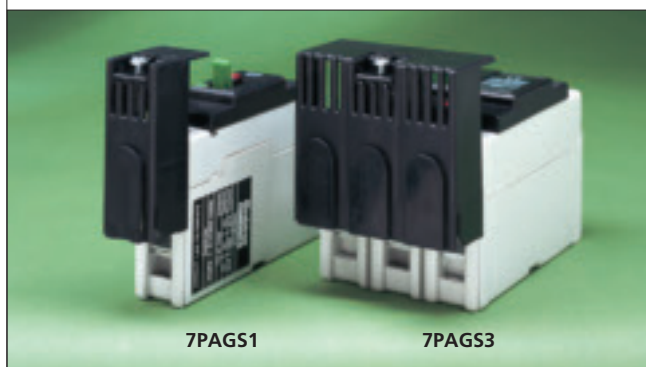
- Enclosures supplied with 1-Gland/End Plate, 2 Side Plates and 1-Cross Strap.
- Cableways supplied with 1-Gland/End Plate and 1-Cross Strap.



MOULDED CASE CIRCUIT BREAKERS

Five Frame sizes, 16A to 1600A with a full range of Accessories and Enclosures

- 'G': 16-125A, 16/25kA, 1, 3 & 4 Pole
- 'J': 16-200A, 25kA, 1, 3 & 4 Pole
- 'F': 25-250A, 35/50kA, 3 Pole
- 'L': 250-800A, 32/50kA, 3 & 4 Pole
- 'N': 800-1600A, 50kA, 3 Pole



G FRAME MCCBs

16kA Rating	1 Pole LIST No
16	7PBGB116
20	7PBGB120
25	7PBGB125
32	7PBGB132
40	7PBGB140
50	7PBGB150
63	7PBGB163
80	7PBGB180
100	7PBGB1100
125	7PBGB1125

16kA Rating	3 Pole LIST No	4 Pole LIST No
16	7PBGB316	N/A
20	7PBGB320	N/A
25	7PBGB325	7PBGB3N25
32	7PBGB332	7PBGB3N32
40	7PBGB340	7PBGB3N40
50	7PBGB350	7PBGB3N50
63	7PBGB363	7PBGB3N63
80	7PBGB380	7PBGB3N80
100	7PBGB3100	7PBGB3N100
125	7PBGB3125	7PBGB3N125

25kA Rating	3 Pole LIST No	4 Pole LIST No
16	7PBGN316	N/A
20	7PBGN320	N/A
25	7PBGN325	7PBGN3N25
32	7PBGN332	7PBGN3N32
40	7PBGN340	7PBGN3N40
50	7PBGN350	7PBGN3N50
63	7PBGN363	7PBGN3N63
80	7PBGN380	7PBGN3N80
100	7PBGN3100	7PBGN3N100
125	7PBGN3125	7PBGN3N125

- Fixed Magnetic and Thermal elements
- MCCB supplied with cage type cable clamps
- 70mm² max cable size
- Front fitting electrical accessories
- Dual size escutcheon cutout 46mm or 79mm high

G FRAME MCCB ACCESSORIES ELECTRICAL

Shunt Trip Assembly (Inc. Aux Sw)	LIST No
18-30V ac: 12-36 V dc	7PAGT030
110-120V ac:	7PAGT110
220-240V ac:	7PAGT240
380-415V ac:	7PAGT415

Auxiliary Contacts (Changeover)	
1-N/O 1-N/C	7PAGA1
2-N/O 2-N/C	7PAGA2

G FRAME MCCB ACCESSORIES GENERAL

	LIST No
Terminal Shrouds 1 Pole	7PAGS1
Terminal Shrouds 3 Pole	7PAGS3
Interphase Barrier (2)	7PAGIB
Dolly Locking Device	7PAGDLD
Padlock for above	748
Door Interlock Rotary Handle	7PAGHR



J FRAME MCCBs

Current Rating (A)	Minimum Setting (A)	1 Pole LIST No	3 Pole LIST No	3 P SwN LIST No
16	13	7PBJN116	7PBJN316	N/A
20	16	7PBJN120	7PBJN320	N/A
25	17.5	7PBJN125	7PBJN325	7PBJN3N25
32	22.5	7PBJN132	7PBJN332	7PBJN3N32
40	28	7PBJN140	7PBJN340	7PBJN3N40
50	35	7PBJN150	7PBJN350	7PBJN3N50
63	44	7PBJN163	7PBJN363	7PBJN3N63
80	56	7PBJN180	7PBJN380	7PBJN3N80
100	70	7PBJN1100	7PBJN3100	7PBJN3N100
125	88	7PBJN1125	7PBJN3125	7PBJN3N125
160	112	7PBJN1160	7PBJN3160	7PBJN3N160
200	140	7PBJN1200	7PBJN3200	7PBJN3N200
Switch Disconnecter		7PDJ1200	7PDJ3200	7PDJ3N200

JM FRAME MOTOR DUTY MCCBs

'JM' Frame MCCBs have higher magnetic settings than standard 'J' Frame

Current Rating (A)	Minimum Setting (A)	3 Pole LIST No
50	35	7PBJN3M50
63	44	7PBJN3M63
80	56	7PBJN3M80
100	70	7PBJN3M100
125	88	7PBJN3M125
160	112	7PBJN3M160
200	140	7PBJN3M200

- 25kA Icu at 415V ac
- Fixed Magnetic elements
- 70 – 100% adjustable thermal elements (25A-200A)
- 80 – 100% adjustable thermal elements (16A-20A)
- Cable clamps at both ends, 150mm² max
- Switched neutral on LHS



J FRAME MCCB ACCESSORIES ELECTRICAL

Shunt Trip Assembly (Inc. Aux Sw)*	LIST No
18-30V ac: 12-36 V dc	7PAJT030
110-120V ac:	7PAJT110
220-240V ac:	7PAJT240
380-415V ac:	7PAJT415
Under Voltage Release (Inc. Power Pack)*	
110-120V ac (Inc. transformer)	7PAJU110
220-240V ac	7PAJU240
380-440V ac (Inc. transformer)	7PAJU440
Auxiliary Contacts (Changeover)	
1-N/O 1-N/C	7PAJA1
2-N/O 2-N/C	7PAJA2

* Shunt trip or UVR can be fitted - not both

J FRAME MCCB ACCESSORIES GENERAL

	LIST No
Terminal Shroud 1 Pole	7PAJS1
Terminal Shroud 3 Pole	7PAJS3
Terminal Shroud 4 Pole	7PAJS4
Interphase Barrier (2)	7PAJIB
Cable Clamps-Set of 3	7PAJCC
Cable Extension Set (to accommodate 185/240mm cable sockets)	7PAJEC
Neutral Link Assembly	7PAJN
Dolly Locking Device	7PAJDLD
Padlock for above	7PAJFP
Door Interlock Rotary Handle	7PAJHR

'J' MCCBs used with System Powerstar

Form 2: • 1P and 3P MCCBs only
• Terminal Shrouds if required, outgoing side only

Form 4: • 3P and 4P MCCBs only
• Door Interlock handle must be ordered for each MCCB used
• Terminal Shrouds, if required outgoing side only





7PBFH3250

7BFS3200



7PAFEC



7PAFIB



7PAFDLD



7PAFS3



7PAFHR

F FRAME MCCBs

Current Rating (A)	3 Pole LIST No 35 kA	3 Pole LIST No 50 kA
25	7PBF325	7PBFH325
32	7PBF332	7PBFH332
40	7PBF340	7PBFH340
50	7PBF350	7PBFH350
63	7PBF363	7PBFH363
80	7PBF380	7PBFH380
100	7PBF3100	7PBFH3100
125	7PBF3125	7PBFH3125
160	7PBF3160	7PBFH3160
200	7PBF3200	7PBFH3200
250	7PBF3250	7PBFH3250
Switch Disconnecter		
250		7PDFH3250

- Conforms to BS EN 60947-2
- 35/50 kA Icu at 415 V ac
- Fixed Magnetic
- Fixed Thermal
- Double Insulated
- Terminal capacity 150mm²
- Standard supply, 3x cable clamps - 150mm² 3x M8 studs
- Front fitting electrical accessories

F FRAME MCCB ACCESSORIES ELECTRICAL

Shunt Trip Assembly (Inc. Aux Sw)*	LIST No
18-30V ac: 12-36 V dc	7PAFT030
110-120V ac:	7PAFT110
220-240V ac:	7PAFT240
380-415V ac:	7PAFT415
Under Voltage Release (Inc. Power Pack)*	
110-120V ac (Inc. transformer)	7PAFU110
220-240V ac	7PAFU240
380-440V ac (Inc. transformer)	7PAFU440
* Shunt trip or UVR can be fitted - Not both	
Auxiliary Contacts (Changeover)	
1-N/O 1-N/C	7PAFA1
2-N/O 2-N/C	7PAFA2

F FRAME MCCB ACCESSORIES GENERAL

	LIST No
Terminal Shroud 3 Pole	7PAFS3
Interphase Barrier (2)	7PAFIB
Cable Clamps-Set of 3	7PAFCC
Cable Extension Set (to accommodate 185/240mm cable sockets)	7PAJEC
Neutral Link Assembly	7PAFN
Dolly Locking Device	7PAFDLD
Padlock for above	7PAFJP
Door Interlock Rotary Handle	7PAFHR

'F' MCCBs used with System Powerstar

Form 2: • Terminal Shrouds if required, outgoing side only

Form 4: • Door Interlock handle must be ordered for each MCCB used
• Terminal Shrouds, if required outgoing side only



LS FRAME MCCBs

Current Rating (A)	Minimum Setting (A)	3 Pole LIST No	3 P SwN LIST No
250	175	7PBL3250	7PBL3N250
315	220	7PBL3315	7PBL3N315
400	280	7PBL3400	7PBL3N400
500	350	7PBL3500	7PBL3N500
630	440	7PBL3630	7PBL3N630
800	560	7PBL3800	7PBL3N800

- Conforms to BS EN 60947-2
- 32kA Icu at 415V ac
- Magnetic adjustable 5 – 10 rated current 250A – 315A
- Magnetic adjustable 4 – 10 rated current 400A – 800A
- Thermal adjustable 70 – 100% rated current 250A – 800A

Each MCCB supplied with a set of cranked copper extension terminals,

LH FRAME MCCBs

Current Rating (A)	Minimum Setting (A)	3 Pole LIST No	3 P SwN LIST No
250	175	7PBLH3250	7PBLH3N250
315	220	7PBLH3315	7PBLH3N315
400	280	7PBLH3400	7PBLH3N400
500	350	7PBLH3500	7PBLH3N500
630	440	7PBLH3630	7PBLH3N630
800	560	7PBLH3800	7PBLH3N800

LH Frame Switch Disconnectors

400	–	7PDLH3400	7PDLH3N400
630	–	7PDLH3630	7PDLH3N630
800	–	7PDLH3800	7PDLH3N800

- Conforms to BS EN 60947-2
- 50kA Icu at 415V ac
- Magnetic adjustable 5 – 10 rated current 250A – 315A
- Magnetic adjustable 4 – 10 rated current 400A – 800A
- Thermal adjustable 70 – 100% rated current 250A – 800A

Each MCCB supplied with a set of cranked copper extension terminals,

LH Frame Load connections (bottom), and Line connections (top) must be observed to obtain 50kA rating.

Switch neutral fitted on left hand side.

L FRAME MCCB ACCESSORIES ELECTRICAL

Shunt Trip Assembly (Inc. Aux Sw)	LIST No
18-30V ac: 12-36 V dc	7PALT030
110-120V ac:	7PALT110
220-240V ac:	7PALT240
380-415V ac:	7PALT415

Under Voltage Release (Inc. Power Pack)

110-120V ac (Inc. transformer)	7PALU110
220-240V ac	7PALU240
380-440V ac (Inc. transformer)	7PALU440

Auxilliary Contacts (Changeover)

1-N/O 1-N/C	7PALA1
2-N/O 2-N/C	7PALA2

L FRAME MCCB ACCESSORIES GENERAL

	LIST No
Interphase Barrier (2)	7PALIB
Dolly Locking Device	7PALNDLD
Padlock for above	7PALNP
Neutral Link Assembly 400A	7PALN4
Neutral Link Assembly 800A	7PALN8
Set of 3 Copper Extension Terminals	7PALEC
Key Interlock - Factory Fitted	7PALHC
Door Interlock Rotary Handle	7PALHR

'L' MCCBs used with System Powerstar Incomer Housings

Form 2: • 3P or 4P as required

Form 4: • 3P or 4P as required. Door Interlock handle must be ordered for each MCCB used



N FRAME MCCBs

Front Flat Terminals	3 Pole with Front Terminals LIST No
Current Rating (A)	
800	7PBNH3800FF
1000	7PBNH31000FF
1250	7PBNH31250FF
1600	7PBNH31600FF

Switch Disconnectors

800 Amp	7PDN3800FF
1250 Amp	7PDN31250FF
1600 Amp	7PDN31600FF

Rear 'T' Terminals	3 Pole with Rear Terminals LIST No
Current Rating (A)	
800	7PBNH3800TT
1000	7PBNH31000TT
1250	7PBNH31250TT
1600	7PBNH31600TT

Switch Disconnectors

1250 Amp	7PDN31250TT
1600 Amp	7PDN31600TT

- Conforms to BS EN 60947-2
- 50kA Icu at 415V ac
- Magnetic adjustable (See chart on page 237)
- Thermal adjustable (See chart on page 237)
- See page 236 for Front Flat and Rear 'T' Terminal details

N FRAME MCCB ACCESSORIES ELECTRICAL

Shunt Trip Assembly (Inc. Aux Sw)	LIST No
18-30V ac: 12-36 V dc	7PANT030
110-120V ac:	7PANT110
220-240V ac:	7PANT240
380-415V ac:	7PANT415

Under Voltage Release (Inc. Power Pack)

110-120V ac (Inc. transformer)	7PANU110
220-240V ac	7PANU240
380-440V ac (Inc. transformer)	7PANU440

Auxiliary Contacts (Changeover)

1-N/O 1-N/C	7PANA1
2-N/O 2-N/C	7PANA2

N FRAME MCCB ACCESSORIES GENERAL

	LIST No
Dolly Locking Device	7PALNDLD
Padlock for above	7PALNP
Neutral Link Assembly 800A	7PANN08
Neutral Link Assembly 1600A	7PANH16
Key Interlock - factory fitted	7PANHC
Door Interlock Rotary Handle	7PANHR

'N' MCCBs used with System Powerstar

Form 2: • 3P MCCB, front flat, only

Form 4: • 3P MCCB, front flat only

- Door Interlock handle must be ordered for each MCCB used



7PGPG3N as supplied



7PGPG4P as supplied



7PGPJ3N with 'J' MCCB fitted



7PGPF3N with 'F' MCCB fitted



7PGPL3N with 'L' MCCB fitted

GENERAL PURPOSE MCCB ENCLOSURES

Order MCCBs separately.

G FRAME

LIST No

Suitable for SP or TP MCCB; fitted with integral Neutral link
Suitable for 4P MCCB

7PGPG3N
7PGPG4P

J FRAME

LIST No

Suitable for SP or TP MCCB; fitted with integral Neutral link
Suitable for 4P MCCB
Additional Cable Spreader Box

7PGPJ3N
7PGPJ4P
19100CSB

F FRAME

LIST No

Suitable for TP MCCB; fitted with integral Neutral link
Additional Cable Spreader Box

7PGPF3N
19100CSB

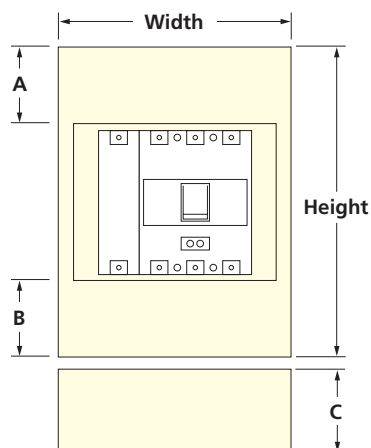
L FRAME

LIST No

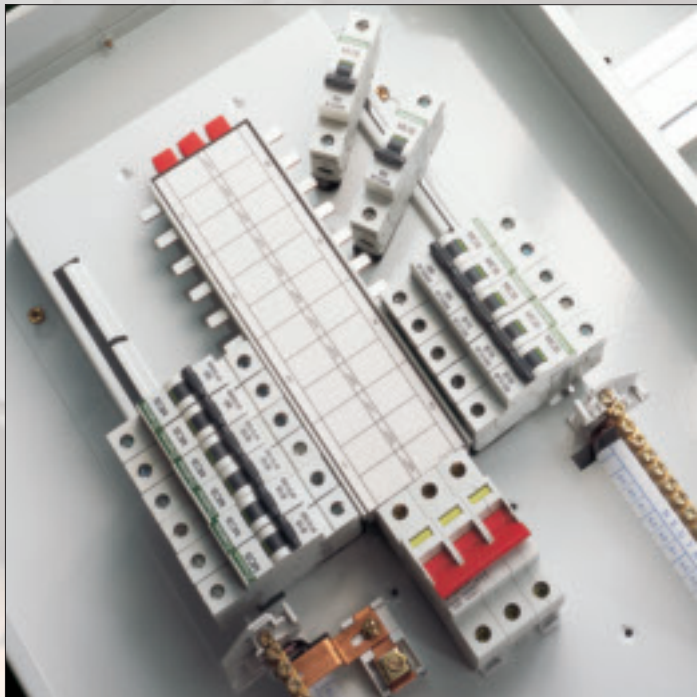
Suitable for TP MCCB; fitted with integral Neutral link
Suitable for 4P MCCB
Additional Cable Spreader Box

7PGPL3N
7PGPL4P
19200CSB

- Surface mounting Sheet Steel Enclosures
- Removable, screw fixed, front cover plates
- IP31
- Paint finish RAL7035



Frame Size	Width	Height	Depth	A	B	Add on CSB C
G	158	325	136	75	130	N/A
J	262.5	420	170	130	130	105
F	262.5	420	170	115	115	105
L	420	735	230	205	205	210



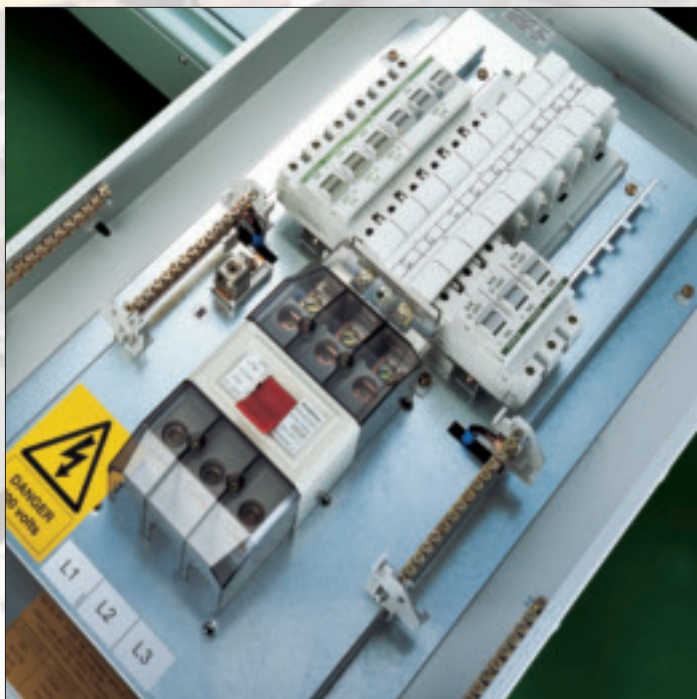
Loadstar



Powerstar 125

Assembly and Factory fitting of all the standard catalogue items, including:

- Incoming Devices
- Outgoing MCCBs
- DIN Rail and Control Devices
- Meter Packs



Polestar

Factory assembly and fitting of all the standard catalogue items, including:

- Incoming Devices
- Outgoing MCBs
- DIN Rail and Control Devices
- Meter Packs

Specialised Customisation Including:

- IP66 Boards
- Non Standard variants



System Powerstar



FACTORY-BUILT ASSEMBLIES

The Crabtree standard product range is complemented by extensive facilities for the design and manufacture of factory-built assemblies. Made to exacting standards, Crabtree design, engineer and build distribution equipment, from custom MCB boards for specific applications, to modular switchboards.

System Powerstar

Factory assembly and fitting of all the standard catalogue items,

- Form 2 Panel Boards, with outgoing 'J' or 'F' Frame MCCBs
- Incoming MCCBs, Switch Disconnectors or Fuse Switches
- Form 4 Panel Boards with outgoing 'J' or 'F' Frame MCCBs, 63A to 200A Fuse Switches
- Incoming MCCBs, Switch Disconnector or Fuse Switches
- Specialised Panels incorporating Horizontal Busbar Systems, MCCBs and Fuse Switches

Our Technical Services staff will provide advice and quotations for the application of Crabtree products, co-ordinating them with your project requirements.



C50

MCBs AND DISTRIBUTION BOARDS

The tried and trusted Magnetic/Hydraulic mechanism of the C50 remains as before, albeit in a slightly reduced range. The Enclosure system for the C50 MCBs however, has undergone some dramatic change.

The old enclosure system with separate Enclosure/ Interior and 'dished front plates is being phased out. Current stocks, once exhausted, will not be replaced.

The New C50 Enclosure System utilises a modern style enclosure with doors fitted as standard, but will only be available in assembled format with 100A or 200A Incoming Isolators prefitted.



C08/3/100



C04/3/200



C06/1/100

TP&N DISTRIBUTION BOARDS, TYPE B (NEW ENCLOSURE)

Assembled boards only, with hinged door & catch

TP Outgoing

List No

100A TP Main Isolator Fitted

4	C04/3/100
6	C06/3/100
8	C08/3/100
10	C10/3/100
12	C12/3/100

For flush mounting add suffix /F

200A TP Main Isolator Fitted

4	C04/3/200
6	C06/3/200
8	C08/3/200
10	C10/3/200
12	C12/3/200

All boards supplied as standard with hinged outer door and catch (lock extra), and removable top/bottom gland plates

100A Isol 50mm² max

200A Isol 120mm² max

For flush mounting add suffix /F

SP&N DISTRIBUTION BOARDS, TYPE A (NEW ENCLOSURE) STEEL

Assembled boards only, with hinged door & catch

SP Outgoing ways

List No

100A DP Main Isolator Fitted

6	C06/1/100
9	C09/1/100
12	C12/1/100

For flush mounting add suffix /F

Extra for cylinder lock to replace catch- new boards only

16CL

TP & N DISTRIBUTION BOARDS TYPE B (ORIGINAL ENCLOSURE)

AVAILABLE ONLY WHILST STOCKS LAST

100A TPN Old Type

No. of TP Ways	Without Isolator			With Isolator		
	Box & Interior	Front Plates & Cover Surface	Flush	Box & Interior	Front Plate & Cover Surface	Flush
4	4/4	36/1	36/3	4/48	36/18	36/38
6	6/4	39/1	39/3	6/48	39/18	39/38
8	8/4	37/1	37/3	8/48	37/18	37/38
10	10/4	40/1	40/3	10/48	40/18	40/38
12	12/4	38/1	38/3	Complete Board: 162/18		

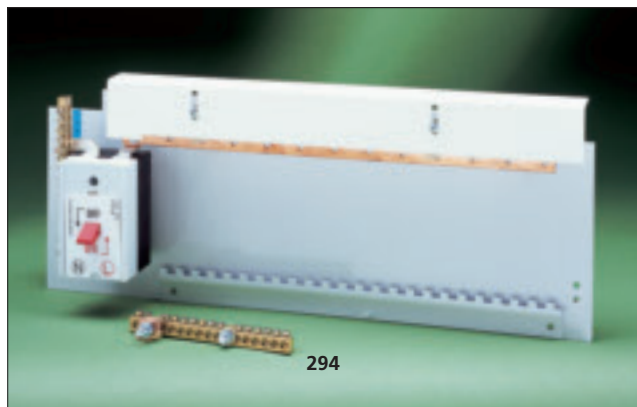
200A TPN Old Type with Isolator Fitted

4 Way	154/1/200	8 Way	158/1/200
6 Way	156/1/200	10 Way	160/1/200
		12 Way	162/1/200

CONSUMER UNIT, SINGLE DP ISOLATOR (ORIGINAL ENCLOSURE) STEEL

SP Ways	Box & Interior	Front Plate only		Front Plate & Cover	
		Surface	Flush	Surface	Flush
6	6/1	30	30/2	30/1	30/3
9	9/1	31	31/2	31/1	31/3
12	12/1	32	32/2	32/1	32/3

If hinged cover is required as lockable add 9 to Front Plate List No.



BACKPLATES AND PAN ASSEMBLIES

Single Pole Type A

SP Ways	Cons Unit Interior c/w 100A DP Isol
4	291
6	292
9	293
12	294

SP Pan Assemblies include Phase, Neutral & Earth.



Single Pole MCB Triple Pole MCB

MINIATURE CIRCUIT BREAKERS

Current Rating A	Single Pole MCB	Triple Pole MCB
2.5	50/025	N/A
5	50/05	53/65
10	50/10	53/10
15	50/15	53/15
20	50/20	53/20
30	50/30	53/30
40	50/40	53/40
50	50/50	53/50
60	50/60	53/60

- MCBs Type C (5-10 In)
- 4.5kA
- BSEN 60898
- 16mm² Terminals



100/SW3

200/22B

SWITCH DISCONNECTORS

100A DP As used in Consumer Unit	80/1
200A TP As Used in 200A TP DBs	200/22B
100A TP As Used in 100A TP DBs	100/SW3

INDIVIDUAL ENCLOSURES

Metal 4 Pole Enclosure	4/1
------------------------	-----

C50 MCB & DISTRIBUTION BOARD ACCESSORIES

MCB Locking Device (Universal)	MCBLD
Standard MCB Terminal Clamp - 16mm ²	90
Heavy Duty Tunnel Clamp - 35mm ²	90/1
Moulded Single Pole Blank Plate - Brown	191/1



191/1



200/22B



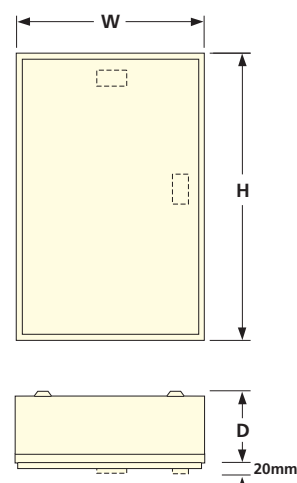
MCBLD fitted



4/1

	W	H	D
C04/3/100	430	650	140
C06/3/100	430	675	140
C08/3/100	430	815	140
C10/3/100	430	815	140
C12/3/100	430	895	140
C04/3/200	430	650	140
C06/3/200	430	675	140
C08/3/200	430	675	140
C10/3/200	430	815	140
C12/3/200	430	895	140
C06/1/100	286	229	95
C09/1/100	336	229	95
C12/1/100	431	229	95

Add 50mm to W for Flush





CEICON CONTACTORS & STARTERS

Ceicon remains the heart of Crabtree's control equipment range, with a comprehensive selection of mini and standard contactors, overload relays, enclosures and accessories. New improvements such as three terminal coils, new overload relays, and accessories signal ongoing commitment to the development of Ceicon.

Available in component form to mix and match, Ceicon is suitable for either panel builders or the creation of individual enclosed starters.



DIRECT-ON-LINE STARTERS up to 40A

- For example DOL starter, motor rating 4kW at 400/415V 3ph, contactor with 220/240V coil, enclosure with start/stop buttons & integral motor circuit switch: overload relay **55500/MC**, contactor **53400/ZB**, enclosure **55011/AA0**.

- 1 Locate the kW, HP or Full Load Current of the motor and select the overload relay.
- 2 Choose the contactor with the appropriate coil voltage (alternative coils see page 181).
- 3 Choose the enclosure with the required pushbuttons (with or without MCS).



Overload relay				Direct-on contactor		Enclosure	
Approx motor rating at 400/415V 3ph		Full load current (A)	LIST No	Coil voltage	LIST No	Pushbutton arrangement	LIST No
kW	HP	min-max		50Hz			
0.06	0.08	0.15-0.25	55500/BC	C10 24V 110V 230V 400V	53400/ZP 53400/ZM 53400/ZB 53400/ZJ	Start & Stop None Reset only	55001/AA0* 57001/AA1 57001/AA2
0.12	0.16	0.24-0.4	55500/CC				
0.18	0.25	0.38-0.63	55500/DC				
0.25	0.33	0.6-1	55500/FC				
0.55	0.75	0.96-1.6	55500/GC				
1.1	1.5	1.5-2.5	55500/HC				
1.5	2	2.4-4	55500/JC				
2.2	3	3.8-6.3	55500/KC				
4	5.5	6-10	55500/MC	C14 110V 230V 400V	54400/ZM 54400/ZB 54400/ZJ	Start & Stop None Reset only	55011/AA0* 57011/AA1 57011/AA2
4	5.5	6-10	55500/MC				
5.5	7.5	6-10	55500/MC				
7.5	10	9.6-16	55500/NC	C19 110V 230V 400V	55400/ZM 55400/ZB 55400/ZJ	Start & Stop None Reset only	57001/AA0* 57001/AA1 57001/AA2
11	15	15-25	57500/PC				
15	20	24-40	57500/QC	C30 110V 230V 400V	57400/ZM 57400/ZB 57400/ZJ	Start & Stop None Reset only	57011/AA0* 57011/AA1 57011/AA2

with
Motor Circuit
Switch

with
Motor Circuit
Switch

Enclosures: IP66, Steel back box with Polycarbonate front.

* Start Switch 40600/XA included

Dimensions – see pages 260–261 Specification – see pages 241–242 Alternative coils see page 181

Wiring diagrams – see page 243

REVERSING STARTERS up to 40A

- For example reversing direct-on starter, motor rating 4kW at 400/415V 3ph, contactor with 380/415V coil, enclosure with 3 push buttons & integral motor circuit switch: overload relay **55500/MC**, contactor **53200/OJ**, enclosure **55011/AC0**.

- 1 Locate the kW, HP or Full Load Current of the motor and select the overload relay.
- 2 Choose the contactor with the appropriate coil voltage (alternative coils see page 181).
- 3 Choose the enclosure with the required pushbuttons (with or without MCS).



Overload relay				Reversing contactor		Enclosure	
Approx motor rating at 400/415V 3ph		Full load current (A) min-max	LIST No	Coil voltage 50Hz	LIST No	Push-button arrangement	LIST No
kW	HP						
0.06	0.08	0.15-0.25	55500/BC	C10 24V 110V 230V 400V	53200/OP 53200/OM 53200/OB 53200/OJ	I, II & 0 None Reset only	55001/AB0 57001/AB1 57001/AB2
0.12	0.16	0.24-0.4	55500/CC				
0.18	0.25	0.38-0.63	55500/DC				
0.25	0.33	0.6-1	55500/FC				
0.55	0.75	0.96-1.6	55500/GC				
1.1	1.5	1.5-2.5	55500/HC				
1.5	2	2.4-4	55500/JC				
2.2	3	3.8-6.3	55500/KC				
4	5.5	6-10	55500/MC	C14 110V 230V 400V	54200/OM 54200/OB 54200/OJ	I, II & 0 None Reset only	55011/AC0 57011/AC1 57011/AC2 } with Motor Circuit Switch
4	5.5	6-10	55500/MC				
5.5	7.5	6-10	55500/MC				
7.5	10	9.6-16	55500/NC	C19 110V 230V 400V	55200/OM 55200/OB 55200/OJ	I, II & 0 None Reset only	57001/AB0 57001/AB1 57001/AB2
11	15	15-25	57500/PC				
15	20	24-40	57500/QC				
11	15	15-25	57500/PC	C22 110V 230V 400V	56200/OM 56200/OB 56200/OJ	I, II & 0 None Reset only	57001/AB0 57001/AB1 57001/AB2
15	20	24-40	57500/QC				
15	20	24-40	57500/QC				
15	20	24-40	57500/QC	C30 110V 230V 400V	57200/OM 57200/OB 57200/OJ	I, II & 0 None Reset only	57011/AC0 57011/AC1 57011/AC2 } with Motor Circuit Switch
15	20	24-40	57500/QC				
15	20	24-40	57500/QC				

Enclosures: I, II & 0 versions supplied with separate legends FOR/REV, UP/DOWN, OPEN/CLOSE

C10-C30 are IP66, comprising Steel back box and Polycarbonate cover.

Dimensions – see pages 260–261 Specification – see pages 241–242 Alternative coils – see page 181

Wiring diagrams – see page 244

STAR-DELTA STARTERS up to 69A

- For example star-delta starter, motor rating 7.5kW at 380/415V AC3, contactor with 380/415V coil, enclosure with start/stop push buttons & integral motor circuit switch: overload relay **55500/MC**, star-delta contactor **55300/OJ**, enclosure **55011/AD0**.
- 1 Locate the kW, HP or Full Load Current of the motor and select the overload relay.
 - 2 Choose the contactor with the appropriate coil voltage (alternative coils see page 181).
 - 3 Choose the enclosure with the required pushbuttons (with or without MCS).



Overload relay				Star-delta contactor		Enclosure	
Approx motor rating at 400/415V 3ph		Full load current (A)		Coil voltage		Push-button arrangement	
kW	HP	min-max	LIST No	50Hz	LIST No		LIST No
2.2	3	4.1-6.9	55500/JC	C19 110V 230V 400V	55300/0M 55300/0B 55300/0J	Start & Stop	55001/AC0
4	5.5	6.5-10.9	55500/KC			None	57001/AC1
7.5	10	10.3-17.2	55500/MC			Reset only	57001/AC2
11	15	16.5-27.6	55500/NC			Start & Stop	55011/AD0
						None	57011/AD1
						Reset only	57011/AD2
						with Motor Circuit Switch	
20	25	25.9-43.3	57500/PC	C22 110V 230V 400V	56300/0M 56300/0B 56300/0J	Start & Stop	57001/AC0
						None	57001/AC1
						Reset only	57001/AC2
22	30	25.8-43.1	57500/PC	C30 110V 230V 400V	57300/0M 57300/0B 57300/0J	Start & Stop	57011/AD0
25	34	41.5-69	57500/QC			None	57011/AD1
						Reset only	57011/AD2
						with Motor Circuit Switch	

STAR-DELTA APPLICATION

For Star-delta units, the overload relay is connected in the delta loop and carries the motor winding current only in the delta mode. For ease of selection the ratings shown in the table are the equivalent motor (nameplate) currents. The overload relay scale is calibrated for direct-on line use and therefore its scale must be set to 0.58 times rated motor (nameplate) current. Star-Delta units are fitted with an electronic timing relay with a minimum adjustment range from 3 to 45 seconds. Timers have an additional built-in delay period between the 'star' contactor opening and the 'delta' contactor closing.

Enclosures: C19-C30 are IP66, comprising Steel back box and Polycarbonate cover.

Dimensions – see pages 260–261 Specification – see pages 241–242 Alternative coils/timers – see page 181

Wiring diagrams – see page 245

HEATING & LIGHTING CONTACTORS up to 85A

- For example TP & N enclosed contactor with switch disconnecter to control 85A heating load (AC1 duty): contactor **49400/XB**, enclosure **49011/AA1**. If additional space is required in the enclosure for control modules etc, select enclosure **49011/AE1**.

1 Check rating required and select contactor.

2 Choose enclosure with or without MCS for one contactor or two (or one with space for Control Module).



49400/XB



49001/AA1



49011/AE1

Contactor

Enclosure

AMPS PER POLE

Heating and general mixed loads. Slightly Inductive AC1 duty (A)	Mixed Load (A)	LIST No. (220/240V) 50Hz Coil	For one contactor with or without Switch disconnecter LIST No.	For two contactors (or one with space for control module) with or without Switch disconnecter LIST No.
25	15	Type C19 55400/ZB	57001/AA1 57011/AA1 } with Switch disconnecter	57001/AB1 57011/AC1 } with Switch disconnecter
35	20	Type C30 57400/ZB		
75	45	Type C43 48400/XB	49001/AA1 49011/AC1 } with Switch disconnecter	49001/AC1* 49011/AE1* } with Switch disconnecter
85	55	Type C63 49400/XB		

ACCESSORIES

Paralleling links available for single pole switching for the following contactors (2 sets required per contactor):



49000/ZK

Contactor type	Current carrying capacity Amps (AC1 duty)	Maximum cable size	LIST No.
C30	60	16mm ²	56000/ZK
C43/C63	120	50mm ²	49000/ZK

Neutral terminal Space is provided for a proprietary neutral terminal.

C3/C7 TRIPLE POLE MINI CONTACTORS

	RATING PER POLE (A)			AUXILIARY POLES		
TYPE	AC1 non inductive	AC3 inductive	Approx motor kW rating at 400/415V 3Ph	N/O	N/C	LIST No
AC COIL OPERATED						
C3	20	5	2.2	1	–	41400/Z
				–	1	41400/Y
C7	20	8.5	4	1	–	42400/Z
				–	1	42400/Y



41400/ZB

C3/C7 AUXILIARY CONTACT BLOCKS

4A 400/415V AC15

TYPE	CONTACTS		Mini Contactor LIST No	Control Relay LIST No
	Normally open	Normally closed		
2 pole	–	2	40000/M2S ▲	40600/C2S ▲
	1	1	40000/M2X ▲	40600/C2X ▲
	2	–	–	40600/C2T ▲
4 pole	–	4	–	40600/C4N ◆
	1	3	40000/M4P ◆	40600/C4P ◆
	2	2	40000/M4B ◆	40600/C4B ◆
	3	1	40000/M4C ◆	40600/C4C ◆
	4	–	–	40600/C4A ◆



40000/M2X

40000/M4B

▲ Suitable for C3 & C7 ◆ Suitable for C7 only

Enclosures: IP66, comprising Steel back box and Polycarbonate cover. Except * which comprise IP55 Steel cabinet and hinged gasketed door.

Dimensions – see pages 260–261 Specification – see pages 241–242 Alternative coils – see page 181

DIRECT-ON (TRIPLE POLE) CONTACTORS

TYPE	RATING PER POLE (A)			AUXILIARY POLES		
	AC1 non inductive	AC3 inductive	Approx motor kW rating at 400/415V 3Ph	N/O	N/C	LIST No
AC COIL OPERATED						
C10	20	8.3	4	1	—	53400/Z_
				—	1	53400/Y_
C14	20	11	5.5	1	—	54400/Z_
				—	1	54400/Y_
C19	25	14	7.5	1	—	55400/Z_
				—	1	55400/Y_
C22	35	22	11	—	—	56400/Z_
C30	40	28	15	—	—	57400/Z_

Coil selection Complete the List No. of the contactor selected by adding the appropriate coil code letter.
Preferred ac coils are **M** – 110/125V 50/60Hz, **B** – 220/240V 50/60Hz, **J** – 380/415V 50/60Hz with a full listing on page 181.

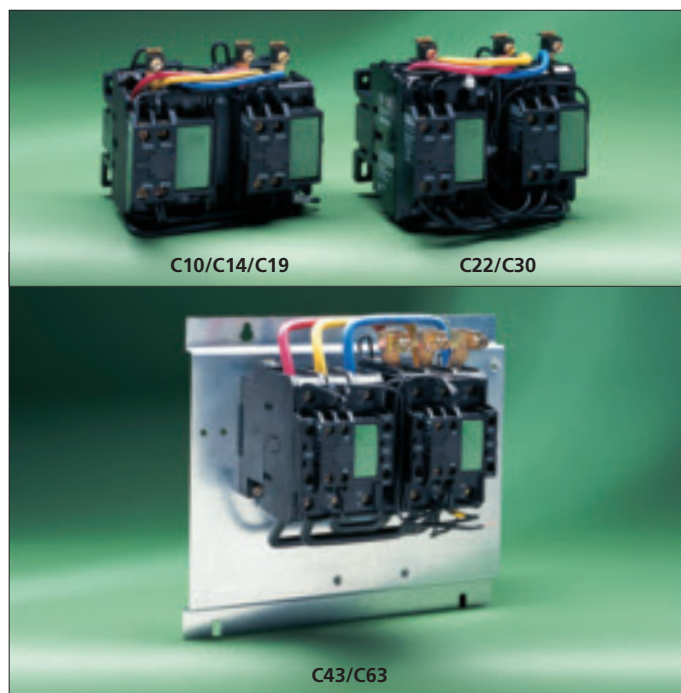


REVERSING CONTACTORS

with electrical & mechanical Interlock

		RATING	
TYPE	AC3	Approx motor kW rating at 400/415V 3Ph	LIST No
AC COIL OPERATED			
C10	8.3	4	53200/0_
C14	11	5.5	54200/0_
C19	14	7.5	55200/0_
C22	22	11	56200/0_
C30	28	15	57200/0_

Coil selection Complete the List No. of the contactor selected by adding the appropriate coil code letter.
Preferred ac coils are **M** – 110/125V 50/60Hz, **B** – 220/240V 50/60Hz, **J** – 380/415V 50/60Hz with a full listing on page 181.



STAR-DELTA CONTACTORS

with electrical & mechanical Interlock

RATING		LIST No	
TYPE	AC3		Approx motor kW rating at 400/415V 3Ph
AC COIL OPERATED			
C19	24	11	55300/0
C22	38	20	56300/0
C30	48	25	57300/0

Star Delta Contactors include electronic timer (adjustable 3–45s).

Coil selection Complete the List No. of the contactor selected by adding the appropriate coil code letter. Preferred ac coils are **M** – 110/125V 50/60Hz, **B** – 220/240V 50/60Hz, **J** – 380/415V 50/60Hz with a full listing on page 181.



OVERLOAD RELAYS

- Direct mounting onto appropriate contactor type.
- Differential tripping mechanism.
- Ambient temperature compensation.
- Manual/Automatic reset facility.
- Front mounted current adjustment dial.



APPROX MOTOR kW RATING		APPROX MOTOR HP RATING		Overload relay rating (A)	C3-C7 contactor mounting	C10-C19 contactor mounting	C22-C30 contactor mounting
Single phase 220/240V	Three phase 380/415V	Single phase 220/240V	Three phase 380/415V				
DIRECT-ON STARTING							
–	0.12	–	0.16	0.3–0.45	51500/DC	–	–
–	0.18	–	0.25	0.45–0.67	51500/EC	–	–
–	0.25	–	0.33	0.67–1.0	51500/FC	–	–
0.06	0.37	0.08	0.5	1.0–1.5	51500/GC	–	–
0.09	0.55	0.12	0.75	1.4–2.1	51500/HC	–	–
0.12	0.75	0.16	1.0	1.8–2.7	51500/IC	–	–
0.25	1.1	0.33	1.5	2.4–3.6	51500/JC	–	–
0.37	1.5	0.50	2.0	3.5–5.0	51500/KC	–	–
0.55	2.2	0.75	3.0	4.0–6.0	51500/LC	–	–
0.75	4	1.0	5.5	5.5–8.5	51500/MC	–	–
1.5	5.5	2.0	7.5	8.5–12.5	51500/NC	–	–
–	0.06	–	0.08	0.15-0.25	–	55500/BC	57500/BC
–	0.12	–	0.16	0.24-0.40	–	55500/CC	57500/CC
–	0.18	–	0.25	0.38-0.63	–	55500/DC	57500/DC
–	0.25	–	0.33	0.6-1.0	–	55500/FC	57500/FC
0.06	0.55	0.08	0.75	0.96-1.6	–	55500/GC	57500/GC
0.09	1.1	0.12	1.5	1.5-2.5	–	55500/HC	57500/HC
0.37	1.5	0.50	2	2.4-4.0	–	55500/JC	57500/JC
0.75	2.2	1.0	3	3.8-6.3	–	55500/KC	57500/KC
1.1	4	1.5	5.5	6.0-10.0	–	55500/MC	57500/MC
2.2	7.5	3.0	10	9.6-16.0	–	55500/NC	57500/NC
3.7	11	5.0	15	15.0-25.0	–	–	57500/PC
5.5	22	7.5	30	24.0-40.0	–	–	57500/QC
3	11	4	15	13-21	–	–	–
3.7	12.5	5	17	16-25	–	–	–
4	15	5.5	20	21-32	–	–	–
5.5	22	7.5	30	25-40	–	–	–
7.5	25	10	34	32-50	–	–	–
–	30	–	40	50-63	–	–	–
STAR-DELTA STARTING							
–	2.2	–	3	4.1-6.9	–	55500/JC	57500/JC
–	4	–	5.5	6.5-10.9	–	55500/KC	57500/KC
–	7.5	–	10	10.3-17.2	–	55500/MC	57500/MC
–	11	–	15	16.5-27.6	–	55500/NC	57500/NC
–	22	–	30	25.8-43.3	–	–	57500/PC
–	37	–	50	41.5-69	–	–	57500/QC
–	18.5	–	25	23-36	–	–	–
–	22	–	30	28-43	–	–	–
–	30	–	40	37-55	–	–	–
–	37	–	50	44-69	–	–	–
–	45	–	60	56-87	–	–	–
–	59	–	80	87-109	–	–	–

CONTROL RELAYS

4A 400/415V AC15

TYPE	CONTACTS		LIST No
	N/O	N/C	

AC coil operation

C10	4	–	53600/A
	2	2	53600/B
	3	1	53600/C

Coil selection Complete the List No. of the control relay selected by adding the appropriate coil code letter.

Preferred ac coils are **M** – 110/125V 50/60Hz, **B** – 220/240V 50/60Hz,

J – 380/415V 50/60Hz

as per list on page181 for C10-30.

MECHANICAL INTERLOCKS

TYPE	LIST No
C10–C30	57000/4
C43/C63	49000/4



53600/AB

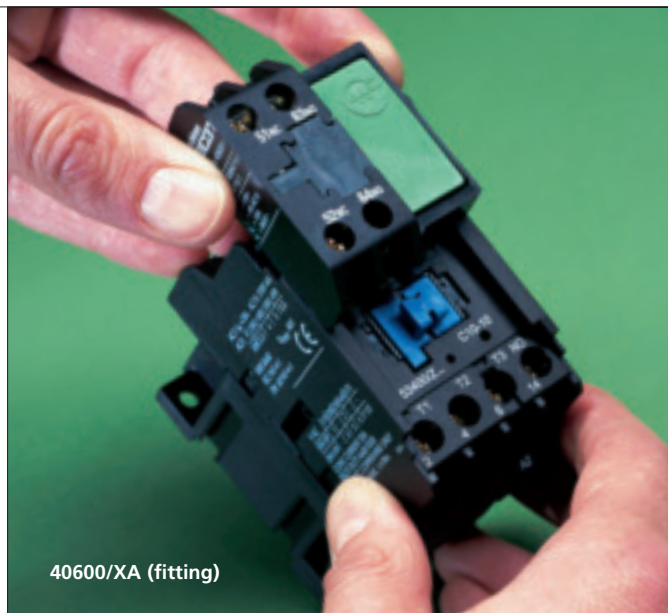


57000/4

49000/4

AUXILIARY CONTACTS

- Top mounting units are 4A 400/415V AC15
- Side mounting are 3A 400/415V AC15
- Units for enclosed starters have a “shallow” design to reduce overall height
- Correct selection of auxiliary contact will ensure that terminal markings comply with regulations
- Use the selection table to choose the correct auxiliary contact unit to suit the contactor or control relay according to application
- Side mounting auxiliary contacts are suitable for right hand side mounting only



40600/XA (fitting)

N/O	N/C	Start Switch	Top Mounting			Top Mounting For C10-C63 Enc. Starters	Side Mounting		Top Mounting For Control Relays
			For Open C10- C19 Contactors	For Open C22- C30 Contactors	For Open C43- C63 Contactors		For C10-C19 Contactors	For C22-C30 Contactors	
0	1	–	–	–	–	–	50000/D01	50000/E01	–
1	0	–	–	–	–	–	50000/D10	50000/E10	–
0	4	–	–	–	–	–	–	–	50600/A04
4	0	–	–	–	–	–	–	–	50600/A40
1	1	1	–	–	–	40600/XA	–	–	–
0	1	1	–	–	–	40600/XC	–	–	–
0	2	–	50000/A02	50000/B02	50000/C02	–	–	–	50600/A02
1	1	–	50000/A11	50000/B11	50000/C11	40600/XB	–	–	50600/A11
1	3	–	50000/A13	50000/B13	–	–	–	–	50600/A13
2	2	–	50000/A22	50000/B22	–	–	–	–	50600/A22
3	1	–	50000/A31	50000/B31	50000/C31	–	–	–	50600/A31
2	0	–	–	–	–	–	–	–	50600/A20

Dimensions – see pages 260-261

SPARE AND REPLACEMENT AC OPERATING COILS

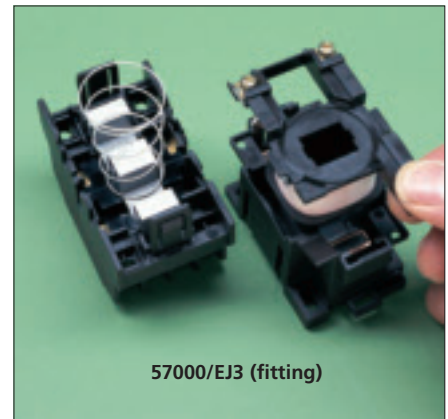
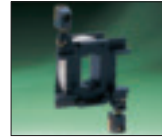
When ordering contactors or starters, the coil voltage is specified by adding to the basic list number the appropriate coil code letter from the table of coils.

e.g. if List No.54400/Z (C14 contactor) is required with a 220/240V 50/60Hz operating coil, the code letter **B** should be added, ie 54400/Z**B**. Preferred coils (fitted to contactors and starters normally held in stock) are **M** (110/125V 50/60Hz), **B** (220/240V 50/60Hz) and **J** (380/415V 50/60Hz). Coils for other voltages and frequencies are available as outlined in the tables below.

Please note that early model C10-C30 contactors use a two terminal coil, and later models use a three terminal coil. Visual inspection of the contactor will easily show which version coil is required.

AC OPERATING COILS

Coil code	Coil rating (V)		2 Terminal C10-C30 LIST No.	3 Terminal C10-C30 LIST No.	C43-C63 LIST No.
	50Hz	60Hz			
X	12	—	—	57000/EX3	—
P	24	—	57000/EP	57000/EP3	49000/EP
N	50	—	57000/EN	57000/EN3	49000/EN
M	110/125	110/125	57000/EM	57000/EM3	49000/EM
L	200	—	—	57000/EL3	—
B	220/240	220/240	57000/EB	57000/EB3	49000/EB
T	346	—	57000/ET	57000/ET3	—
E	365	—	—	57000/EE3	—
J	380/415	380/415	57000/EJ	57000/EJ3	49000/EJ
G	440	—	57000/EG	57000/EG3	49000/EG



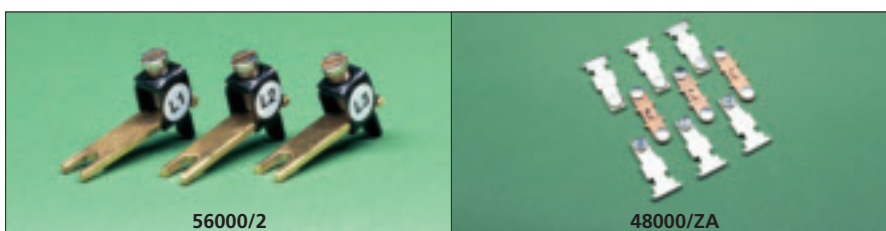
STAR-DELTA ELECTRONIC TIMER

DESCRIPTION	INPUT (V) 50/60HZ	LIST No
CEICON Electronic Timing Relay for star-delta contactor supplied with 1 NC contact.	50-55	56600/QN
Nominal setting range 3-45 secs.	105-150	56600/QM
(DIN rail mounting only)	180-240	56600/QB
	250-290	56600/QC
	330-400	56600/QE
As used with types C19-C30	380-440	56600/QJ
List Nos. 55300/0_ to 57300/0_	460-500	56600/QH

ACCESSORIES

DESCRIPTION	TYPE	LIST No
Extension terminals	C10-C19	56000/2
	C22-30	57000/2
	C43-C63	49000/2
Main contact sets	C43	48000/ZA
	C63	49000/ZA

One List No. comprises:
set of 6 fixed & 3 moving contacts
as required per contactor.



Dimensions – see pages 260-261

MANUAL MOTOR STARTERS

Manual Motor Starters are a new addition to the Crabtree range complimenting Ceicon. Ideal for panel builders requiring a compact solution to motor control including integral short circuit and overload protection. An enclosure and a full range of accessories make them suitable for use as standalone starters for local control of motors on intermittent duty.



MANUAL MOTOR STARTERS

LIST No	Setting range (A)	Operating current of short-circuit release (A)	Rated ultimate short-circuit breaking capacity (IEC 947-2 EN 60947-2) and Max. backup fuse Icu (kA)/gL,aM(Δ)			
			230V	400V	500V	690V
CMS25-0.16	0.1 - 0.16	1.9	Switches are short-circuit proof for any value of prospective current I_{cc}			
CMS25-0.25	0.16 - 0.25	2.6				
CMS25-0.4	0.25 - 0.4	4.4				
CMS25-0.63	0.4 - 0.63	8				
CMS25-1	0.63 - 1	11				
CMS25-1.6	1 - 1.6	19				
CMS25-2.5	1.6 - 2.5	30				
CMS25-4	2.5 - 4	42				
CMS25-6.3	4 - 6.3	69				
CMS25-10	6.3 - 10	110				
CMS25-16	10 - 16	210	6/80	4/80	2.5/63	2/35
CMS25-20	16 - 20	220	6/80	4/80	2.5/63	2/50
CMS25-25	20 - 25	330	6/80	4/80	2.5/63	2/50



CMS25-6.3

CMS25-10

ACCESSORIES

Auxiliary contacts	N/O	N/C	LIST No
	2	0	CPS20
	1	0	CPS10
	0	1	CPS01
	1	1	CPS11



CPS11

CPS20

Shunt Trip & Undervoltage Release	Voltage 50Hz	Shunt Trip	UVR
	24	CA24	CU24
	48	CA48	CU48
	110	CA110	CU110
	230	CA230	CU230
	400	CA400	CU400



CA110

CU24

IP55 ENCLOSURE

Note: Enclosure is supplied with IP55 membrane. In the case of an Emergency Stop or padlock facility being fitted, IP rating will be IP40.

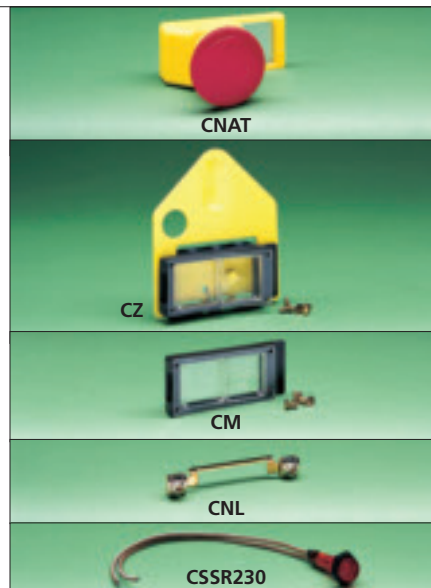
LIST No
CO-55



CO-55

ENCLOSURE ACCESSORIES

	LIST No
Emergency Stop Pushbutton	CNAT
Padlocking Device	CZ
Pushbuttons Membrane	CM
Additional Neutral/Earth link	CNL
Signal Lamp 230V Red	CSSR230



CNAT

CZ

CM

CNL

CSSR230

Dimensions – see page 262

SILENT OPERATION INSTALLATION CONTACTORS

These are DIN rail mounted contactors with silent operation, they are ideal for mounting in Control panels, destined for either residential or commercial dwellings where quiet running is a priority. Suitable for heating, lighting, air-conditioning, motors and similar equipment.





SILENT OPERATION INSTALLATION CONTACTORS

TYPE	Thermal Rating per Pole AC1(A)	Motor Rating AC3 (kW)		Pole Configuration		LIST No
		230V	400V	N/O	N/C	
CIK22	20	1.3 (N/O only)	–	2 1 0	0 1 2	1 Mod [CIK22-20 CIK22-11 CIK22-02
CIK24	24	2.2	4	4 3 2 0	0 1 2 4	2 Mod [CIK24-40 CIK24-31 CIK24-22 CIK24-04
CIK40	40	5.5	11	4 3 2 0	0 1 2 4	3 Mod [CIK40-40 CIK40-31 CIK40-22 CIK40-04
CIK63	63	8.5	15	4 3 2 0	0 1 2 4	3 Mod [CIK63-40 CIK63-31 CIK63-22 CIK63-04
Auxiliary Contacts						
		230V	400V			
		AC15				
		6	4	–	–	CHHSLA11 CHHSLA20

MAXIMUM NUMBER OF LAMPS PER POLE

TYPE		CIK22	CIK24	CIK40	CIK63
Incandescent lamps	60W	21	25	65	85
	100W	13	15	40	50
	200W	7	7	20	25
	500W	3	3	8	10
	1000W	1	1	4	5
Energy saving lamps	7W	10	15	100	150
	11W	10	15	100	150
	15W	5	15	100	150
	20W	3	10	70	70
Halogen lamps	200W	–	5	15	20
	300W	–	3	10	13
	500W	–	2	6	8
	1000W	–	1	3	4
Low pressure sodium-vapour lamps (uncompensated)	35W	5	6	13	20
	55W	5	6	13	20
	90W	3	4	9	14
	135W	2	3	6	9
	180W	3	3	6	9
High pressure sodium-vapour lamps (uncompensated)	50W	12	12	24	38
	70W	10	10	20	30
	110W	8	7	16	25
	150W	6	5	10	16
	250W	3	3	6	10
	400W	2	2	4	6
	1000W	1	–	2	3
Low pressure sodium-vapour lamps (compensated)	35W	1	1	10	16
	55W	1	1	10	16
	90W	–	1	8	12
	135W	–	–	4	7
	180W	–	–	4	7
High pressure sodium-vapour lamps (compensated)	50W	3	3	22	33
	70W	2	3	18	27
	110W	2	2	18	27
	150W	1	1	10	16
	250W	–	1	6	9
	400W	–	–	4	7
	1000W	–	–	2	3
Fluorescent lamps (uncompensated)	18W	24	24	90	140
	36W	17	20	65	95
	58W	10	13	40	60
Fluorescent lamps (compensated)	18W	6	8	45	70
	36W	6	8	45	70
	58W	4	5	25	43
Fluorescent lamps (dual fitted)	18W	2 x 22	2 x 48	2 x 100	2 x 150
	36W	2 x 17	2 x 24	2 x 65	2 x 95
	58W	2 x 10	2 x 15	2 x 40	2 x 60
Fluorescent lamps with electronic starting device AC - operation	1 x 18W	25	35	100	140
	1 x 36W	15	20	52	75
	1 x 58W	14	19	50	72
	2 x 18W	12	17	50	70
	2 x 36W	7	10	26	38
	2 x 58W	7	9	25	36

Dimensions – see page 262

R22 22.5mm COMMAND DEVICES

The revised R22 range of command devices includes a broad range of components to offer numerous solutions to the control of low voltage circuits. A variety of popular ready assembled product combinations complete the range.

For Panel mounting select: (see inset)

1. Actuator/device
2. Legend if required
3. Contact block support
4. Front mounted contact block(s)
/other device eg.lampholder



For R22 enclosure mounting select:

1. Actuator/device
2. Legend if required
3. Enclosure
4. Base mounted contact block
(no contact block support
is required).

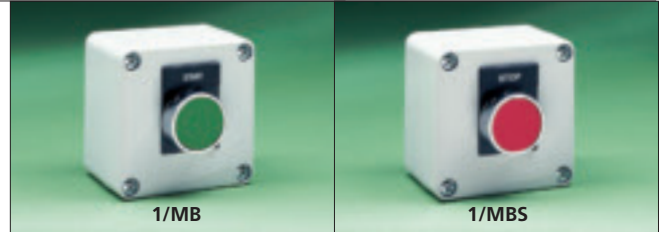


INSULATED ASSEMBLED PUSH BUTTON UNITS

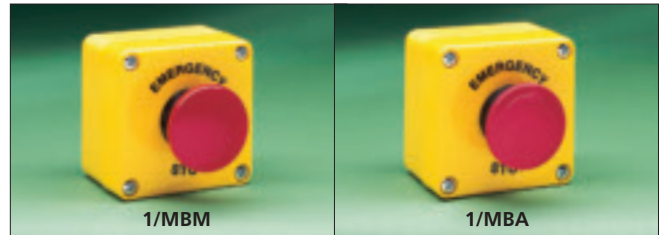
Supplied complete in an all-insulated IP65 enclosure with:

- Knockouts on side walls for ease of installation.
- Actuators affixed to the cover whilst the contact blocks are arranged for enclosure base mounting.
- Contact blocks, fitted with upward-facing terminals, can be pre-wired and then snapped to the enclosure base.
- Stop actuators are provided with a normally closed contact.
- Start, for, rev & selector switch actuators include a normally open contact.

DESCRIPTION	LIST No
1 Button START	1/MB
1 Button STOP	1/MBS



1 Button mushroom head STOP	1/MBM
1 Button mushroom head autolock STOP	1/MBA



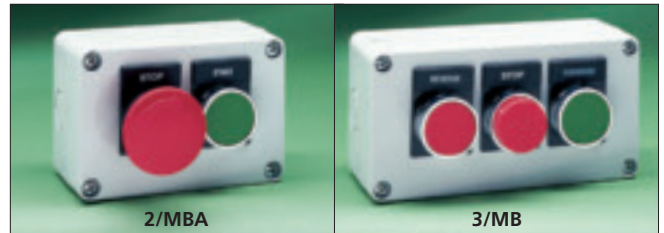
1 Button mushroom head autolock STOP key reset	1/MBAK
Key switch 0-1	1/MBK



2 Button START/STOP	2/MB
2 Button START/mushroom head STOP	2/MBM



2 Button START/mushroom head autolock STOP	2/MBA
3 Button FOR/REV/STOP	3/MB



Emergency Jumbo Mushroom Head push button station **22EV90**



Alternatively, actuator combinations to the customer's choice can be selected by ordering individual enclosures, contact blocks and actuators – R22 Range, see pages 189–191.

Dimensions – see page 264 Specification – see page 246

HEAVY DUTY METALCLAD ASSEMBLED PUSH-BUTTON UNITS

Supplied complete in a robust diecast enclosure with:

- 1 Earth terminal 2 Box & cover fixings outside gasket
3 Captive screws 4 IP65 gasket

- Stop actuators are provided with one normally closed contact.
- All other actuators have one normally open contact.

1 STATION UNITS

	LIST No
1 button START	22931/GV
1 button STOP	22931/RV
Keyswitch 0-1	22931/K2V
Keyswitch 0-1, spring return to centre	22931/SK2V

Mushroom STOP	22931/MV
Autolock STOP	22931/AV
Autolock STOP, key reset	22931/AKV
Jumbo STOP	22931/AJV

Mushroom STOP with half collar shroud	22931/MHCV
Autolock STOP with half collar shroud	22931/AHCV
Autolock STOP, key reset with half collar shroud	22931/AKHCV

2 STATION UNITS

	LIST No
UP/DOWN	22932/UDV
START/STOP	22932/SV
START/Mushroom STOP	22932/MV
START/Autolock STOP	22932/AV

3 STATION UNITS

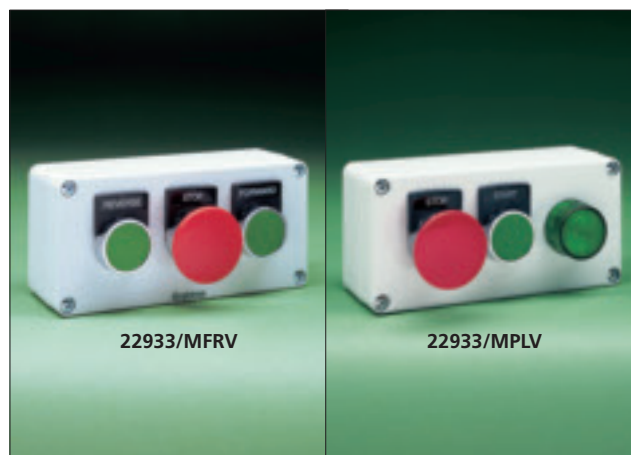
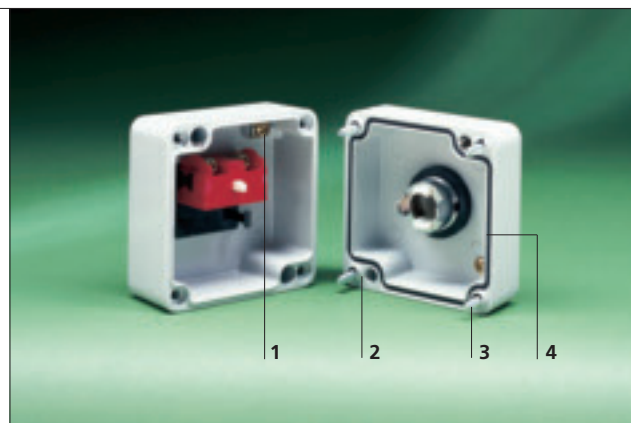
	LIST No
UP/DOWN, with Mushroom STOP	22933/MUDV
FOR/REV/Mushroom STOP	22933/MFRV
START/Mushroom STOP with Green Pilot Light, (220-240V neon)	22933/MPLV

4 STATION UNIT

	LIST No
START/Mushroom STOP Red and Green Pilot Lights, (220-240V neons)	22934/M2PLV

One additional contact block can be fitted per actuator position except Autolock STOP with key reset.

Dimensions – see page 264 Specification – see page 246



NON ILLUMINATED PUSH BUTTONS IP65

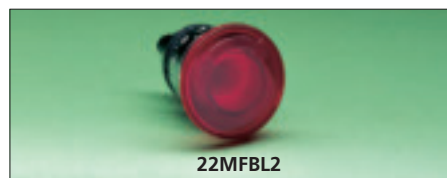
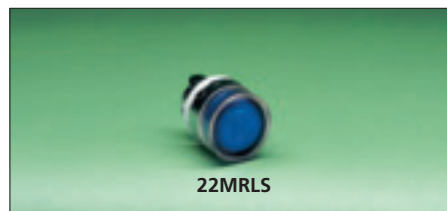
Supplied with contact block support

	Colour	LIST No	
		Metal	Plastic
Flush Button	Black	22MR1	22ER1
	Red	22MR2	22ER2
	Green	22MR3	22ER3
	Yellow	22MR4	22ER4
	Blue	22MR5	22ER5
	White	22MR6	22ER6
Extended Button	Black	22MRR1	22ERR1
	Red	22MRR2	22ERR2
	Green	22MRR3	22ERR3
	Yellow	22MRR4	22ERR4
	Blue	22MRR5	22ERR5
	White	22MRR6	22ERR6
Push on - Push off Button	Black	22MR/PP1	22ER/PP1
	Red	22MR/PP2	22ER/PP2
	Green	22MR/PP3	22ER/PP3
	Yellow	22MR/PP4	22ER/PP4
	Blue	22MR/PP5	22ER/PP5
	White	22MR/PP6	22ER/PP6
Mushroom head button - 40mm	Black	22MF1	22EF1
	Red	22MF2	22EF2
	Green	22MF3	22EF3
Mushroom head with auto lock - 40mm	Red	22MFB2	22EFB2
Mushroom head with switching after auto lock (BSEN418) - 40mm	Red	22MFBC2	22EFBC2
Mushroom head with auto lock key reset - 40mm	Red	22MFC2	22EFC2
Spare Key		22/KEY	22/KEY
Push on - push off mushroom head - 40mm	Black	22MFB/PP1	22EFB/PP1
	Red	22MFB/PP2	22EFB/PP2
	Green	22MFB/PP3	22EFB/PP3
Jumbo mushroom head button - 60mm	Red	22MFBA2	22EFBA2
Reset button	White	22MRESET	22RESET



ILLUMINATED PUSH BUTTONS IP65

	Colour	LIST No	
		Metal	Plastic
Illuminated flush Button	Red	22MRL2	22ERL2
	Green	22MRL3	22ERL3
	Yellow	22MRL4	22ERL4
	Blue	22MRL5	22ERL5
	White	22MRL6	22ERL6
Push on - push off illuminated flush button	Red	22MRL-PP2	22ERL-PP2
	Green	22MRL-PP3	22ERL-PP3
	Yellow	22MRL-PP4	22ERL-PP4
	Blue	22MRL-PP5	22ERL-PP5
	White	22MRL-PP6	22ERL-PP6
Illuminated mushroom head auto lock button-40mm Red		22MFB2	22EFB2
Illuminated push on - push off mushroom head button	Red	22MFB2-PP2	22EFB2-PP2
	Green	22MFB2-PP3	22EFB2-PP3
Illuminated mushroom head button	Red	22MFL2	22EFL2
	Green	22MFL3	22EFL3
Pilot light	Red	22ML2	22EL2
	Green	22ML3	22EL3
	Yellow	22ML4	22EL4
	Blue	22ML5	22EL5
	White	22ML6	22EL6
Monobloc pilot light	Red		22ELE2
	Green		22ELE3
	Yellow		22ELE4
	Blue		22ELE5
	White		22ELE6



Lamp not supplied = **BA9s**

SELECTOR SWITCHES

Supplied with contact block support

LIST No

Metal

Plastic

**Maintained left - right**

Standard selector switch (black)
Illuminated selector switch (red)
Key selector switch (black)

22MS1A
22MSL-L2A
22MSCA/J

22ES1A
22ESL-L2A
22ESCA/J

**Maintained middle - right**

Standard selector switch (black)
Illuminated selector switch (red)
Key selector switch (black)

22MS1CD
22MSL-L2CD
22MSCCD/J

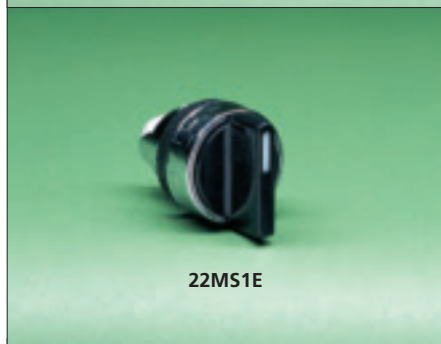
22ES1CD
22ESL-L2CD
22ESCCD/J

**Momentary middle - right**

Standard selector switch (black)
Illuminated selector switch (red)
Key selector switch (black)

22MS1CD/R
22MSL-L2CD/R
22MSCCD/R/V

22ES1CD/R
22ESL-L2CD/R
22ESCCD/R/V

**Maintained left - middle - right**

Standard selector switch (black)
Illuminated selector switch (red)
Key selector switch (black)

22MS1E
22MSL-L2E
22MSCE/J

22ES1E
22ESL-L2E
22ESCE/J

**Momentary left and right**

Standard selector switch (black)
Illuminated selector switch (red)
Key selector switch (black)

22MS1E/RC
22MSL-L2E/RC
22MSCE/RC/V

22ES1E/RC
22ESL-L2E/RC
22ESCE/RC/V

**Maintained left - momentary right**

Standard selector switch (black)
Illuminated selector switch (red)
Key selector switch (black)

22MS1E/RD
22MSL-L2E/RD
22MSCE/RD/X

22ES1E/RD
22ESL-L2E/RD
22ESCE/RD/X

**Momentary left - maintained right**

Standard selector switch (black)
Illuminated selector switch (red)
Key selector switch (black)

22MS1E/RS
22MSL-L2E/RS
22MSCE/RS/Z

22ES1E/RS
22ESL-L2E/RS
22ESCE/RS/Z



Spare Key

22/KEY

▼ = direction of spring return (momentary)
□ = key removable position for key switches

JOY STICK SELECTOR SWITCHES

LIST No

Metal

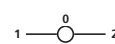
Plastic

**2 Position maintained**

Standard
with lock release

22MM2F
22MMB2F

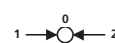
22EM2F
22EMB2F

**2 Position momentary**

Standard
with lock release

22MM2R
22MMB2R

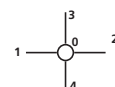
22EM2R
22EMB2R

**4 Position maintained**

Standard
with lock release

22MM4F
22MMB4F

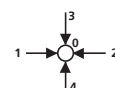
22EM4F
22EMB4F

**4 Position momentary**

Standard
with lock release

22MM4R
22MMB4R

22EM4R
22EMB4R



▼ = direction of spring return (momentary)

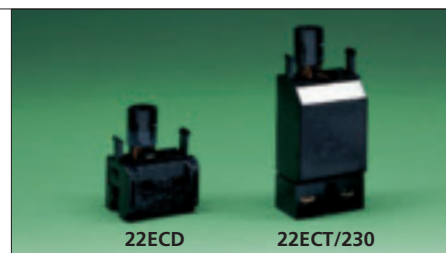
DUAL PUSH BUTTONS

Dual push button black-black with indicator	Plastic	22EPD/F
Dual push button green-red (extended) O-I	Plastic	22EPDR/O-I
Dual push button green-red O-I	Plastic	22EPD/O-I
Dual illuminated push button green-red O-I	Plastic	22EPDL/O-I
Dual illuminated push button black-black with indicator	Plastic	22EPDL/F
Dual illuminated push button green-red (extended) O-I	Plastic	22EPDLR/O-I



POWER SUPPLIES

Direct power supply	Plastic	22ECD
Power supply with flasher 24V	Plastic	22ECL/24
Power supply with flasher 130V	Plastic	22ECL/130
Power supply with flasher 230V	Plastic	22ECL/230
Power supply with transformer 110/6V	Plastic	22ECT/110
Power supply with transformer 230/6V	Plastic	22ECT/230
Power supply with transformer 400/6V	Plastic	22ECT/400



CONTACT BLOCKS

Contact block support	Plastic	22EB
Normally open front mounting (panel)	Plastic	22EC/NO
Normally closed front mounting (panel)	Plastic	22EC/NC
Normally open rear mounting (for R22 enclosure)	Plastic	22EC/NO-EV
Normally closed rear mounting (for R22 enclosure)	Plastic	22EC/NC-EV
Slimline contact block support	Plastic	SL22EB
Slimline normally open	Plastic	SL22EC/NO
Slimline normally closed	Plastic	SL22EC/NC
Slimline direct power supply	Plastic	SL22ECD



IP65 ENCLOSURES

Enclosure-Yellow-1 button hole	Plastic	22EVG1	Metal	22EVK-1/G
Enclosure-Grey-1 button hole		22EV1		22EVK-1
Enclosure-Grey-2 button holes		22EV2		22EVK-2
Enclosure-Grey-3 button holes		22EV3		22EVK-3
Enclosure-Grey-4 button holes				22EVK-4
Protection cap for flush buttons	Plastic	22ERPR		
Protection cap for illuminated flush buttons	Plastic	22ERPL		
Protection cap for mushroom head buttons - 40mm	Plastic	22ERPF		
Protection cap for dual push buttons	Plastic	22ERPD		
Protection cap for extended dual push buttons	Plastic	22ERPDR		
Legend Plate 30x40	Plastic	22EQ8		
Legend Plate 30x50	Plastic	22EQ15		
Legend Plate 30x40	Metal	22EQ16		
Legend Plate 30x45	Metal	22EQ21		
Yellow stop legend 40mm	Plastic	22ED40		
Yellow stop legend 60mm	Plastic	22ED60		
Yellow stop legend 90mm	Plastic	22ED90		



LEGEND PLATES & ANCILLIARIES

Legend	List No.	Legend	List No.	Legend		List No.	Legend	List No.	
OPEN	22641	FORWARD	22637	0	1	22650	FAST	22643	
CLOSE	22642	REVERSE	22638	2	0	1	22651	SLOW	22644
UP	22639	START	22636	AUTO	0	MAN	22652	INCH	22645
DOWN	22640	STOP	22635	OFF	ON	22654	RESET	22648	
							RUN	22646	

ANCILLARIES

Padlockable cover (for flush/extended buttons)	LIST No
	22054
Mushroom half collar shroud	220HC/K
Blanking plug for unused holes	22T22
Earth terminal for metal body actuators	220Z



220HC/K suitable for all enclosures except List Nos. **22EV2** & **22EV3**. Spare keys on application.

MOTOR CIRCUIT SWITCHES

An all new selection of motor circuit switches from 16A to 80A fully rated for AC23. The range includes compact triple pole switches for panel mounting with a full range of accessories including switched and fixed 4th poles, auxiliaries, handles, extension shafts and shrouds. The range is completed with ready assembled versions in either all insulated or metal base enclosures, both to IP65.



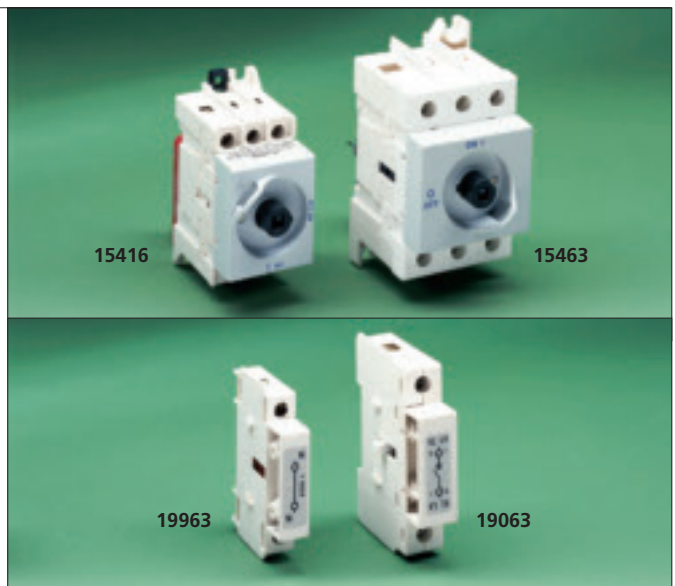
TP & N ENCLOSED MOTOR CIRCUIT SWITCHES

			List Numbers			
Rating (A)			All Insulated	Box	Metal Base	Box
AC21	AC23	415V/kW	IP65	Size	IP65	Size
16	16	7.5	15416/11	A	16/MS	1
25	25	9	15425/11	A	25/MS	1
32	32	11	15432/11	B	32/MS	1
40	40	11	15440/11	B	40/MS	1
63	63	15	15463/11	C	63/MS	1
80	80	22	15480/11	D	80/MS	1



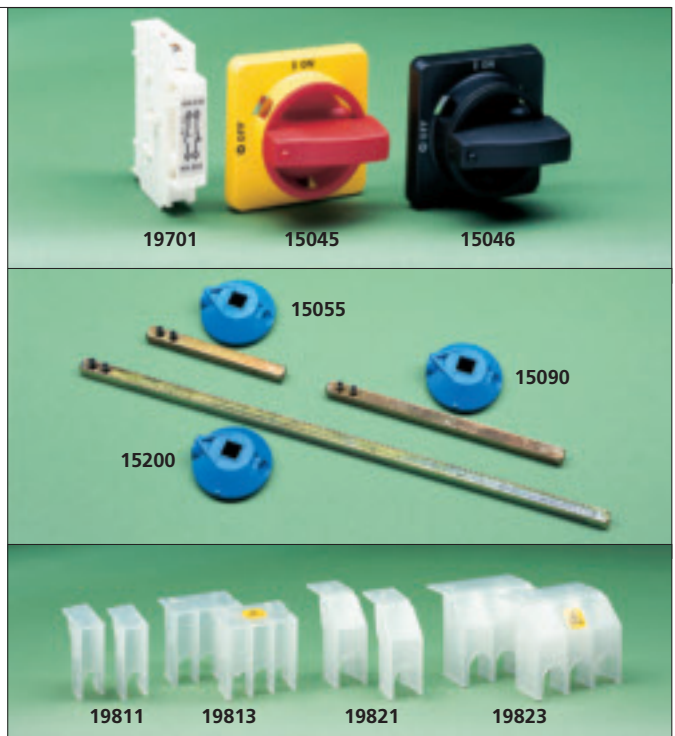
PANEL MOUNTED MOTOR CIRCUIT SWITCHES

			List Numbers		
Rating (A)			TP Switch	Switched	Neutral
AC21	AC23	415V/kW		4th pole	Link-63A
16	16	7.5	15416	19016	19963
25	25	9	15425	19025	19963
32	32	11	15432	19032	19963
40	40	11	15440	19040	19963
63	63	15	15463	19063	19963
80	80	22	15480	19080	199125



ACCESSORIES

Description	List No
Auxiliary contact (10A)	19701
Door Interlocked Handle Red/Yellow	15045
Door Interlocked Handle Black/Grey	15046
Shaft Extension 55mm	15055
Shaft Extension 70mm	15070
Shaft Extension 90mm	15090
Shaft Extension 150mm	15150
Shaft Extension 200mm	15200
Shaft Extension 300mm	15300
16-40A SP Terminal Shroud	19811
16-40A TP Terminal Shroud	19813
63-80A SP Terminal Shroud	19821
63-80A TP Terminal Shroud	19823



Dimensions – see page 263 Specification – see page 246

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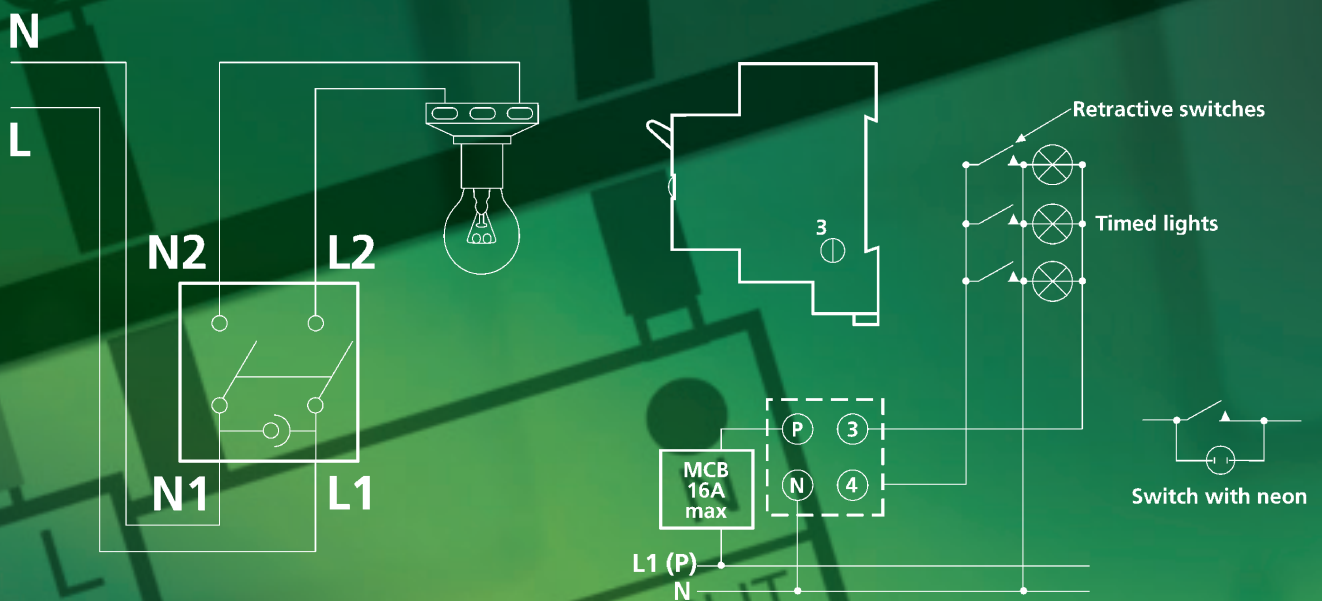
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IP RATINGS

The IP (International Protection) rating given to an enclosure states the degree of protection it offers by means of two digits. A summary of these is shown below; for a more detailed definition, see IEC 529: 1989, BS EN 60529: 1992.

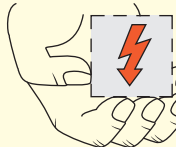
FIRST DIGIT

Protection against solid foreign objects and access to hazardous parts

The first digit covers protection against penetration by solid objects, which includes hands and tools such as screwdrivers. At the lowest of seven levels, 0, no protection is offered, either of the equipment itself from damage by intrusion or of a person contacting live or moving parts. At the highest, 6, there shall be no entry of dust.

IP

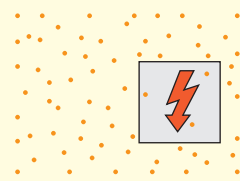
0  No protection

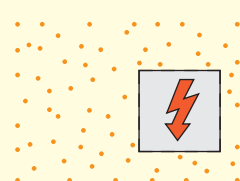
1  Protected against solid objects up to 50mm eg accidental touch by hands

2  Protected against solid objects up to 12mm eg fingers

3  Protected against solid objects over 2.5mm eg tools and wires

4  Protected against solid objects over 1mm eg tools, wires and small wires

5  Protected against dust – limited ingress, no harmful deposits

6  Totally protected against dust

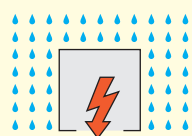
SECOND DIGIT

Protection against ingress of water

The second digit covers the degree of protection against the entry of water, on a progressive scale. For example, number 1 indicates that dripping water shall have no harmful effect, and number 6, that water projected in powerful jets against the enclosure from any direction shall have no harmful effects.

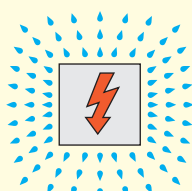
IP

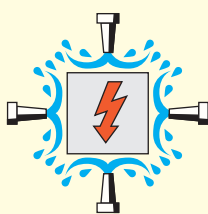
0  No protection

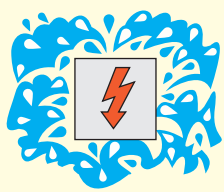
1  Protected against vertically falling drops of water eg condensation

2  Protected against direct sprays of water up to 15° from the vertical

3  Protected against sprays of water up to 60° from the vertical

4  Protected against water splashed from all directions – limited ingress permitted

5  Protected against low pressure jets of water from all directions – limited ingress permitted

6  Protected against strong jets of water eg for use on ship decks – limited ingress permitted

The letter X can be used in place of the first or second digit to indicate that tests have either not been made or are not applicable.

NOTE

In the event of additional holes being drilled/pierced or knockouts removed, suitable measures should be taken to restore the products to the original ratings.

IEC 529, BS EN 60529 does not apply to protection against the risk of explosion or conditions such as humidity, corrosive gases, fungi or vermin.

In certain cases equipment designed to be mounted in an enclosure will contribute towards the stated IP rating (eg pushbuttons mounted in an enclosure).

Different parts of enclosures can have different degrees of protection and still conform to the standard (eg enclosures with pre-drilled conduit entry).

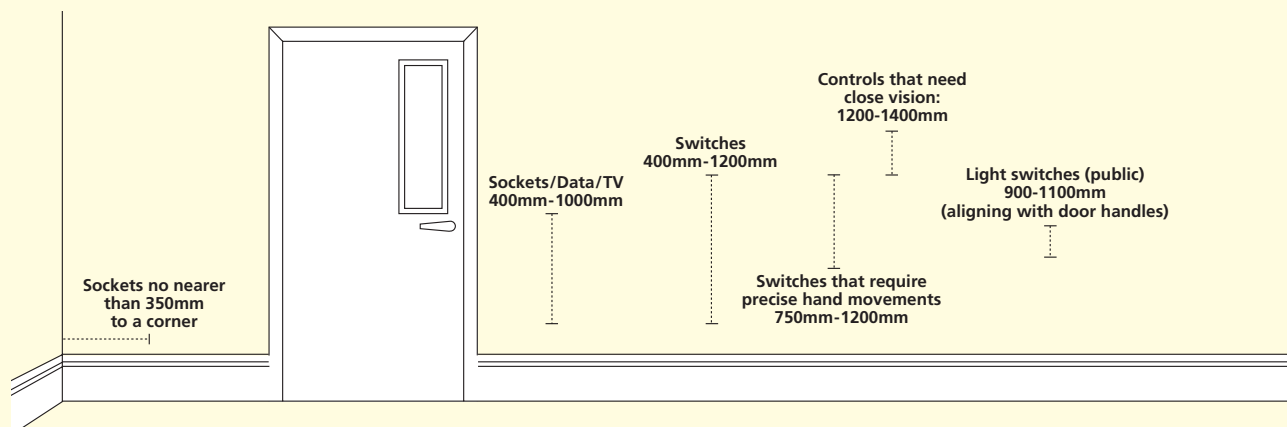
BUILDING REGULATIONS APPROVED DOCUMENT PART M - ACCESS TO AND THE USE OF BUILDINGS

There are a number of considerations that need to be met by the specifier or contractor of a buildings installation when covering reasonable provision for the access to and use of a buildings structure and facilities for a disabled person whether visiting, working or dwelling in them. Crabtree have continually been introducing and developing products throughout their range of wiring accessories to enable compliance with Part M.

Part M can be split into four sections:

- Height
- Visibility
- Operation
- Freedom from obstruction

MOUNTING HEIGHT AND POSITION



- Socket outlets, Telephone points and TV mounted at 400 - 1000mm with a preference for the lower range.
- Switches should be mounted at 400 - 1200mm unless needed at a higher level for particular appliances.
- Switches and controls that require precise hand movement (eg: Central Heating Controls) at 750 - 1200mm.
- Controls that need close vision at 1200 - 1400mm so that readings may be taken by a person sitting or standing.
- Light Switches for use by the general public align horizontally with door handles within the range 900 - 1100mm.
- Sockets no nearer than 350mm from room corners.

DESIGN CONSIDERATIONS

- There should be a consistent relationship with the doorways and corners to reinforce the ease with which people manipulate switches and controls.
- All users should be able to locate a control, know which setting it is on and use it without inadvertently changing its setting.
- Controls that contrast with their surroundings are more convenient for the visually impaired as are light switches that are activated by a large touch pad.
- It is an advantage if individual switches on panels and multiple socket outlets are well separated, to avoid the incorrect selection of an adjacent control by visually impaired people and people with limited dexterity.
- The colours red and green should not be used in combination as indicators of "on" and "off" for switches and controls. It may be useful to use text or a pictogram to clarify.

Visibility

Part M recommends a contrast of 30% Light Reflective Value (LRV) between a frontplate and wall. White has an LRV of 100 and Black 0.

Some may consider these requirements refer to the complete product contrasting with a wall, whilst others may consider it is the switch that should contrast with its frontplate. The regulation states that switches, outlets

and controls will satisfy requirement M1 if: front plates contrast visually with their background.

Crabtree have considered both options in their product range of Platinum, the products can either have contrasting rocker to frontplate which then could contrast with the back wall, or just contrast of frontplate and wall.

Operation

Light switches, which are to be used by the general public are encouraged to have large rockers at a height corresponding to the door handle, within the 900 - 1100mm range.

This would enable people with a physical disability or visual impairment to both locate and activate them easily.

The Crabtree range of electrical wiring accessories all come with a large concave rocker, with the 'Corinthian' range having an extra wide rocker.

Freedom from obstruction

Light switches and controls should be 'well separated' or activated by a large push pad to prevent inadvertent operation.

Crabtree socket outlets come with outboard rockers, to aid the use for those with visual impairment or limited dexterity. In addition the Crabtree Rockergrid range provides a wide choice of switch options.

CRABTREE PRODUCT SELECTOR



Corinthian

A range of wide rocker 10AX lighting switches with clip on surrounds that can be provided in alternative colours to meet a variety of LRV values.

Capital

A wide range of moulded power, control and lighting accessories that can be offered with alternative plate and rocker colour. Also the introduction of an outboard rocker twin switched socket outlet to prevent accidental operation of an appliance it is controlling.



Rockergrid

This modular system of boxes, grids, plates and switches can be quickly and easily assembled to customers' individual specifications enabling several circuits to be controlled from a single position.

The switches are a modular design that has a large concave rocker with a barrier between to avoid inadvertent selection of adjacent controls.

Capital Metal Plate

Complimenting the Capital moulded product range, black and white interiors are mounted on raised metal plates of various colour finishes to meet a variety of LRV values.



Platinum Grid

This can be used in conjunction with Rockergrid to provide a contrast of rocker and plate finish.

Platinum White Moulded

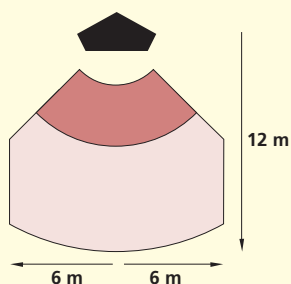
A new range of power, control and lighting accessories offering a low profile clip on moulded front plate. This range can be supplied with alternative colour front plates to contrast with the moulded rocker or can be combined with the Platinum decorative plates and interiors to provide a visual contrast.

Although the product ranges mentioned aim to meet the design considerations for Part M compliance, Crabtree would be prepared to discuss any future development on a project by project basis and assist, where possible, with any other requirements.

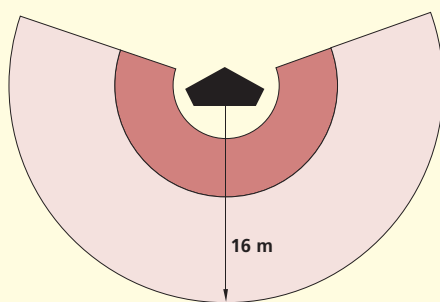
MINDER PASSIVE INFRA RED SENSORS

The Minder is a multi-adjustable, passive infrared movement detector. People and animals radiate heat, which is invisible to the human eye (infrared range). Consequently, the recorded infrared energy pattern changes when they enter the detection zone

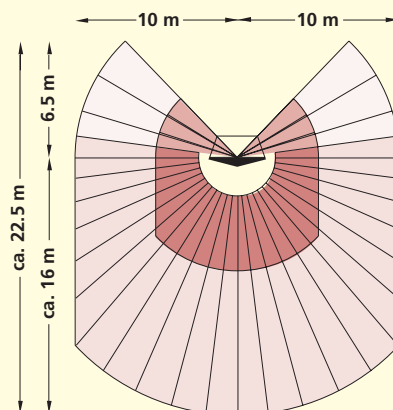
DETECTION RANGE DIAGRAMS



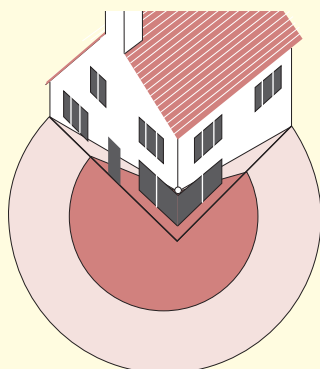
Minder 90



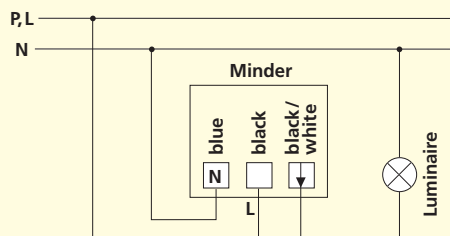
Minder 220



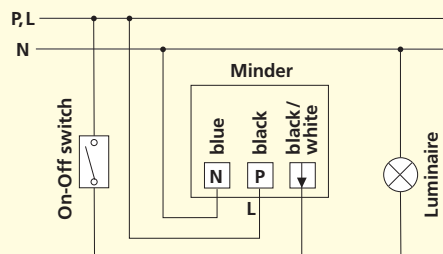
Minder 280



Minder 280



Connection Diagram



Connection Diagram (with On-Off Switch)

TECHNICAL DATA

	90°	220°	280°
Horizontal range of detection	90°	220°	280°
surveillance levels	4	4	4
Max. frontal range	12m	16m	16m
Max. bilateral range	6m	16m	10m
Switching segments	88	280	372
Water protection	IP55	IP55	IP55
Switch off delay	1s-5min	10s-30min	10s-30min
Dusk sensor, in Lux	5-1000	5-1000	5-1000

INSTALLATION

The Minder functions optimally when installed lateral to walking direction. When selecting the installation site, ensure that:

- The minder is not covered by rigid or moveable objects (e.g. roofing elements, branches of tree, etc.).
- When unit is installed above, or lateral to luminaires, a minimum distance is always allowed between the unit and the luminaire, in order to prevent maloperation.
- when the unit is installed below luminaires, it is not heated up as a result of radiant heat from the luminaire.

When mounted at a height of 2.5m, the detection range is as above mentioned, though deviations in the mounting height cause changes in the detection range. In the case of special conditions at the site (e.g. rows of trees, small plot of land, proximity to road, etc.) the enclosed masking strip can be used to restrict the detection range by sticking it on the Minder lens.

MINDER FAULT FINDING ANALYSIS

NATURE OF FAULT	REASON FOR FAULT	REMEDY
Minder does not operate	Lens covered or dirty	Check power supply, uncover and/or clean lens
Inadvertent operation of Minder	Hot air or smoke e.g. out of kitchens activate Minder	Install Minder at a different location
Lamp is permanently on	Permanent movement in the monitored area	Make sure that no heat source is in the detection zone and wait until adjusted time lapse has run down.. For control purposes, please cover the lens completely.
	Minder is bridged to manual operation by additional switch	Switch to automatic operation

WIRING ACCESSORIES – GENERAL

BRITISH STANDARDS

An unqualified reference to the British Standards in this product catalogue indicates that the products referred to are marked with the British Standard and therefore comply in all respects with the standard stated. Where a qualification is given against the British Standard, eg BS 3676 where applicable, this means that there is no specific standard for the product in question and it has been tested as far as possible for compliance with the standard indicated.

TERMINAL CAPACITIES (mm²)

Product	Quantity and gauge of cable accepted by terminals
13A Capital/Platinum socket outlets 13A Capital safety sockets 13A Capital/Platinum fused conn. units	3 x 2.5mm ² , 2 x 4mm ² , 2 x 6mm ²
13A Panel mounting socket	3 x 2.5mm ² , 2 x 4mm ² , 1 x 6mm ²
10AX Capital/Platinum plate switches 10A Capital architrave switches	4 x 1mm ² , 3 x 1.5mm ² , 1 x 2.5mm ²
20A Capital/Platinum DP switches 32A Capital/Platinum DP switches	3 x 2.5mm ² , 2 x 4mm ² , 1 x 6mm ² , 1 x 10mm ²
32A Capital TP & N switches 45A Capital/Platinum DP switches	2 x 6mm ² , 1 x 10mm ² , 1 x 16mm ²
50A Capital DP switches 45A Capital/Platinum cooker control units	2 x 6mm ² , 1 x 10mm ² , 1 x 16mm ²
Capital/Platinum shaver supply unit Capital light/shaver unit 6A Capital ceiling switches	4 x 1mm ² , 3 x 1.5mm ²
16A Capital ceiling switches	2 x 2.5mm ² max
50A Capital ceiling switch	3 x 2.5mm ² , 2 x 4mm ² , 1 x 6mm ² , 1 x 10mm ²
Capital ceiling roses Capital safety batten lampholder	1.5mm ² multiway
Capital safety pendant lampholder	1 x 1mm ² flexible cable
16A Minder PIR sensor	6 x 1mm ² , 4 x 1.5mm ² , 2 x 2.5mm ²

10A TP ISOLATING SWITCH

LIST No. 4017, 4017/1, 6017/_ _ & 4587/BG

Complies fully with requirements of BS EN 60947-3 for switch disconnectors.

Rated SC making capacity 300A

Rated conditional short circuit current 6kA

(when protected by Starbreaker 6A mcb)

Rated insulation voltage 300V

Rated impulse withstand voltage 2.5kV

Rated duty Uninterrupted

Maximum switching rate 120 switch cycles per hour

Rated short time withstand current 100A for 1 second

Utilisation category AC 23B, 6A 250V 50Hz

A POINT ON TESTING

When installations incorporating electronic devices of the semi-conductor type are being tested, care must normally be taken to ensure that they are not subjected to the output voltage of an insulation tester. However, dimmer switches complying with BS 5518 (eg Crabtree 2190) will not be damaged by the application of a normal 500V insulation resistance test. In all other cases where electronic items are fitted, they should be disconnected whilst the insulation of the installation is tested. A notice, drawing attention to the fact that electronic devices are incorporated in the installation, should always be affixed at the intake position. This also applies to any neon indicators fitted.

CAPITAL RANGE 'SEEKLIGHT' ASSEMBLY

LIST No.4009

For use on 200–250V 50Hz supply only.

Not suitable for use with Capital architrave switches.

One 'Seeklight' position is provided on each full size plate switch.

- 1 Isolate mains before commencing work.
- 2 Connect neon wires to terminals, as shown in the following wiring diagrams, to suit circuit conditions.
- 3 Locate neon indicator into position on back of switch plate (figure A).
- 4 Remove backing from self-adhesive pad and locate over neon to hold it in place (figure B).

General note

The neon 'Seeklight' must be disconnected when carrying out insulation testing to avoid a false reading.

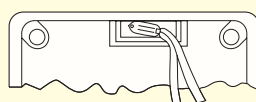


Figure A

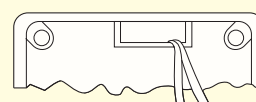
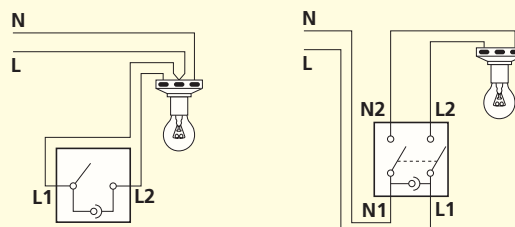


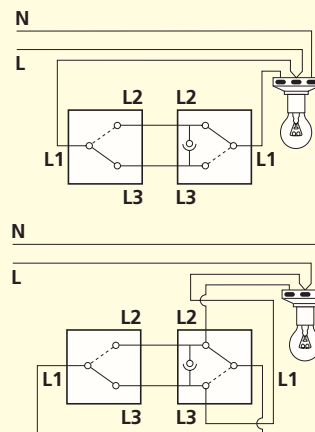
Figure B

CONNECTION TO VARIOUS CIRCUITS

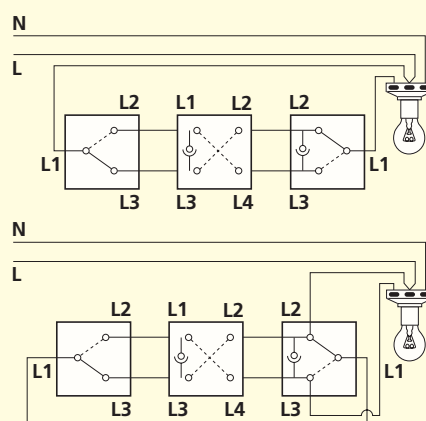
One-way circuits



Two-way circuits



Multiple control circuits

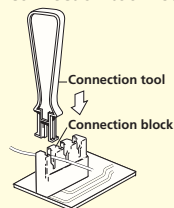


CAPITAL TELEPHONE SOCKET OUTLETS

The Crabtree Capital range of Telephone Socket Outlets has been developed primarily for use in telephone systems using British Telecom standards. The products are similar in specification to units available from British Telecom. Approval is to BT Specification No.50. Suitable for use in accordance with BS7671, formerly the 16th Edition of the IEE Wiring Regulations.

TERMINATIONS

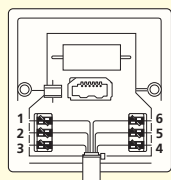
All telephone outlets should be wired in accordance with the wiring diagrams shown below. Connection of these telephone outlets is by the IDC (Insulation Displacement Connection) method allowing one or two equal size cables (0.40–0.68mm) to be terminated per connection block, using Crabtree connection tool List No.6915 as shown below.



- Allow 50mm cable 'tails' at each connection block
- Push home in direction of arrow with connection tool
- Excess cable may be trimmed using wire cutters

WIRING COLOUR CODE

Pin number	Base colour/stripe
1	Green/White
2	Blue/White
3	Orange/White
4	White/Orange
5	White/Blue
6	White/Green



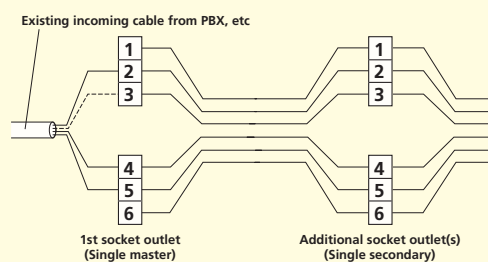
As seen from rear

WIRING DIAGRAMS

Example of typical connections:

- 1 Connections to 2 & 5
- 2 Earth recall (when used) connect to terminal 4
- 3 Connection to terminal 3 is not usually required

- NB** (a) Standard 4 wire cable is shown below as incoming cable. If terminals 1 and 6 (normally unused) are required, 6 wire cable may be used.
- (b) All socket outlet connections are in parallel – any number of socket outlets can be connected, but it is recommended that only a maximum of 5 telephones be used at any one time on one line.



WARNING NOTES

In order to comply with current Wiring Regulations, metal faceplate telephone socket outlets must be within the 'equipotential zone' of the building they are located in. Therefore an earth terminal is fitted to metal plate units which should be connected to the electrical installation's earthing system.

Testing

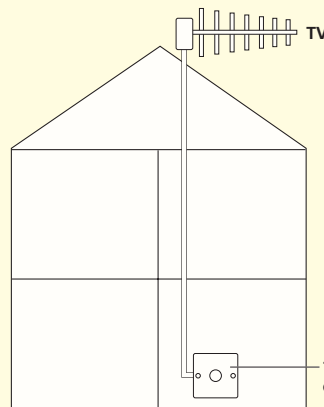
- (a) Connect cables as shown in wiring diagram
- (b) Plug in telephones
- (c) Lift receivers and check for dial tone
- (d) Make an incoming call to check bells work
- (e) If circuit does not work, disconnect and check thoroughly before reconnecting

Note

Unauthorised connection of telephone socket outlets to wiring owned by British Telecom is an offence. Further information concerning the requirements of a telephone system installation can be obtained from the Department of Industry or the telephone equipment supplier.

CO-AXIAL SOCKET OUTLETS

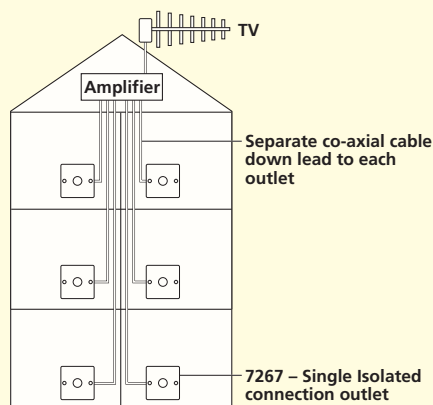
In order to comply with the latest EMC directives, all installations containing amplification systems or comprising multiple co-axial socket outlets must be fitted with appropriate earth bonding.



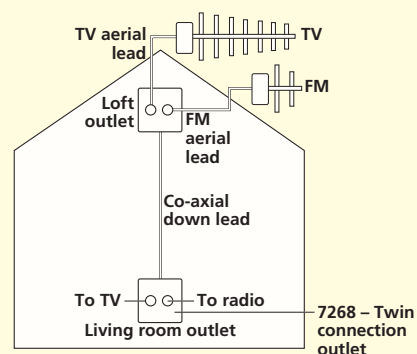
Note
If additional outlets are required, an amplifier should be used. Each outlet is then wired separately to the amplifier.

7265 – Single Direct connection outlet

Single connection outlet Domestic installation



Co-axial outlet installation Communal aerial system eg flats, hotels etc



TV/FM outlet installation

TV and FM aerial connections use a twin connection outlet (7268) and one co-axial down lead.

- 1 Fit a co-axial connector to the TV and FM aerial cables.
- 2 Plug connectors into 7268 in loft.
- 3 Connect a co-axial cable run between back of 7268 in loft and back of 7268 in the living room, then plug TV and FM radio into front of plate.

7268 – Twin connection outlet

LUMINAIRE SUPPORT COUPLERS



5015 rear view



5013 rear view

Technical details:

Terminal capacity: 4x2.5mm², 2x4mm², 1x6mm² per outlet terminal

Standards: BS7001

BS5733 general electrical requirements

Note: BS 6972 only covers LSC's rated upto 6A 250V

Rating: max 10A 250V

Static load: 5kg

5 AND 7 PIN OUTLETS

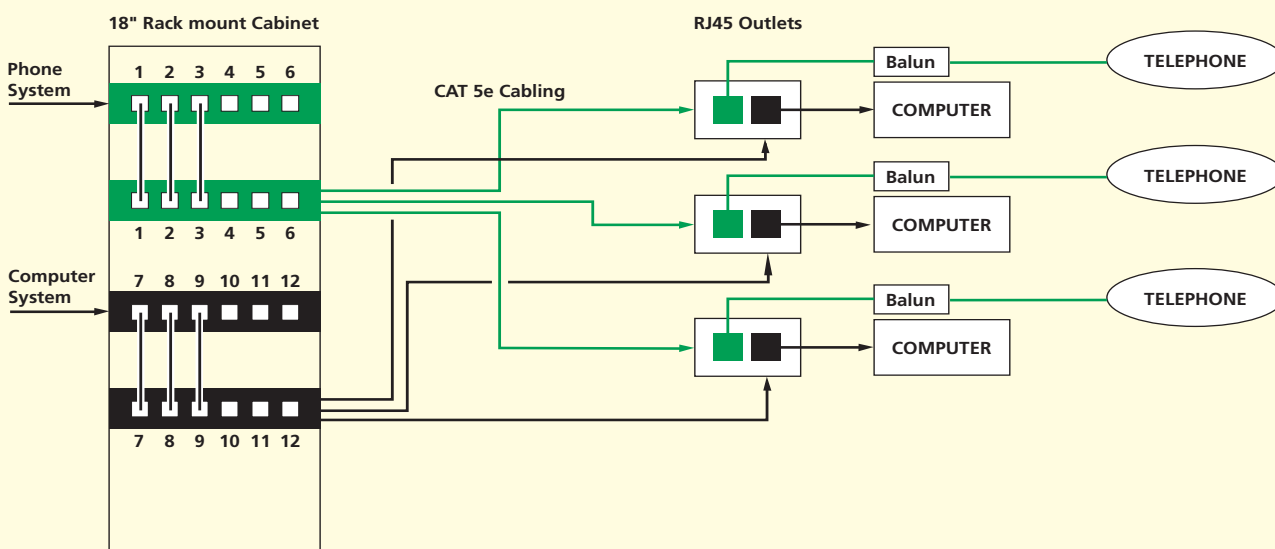
The 5 and 7 pin applications provide addition benefits when utilising building management systems included low voltage, dimmer, emergency lighting circuits, PIR security & EIBUS.

Typical 7 pin applications:-

	Connection	Description
L1	Maintained	(Emergency Lighting)
A	Auxiliary Live	
E	Earth	
LOOP	Live Loop	
L	Live	
N	Neutral	
A1	0 to 10V	Building management systems
A2	0 to 10V	Building management systems

The LSC is forming an integral part of design installations for many major projects. In new installations the specifier may choose LSCs to offer a versatile lighting system. However, in projects where refurbishment is being undertaken the LSC system is seen as an ideal cost effective solution where hard wiring may already be in place.

DATAPAK TYPICAL USE OF PATCH PANELS, PATCH LEADS & DATA OUTLETS



TELECOM MODULES

Master voice module - BT 601 master

IDC connectors (Krone style)

Capacitor, lightning protection, resistor

PABX voice module - IDC connectors

Capacitor, no lightning protection, (resistor optional)

Secondary voice module - IDC connectors

Master voice module (left handed) - BT 601 master

IDC connectors

Capacitor, lightning protection, resistor

Accepts left handed plug

DATA MODULES

RJ45 Cat 5e - IDC connector blocks

Colour coding - socket/cable/patch panel

Tie wrap facility

Use as socket on ISDN system, multiple sockets "daisy-chained"

ISDN Terminated (blue shutter) - RJ45 socket with 100 ohm resistor between pins 4 & 5 and one between pins 3 & 6

Ratio 8:1 use

RJ11/12 - classified as data outlet, but used as telecom socket in Eire & USA

No capacitor accepts 6p6c plug (RJ12) and 6p4c plug (RJ11)

MEDIA MODULES AND ACCESSORIES

Triplex unit - TV/SAT/FM splitter. One cable in, carrying combined signals, splits signal back into 3 parts. Each socket is screened, reducing susceptibility to noise distortion thus improving picture reception. 50mm x 50mm (double mod size)

TV return - screened TV module, used in conjunction with a distribution amplifier to distribute signals to other rooms

BNC (female) - accepts BNC male plug, 50 ohm or 70 ohm, as found on co-axial data systems (RG58, Ethernet) and CCTV installations.

BAND WIDTH/CAT

Cat 4 - 20Mhz

Cat 5 - 100Mhz

Cat 5e - 160Mhz

Cat 6 - 250Mhz

WIRING ACCESSORIES – METAL PLATE SPECIFICATION

CAPITAL



Capital Bronze (BZ)
Base metal Brass
Process 1 Linished and brushed
2 Electrophoretically lacquered
3 Stoved



Capital Satin Chrome (SC)
Base metal Brass
Process 1 Linished and brushed
2 Nickel-chrome plated
and lanolin wiped



Highly Polished Chrome (HPC)
Base metal Brass
Process 1 Polished plate
2 Electrophoretically lacquered
3 Stoved



Capital Polished Brass (PB)
Base metal Brass
Process 1 Polished plate
2 Electrophoretically lacquered
3 Stoved



Polished Stainless Steel (PSS)
Base metal Stainless Steel
Process 1 Polished plate
2 Electrophoretically lacquered



Industrial Grey (BG)
Base metal Steel
Process 1 Iron phosphated
2 Epoxy polyester powder coated



Stainless Steel (SS)
Base metal Stainless Steel

PLATINUM LOW PROFILE



Satin Chrome (SC)
Base metal Brass
White interior as standard



Polished Brass (PB)
Base metal Brass
Black interior as standard



Highly Polished Chrome (HPC)
Base metal Brass
Black interior as standard

PLATINUM FLAT PLATE



Stainless Steel (SS)
Base metal Stainless Steel
White interior as standard



Polished Brass (PB)
Base metal Brass
Black interior as standard



Polished Stainless Steel (PSS)
Base metal Stainless Steel
Black interior as standard

CFL COMPACT FLUORESCENT LAMPHOLDER

The design of the Lampholder accepts an industry standard 4 pin 10,13 and 18W G24q¹ and q² lamp. This reduces the power consumption, when compared to an equivalent incandescent lamp, by up to 80%.

The Lampholder is designed to European standards and has a diameter of 42mm, which is larger than the typical Lampholder which is 29mm.

A Safety feature which protects the installation will disconnect the supply to the Lampholder:-

During a lamp change, when no lamp is present, or in the case of lamp failure at the end of lamp life.

This Safety feature is reset by switching the supply to the fitting off for 10 to 15 seconds.

STANDARDS

Manufactured to comply with the requirements of BS4678: Part 4 (1982) and BSEN 50085-1 (1999).

The Electrium group of companies is registered for assessed capability to ISO 9002 Part 1.

The WARWICK range complies with all requirements of the 16th Edition of the IEE Regulations.

MANUFACTURE

All trunking components are manufactured from PVCu material. Base sections, covers and bus-bar base sections are extruded.

Bends, corners, stop ends, joint covers and accessory boxes are formed by injection moulding.

Flat angles and tees are factory pre-fabricated from standard profiles.

STRENGTH

High impact resistant. The material is formulated to comply with BS4678 Part 4 (1982). Temperature classification -5 to +60°C for permanent application range.

FINISH

Manufactured in White Semi-gloss finish.

FIRE RESISTANCE

The PVCu used in WARWICK trunking is non-propagating and complies with the requirements of BS476 parts 5 & 7 and BS4678 Part 4.

DEGREE OF PROTECTION

IP4X

THERMAL PROPERTIES

Water Absorbtion – Negligible
Mineral Acids – Excellent
Detergents – Excellent

Note:

Some solvents such as Ketones, Aromatics and Hydrocarbons should not be used on PVC trunking

CABLE CAPACITIES

The following table is from the 16th edition of the IEE Wiring Regulations: Guidance Note 1: Selection and Erection of equipment.

The table refers to single core PVC Insulating cables only.

**TABLE A5
CABLE FACTORS FOR TRUNKING**

Type of Conductor	Conductor Cross - Sect. Area	Term
Solid	1.5	7.1
	2.5	10.2
Standard	1.5	8.1
	2.5	11.4
	4.0	15.2
	6.0	22.9
	10.0	36.3

This Appendix is a method which can be used to determine the size of trunking necessary to accommodate cables of the same size, or different sizes.

The number of cables drawn into or laid in an enclosure of a wiring system shall be such that no damage is caused to the cables or to the enclosure during their installation.

For trunking each size of cable has been allocated a term, as has each trunking. To ascertain the size of trunking required, add together all the cable terms and compare against the trunking terms given in the following figures.

Note:

For power cables a space factor of 45% must apply, therefore, the following terms represent this in the internal area figures.

Angled Top/Bottom section:-
Area 1176mm Term Value 532

Central section:-
Area 3483mm Term Value 1576

Square Top/Bottom section:-
Area 1507mm Term Value 682

Extended Bottom section:-
Area 3499mm Term Value 1583

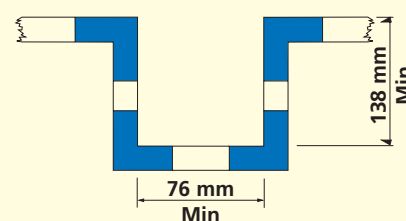
INSTALLATION RECOMMENDATIONS

- 1) The base section and extension base (if used) should be plug and screw fixed to the wall ensuring washers are used behind the screw head for a more secure fix.
- 2) All joints should have a 5mm gap to allow for expansion and base section corners should be mitred. The cutting of the base sections is not critical as the manufactured fittings cover the joints and overlap the trunking lids.
- 3) For cutting it is recommended that a fine tooth tenon or hacksaw is used. Use a sharp knife or file for trimming.
- 4) Should screening be required this can now be inserted into the relevant compartment.
- 5) Socket and data boxes can be positioned and wiring can begin.
- 6) On completion of all wiring, the covers, joint covers etc can be inserted.
- 7) Finally, all power/data/telephone accessories can be wired and fixed.

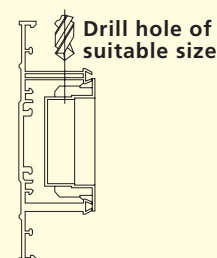
The Earth Loop Impedance Test can now be carried out.

INSTALLATION TIPS

Installation around columns.



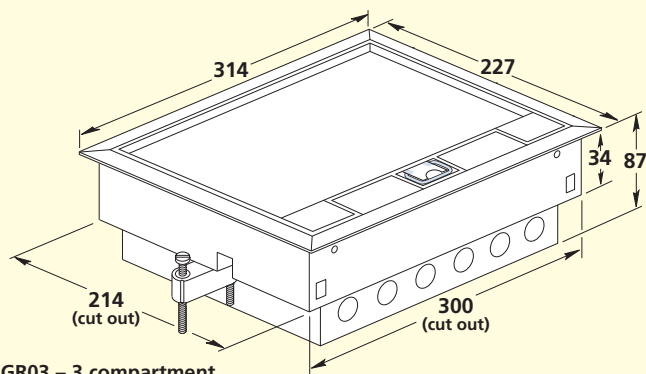
Accessory Boxes



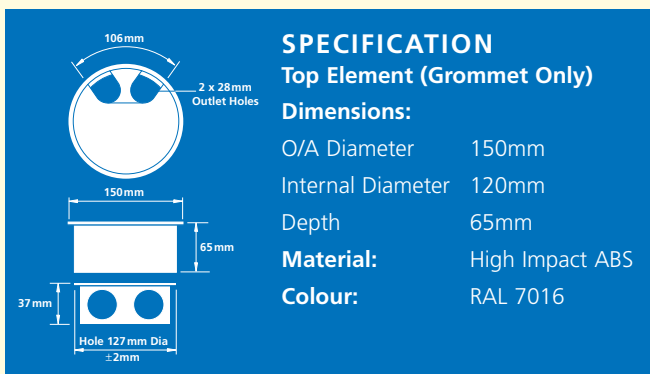
All boxes are on the same plain. Therefore, holes should be drilled from top or bottom to accommodate data and telephone cabling.



GROSVENOR 'FAST FIT' RAISED ACCESS FLOOR BOXES



GR03 - 3 compartment
GR04 - 4 compartment



SPECIFICATION Top Element (Grommet Only)

Dimensions:

O/A Diameter	150mm
Internal Diameter	120mm
Depth	65mm

Material:	High Impact ABS
Colour:	RAL 7016

BRITMAC FLOOR DISTRIBUTION SYSTEMS

Materials

All systems are constructed from high quality materials and are designed to meet relevant British and International Standards including the installation requirements of the IEE Wiring Regulations. Trunking conforms with the requirements of BS 4678 Part 2: 1973 as applicable.

Extensive use is made of pre-galvanised steel sheet and, where this is not appropriate, a hard-wearing epoxy polyester paint is used.

Raised Access Floors

Throughout this catalogue the term Raised Access Floor has been used to describe any modular flooring system which is supported on adjustable pedestals providing a service void. Other names frequently used are Cavity Floor, False Floor, Platform Floor, Access Floor, Computer Floor, etc.

GROSVENOR RAISED ACCESS FLOOR BOXES

Floorboxes

The Grosvenor floorbox has been designed to withstand working loads of the MOB PF2 PS/SPU March 1992 specification for raised floors.

The floorboxes listed within this catalogue are capable of accepting a very wide range of accessories fitted in any compartment. However, certain combinations do impose restrictions on positioning, due to the clashes of connectors, plug tops or the cables themselves.

All accessory plates are supplied complete with the appropriate thread cutting screws. Each fixing hole in the unit frames is unthreaded and deep plunged for ease of location of fixing.

The minimum plug clearance between accessory plate and underside of floor is 34mm.

Accessories

In addition to the extensive range of standard accessories illustrated, many alternative items can be incorporated **when specified**.

Typical items are listed below:

POWER

- Non-standard sockets.
- Clean Earth sockets.
- American NEMA sockets.
- Schuko and other European sockets.

TELEPHONE

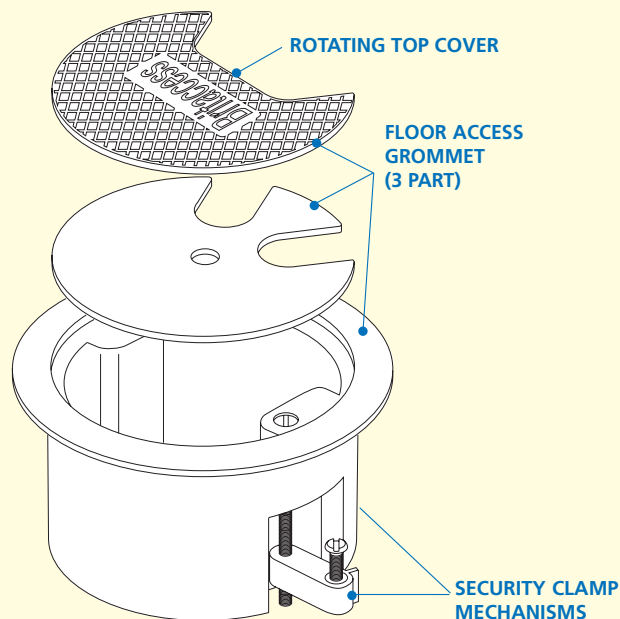
Components for most British Telecom, Mercury and other national and international systems.

DATA

A wide range of components to suit virtually all systems in current use. These include IBM, Wang, Phillips, ICL and many others.

Provision can also be made for the accommodation of fibre optic installations and their components.

All dimensions in mm Tolerance on cut-out dimensions is ± 1 mm



CONTROL MODULES – GENERAL

ANALOGUE TIME SWITCHES

	LIST Nos 303/TS24	303/TQ24	303/TQ7
Time period	24hr	24hr	7 day
Power reserve	–	150hr	150hr
Setting interval	15 min	15 min	1hr
Minimum switching	30 min	45 min	4hr
Contact rating at 240V ac	16A	16A	16A

- Changeover contacts.
- Manual override.
- Clear switch position indicator.

DIGITAL TIME SWITCHES

	LIST Nos 302/TD1	302/TD2
Channel	1	2
Switching programme	24hr/7 day	24hr/7 day
Power reserve	250hr	250hr
Minimum setting	1 min	1 min
Contact rating resistive at 240V ac	16A	2 x 16A
Accuracy at 20°C	±1 sec/day	±1 sec/day
Power consumption	8.5VA	8.5VA
Holiday programme	1– 45 days	1– 47 days
Standard	VDE0875	VDE0875
Memory locations	42	24
Every day programme switchings per week	294	168
Permissible ambient temperature	-10–+50°C	-10–+45°C

- Permanent 'on/off'.
- Summer/Winter time changes.
- Manual override.
- Daily and weekly programmes.
- Changeover contacts.

If the timers are used in combination with other devices within a system it is important to check that the entire system does not cause adverse interference.

In the event that the ambient temperature exceeds those stated above, temporary fading of the display may occur. This does not affect the time-keeping or switching functions of the device.

STAIRCASE TIME SWITCH

Operating voltage	190–240V
Mains frequency	50–60Hz
Switching capacity	16A resistive, 2000W tungsten, 2000W fluorescent
Connection: 3-lead rising mains	4-lead rising mains
Timed, reswitchable lighting.	Timed, reswitchable lighting.
	Untimed, standard lighting switches.

- Synchronous motor.
- Time range 1–7 minutes.
- Glow lamp max 50mA.
- Override switch for permanent 'on'.
- Pre-selector switch for 3-4 wire connection.

BELL TRANSFORMER

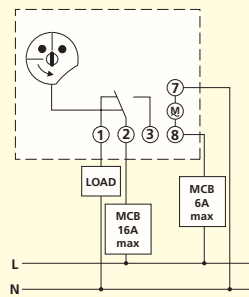
- Operating voltage: Primary 240V 50/60Hz; Secondary 4/8/12V.
- Power: 5VA.
- Short circuit resistance is in accordance with IEC 742.

It is important to note that when this unit is installed with other 240 or 415V equipment, ensure secondary connections use cable with insulation rated for 240/415V duty, or use additional insulation (sleeving etc) to provide appropriate insulation.

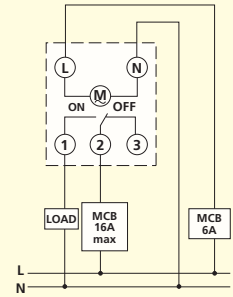
TWILIGHT SWITCH

Operating voltage	190–240V
Mains frequency	45–60Hz
Power consumption	2.2VA
Contact rating resistive @ 240V	10A
Incandescent lamp load	1000W
Brightness range	2–2000 lux
Switching delay (on/off)	80 seconds approx
Switching status indication	LED (no delay)
Connection cable for light sensor	2 core cable max length 100m
Permissible ambient temp	-10 to +50°C control unit -40 to +70°C
Protection category	IP20 control unit IP54 light sensor

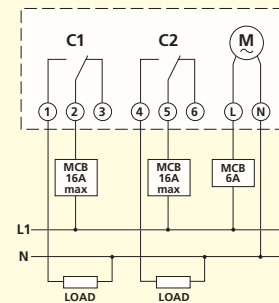
- Can be wired normally open or closed.
- Delay 'on/off' eliminates nuisance switching.
- Selector switch for adjustment of ranges: range 1 2–35 lux; range 2 35–2000 lux.
- Connection of additional timing device will provide facility to override 'switch on' status.



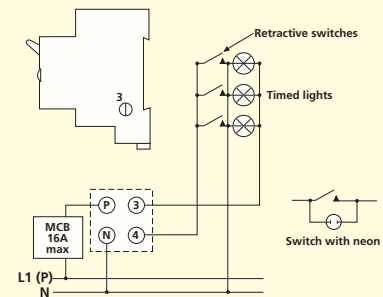
Analogue
Typical wiring diagram



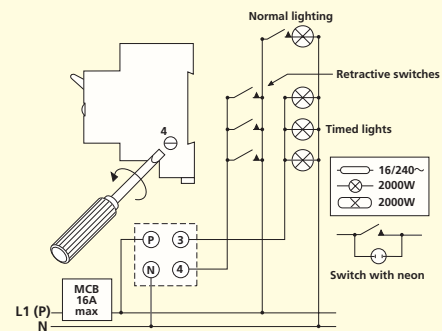
Digital 1 channel
Typical wiring diagram



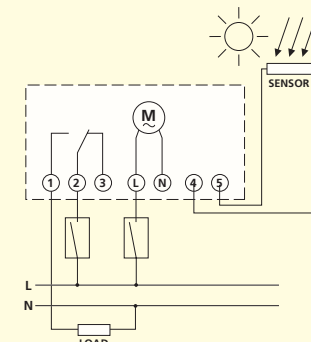
Digital 2 channel
Typical wiring diagram



Staircase 3 wire
Typical wiring diagram



Staircase 4 wire
Typical wiring diagram



Twilight switch
Typical wiring diagram

MCBs – GENERAL

Crabtree Starbreaker MCBs comply fully with BS EN 60898 and therefore enable the requirements of BS 7671 to be met.

TYPE CLASSIFICATION

BS EN 60898 specifies different tripping characteristics for different types of MCB, depending on the level of overload current required to make the MCB trip out in less than 100 milliseconds. Crabtree MCBs are available as types B, C or D, enabling installation designers to choose an MCB with a characteristic closely matched to the circuit requirement.



FAULT LEVELS

Regulation 432-02-01 of BS 7671 requires that a device providing protection against overload currents and fault currents shall be capable of breaking any overcurrent up to and including the prospective fault current at the point where the device is installed.

In domestic situations this could be as high as 16kA, in industrial situations it could be even higher.

According to regulation 434-03-01, the prospective fault current can be higher than the breaking capacity of the protective device if another protective device having the necessary breaking capacity is installed on the supply side.

This means that MCBs can be backed up by devices of greater capacity such as HRC fuses.

When providing back-up protection, consideration must be given to discrimination. Discrimination is said to occur when the device nearest the fault operates first.

AMBIENT TEMPERATURE CONSIDERATIONS

Starbreaker MCBs are calibrated to meet the requirements of BS EN 60898, 30°C Ref Calibration Temperature. At other temperatures the following rating factors should be used:

At 60°C 0.9 At 20°C 1.0 At 0°C 1.1

Adjacent thermal-magnetic MCBs should not be continuously loaded at or approaching their nominal rated currents when mounted in enclosures. It is good engineering practice to apply generous de-rating factors or make provision for adequate free air between devices. In these situations, and in common with other manufacturers, we recommend a 66% diversity factor is applied to the MCB nominal rated current where it is intended to load the MCBs continuously (in excess of 1 hour).

OPERATING CHARACTERISTICS FOR MCBs

MCB type	BS EN 60898 type	Instantaneous trip current range	Typical application
B	B	3–5I _n	Domestic
C	C	5–10I _n	Commercial Light Industrial
D	D	10–20I _n	General Industrial
1*	–	2.7–4I _n	Domestic
2*	–	4–7I _n	Commercial
3*	–	7–10I _n	General Industrial

* MCBs, type 1,2 & 3 to BS 3871

INDIRECT SHOCK RISK PROTECTION

BS 7671, formerly the IEE Wiring Regulations requires that measures are taken to protect against the risk of electric shock, which can be the result of contact with live parts.

MCBs can be used in conjunction with earthed equipotential bonding to achieve the required disconnection times of 0.4 seconds for 230V socket outlets and 5 seconds for circuits supplying fixed equipment (Regulation 413-02-08). This regulation, together with tables 41B1, 41B2 and 41D, specifies the maximum permissible earth fault loop impedance which is allowed using various protective devices.

EARTH FAULT LOOP IMPEDANCES (Z_s) TO GIVE COMPLIANCE WITH BS 7671 REGULATION 413-02-08 AT 230V

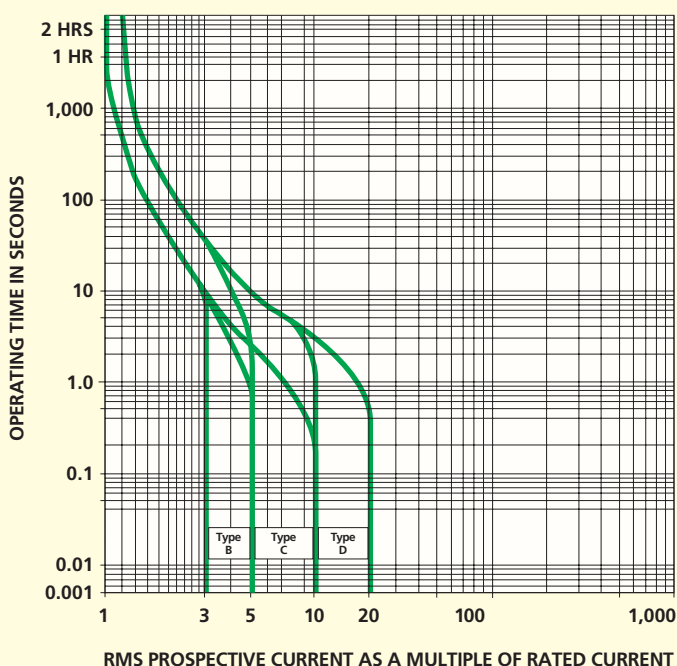
Maximum earth fault loop impedance in ohms for circuits supplying socket outlets (also fixed equipment in bathrooms)

DEVICE	BS	RATINGS				
		5A	15A	20A	30A	45A
Rewireable fuses	BS 3036	10	2.67	1.85	1.14	0.62
House service fuse	BS 1361	10.9	3.43	1.78	1.2	0.6
Type B MCB	BS EN 60898	9.6	3.2	2.4	1.6	1.07
Type C MCB	BS EN 60898	4.8	1.6	1.2	0.8	0.53

	BS	RENARD SERIES OF RATINGS							
		6A	10A	16A	20A	32A	40A	50A	63A
HRC fuse	BS 88	8.89	5.33	2.82	1.85	1.09	0.86	0.63	–
Type B MCB	BS EN 60898	8	4.8	3	2.4	1.5	1.2	0.96	0.76
Type C MCB	BS EN 60898	4	2.4	1.5	1.2	0.75	0.60	0.48	0.38

At these values of loop impedance fuses will operate within 0.4 seconds and MCBs will operate in 0.1 second.

Type D MCBs are not quoted in BS 7671 since it is considered unlikely that the low earth loop impedances necessary can be achieved in practice.



MCBs – STARBREAKER

SPECIFICATION

- British Standard BS EN 60898
- Short circuit breaking capacity 6000A (M6)
- Type classification B (3–5In)
- Rated voltage 230V
- Rated frequency 50Hz



APPLICATIONS

The Starbreaker single pole MCB with its Type B characteristics is suited for use on loads with little or no switching surges, such as occur on domestic applications.

In addition, a Type B MCB will give indirect shock risk protection at higher levels of earth loop impedance (see tables on page 114).

Other ratings are available in Type C classification (5–10In).

GENERAL CONSTRUCTION

Starbreaker MCBs are of the thermal-magnetic current limiting type, having a compact construction which has been achieved by not only minimising the number of parts but also the number of welded joints and connections. Critical material selection ensures reliability and durability. Typical of this is the choice of silver graphite for the fixed contact. The MCB has an easy to operate handle with a trip-free toggle mechanism – so even when the handle is held in the 'on' position the MCB is free to trip.

AMBIENT TEMPERATURE CONSIDERATIONS

Starbreaker MCBs are calibrated to meet the requirements of BS EN 60898, 30°C Ref Calibration Temperature.

At other temperatures the following rating factors should be used:

At 60°C 0.9 At 20°C 1.0 At 0°C 1.1

Adjacent thermal-magnetic MCBs should not be continuously loaded at or approaching their nominal rated currents when mounted in enclosures. It is good engineering practice to apply generous derating factors or make provision for adequate free air between devices. In these situations, and in common with other manufacturers, we recommend a 66% diversity factor is applied to the MCB nominal rated current where it is intended to load the MCBs continuously (in excess of 1 hour).

BACK-UP PROTECTION

Back-up protection is required only if the prospective short circuit current at the point of installation exceeds the breaking capacity of the MCB. When providing back-up protection consideration must be given to discrimination between the MCB and fuse.

DISCRIMINATION

It is desirable that the protective device nearest the fault should operate first. The low energy let through of Starbreaker MCBs provides better discrimination with HRC fuse back-up than is given by earlier types of MCBs.

METHOD OF OPERATION

1 Moderate overload conditions

Detection of moderate overload conditions is achieved by the use of a thermo-metal element which deflects in response to the current passing through it. The thermo-metal element moves against the trip bar releasing the trip mechanism.

2 Short circuit conditions

When the current flowing through the MCB reaches a predetermined level, the solenoid directly pulls in the plunger which forcibly separates the contacts and simultaneously releases the trip mechanism.

3 Establishment of arc between fixed and moving contacts

As the moving contact moves away from the fixed contact, an arc is established. The arc runs along the arc runner to the arc chamber where it is split up between the plates and extinguished.

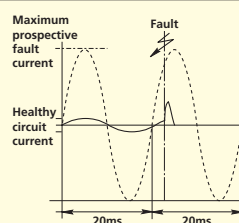
The low inertia and consequent high speed of the moving contact has a limiting effect on the flow of fault current. The rapid development of the arc, together with its accelerated extinction in the arc chamber, gives a typical operating time of 3.5–5 milliseconds.

CURRENT LIMITING ACTION

The high speed current limiting action ensures that the MCB operates before the full prospective fault current is allowed to develop.

Under fault conditions, damage can be sustained to the installation and associated equipment due to the amount of energy that passes before the current is completely interrupted. The total energy let-through depends on the value of current and the time for which it flows, and is denoted by the symbol I^2t . The high speed current limiting action of Starbreaker MCBs ensures that the energy let-through and any subsequent damage is minimised. This reduced energy let-through assists greatly with both back-up and discrimination considerations.

CURRENT LIMITING EFFECT



I^2t ENERGY LET-THROUGH

Typical values of I^2t energy let-through for Starbreaker MCBs are given in the table below:

MCB rating (A)	Total I^2t let-through ($A^2 \text{ sec}$)	MCB rating (A)	Total I^2t let-through ($A^2 \text{ sec}$)
6	7500	20	23500
10	13000	32	33000
16	21500	40	40000

Prospective short circuit test current 6000A

MOUNTING THE MCB

In Crabtree consumer units Starbreaker MCBs are mounted on standard 35mm top hat rail to BS 5584: 1978 EN 50022 giving a projection within the Standard of 70mm. Due to the method of connection onto the busbar it is not possible to use the 61/B06 range for custom built panels. Therefore the 610/06 range should be used (see page 105 for details).

TERMINALS

The MCB terminals are designed to accept copper cable up to 16mm²

Starbreaker main switch	100/MI2
• Specification	BS EN 60947-3
• Rating	100A 230V 50Hz
• Utilisation category	AC-22A
• Type	Double pole switch disconnector
• Insulation voltage	250V
• Impulse withstand voltage	4kV
• Rated duty	Continuous
• Short-time withstand current	2kA for 1 second
• Short-circuit making capacity	3.5kA (peak)
• Conditional short-circuit current	16kA when protected by 100A HRC fuse to BS 1361
• Pollution degree	3

RCDs – STARBREAKER & LIFESTAR

SPECIFICATION

- BS EN 61008 RCCBs
- BS EN 61009 RCBs
- BS 7288 SRCDs
- Range of current ratings 13–100A
- Range of sensitivities 10–300mA
- Pole configurations DP and TP & N
DP SRCD – 230V
- Voltage ratings 1 Module SP & N – 230V Other voltage ratings available on request
- Frequency rating 50Hz
- Tripping principle employed Electro-mechanical (3 & 4 Module)
Electronic (1 Module)

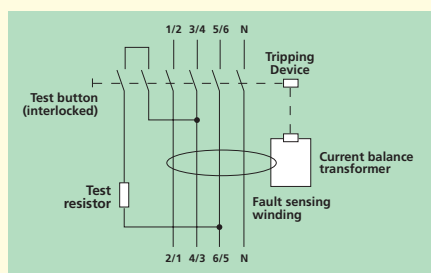


OPERATION

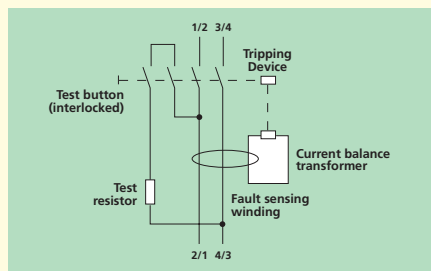
The RCD employs the current balance principle which involves the supply conductors to the load (phase and neutral) being wound onto a common transformer core to form the primary windings. The secondary winding of the current transformer is then connected to the trip mechanism, either an electro-magnetic relay in the case of 2, 3 and 4 module RCCBs or an electronic relay in the case of Starbreaker RCBs, and Lifestar SRCDs. Under healthy circuit conditions, the current in the phase conductor is equal to the current in the neutral and the vector sum of the current is zero. In the event of an earth fault, an amount of current will flow to earth, creating an out of balance situation in the transformer assembly. This out of balance is detected by the secondary winding of the transformer and at a pre-determined level of out of balance will activate the trip mechanism.

Single phase and neutral or three phase and neutral units (suitable for 3 or 4 wire systems) are available, the latter being suitable for balanced or unbalanced 3 phase loads.

The RCD trip mechanism will operate at a residual current of between 50–100% of its rated tripping current (sensitivity).



RCD circuit diagram (four pole)



RCD circuit diagram (two pole)

TEST BUTTON

A test button is provided on all RCDs to enable the operation of the device to be checked. It is recommended that an RCD is tested at least quarterly. (See BS 7671 Regulation 514-12-02).

TERMINAL CAPACITIES

Lifestar RCCBs	50mm ²	Lifestar SRCDs	3 x 2.5mm ² 3 x 4mm ² 2 x 6mm ²
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Starbreaker RCBs 10mm²

APPLICATIONS

Residual Current Devices (RCDs) may be required for one of two main reasons:

(a) to ensure the compliance of an installation with BS 7671, formerly the IEE Wiring Regulations.

An RCD may be installed to meet the requirements of Regulation 413-02-15 where a high earth fault loop impedance disqualifies the use of overcurrent protection devices as a means of providing protection against indirect contact. To comply with Regulation 413-02-16 the earth fault loop impedance in ohms multiplied by the rated tripping current of the RCD in amperes must not exceed 50. With the RCD having a sensitivity of 30mA, the maximum permissible earth fault loop impedance is calculated as follows:

$$Z_s (\text{max}) = 50 / 0.03 = 1666 \text{ Ohms}$$

Rated tripping current of RCD	Max permissible earth fault loop impedance
30mA	1666 Ohms
100mA	500 Ohms
300mA	166 Ohms

(b) to provide a higher level of protection than that given by direct earthing, against fire or shock risks caused by earth leakage currents.

Overcurrent protection devices cannot detect earth fault currents below their operating current. If they are the only means of earth fault protection, it is possible for sufficient earth fault current to flow undetected to constitute a fire risk.

By using an RCD, the flow of the sustained earth fault current, above the tripping current of the RCD, is prevented. The shock risk associated with these earth fault currents is also greatly reduced.

To provide complete personnel protection, a high sensitivity RCD to a Type A classification with a maximum tripping current of 30mA should be used. This is particularly important with portable appliances where there is a danger of losing earth continuity due to damage or fatigue.

Residual current devices are completely selective in their operation. They are unaffected by parallel earth paths and are thus ideally suitable for the protection of installations in modern high density dwellings or office blocks. They are virtually tamperproof and provide a predetermined level of protection. Even if earthing conditions deteriorate substantially, they will continue to provide a higher level of protection than would have been given by direct earthing. Starbreaker 100A plug in rcd's are recommended for use in larger capacity enclosures, for further advice consult our Technical Department.

SENSITIVITIES

The choice of RCD depends upon the application of the level of protection required.

300mA provide the means to achieve compliance with BS 7671 in conditions of poor earth loop impedance and also give a good level of fire risk protection.

100mA provide the means to achieve compliance with BS 7671, a high level of fire risk protection and a degree of indirect shock risk protection.

30mA for use where a higher level of protection is required, with portable equipment or equipment used in hazardous conditions. Regulation 471-16-01 of BS 7671 indicates that where a socket outlet may reasonably be expected to supply equipment to be used outside the equipotential zone, protection shall be afforded by a residual current device having a rated residual operating current not exceeding 30mA.

Regulation 471-16-02 also contains a requirement for circuits supplying portable equipment outdoors supplied other than through a socket outlet.

10mA provide a higher level of personal protection, for use in sensitive areas such as laboratories, schools and workshops where potential hazards exist from electrical faults caused through misuse, accidental damage or failure of electrical appliances.

TRANSIENT EARTH LEAKAGE CURRENTS

All Crabtree residual current devices incorporate a high level of immunity to tripping when subjected to transient earth leakage currents.

Such transients can occur when there is a significant level of capacitance to earth as can result from cable capacitance (particularly MICC) or RF filter networks. Crabtree RCDs are therefore less susceptible to nuisance tripping due to transient earth leakage currents.

Note
Exposed installation metal work must be earthed.
When used on 3 wire 230V systems a link should be connected between 5/6 and N.

Note
Exposed installation metal work must be earthed.

RCBOs (MCB/RCDs) & RCDs – GENERAL

SPECIFICATION

STARBREAKER RCBOs (MCB/RCD)

● Standard	BS EN 61009
● Short circuit breaking capacity	6000A (M6)
● Current rating	6–50A
● Type classification	C
● Sensitivities	30mA
● Rated voltage	230V
● Rated frequency	50Hz
● Tripping principle employed	Electronic
● Pole configurations	Single pole with solid neutral

APPLICATIONS

RCBOs provide both earth fault and overcurrent protection. The MCB element of the Starbreaker unit has a Type C (5–10In) classification making the device more suitable for domestic or light commercial applications. RCBOs with other MCB classifications are available to order.

All RCBOs give a high level of protection to individual circuits whilst exhibiting improved immunity to response caused by transients.

INSTALLATION TESTING – CAUTION

As Starbreaker RCBOs employ electronic components they should be disconnected when carrying out the following tests on the electrical installation:

(a) Earth fault loop impedance test

The load terminals should be disconnected if it is intended to parallel-out the unit for test purposes.

It may incur damage if mains potential is maintained on the load terminals of this unit after the trip mechanism has operated.

(b) Insulation test

Whilst RCBOs can withstand the effects of normal insulation testers without damage, false readings may be given on the test instrument. For this reason it is recommended that the device is disconnected during this test.

FAULT CURRENT SENSITIVITY

Semi-conductor devices are now incorporated in equipment used throughout industry, commerce and in the home. Typically, the purpose of these semi-conductor devices is for monitoring and controlling industrial equipment eg speed controls for small motors and temperature controls, along with extensive use in computers, VDUs, printers, washing machines, etc.

As the equipment is fed from the mains electrical supply, in the event of an earth fault the presence of semi-conductors may result in the normal ac waveform being replaced by a non-sinusoidal fault current. In some cases the waveform may be rectified or chopped. These waveforms are said to contain a pulsating dc component which can either partially desensitise or totally disable a standard Type AC RCD.

New International standards IEC 61008 (RCCBs) and IEC 61009 (RCBOs) divide RCDs into two performance classes:

Type AC

RCDs for which tripping is ensured for residual sinusoidal alternating currents, whether suddenly applied or slowly arising.

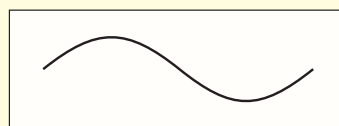
Type A

RCDs for which tripping is ensured for residual sinusoidal alternating currents and residual pulsating direct currents, whether suddenly applied or slowly arising.

To ensure the correct level of protection, check for the following symbols:

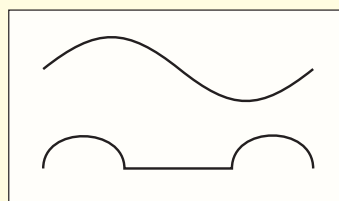
TYPE AC

normal ac sensitivity



TYPE A

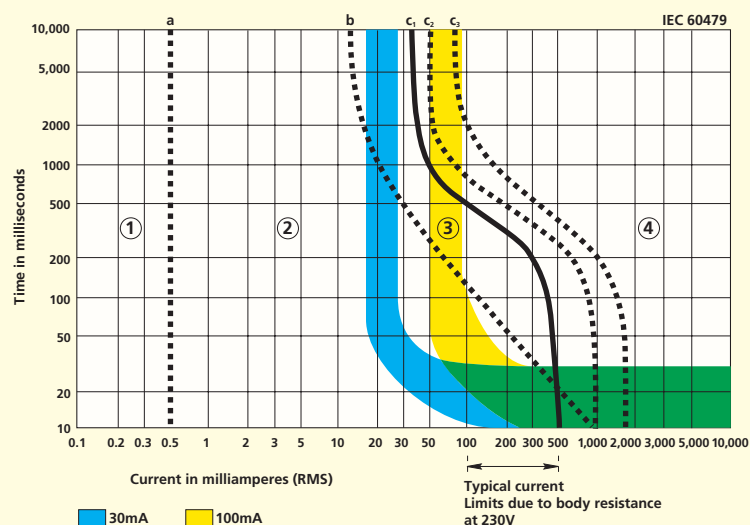
pulsating dc sensitivity



Crabtree RCDs are available as both Type AC and Type A devices.

IEC PUBLICATION (60479) CURVES WITH CRABTREE RCD CHARACTERISTICS SUPERIMPOSED

TIME/CURRENT ZONES OF EFFECTS OF AC CURRENT (15–100Hz) ON PERSONS



Zone Physiological effects

- 1 Usually no reaction effects.
- 2 Usually no harmful physiological effects.
- 3 Usually no organic damage to be expected. Likelihood of muscular contraction and difficulty of breathing, reversible disturbances of formation and conduction of impulses in the heart, and transient cardiac arrest without ventricular fibrillation increases with current magnitude and time.
- 4 In addition to the effects of zone 3, probability of ventricular fibrillation increased up to 5% (Curve C2) up to 50% (Curve C3) and above 50% beyond Curve C3. Increasing with magnitude and time, pathophysiological effects such as cardiac arrest, breathing arrest and heavy burns may occur.

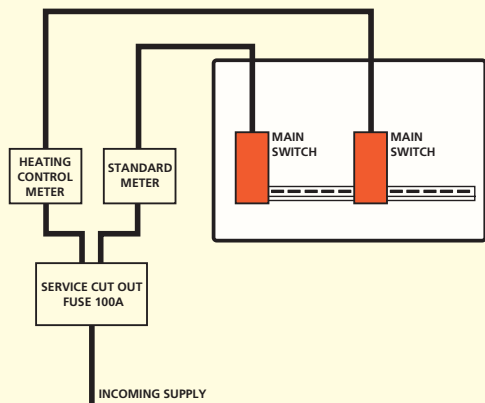
STARBREAKER CONSUMER UNIT APPLICATIONS

The following information illustrates the methods by which consumer units can be installed into more specific applications, for example multi-tariff or dual RCCB consumer units. To assist product selection we have included references of the components required in order to assemble the particular variant.

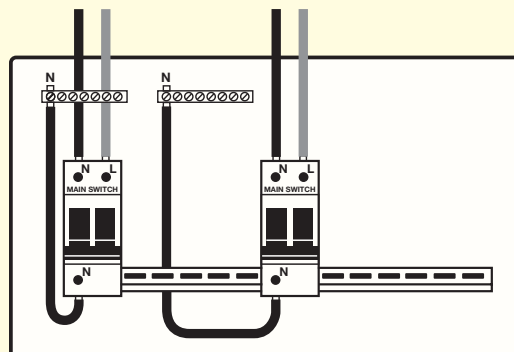
TWIN-TARIFF

Twin-tariff combines two independent supplies typically the standard domestic supply and the supply for storage heaters. This installation can be housed within one standard enclosure thus saving space and installation time.

Supply diagram



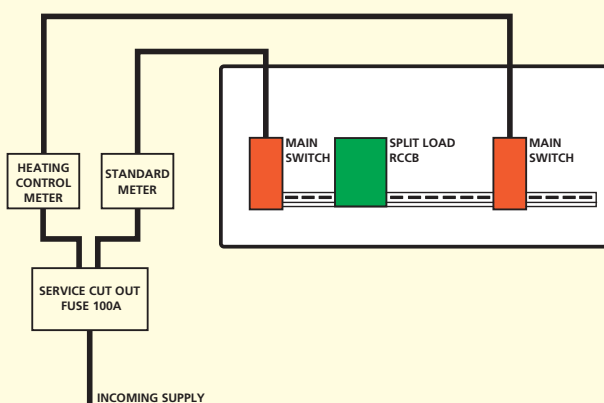
Internal wiring diagram



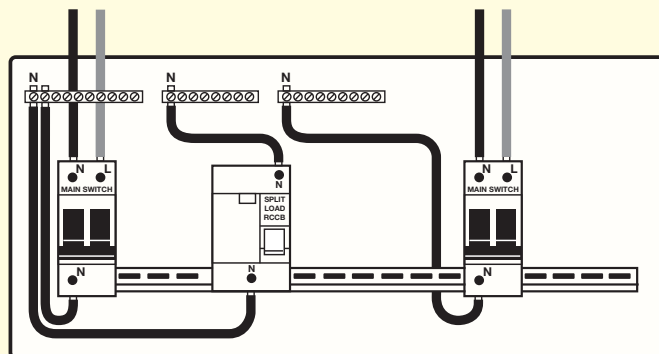
SPLIT-LOAD DUAL-TARIFF

Combining the added safety of a split-load RCCB and the economy heating tariff into one combined unit offers an all-round saving of space and installation time.

Supply diagram



Internal wiring diagram

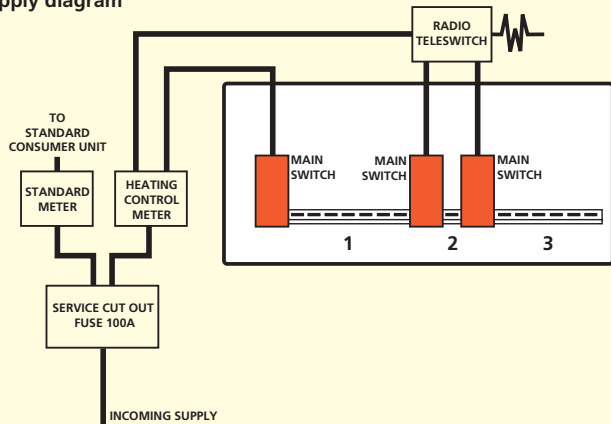


MULTI-TARIFF

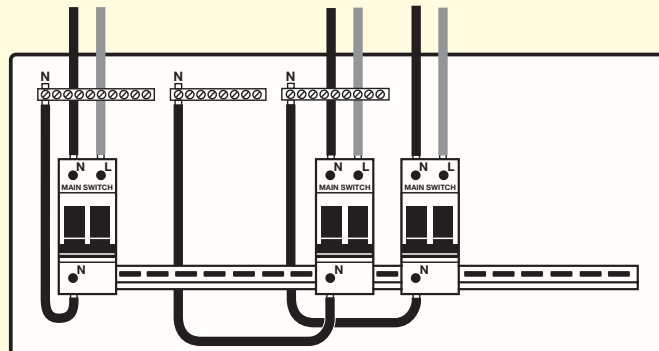
Multi-tariff heating provides 3 tariffs catering for total heating applications:

- 1 Direct heating appliances
- 2 Bottom immersion heater
- 3 Storage heating

Supply diagram



Internal wiring diagram



NOTE

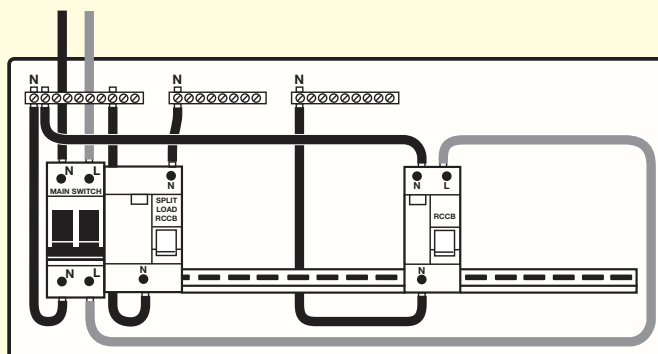
15 module enclosures will accommodate this facility, however the enclosure is not fitted with three neutral bars. In this instance the bottom immersion heater neutral should be connected directly to the bottom neutral terminal on the appropriate main switch.

STARBREAKER CONSUMER UNIT APPLICATIONS

DUAL RCCB

This type of configuration combines the benefit of both 100mA RCCB protection for lighting and 30mA RCCB protection for personal safety. Furthermore each RCCB will operate totally independent from each other. The main switch provides total isolation of the entire consumer unit. It is necessary to use the main incoming device fitted with the additional terminal to provide the independent supply to the second RCCB.

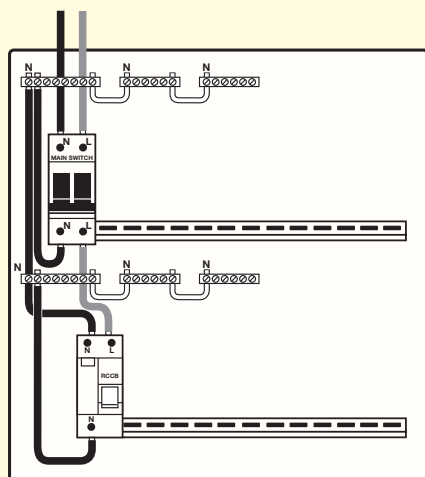
Internal wiring diagram



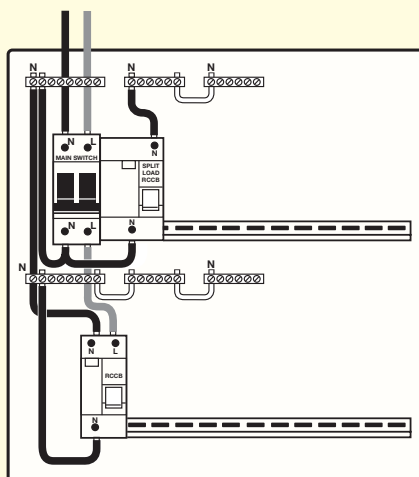
TWO BANK

Two bank consumer units provide the facility to offer a wide range of configurations for applications which demand increased numbers of circuits. Continuity of supply between the top and bottom banks (where required) can be achieved by utilising the main switch with the additional terminal.

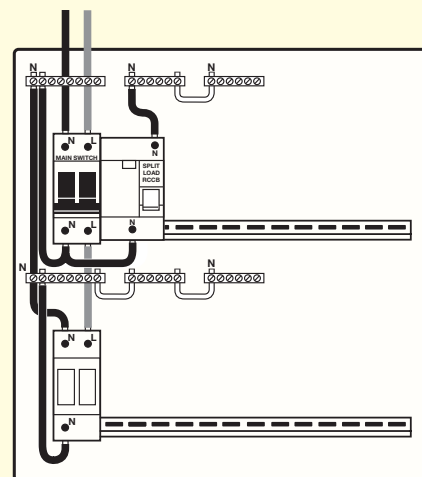
Supply and internal wiring diagrams



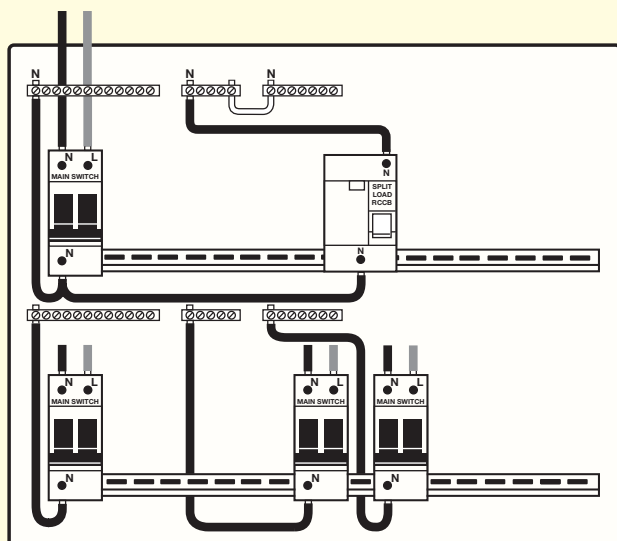
20, 26, or 36 way
Split-load



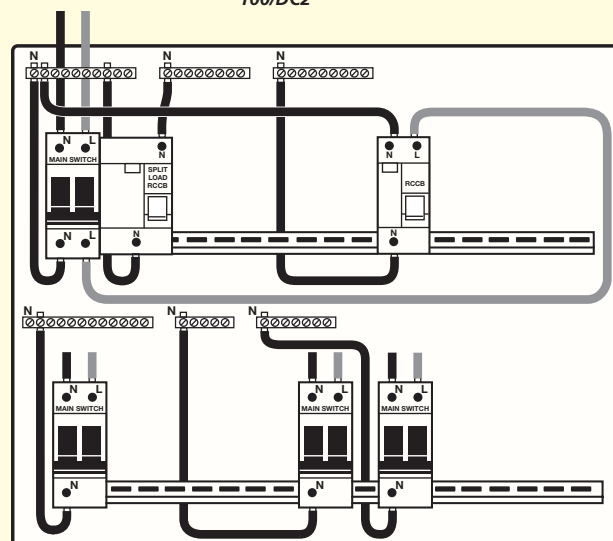
17, 23, or 33 way
Dual RCCB



17, 23, or 33 way
Split-load
Bottom bank is fed via the direct connection unit
100/DC2



Top bank 7, 10 or 15 way
Split-load
Bottom bank 6, 9 or 14 way
Multi-tariff



Top bank 8 or 13 way
Dual RCCB
Bottom bank 9 or 14 way
Multi-tariff

MCBs – GENERAL

Crabtree Polestar, Loadstar and C50 range of MCBs comply fully with BSEN60898 and therefore enable the requirements of BS7671, formerly the IEE Wiring Regulations to be met.

TYPE CLASSIFICATION

BSEN60898 specifies different tripping characteristics for different types of MCB, depending on the level of overload current required to make the MCB trip out in less than 100 milliseconds. Crabtree Polestar and Loadstar MCBs are available as types B, C or D, enabling installation designers to choose an MCB with a characteristic closely matched to the circuit requirement. C50 range is available as type C only.



FAULT LEVELS

Regulation 432–02–01 of BS7671 requires that a device providing protection against overload currents and fault currents shall be capable of breaking any overcurrent up to and including the prospective fault current at the point where the device is installed.

In domestic situations this could be as high as 16kA, in industrial situations it could be even higher.

According to regulation 434–03–01, the prospective fault current can be higher than the breaking capacity of the protective device if another protective device having the necessary breaking capacity is installed on the supply side.

This means that MCBs can be backed up by devices of greater capacity such as HRC fuses.

Crabtree Polestar Type B & C, Polestar Type D and Loadstar 'H' Types B, C & D, Loadstar 'F' Types B, C & D and C50 MCBs can protect installations with prospective currents up to 16kA, 10kA, 6kA and 4.5kA respectively without the need for back-up devices.

When providing back-up protection, consideration must be given to discrimination. Discrimination is said to occur when the device nearest the fault operates first.

AMBIENT TEMPERATURE CONSIDERATIONS

Polestar and Loadstar MCBs are calibrated to meet the requirements of BS EN 60898, 30°C Ref Calibration Temperature. At other temperatures the following rating factors should be used:

At 60°C 0.9 At 20°C 1.0 At 0°C 1.1

Adjacent thermal-magnetic MCBs should not be continuously loaded at or near their nominal rated currents when mounted in enclosures. It is good engineering practice to either apply generous de-rating factors or make provision for adequate free air between devices. In common with other manufacturers, we recommend a 66% diversity factor is applied to the MCB nominal rated current where it is intended to load adjacent MCBs continuously (in excess of 1 hour).

The C50 Range of MCBs meet the requirements of BS EN 60898 for 30°C Ref calibration temperature, but are virtually unaffected by ambient temperature variations over their working range from below freezing to 55°C

INDIRECT SHOCK RISK PROTECTION

BS7671, requires that measures are taken to protect against the risk of electric shock, which can be the result of contact with live parts. MCBs can be used in conjunction with earthed equipotential bonding to achieve the required disconnection times of 0.4 seconds for 230V socket outlets and 5 seconds for circuits supplying fixed equipment (Regulation 413–02–08). This regulation, together with tables 41B1, 41B2 and 41D, specifies the maximum permissible earth fault loop impedance which is allowed using various protective devices. For unspecified ratings the formula of Regulation 413-02-08 should be used.

EARTH FAULT LOOP IMPEDANCES (Z_s) TO GIVE COMPLIANCE WITH BS7671 REGULATION 413-02-08 AT 230V

Maximum earth fault loop impedance in ohms for circuits supplying socket outlets (also fixed equipment in bathrooms)

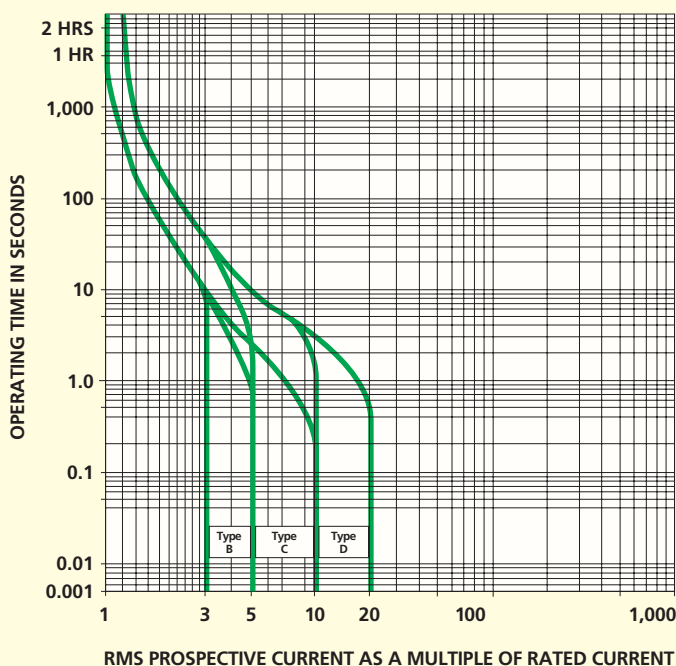
DEVICE	RATINGS							
	5A	10A	15A	20A	30A	40A	45A	50A 60A
Rewireable Fuse BS3036	10.0	2.67	1.85	1.14		0.62		
Cartridge Fuse BS1361	10.9	3.43	1.78	1.20		0.60		
Type C MCB BSEN60898	4.80	2.40	1.60	1.20	0.80	0.60	0.53	0.48 0.40

DEVICE	RENARD SERIES OF RATINGS							
	6A	10A	16A	20A	32A	40A	50A	63A
HRC fuse BS88	8.89	5.33	2.82	1.85	1.09	0.86	0.63	–
Type B MCB BSEN60898	8	4.8	3	2.4	1.5	1.2	0.96	0.76
Type C MCB BSEN60898	4	2.4	1.5	1.2	0.75	0.60	0.48	0.38
Type D MCB BSEN60898	2.0	1.2	0.75	0.6	0.38	0.3	0.24	0.19

At these values of loop impedance fuses will operate within 0.4 seconds and MCBs will operate in 0.1 second.

The loop impedances given in the tables should not be exceeded when the conductors are at their normal operating temperatures. If the conductors are at a different temperature when tested, the reading should be adjusted accordingly.

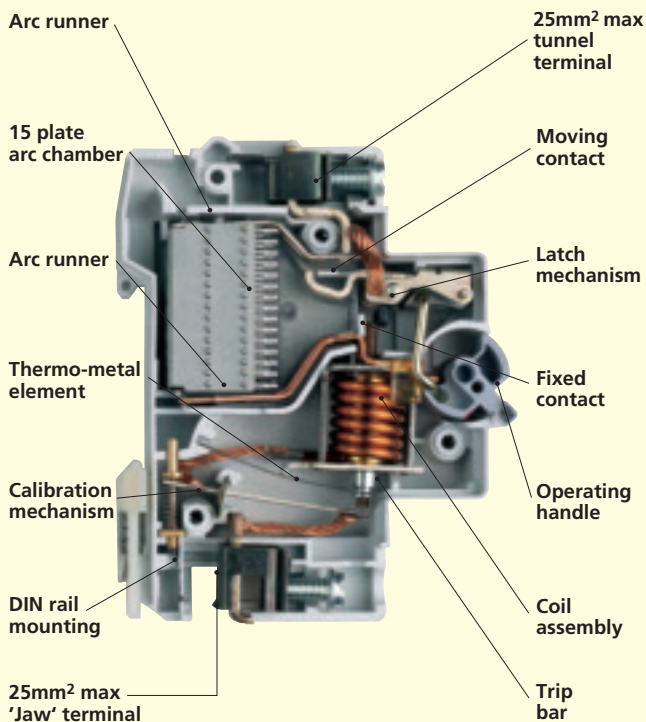
POLESTAR & LOADSTAR MCBs



MCBs – POLESTAR & C50

METHOD OF OPERATION

POLESTAR



Polestar MCBs are of the thermal-magnetic current limiting type. There are 3 distinct modes of operation:

1 Small overload conditions

Small overload currents are detected by the use of a thermo-metal, which deflects at a rate in proportion to the size of the overload. The thermo-metal moves against a latching system which releases the contacts, allowing them to open under spring pressure.

2 Large overload conditions

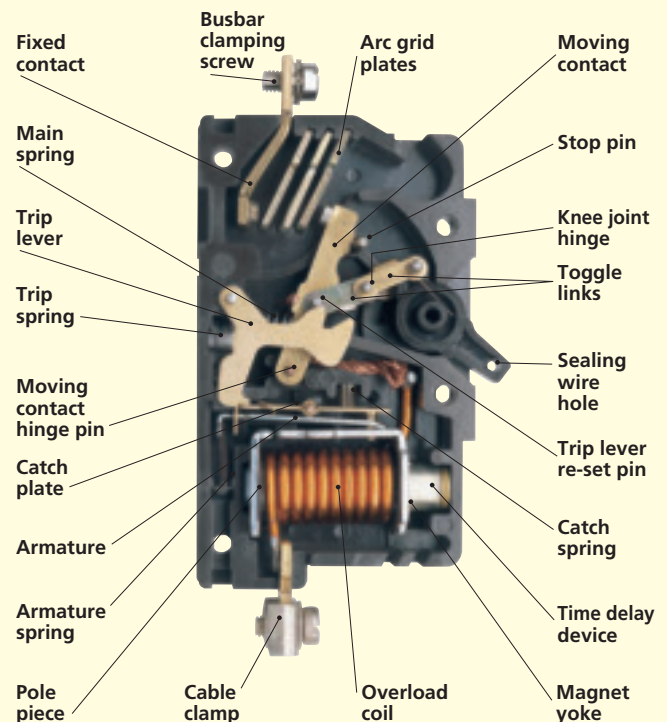
If the overload current reaches a predetermined level (which depends on the current rating and type classification of the MCB), then the current in the coil produces a magnetic field in the solenoid which is strong enough to pull in the armature and operate the latching mechanism. Again the contacts open under spring pressure.

3 Short circuit conditions

If the fault current is of a high enough level, not only does the solenoid trip the mechanism, it forces the contacts apart very rapidly in a process known as 'hammer trip'.

Under these conditions as the contacts separate an arc is drawn between them. The combination of magnetic fields in the MCB and the flow of the current in the arc acts to push the arc along the runners and into the arc chamber where it is quickly extinguished. The rapid opening of the contacts and extinction of the arc give a total operating time that is typically 3.5–5 milliseconds.

C50



The C50 MCB employs the hydraulic/magnetic principle, the heart of which is a hermetically sealed tube filled with silicone fluid and containing a closely-fitting iron slug. In normal load conditions, the magnetic pull from the trip coil is unable to overcome the restoring force of the time delay spring, and the iron slug remains at the far end of the tube.

When an overload occurs, the magnetic field pulls the slug through the tube, the speed of travel being governed by the magnitude of the current. As the slug nears the end of the tube, the gap in the magnetic circuit is reduced, so increasing the pull on the armature until it moves and the breaker is tripped.

If a large overload or short circuit occurs, the magnetic field generated is much greater and the armature moves without having to wait for the slug to reach the end of the tube. In this way instantaneous tripping occurs.

INSTALLATION CONDITIONS

When used in Crabtree distribution boards and consumer units, Polestar and C50 MCBs are mounted on specially-designed rails for ease of installation. Polestar MCBs are also suitable for use in custom built panels, where they should be mounted on standard 35mm top hat rail to BS 5584: 1978 EN50022 giving a projection within the standard 70mm.

RCDs

SPECIFICATION

- BSEN61008 (Voltage independent)
- Range of current ratings 16–100A
- Range of sensitivities 10–300mA
- Operation General Type A or AC
- Operation Selective Type S (Time Delay)
- Pole configurations DP and TP&N
- Voltage ratings DP 230V
- Voltage ratings TP&N 240V/415V
- Frequency ratings 50/60Hz

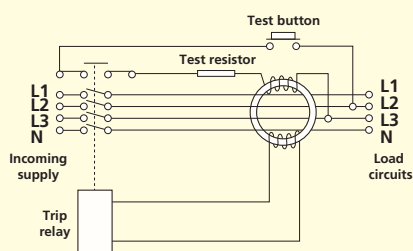


OPERATION

The RCD employs the current balance principle which involves the supply conductors to the load (phase and neutral) being wound onto a common transformer core to form the primary windings. The secondary winding of the current transformer is then connected to the electro-magnetic relay. Under healthy circuit conditions, the current in the phase conductor is equal to the current in the neutral and the vector sum of the current is zero. In the event of an earth fault, an amount of current will flow to earth, creating an out of balance situation in the transformer assembly. This out of balance is detected by the secondary winding of the transformer and at a pre-determined level of out of balance will activate the trip mechanism.

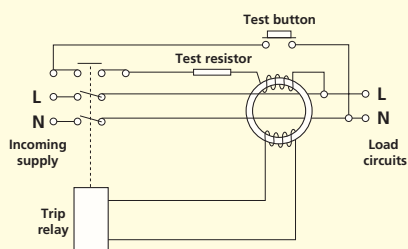
Single phase and neutral or three phase and neutral units (suitable for 3 or 4 wire systems) are available, the latter being suitable for balanced or unbalanced 3 phase loads.

The RCD trip mechanism will operate at a residual current of between 50–100% of its rated tripping current (sensitivity).



Note
Exposed installation
metal work must be
earthed.

RCD circuit diagram (triple pole and neutral)



Note
Exposed installation
metal work must be
earthed.

RCD circuit diagram (double pole)

TEST BUTTON

A test button is provided on all RCDs to enable the operation of the device to be checked.

It is recommended that an RCD is tested at least quarterly. (See BS7671) Regulation 514-12-02.

APPLICATIONS

Residual Current Devices (RCDs) may be required for one of two main reasons:

(a) to ensure the compliance of an installation with BS7671.

An RCD may be installed to meet the requirements where a high earth fault loop impedance disqualifies the use of overcurrent protection devices as a means of providing protection against indirect contact. To comply with Regulation 413-02-16 the earth fault loop impedance in ohms multiplied by the rated tripping current of the RCD in amperes must not exceed 50. With the RCD having a sensitivity of 30mA, the maximum permissible earth fault loop impedance is calculated as follows:

$$Z_s (\text{max}) = 50 / 0.03 = 1666 \text{ Ohms}$$

Rated tripping current of RCD	Max permissible earth fault loop impedance
30mA	1666 Ohms
100mA	500 Ohms
300mA	166 Ohms

(b) to provide a higher degree of protection than that given by direct earthing, against fire or shock risks caused by earth leakage currents.

Overcurrent protection devices cannot detect earth fault currents below their operating current. If they are the only means of earth fault protection, it is possible for sufficient earth fault current to flow undetected to constitute a fire risk.

By using an RCD, the flow of the sustained earth fault current, above the tripping current of the RCD, is prevented. The shock risk associated with these earth fault currents is also greatly reduced.

For personnel protection, a high sensitivity RCD with a maximum tripping current of 30mA should be used. This is particularly important with portable appliances where there is a danger of losing earth continuity due to damage or fatigue.

Residual current devices are completely selective in their operation. They are unaffected by parallel earth paths and are thus ideally suitable for the protection of installations in modern high density dwellings or office blocks. They are virtually tamperproof and provide a predetermined level of protection. Even if earthing conditions deteriorate substantially, they will continue to provide a higher degree of protection than would have been given by direct earthing.

SENSITIVITIES

The choice of RCD depends upon the application of the degree of protection required.

300mA provide the means to achieve compliance with the Wiring Regulations in conditions of poor earth loop impedance and also give a good level of fire risk protection.

100mA provide the means to achieve compliance with the Wiring Regulations, a high level of fire risk protection and a degree of indirect shock risk protection.

30mA for use where a higher degree of protection is required, with portable equipment or equipment used in hazardous conditions. BS7671 regulation 471-16-01 indicates that where a socket outlet may reasonably be expected to supply equipment to be used outside the zone, protection shall be afforded by a residual current device having a rated residual operating current not exceeding 30mA.

If using RCDs in series, discrimination can only be achieved by using Type S devices in series with Types A or AC. See chart below.

BSEN61008-1:1995

Type of RCD	Rated Residual Current (In) RCD to Trip between 50%-100% In	1x In	Tripping times 2x In	5x In	500Amps	Scope
Standard A & AC	Any Value, eg 10, 30, 100mA	300ms	150ms	40ms	40ms	Maximum-Trip
Time Delay (S)	Greater than 30mA, eg 100mA	500ms 130ms	200ms 60ms	150ms 50ms	150ms 40ms	Maximum-Trip Minimum-Non Trip

TRANSIENT EARTH LEAKAGE CURRENTS

All Crabtree residual current devices incorporate a high degree of immunity to tripping when subjected to transient earth leakage currents.

Such transients can occur when there is a significant level of capacitance to earth as can result from cable capacitance (particularly MICC) or RF filter networks. Crabtree RCDs are therefore less susceptible to nuisance tripping due to transient earth leakage currents.

SPECIFICATION

RCBOs (MCB/RCD)	POLESTAR	LOADSTAR
• Standards	BS4293/BS3871	BSEN61009
• Short circuit breaking capacity	10kA	10kA or 6kA
• Current rating	6 to 40A	6 to 40A
• MCB Type classification	C	C
• RCD Type classification	AC	A
• Rated voltage & frequency	240V 50Hz	240V 50Hz
• RCD Tripping principle	Electromechanical	Electronic
• Neutral configuration	Switched	Solid
• Positive contact indication	Yes	Yes
• Loss of supply Neutral	Inherent	Via functional earth circuit

APPLICATIONS

RCBOs provide both earth fault and overcurrent protection. For commercial and industrial applications a unit should be employed, utilising Type C (5–10In) classification of MCB. RCBOs, other MCB classifications available to order.

Polestar and 2 module Loadstar RCBOs employ an electromechanical operating principle.

Loadstar 1 module RCBOs employ an electronic operating principle incorporating loss of supply neutral protection via a functional earth lead. All RCBOs give a high level of protection to individual circuits whilst exhibiting improved immunity to response caused by transients.

Two module switched neutral RCBOs have safety advantages over single module RCBOs and are exclusively used in continental Europe.

ADVANTAGES OF SWITCHED NEUTRAL RCBOs

If a neutral to earth fault occurs in a circuit fed via an RCBO with a solid neutral which is backed up by an upstream selective RCD, the selectivity or discrimination will be lost and the main RCD will also trip as it will still detect the fault which has not been cleared.

The main requirements of RCD protection are:

- Additional protection against direct contact with live parts
- Protection against direct connection with live parts
- Protection against fire in the case of a fault to earth

If a fault occurs between neutral and earth where a solid neutral RCBO is protecting a circuit, the RCBO will trip. However, as previously stated, the fault will still be in the circuit within the rest of the installation.

As the neutral will be common throughout the installation, it is possible that current could still flow through the fault and lead to a fire hazard. This would mean that the RCBO would not offer full protection against fire and therefore does not comply with one of its main protection requirements.

Testing of outgoing circuits is easier with RCBOs incorporating a switched neutral as an electrician does not have to disconnect terminals before testing. BS7671 requires that the main switch to a TT earthed installation must have a switched neutral.

INSTALLATION TESTING – CAUTION

As Single Module RCBOs employ electronic components they should be disconnected when carrying out the following tests on the electrical installation:

(a) Earth fault loop impedance test

The load terminals should be disconnected if it is intended to parallel-out the unit for test purposes.

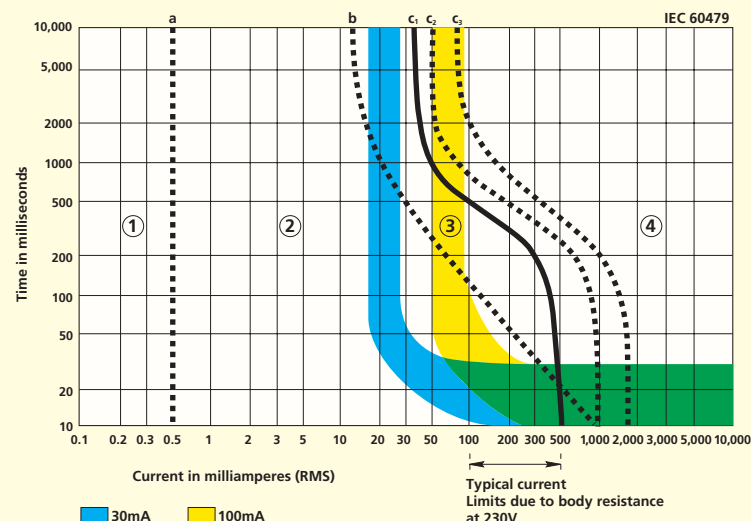
It may incur damage if mains potential is maintained on the load terminals of this unit after the trip mechanism has operated.

(b) Insulation test

Whilst RCBOs can withstand the effects of normal insulation testers without damage, false readings may be given on the test instrument. For this reason it is recommended that the device is disconnected during this test.

IEC PUBLICATION 60479 CURVES WITH CRABTREE RCD CHARACTERISTICS SUPERIMPOSED

TIME/CURRENT ZONES OF EFFECTS OF AC CURRENT (15–100Hz) ON PERSONS



Zone Physiological effects

- 1 Usually no reaction effects.
- 2 Usually no harmful physiological effects.
- 3 Usually no organic damage to be expected. Likelihood of muscular contraction and difficulty of breathing, reversible disturbances of formation and conduction of impulses in the heart, and transient cardiac arrest without ventricular fibrillation increases with current magnitude and time.
- 4 In addition to the effects of zone 3, probability of ventricular fibrillation increased up to 5% (Curve C2) up to 50% (Curve C3) and above 50% beyond Curve C3. Increasing with magnitude and time, pathophysiological effects such as cardiac arrest, breathing arrest and heavy burns may occur.

STANDARDS COMPLIANCE

POLESTAR & LOADSTAR

Consumer units	BSEN60439-3
Distribution boards	BSEN60439-3
Control module enclosure	BSEN62208
Degree of protection	IP40 (IP20 with door open)
Switch disconnector	BSEN60947-3, IEC 60947-3
MCB	BSEN60898, IEC 60898
RCBO (MCB/RCD)	BSEN61009, IEC 61009
RCCB	BSEN61008, IEC 61008

Maximum terminal cable capacities	POLESTAR LOADSTAR	
125A (Heavy Duty)	70mm ²	-
MCB	25mm ²	35mm ²
Switch disconnector (DP)	50mm ²	50mm ²
Switch disconnector (TP) 125A (Modular)	50mm ²	50mm ²
200A	120mm ²	120mm ²
250A	-	185mm ²
RCCB	50mm ²	50mm ²
Earth busbar	16mm ²	25mm ²
Neutral busbar	16mm ²	25mm ²
Direct busbar connection	120mm ²	120mm ²

C50

Consumer units	BS5486, Part 13: 1989
Distribution boards	BS5486, Part 12: 1989
Degree of protection	IP20
Switch disconnector (DP)	BSEN60947-3, IEC 60947-3
Triple pole main switch	BS5419: 1977
MCB	BSEN60898, IEC 60898

Maximum terminal cable capacities	
MCB	16mm ²
Switch disconnector (DP)	50mm ²
Triple pole main switch	50mm ²
Earth busbar	16mm ²
Neutral busbar	16mm ²



SWITCH DISCONNECTORS

A switch disconnector is defined in BSEN60947-3 as:

"A switch which, in the open position, satisfies the isolating requirements specified for a disconnector"

IEC 60947-3 also defines a switch and a disconnector. In general terms the definitions cover a device that is capable of making, carrying and breaking normal circuit currents, and may also be capable of carrying, for a specified time, abnormal loads such as short circuit currents. In the open position, the device will provide isolation and it will indicate reliably the position of the contacts.

All Crabtree switch disconnectors rated in the following table comply with BSEN60947-3 and IEC 60947-3.

LIST No	100SW3 100/21BA	125SW3* 125/21BA*	125/3MS 125/21B	125/21BDP	200/3MS 200/22B	200/22BDP	250/22B
Rated current	100A	125A	125A	125A	200A	200A	250A
Utilisation category	AC22a AC23b @63A	AC22a	AC22b	AC22b	AC22b	AC22b	AC22b
Rated voltage	240V/415V	240V/415V	415V	240V	415V	240V	415V
Rated frequency	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz	50Hz
Rated insulation voltage	500V ac	500V ac	500V ac	500V ac	500V ac	500V ac	500V ac
Rated impulse withstand voltage	6kV ac peak	6kV ac peak	6kV ac peak	6kV ac peak	6kV ac peak	6kV ac peak	6kV ac peak
Rated duty	Uninterrupted	Uninterrupted	Uninterrupted	Uninterrupted	Uninterrupted	Uninterrupted	Uninterrupted
Rated short time withstand current	1.5kA rms for 1 sec	1.5kA rms for 1 sec	5.5kA rms for 100ms	5.5kA rms for 100ms	5.5kA rms for 100ms	5.5kA rms for 100ms	5.5kA rms for 100ms
Rated short circuit making capacity	2.5kA peak	2.5kA peak	8.0kA peak	8.5kA peak	8.5kA peak	8.5kA peak	8.5kA peak
Rated conditional short circuit	16.5kA rms (BS1361 100A fuse)	16.5kA rms (BS88 125A fuse)	16kA rms (BS88 160A fuse)	16kA rms (BS88 125A fuse)	16kA rms (BS88 200A fuse)	9kA rms (BS88 200A fuse)	16kA rms (BS88 200A fuse) 6kA rms (BS88 250A fuse)

*Rated conditional short circuit levels only apply when used as Incomer to Crabtree MCB Distribution Board and includes series connected outgoing MCB.



TRANSFORMERS

Transformers produce inrush currents when they are switched on, typically 15 times the normal running current.

The tables below show the recommended MCB rating for single phase (230V) and 3 phase (400V) transformers.

SINGLE PHASE 230V AC SUPPLY

TRANSFORMER RATING (VA)	MCB RATING (A)		
	Type B	Type C	Type D
50	6	6	6
100	6	6	6
200	6	6	6
300	10	6	6
400	10	6	6
500	16	10	6
750	16	10	6
1000	32	16	10
2500	63	32	16
5000	–	63	32
7500	–	–	50
10000	–	–	63

THREE PHASE 400V AC SUPPLY

TRANSFORMER RATING (VA)	MCB RATING (A)		
	Type B	Type C	Type D
500	6	6	6
750	6	6	6
1000	10	6	6
2000	16	10	6
3000	32	16	10
4000	32	20	10
5000	40	32	16
7500	63	32	16
10000	–	50	32
15000	–	63	32
20000	–	–	50
25000	–	–	63
30000	–	–	63

The above information applies to MCBs supplying transformers irrespective of the load on the secondary circuit. If the MCBs are on the secondary side of the transformer, they do not see the inrush current and so nuisance tripping does not occur.

LOW VOLTAGE LIGHTING

Low voltage lighting is generally supplied via a transformer. If MCBs are used on the primary (input) side of the transformer, then the information given in the section below left is applicable. If MCBs are used on the secondary (output) side, then no special precautions are necessary.

FLUORESCENT LIGHTING

Fluorescent lighting can also produce high inrush currents, especially when electronic ballasts are used. However, the duration of the inrush current is generally less than 1ms, so that the current may fall to normal levels before the MCBs have had time to react.

It is recommended that fluorescent lighting is protected by type C MCBs, which give a good level of protection whilst avoiding the risk of nuisance tripping.

MCB RATING (A) TYPE C	MAXIMUM NUMBER OF LAMPS AT 230V		
	36W	58W	80W
6	10	6	5
10	16	10	8
16	26	16	13
20	33	20	17
32	53	33	27
40	66	41	34
50	83	51	42
63	105	65	54

HIGH-PRESSURE SODIUM LAMPS

High-pressure sodium lamps draw current of more than 30 times their normal running currents for the first few milliseconds after start up.

MCB RATING (A) TYPE B	MAXIMUM NUMBER OF LAMPS		
	150W	250W	400W
6	–	–	–
10	1	–	–
16	1	1	–
20	2	1	–
32	3	2	1
40	4	2	1
50	5	3	1
63	6	4	2

TYPE C

6	1	–	–
10	1	1	–
16	2	1	–
20	3	2	1
32	5	3	1
40	6	4	2
50	8	5	2
63	10	7	3

TYPE D

6	2	1	–
10	3	2	1
16	5	3	1
20	6	4	2
32	10	7	3
40	13	8	4
50	16	11	5
63	21	14	7

It is recommended that type D MCBs are used where possible, as they will give good thermal protection without suffering from nuisance tripping.

POLESTAR & LOADSTAR MCB APPLICATIONS – MOTOR STARTERS

In general miniature circuit breakers by themselves can only provide short circuit protection for motor loads. Motor start-up currents can be as high as 12 times the normal running current. MCBs in general cannot accommodate this and provide the close thermal protection required by motors. They can, however, be used to protect lightly loaded motors or motors started off load, or they can be used in conjunction with thermal overload relays. In this case the MCB will protect the cable to the motor against short circuit faults, and the motor will be protected by a second thermal device.

RECOMMENDED TYPE D MCB RATINGS for single phase 230/240V ac motors

Motor power HP	Motor power kW	Normal running current (A)	Start-up current (A)	MCB current rating (A)
0.25	0.18	1.5	18	6
0.50	0.37	3.0	36	6
0.75	0.55	4.5	54	6
1.00	0.75	5.5	66	10
1.50	1.1	8.5	102	10
2.00	1.5	10.5	126	16
3.00	2.2	15.5	186	20
4.00	3.0	20.0	240	32
5.00	3.75	24.0	288	32
7.50	5.5	34.0	408	40
10.00	7.5	45.0	540	63

RECOMMENDED TYPE D MCB RATINGS for 3 phase 400/415V ac motors

Motor power HP	Motor power kW	Normal running current (A)	Start-up current (A)	MCB current rating (A)
0.25	0.18	0.7	8.4	6
0.5	0.37	1.35	16.2	6
0.75	0.55	1.55	18.6	6
1.0	0.75	1.93	23.2	6
1.5	1.1	2.5	30.0	6
2.0	1.5	3.5	42.0	6
3.0	2.2	4.8	57.6	6
4.0	3.0	6.4	76.8	10
5.0	3.75	7.8	93.6	10
7.5	5.5	11.0	132.0	16
10.0	7.5	14.4	172.8	20
12.5	9.33	17.3	207.6	32
15.0	11.0	21.0	252.0	32
20.0	15.0	28.0	336.0	40
25.0	18.5	35.0	420.0	50
30.0	22.0	40.0	480.0	50
40.0	30.0	54.0	648.0	63

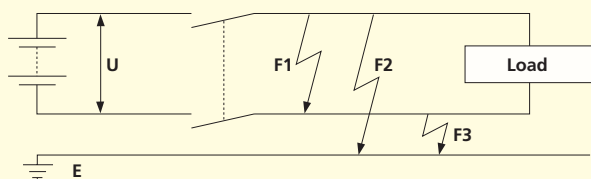
POLESTAR MCB APPLICATIONS – DC SUPPLIES

Crabtree circuit breakers are generally designed for use on ac systems, but can also be used on dc supplies. The selection of the most suitable circuit breaker depends on the following conditions:

- The type of circuit
- The short circuit current
- The circuit time constant
- The circuit voltage

TYPICAL CIRCUITS

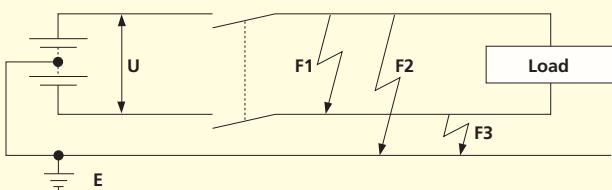
NOT EARTHED



FAULT F1 Will produce the maximum short circuit current with half the supply voltage dropped across each pole

FAULTS F2 & F3 No effect

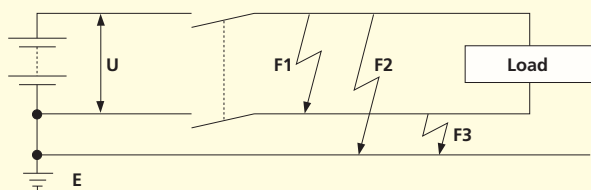
EARTHED AT THE SUPPLY CENTRE POINT



FAULT F1 Will produce the maximum short circuit current with half the supply voltage dropped across each pole

FAULTS F2 & F3 Will produce a short circuit current of less than the maximum. Half the supply voltage will appear across the affected MCB

EARTHED AT ONE OF THE SUPPLY TERMINALS



FAULT F1 Will produce the maximum short circuit current with half the supply voltage dropped across each pole

FAULT F2 Will produce the maximum short circuit current with all of the supply voltage appearing across one pole

FAULT F3 No effect

NORMAL CIRCUIT CURRENTS

The rating and normal running temperature of the MCB are unaffected by dc. The MCB can be selected using the thermal section of the standard time/current curves in the normal manner.

Magnetic tripping on dc is different from the equivalent ac by a factor of $\sqrt{2}$.

ie type B ac magnetic range = $3-5I_n$

type B dc magnetic range = $\sqrt{2}(3-5)I_n = 4-7I_n$

type C ac magnetic range = $5-10I_n$

type C dc magnetic range = $\sqrt{2}(5-10)I_n = 7-14I_n$

type D ac magnetic range = $10-20I_n$

type D dc magnetic range = $\sqrt{2}(10-20)I_n = 14-28I_n$

SHORT CIRCUIT CURRENTS

The maximum short circuit current possible on a dc system is determined by the voltage of the battery and the total internal resistance of the cells. It is given by Ohm's law:

$$I_{SC} = \frac{V_b}{R_b} \text{ where } V_b \text{ is the voltage of the battery (with the battery 100\% charged)}$$

$$R_b \text{ is the internal resistance of the battery cells}$$

(this is usually quoted by the manufacturer)

CIRCUIT TIME CONSTANT

The time constant is given by:

$$\frac{L}{R} \text{ where } L \text{ is the inductance of the circuit}$$

$$R \text{ is the resistance of the circuit}$$

The time constant is usually given in milliseconds (ms). Ideally, dc circuits would be mainly resistive (ie a low number), as inductive circuits produce a back emf when the current suddenly falls. This in turn tends to prolong arcing during switching operations, and so reduces contact life.

CIRCUIT VOLTAGE

The voltage of the circuit is dependent upon the power supply. The lower the voltage the easier switching operations will be, but the voltage makes no difference to the normal running of the MCBs.

Contact life can be significantly increased by reducing the voltage drop across each pole. This can be achieved by wiring poles in series. It is also recommended that for frequent switching the voltage across each pole should not exceed 110V dc.

Crabtree Polestar MCBs have been successfully tested on dc and can be used under the following conditions:

Circuit Time Constant L/R	15ms max
Voltage	24-220V
Short circuit breaking capacity	9kA

C50 MCBs are not suitable for dc circuits and must not be used.

POLESTAR MCBs – Type B, C & D typical tripping times/I²t energy let-through values

TYPE B TYPICAL TRIPPING TIMES

RATING	CURRENT REQUIRED TO OPERATE									
(A)	60s	10s	5s	4s	3s	2s	1s	0.4s	0.1s	0.02s
6	12	23	24	24	24	24	24	24	24	24
10	19	32	40	40	40	40	40	40	40	40
16	30	50	64	64	64	64	64	64	64	64
20	40	68	80	80	80	80	80	80	80	80
32	67	112	128	128	128	128	128	128	128	128
40	80	120	160	160	160	160	160	160	160	160
50	100	160	200	200	200	200	200	200	200	200
63	138	230	252	252	252	252	252	252	252	252

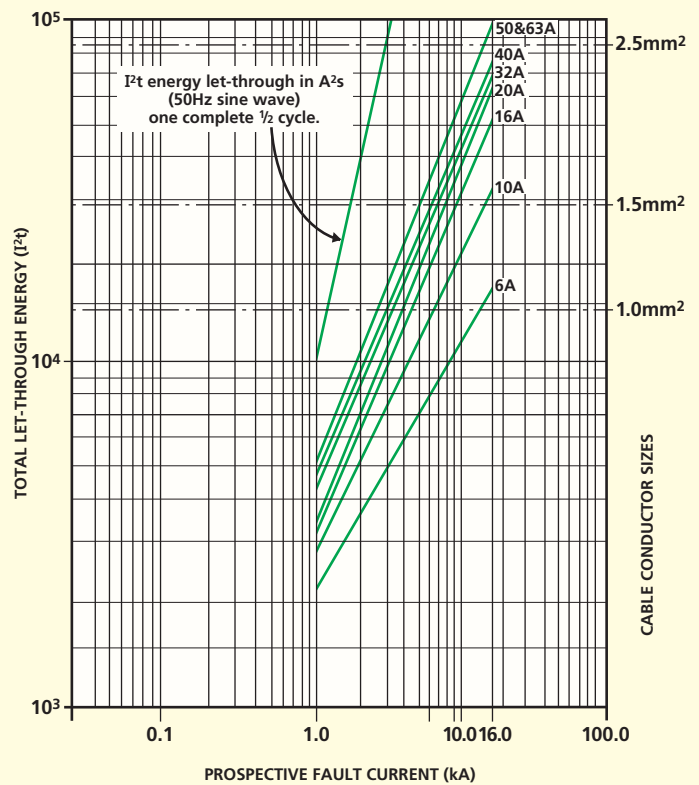
TYPE C TYPICAL TRIPPING TIMES

RATING	CURRENT REQUIRED TO OPERATE									
(A)	60s	10s	5s	4s	3s	2s	1s	0.4s	0.1s	0.02s
6	12	23	33	37	44	45	45	45	45	45
10	19	32	48	55	67	75	75	75	75	75
16	30	50	67	72	83	100	120	120	120	120
20	40	68	92	104	120	150	150	150	150	150
32	67	112	144	153	176	208	240	240	240	240
40	80	120	152	168	190	230	300	300	300	300
50	100	160	210	230	260	312	375	375	375	375
63	138	220	283	302	334	397	472	472	472	472

TYPE D TYPICAL TRIPPING TIMES

RATING	CURRENT REQUIRED TO OPERATE									
(A)	60s	10s	5s	4s	3s	2s	1s	0.4s	0.1s	0.02s
6	12	23	33	37	44	55	90	90	90	90
10	19	32	48	55	67	93	150	150	150	150
16	30	50	67	72	83	100	147	240	240	240
20	40	68	92	104	120	150	240	300	300	300
32	67	112	144	153	176	208	288	432	480	480
40	80	120	152	168	190	230	340	600	600	600
50	100	160	210	230	260	312	450	750	750	750
63	138	220	283	302	334	397	555	819	945	945

TOTAL I²t LEVELS



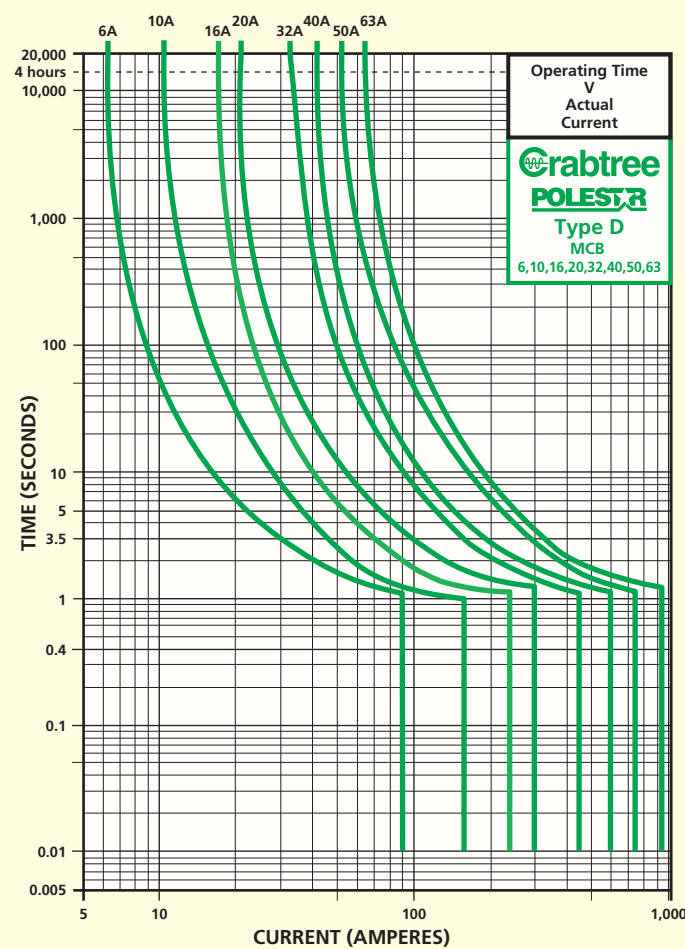
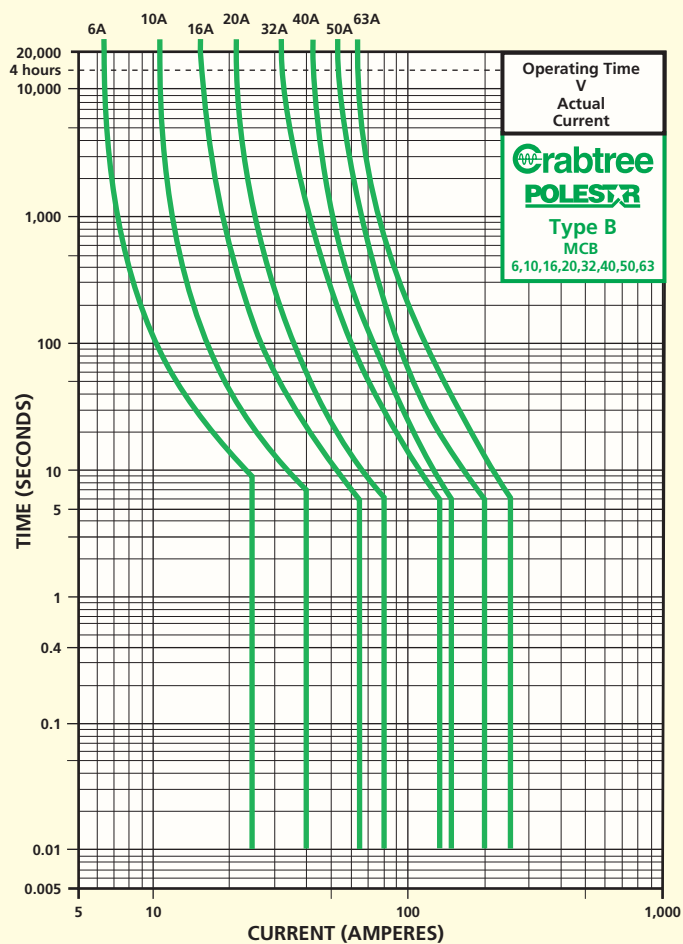
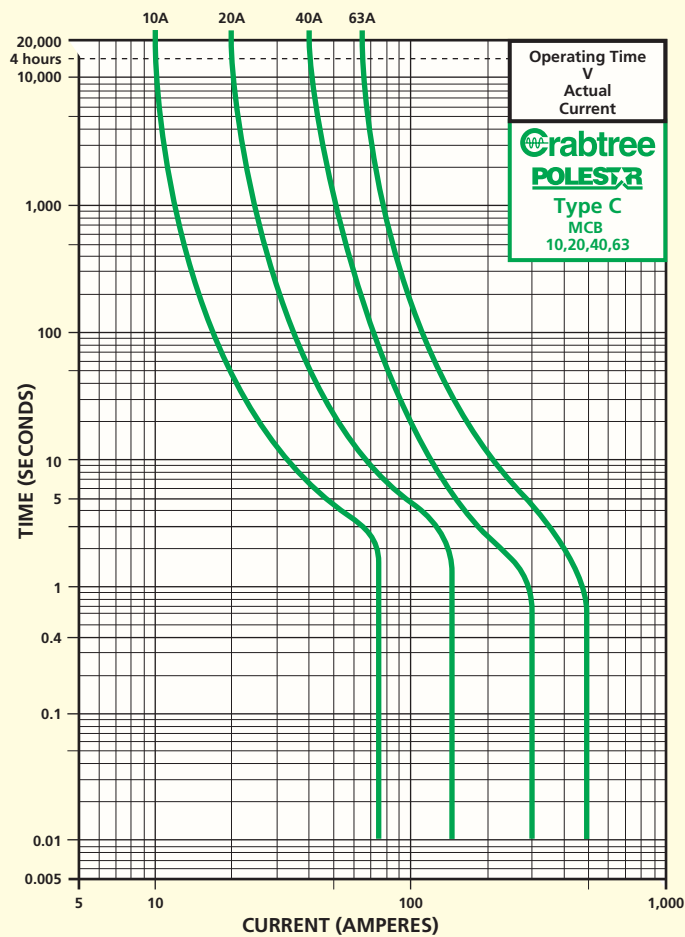
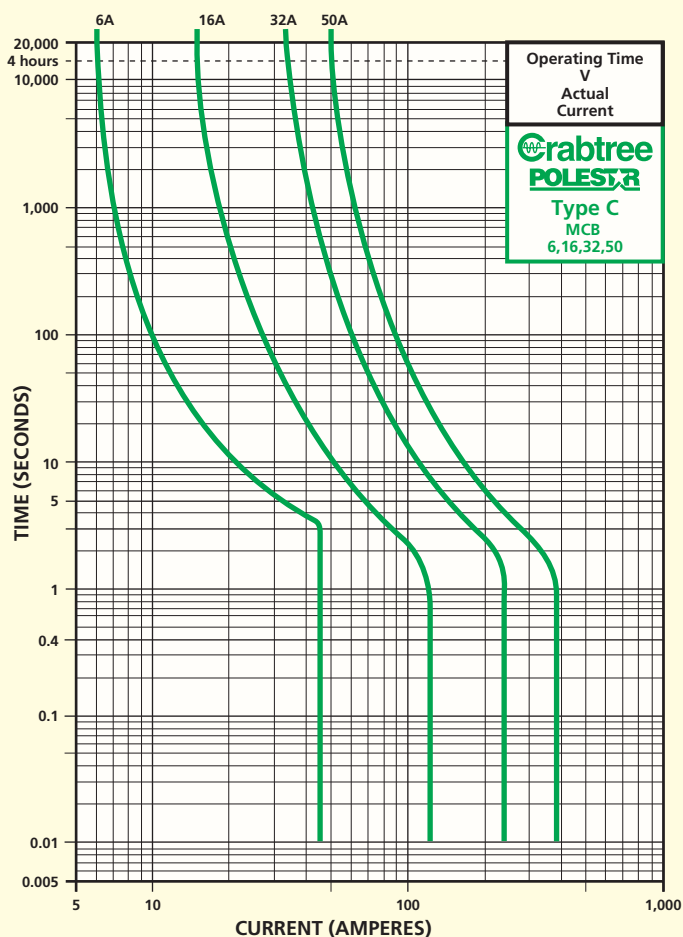
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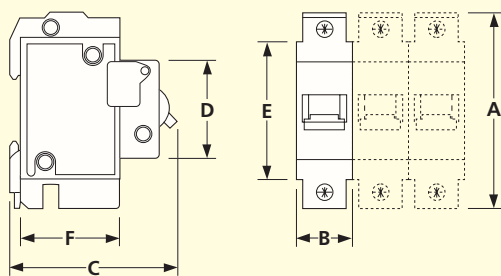
Tests performed at 240V 50Hz at most unfavourable closing angle, ie +60°.

TYPICAL VALUES OF I²t ENERGY LET-THROUGH FOR POLESTAR MCBs

MCB RATING	TOTAL I ² t LET-THROUGH (A ² SEC)		
	6kA	10kA	16kA
6	8000	12000	16000
10	15000	25000	34000
16	20000	35000	53000
20	25000	40000	64000
32	28000	50000	70000
40	30000	65000	85000
50	36000	75000	110000
63	36000	75000	110000

POLESTAR MCBs TYPE C, B & D – Typical time/current characteristics

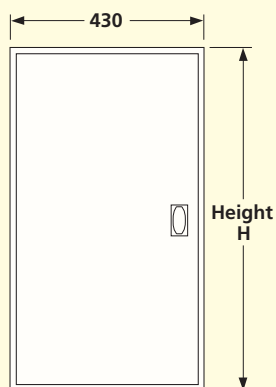




APPROXIMATE DIMENSIONS (mm) MINIATURE CIRCUIT BREAKERS (MCBs) & RCBOs

TYPE	A	B	C*	D	E	F
Single pole	90	25	82.5	45	63	44
Double pole & RCBO	90	50	82.5	45	63	44
Triple pole	90	75	82.5	45	63	44

* Allow 4mm for handle clearance

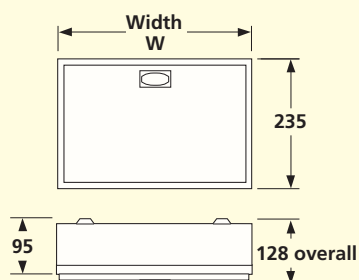


*Add 50mm to height & width for flush front



'PRIMARY' TP & N DISTRIBUTION BOARDS

List No	Height 'H'
1804/OB	650
1806/OB	675
1808/OB	815
1810/OB	815
1812/OB	895
1816/OB	1085
1820/OB	1190
1824/OB	1360
18SB	245
18DIN18	245

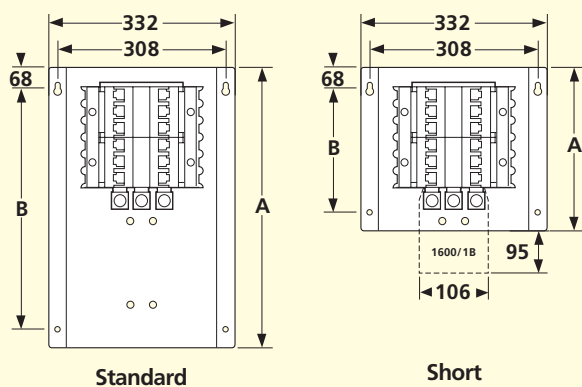


Boards Hinged at Bottom

SP & N ENCLOSURES

List No	WIDTH 'W'
1806 Series	292
1809 Series	343
1813 Series	437
*1818 Series	343
*1826 Series	437
1808 Series	437
1811 Series	437

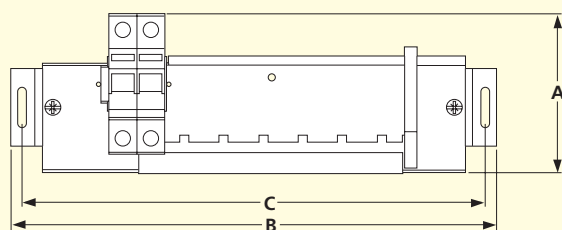
*1818 and 1826 Series are hinged at Left Hand side, and are 450mm high.



PRIMARY TRIPLE POLE BACKPLATE

Standard OBI			Short OBIS		
List No	A	B	List No	A	B
1804/OBI	533	414	1804/OBIS	285	167
1806/OBI	561	442	1806/OBIS	361	243
1808/OBI	695	576	1808/OBIS	437	319
1810/OBI	695	576	1810/OBIS	513	395
1812/OBI	776	657	1812/OBIS	589	470
1816/OBI	965	846	1816/OBIS	741	622

Please confirm dimensional details with Technical Services before commencing manufacture.



SINGLE POLE BACKPLATES

List No	A	B	C
1806	113	310	296
1809	113	360	345
1813	113	458	444

LOADSTAR RANGE

Crabtree Loadstar MCBs comply fully with BSEN60898 and and therefore enable the requirements of BS7671 to be met.

DISTRIBUTION BOARDS

Standards Compliance:	BSEN60439-3 and IEC 60439-3
Rated Voltage:	230/400V, 50/60Hz
Rated Current:	125/250A
Rated Insulation Voltage:	500V a.c.
Short Circuit Withstand:	16kA Conditional
Protection Degree:	BSEN60529 IP4X (Door Closed) IP3X (Door Open)

MINIATURE CIRCUIT BREAKERS (MCBs)

Standards Compliance:	EN60898 and IEC 60898
Rated Voltage:	230/400V, 50/60Hz
Short Circuit Capacity:	6kA or 10kA (EN60898 and IEC60898).
Tripping Class:	Types B, C and D
Temperature Range:	Maximum Operating Temperature: 55°C
Pole Configuration:	Single Pole, Double Pole, Triple Pole

ISOLATORS & SWITCH DISCONNECTORS

Standards Compliance:	BSEN60947-3 and IEC 60947-3
Rated Voltage:	230/400V, 50/60Hz
Rated Insulation Voltage:	500V a.c.
Rated Impulse Withstand Voltage:	4kV a.c. peak
Rated Duty:	
63 to 125A Modular	AC 22A (63A at AC23B)
Heavy Duty 200/250A	AC 22B

RESIDUAL CURRENT CIRCUIT BREAKERS (RCCBs)

Standards Compliance:	EN61008 and IEC 61008
Rated Voltage:	230/400V, 50/60Hz
Tripping Characteristic:	AC

MOULDED CASE CIRCUIT BREAKERS (MCCBs)

Standards Compliance:	BSEN60947-2 and IEC 60947-2
Rated Voltage:	415V, 50/60Hz
Rated Insulation Voltage:	500V a.c.
Rated Ultimate Short Circuit Capacity (Icu):	25kA (G Frame) 25kA (J Frame)

Rated Service Short Circuit Capacity (Ics):	50% of Icu (G Frame) 75% of Icu (J Frame)
---	--

MAXIMUM TERMINAL CAPACITIES

MCB	35mm ²
RCCB	50mm ²
Isolators 63 to 125A	50mm ²
200A Heavy Duty	120mm ²
250A Heavy Duty	185mm ² via sockets
MCCB 200A Frame	120mm ² (Stranded)

MINIATURE CIRCUIT BREAKERS (MCBs)

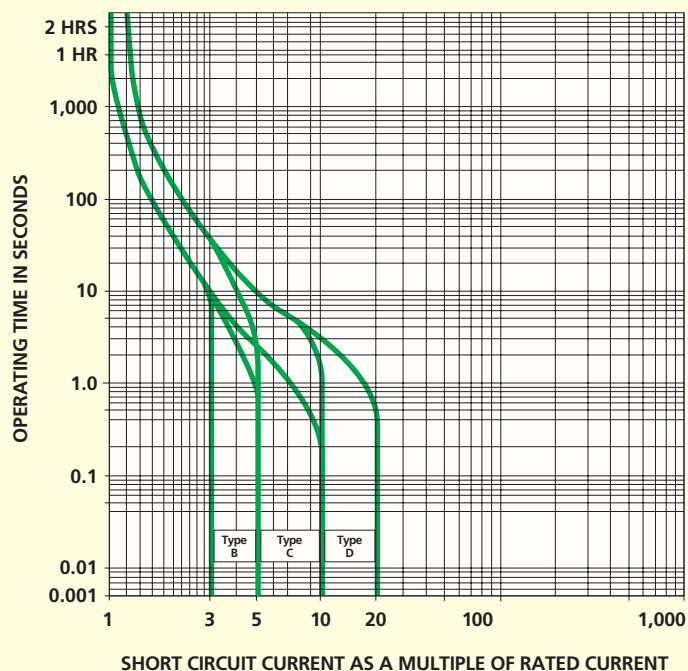
	A	B	C	D	E
Single pole	43.8	56.5	13.5	86	18
Double pole	43.8	56.5	13.5	86	36
Triple pole	43.8	56.5	13.5	86	54

RESIDUAL CURRENT CIRCUIT BREAKERS (RCCB)

	A	B	C	D	E
2 pole	43.8	56.5	13.5	86	36
4 pole	43.8	56.5	13.5	86	72

TYPE CLASSIFICATION

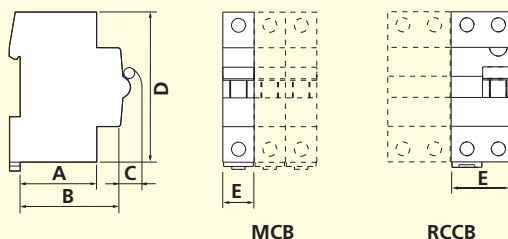
BSEN60898 specifies different tripping characteristics for different types of MCB, depending on the level of overcurrent required to make the MCB trip out in less than 100 milliseconds. Crabtree MCB's are available as types B, C or D, enabling installation designers to choose an MCB with a characteristic closely matched to the circuit requirement.



RCBOs

Single module	
Standards Compliance:	EN61009, IEC 601009
Rated Voltage:	230V 50Hz
Rated Short Circuit Capacity:	6kA or 10kA
MCB Tripping:	Type C
RCD Tripping (Electronic):	Type A
Neutral:	Unswitched
Neutral flying lead and functional earth lead provided	

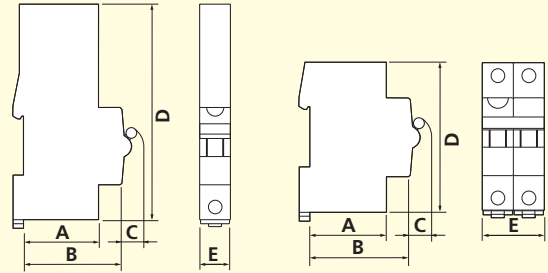
Two module	
Standards Compliance:	EN61009, IEC601009
Rated Voltage:	230V 50Hz
Rated Short Circuit Capacity:	6kA or 10kA
MCB Tripping:	Type C
RCD Tripping: (Electromechanical)	Type AC
Neutral	Switched
Neutral flying lead provided	



APPROXIMATE DIMENSIONS (mm)

RESIDUAL CURRENT CIRCUIT BREAKERS WITH OVERLOAD PROTECTION (RCBOs)

	A	B	C	D	E
Single module	43.8	56.5	13.5	126	18
Two module	43.8	56.5	13.5	86	36



TYPE B AND ROW DISTRIBUTION BOARDS

125A 'L'		125A 'DIN'		250A 'H'	
List No.	H	List No.	H	List No.	H
18LS04	490	18LS04D	650	18HS04	650
18LS06	570	-	-	18HS06	815
18LS08	650	18LS08D	815	18HS08	815
18LS12	815	18LS12D	975	18HS12	895
18LS16	895	18LS16D	1140	18HS16	975
18LS20	975	18LS20D	1140	18HS20	1085
18LS24	1140	-	-	18HS24	1190
18LS12A	675	-	-	18HS12A	675
18SB	245	18SB	245	18SB	245

DIN Rail Only Enclosure

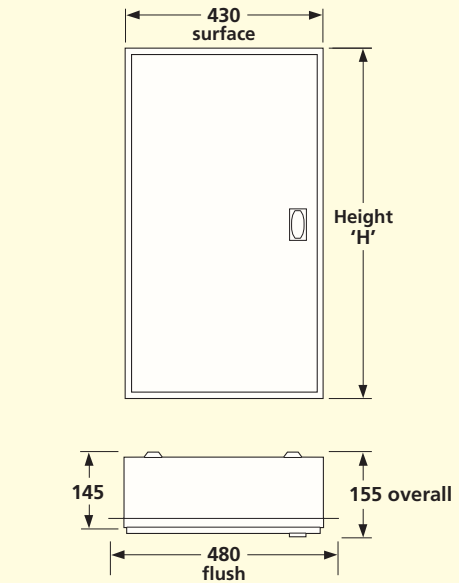
List No.	H	Row Boards	
List No.	H	List No.	H
18DIN18	245	18AS1	245
18DIN36	410	18AS2	410
		18AS3	570
		18AS4	735
		18AS5	815

SP Distribution Board c/w 100A DP Isolator

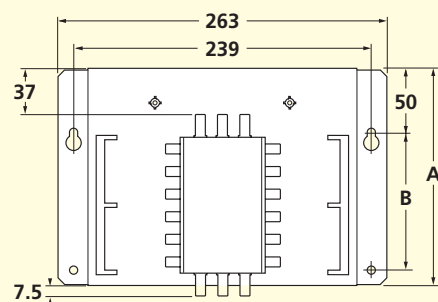
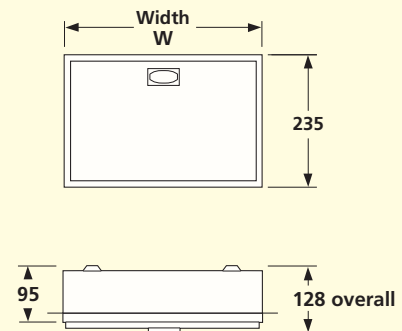
List No.	W	GP Enclosure			
List No.	W	H	D		
18SN05	188	18GP2S	61	152	61
18SN08	242	18GP4S	76	140	67
18SN11	293				
18SN14	343	18GP2M	90	225	66
18SN19	437	18GP4M	135	316	74

250A TP 'H' Type Pan Assemblies

List No.	A	B
18HP04	174	110
18HP06	228	164
18HP08	282	218
18HP12	390	326
18HP16	498	434
18HP20	606	542
18HP24	714	650



* Add 50mm to height and width for flush front plate



Incoming cable connection Kit fits to top of pan as illustrated. Spare phase identity labels allow the pan to be used either way up.

FUSESTAR HOUSED FUSE SWITCH

SPECIFICATION

- BSEN947-3
- Range of ratings 20A -800A in 4 frame sizes
- Pole configurations SP & N, TP & N, and 4 Pole
- Voltage rating 415V ac
- Frequency rating 50/60 Hz
- Fuse type BS88
- Fused Short Circuit, 80kA RMS

PRODUCT FEATURES

- Switching speed totally operator independent
- Handle padlockable on or off

HOUSED UNITS

- Modular enclosure design (52.5mm) with inbuilt cable spreader box
- Reversible door which opens 180°
- IP4X



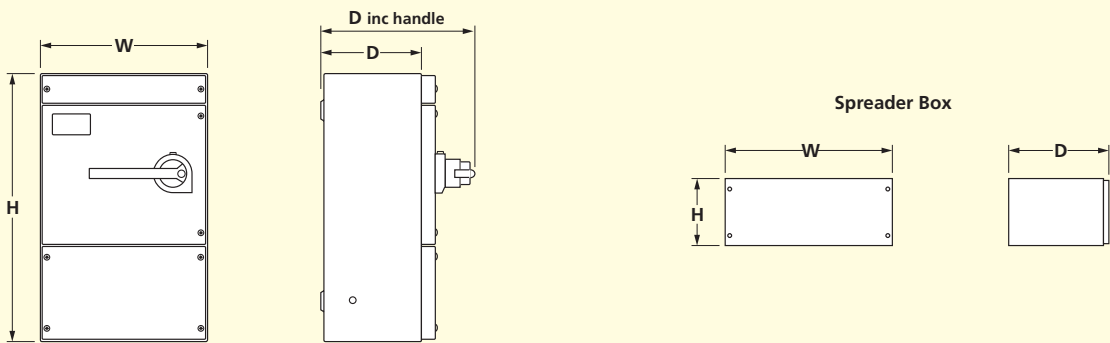
TECHNICAL DATA

	20-32A	63A	100A	125A	160A	200A	315A	400A	630A	800A
Mechanical Endurance	20,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	8,000	8,000
Ratings	A kW	A kW	A kW	A kW	A kW	A kW	A kW	A kW	A kW	A kW
415V Ie/pe	32 15	63 30	100 51	125 75	160 90	200 80	315 160	400 220	630 355	800 450

FUSE COMPARISON DATA

Current Rating	BS 88 Reference	Lawson	GEC	Bussman
20/32A	A1	NIT	NIT	NITD
63A	A3	TIS, TIA GTIA	TIS, TIA	BAO, AAO
100A	A4 (Dia 31 max)	TCP	-	CEO
125A	A4 (Dia 31 max)	TFP	TFP	DEO, CEO
160/200A	A4 (Dia 31 max)	TFP	TFP	DEO, CEO
315A	B3, B2, B1	TFK, TF	TF	ED, DD, CD
400A	B3, B2, B1	TMF, TFK, TF, TC	TMF, TFK, TF, TC	ED, DD, CD
630A	C2, C1	TTM, TM	TTM, TM	FF, EF
800A	C3, C2, C1	TLM, TTM, TM	TLM, TTM, TM	GF, FF, EF

FUSESTAR DIMENSION DETAILS



DIMENSIONS (mm)

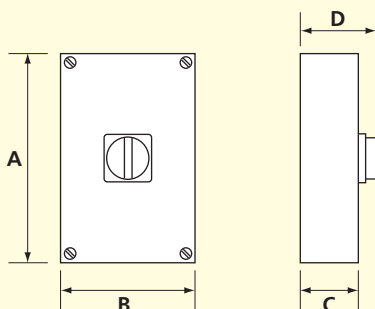
	H	W	D	D inc. handle		H	W	D
20-32A	220	210	136	200	SPREADER BOX	105	210	105
63A	420	263	188	263	SPREADER BOX	105	262.5	157.5
100A	420	263	188	263	SPREADER BOX	105	262.5	157.5
125-200A	525	315	241	305	SPREADER BOX	105	315	210
315-400A	735	420	241	305	SPREADER BOX	210	420	210
630-800A	850	620	293	355	SPREADER BOX	210	620	262.5

FUSESTAR HOUSED SWITCH DISCONNECTOR

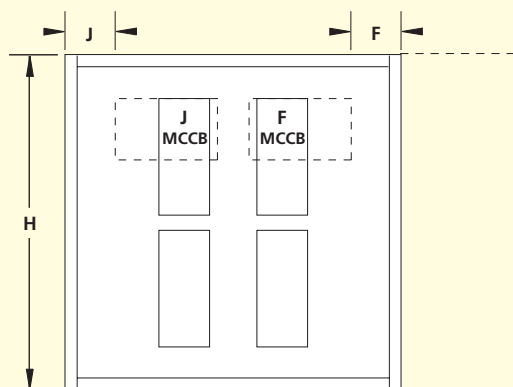
	Moulded Enclosure								Sheet Steel Enclosure								
RATING IN AMPS	16A	25A	32A	40A	63A	80A	100A	125A	20A	32A	40A	63A	63A*	100A	125A	20A	32A
Rated Insulation Voltage Ui (V)	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Dielectric Strength (kV) 50 Hz 1min	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Shock Resistance Uimp (kV)	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8		
OPERATIONAL CURRENT Ie (A)																	
415 V AC - AC21A / AC21B	16	25	32	40	63	80	100	125	20	32	40	63	80	100	125	20	32
AC22A / AC22B	16	25	32	40	63	80	100	125	20	32	40	63	80	100	125	20	32
AC23A / AC23B	16	25	32	40	63	80	80	80	20	32	40	63	80	80	80	20	32
500 V AC - AC21A / AC21B	16	25	32	40	63	80	100	125	20	32	40	63	80	100	125	20	32
AC22A / AC22B	16	25	32	40	63	80	100	125	20	32	40	63	80	100	125	20	32
AC23A / AC23B	16	25	32	40	40	63	63	63	20	32	40	40	63	63	63	20	32
690 V AC - AC20A / AC20B	16	25	32	40	63	80	100	125	20	32	40	63	80	100	125	20	32
AC21A / AC21B	16	25	32	40	63	80	100	125	20	32	40	63	80	100	125	20	32
AC22A / AC22B	16	25	32	40	63	80	100	100	20	32	40	63	80	100	100	20	32
AC23A / AC23B	16	25	25	25	25	50	50	50	20	25	25	25	50	50	50	20	25
MOTOR POWER (KW) AC 23																	
415 V AC	7.5	9	11	11	15	22	37	40	7.5	11	11	15	18.5	37	40	7.5	11
500 V AC	7.5	9	11	15	18.5	30	37	37	7.5	11	15	18.5	22	37	37	11	11
690 V AC	11	11	11	18.5	18.5	30	30	30	11	11	18.5	18.5	25	30	30	11	11
FUSE TYPES TO BS88																NS	NS
OVERLOAD CAPACITY																	
Fuse rating gG	16	25	32	40	63/40	80	100	125	20	32	40	63/40	63	100	125	20	32
Short circuit current with fuses (kA Rms)	50	50	50	50	20/50	40	20	15	50	50	50	20/50	50	20	15	50	50
Asymmetric short time rating current (kA peak)	6	6	6	6	6	9	9	9	6	6	6	9	9	9	9	6	6
Admissible short time current 1 s. (kA Rms)	1.26	1.26	1.26	1.26	1.26	1.5	1.5	1.5	1.26	1.26	1.26	1.5	1.5	1.5	1.5	1.26	1.26
MAKING & BREAKING CHARACTERISTICS																	
Breaking capacity (A Rms) 415 V AC 23 A	128	200	256	320	504	640	640	640	160	256	320	504	504	640	640	160	256
Making capacity (A Rms) 415 V AC 23 A	160	250	320	400	630	800	800	800	200	320	400	630	630	800	800	200	320
WITHSTAND																	
Mechanical (number of operations) x 1000	100	100	100	100	100	30	30	30	100	100	100	100	30	30	30	100	100
Electrical (number of operations at 415V AC 23A) x 1000	3	3	3	3	3	1.5	1.5	1.5	3	3	3	3	1.5	1.5	1.5	3	3
CONNECTION																	
Maximum Cu cable section (mm²) lth	16	16	16	16	16	50	50	50	16	16	16	16	50	50	50	16	16
using stranded cable (mm²)	25	25	25	25	25												
WEIGHT (KG)																	
3 pole	0.13	0.13	0.13	0.13	0.13	0.26	0.26	0.26	2.00	2.00	2.00	2.00	2.50	2.50	2.50	3.0	3.0
4 pole	0.18	0.18	0.18	0.18	0.18	0.34	0.34	0.34	2.00	2.00	2.00	2.00	2.50	2.50	2.50	3.0	3.0

63* = Size 2 Enclosure

APPROXIMATE DIMENSIONS (mm)



BOX	A	B	C	D
A	130	85	75	105
B	175	125	100	137
C	250	175	100	135
D	310	200	135	170
E	410	200	135	170
1	220	158	136	172.5
2	325	158	136	172.5



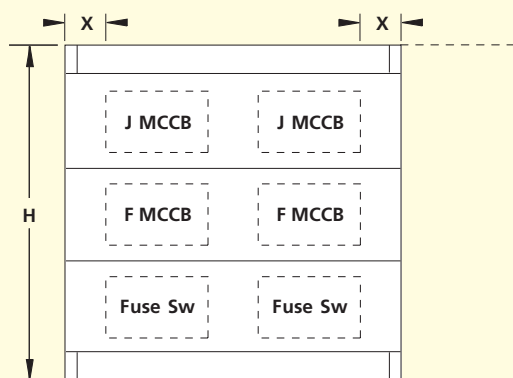
APPROXIMATE DIMENSIONS (mm)

FORM 2

Cabling Room

List No		H	Mod.	J	F
KP2J404	KP2F404	576	3	175	140
KP2J804	KP2F804	576	3	175	140
KP2J408	KP2F408	768	4	175	140
KP2J804	KP2F808	768	4	175	140
KP2J412	KP2F412	960	5	175	140
KP2J812	KP2F812	960	5	175	140
KP2J416	KP2F416	1162	6	175	140
KP2J816	KP2F816	1162	6	175	140

Optional Cableway shown as a dotted line.

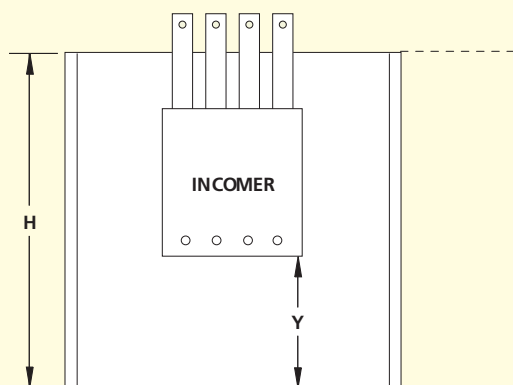


FORM 4

Cabling Room

List No	H	Mod.	X
KP4J806	768	4	170
KP4J810	1162	6	170
KP4F806	768	4	135
KP4F810	1162	6	135
KP4S806	768	4	160
KP4S810	1162	6	160

Optional Cableway shown as a dotted line.

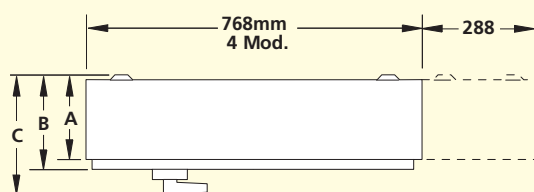


INCOMER FORM 2 AND FORM 4

Cabling Room

Form 2	Form 4	H	Mod.	Y
K12J1	K14J1	576	3	320
K12F1	K14F1	576	3	300
K12L1	K14L1	768	4	460
K12N1	K14N1	960	5	440
K12L2		960	5	460
K12S2	K14S2	576	3	310
K12S4	K14S4	768	4	480
	K14S8	960	5	540

Optional Cableway shown as a dotted line.



ENCLOSURE DEPTH

	A	B	C
Standard (eg. KP2J408)	265		
With Doors (eg. KP2J408 & KPXD04)		297	
With Doors and Handle (eg. KP4F806)			385

Optional Cableway shown as a dotted line.

BSEN60439-1 : FORMS OF SEPARATION

FORMS OF SEPARATION

Main criteria	Sub criteria	Form	Type of Construction
No separation		Form 1	
Separation of busbars from the functional units.	Terminals for external conductors not separated from busbars.	Form 2	Type 1 Busbar separation is achieved by insulated coverings, e.g. sleeving, wrapping or coatings
	Terminals for external conductors separated from busbars.		Type 2 Busbar separation is by metallic or non-metallic rigid barriers or partitions.
Separation of busbars from the functional units and separation of all functional units from one another. Separation of the terminals for external conductors from the functional units, but not from each other.	Terminals for external conductors not separated from busbars.	Form 3a	Type 1 Busbar separation is achieved by insulated coverings, e.g. sleeving, wrapping or coatings
	Terminals for external conductors separated from busbars.	Form 3b	
Separation of busbars from the functional units and separation of all functional units from one another including the terminals for external conductors which are an integral part of the functional unit.	Terminals for external conductors in the same compartment as the associated functional unit.	Form 4	Type 1 Busbar separation is achieved by insulated coverings, e.g. sleeving, wrapping or coatings Cables may be glanded elsewhere.
			Type 2 Busbar separation is by metallic or non-metallic rigid barriers or partitions. Cables may be glanded elsewhere.
			Type 3 All separation requirements are by metallic or non-metallic rigid barriers or partitions. The termination for each functional unit has its own integral glanding facility.
	Terminals for external conductors not in the same compartment as the associated functional unit. but in individual, separate, enclosed protected spaces or compartments.		Type 4 Busbar separation is achieved by insulated coverings, e.g. sleeving, wrapping or coatings Cables may be glanded elsewhere.
			Type 5 Busbar separation is by metallic or non-metallic rigid barriers or partitions. Terminals may be separated by insulated coverings and glanded in common cabling chamber(s).
			Type 6 All separation requirements are by metallic or non-metallic rigid barriers or partitions. Cables are glanded in common cabling chamber(s).
			Type 7 All separation requirements are by metallic or non-metallic rigid barriers or partitions. The termination for each functional unit has its own integral glanding facility.

FORMS OF SEPARATION

As described in BSEN60439-1 the Forms of Separation comprise four levels as detailed in the above table. The various methods of achieving separation can involve sleeving the busbars inside a separate box or a combination of both methods.

COST EFFECTIVE SPECIFICATION

In order to gain maximum benefit from the standard it is necessary to consider the application for which the switchboard is required and the appropriate level of separation for the environment in which it is to be installed. For example a Form 4 switchboard may be appropriate where general access is permitted to the switch room but where the switchboard is in a locked substation with access restricted to qualified personnel, a lesser degree of separation may be more appropriate.

TYPICAL APPLICATIONS

Form 1 – No separation

Typical applications are places where the switchboard is in a secure location and where failure of the switchboard will cause little or no additional disruption to other areas being fed by the switchboard.

Form 2 – Separation of busbars from functional units.

Applications may well be the same as Form 1 but where it is important that a fault in the switchboard need not affect all functional units being fed from the same busbar system.

Form 3 – Separation of busbars from functional units and the functional units from one another but not their terminations.

Should be applied where it is important to provide protection from internal live parts and where failure of functional units being fed from the same busbar would cause unacceptable disruption.

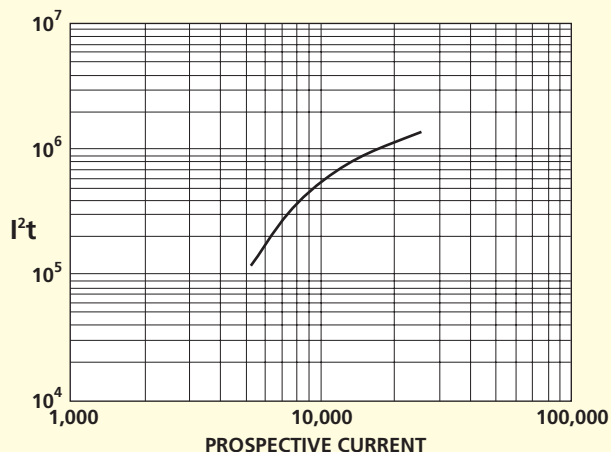
Form 4 – Separation of busbars from functional units and the functional units from one another including their terminations.

Should be applied where it is important to provide protection from internal live parts and where failure of functional units being fed from the same busbar would cause unacceptable disruption. Because all the terminations are separated it is possible to isolate and work on a single functional unit.

G FRAME MCCBs TECHNICAL SPECIFICATION

G FRAME SPECIFICATION

• Specification	BS EN 60947-2
• Current Range	16 – 125A
• Ue Rated Operation Voltage	240V SP 415V TP
• Ui Rated Insulation Voltage	500V AC
• Rated Frequency	50/60Hz
• Release	Thermal Magnetic
• Adjustment	None
• Ambient Range	-20°C to 55°C
• Humidity Range	0 – 90%
• Weight	SP - 0.4kg TP - 0.95kg
• Mechanical Duration	8000 operations



FEATURES

The symmetrical vertical and horizontal axis with a double stepped escutcheon plate, enabling it to fit through either a 46mm or 80mm cut-out. A double insulated compartment located behind the removable escutcheon plate, facilities easy on-site installation of shunt trip and auxiliary switch units.

AVAILABLE OPTIONS

- ST (See Product Section for selection)
- Aux Switches
- Padlocking
- Terminal Shrouds

SHORT CIRCUIT BREAKING CAPACITY

Type	GB	GN
Ue	Icu	Icu
	SP/TP	TP
220 V	30	30
380 V	16	25
415 V	16	25

Ics = 50% Icu

INSTANTANEOUS TRIP BANDS

25 – 50A	500A
63 – 80A	800A
100 – 125A	1000A

TERMINALS

Front-connected clamps –
16A to 125A – 70mm² cable
– 10mm strip

AUXILIARY EQUIPMENT

G Frame MCCBs

- Shunt Trip & Auxiliary Switch
 - Two Auxiliary Switches
- (For Shunt Trip with 2 Auxiliary C/O Switches add suffix A to ST List No.).

Shunt Trip

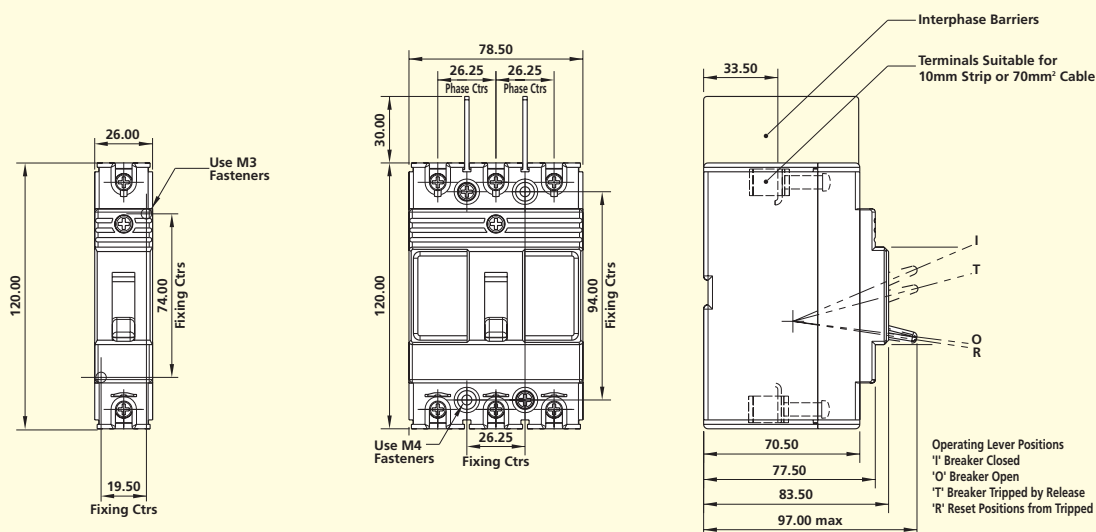
Max on time 1 cycle: 10 seconds
Max on time con. cycle: 6 seconds
24V dc 30W } Closed Power
115V ac 43VA } Consumption
230V ac 43VA } 10% Duty Cycle

Auxiliary Contact Ratings (A)

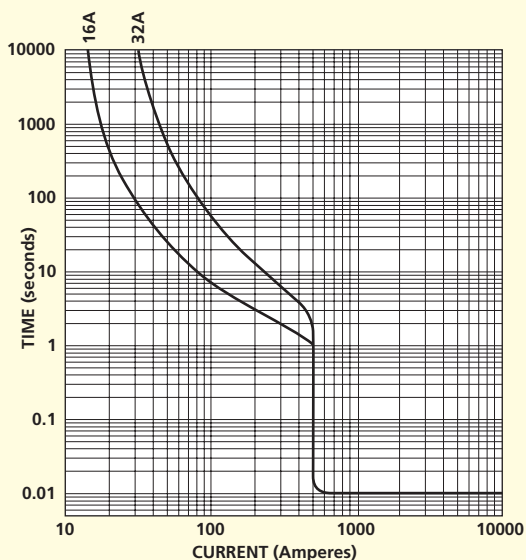
Voltage	Resistive Load (A)	Tungsten NC (A)	Load NO (A)	Inductive Load (A)
AC				
125	3	0.5	0.5	3
250	3	0.5	0.5	3
DC				
30	3	3	0.5	3
50	1	0.7	0.7	1
125	0.5	0.4	0.4	0.05

POWERSTAR G FRAME MAXIMUM EARTH LOOP IMPEDANCES Zs (ohms) for Uo = 240V~

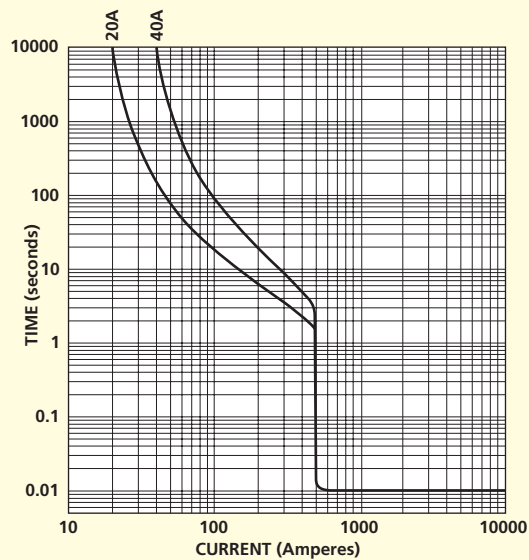
Current Rating (A)	16	20	25	32	40	50	63	80	100	125
0.4 Seconds Disconnection Time	0.48Ω	0.48Ω	0.48Ω	0.48Ω	0.48Ω	0.48Ω	0.30Ω	0.30Ω	0.24Ω	0.24Ω
5.00 Seconds Disconnection Time	1.68Ω	1.37Ω	1.06Ω	0.81Ω	0.69Ω	0.51Ω	0.37Ω	0.32Ω	0.27Ω	0.25Ω



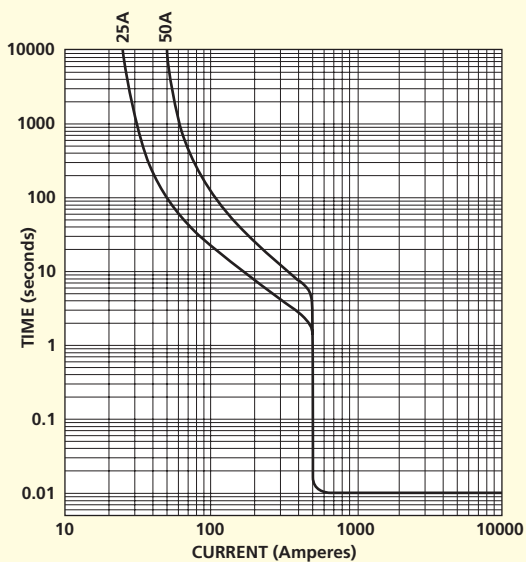
G 16-32A



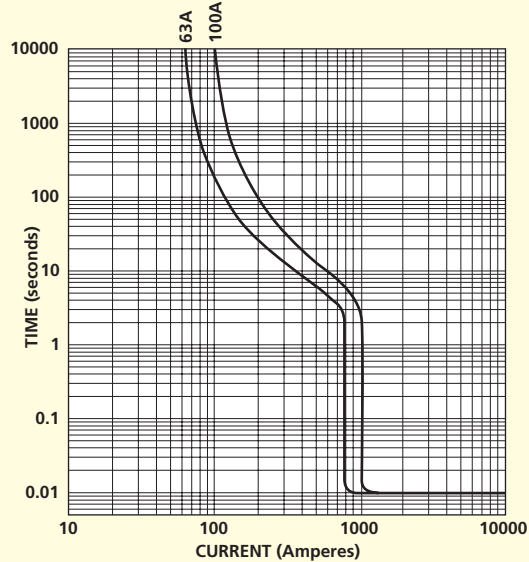
G 20-40A



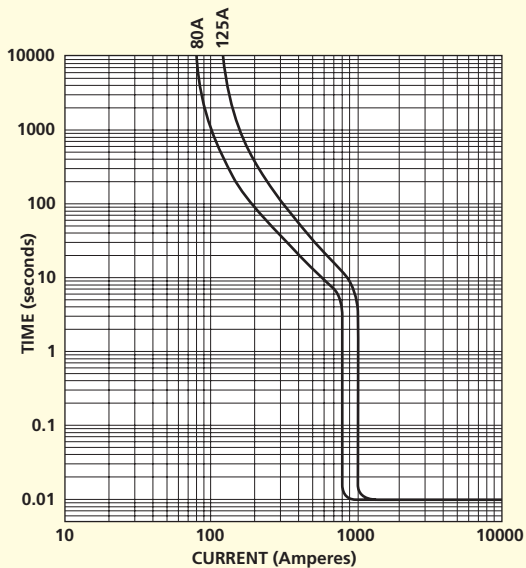
G 25-50A



G 63-100A



G 80-125A



Tolerance on instantaneous current values $\pm 10\%$.

JN & JM FRAME MCCBs TECHNICAL SPECIFICATION

JN & JM FRAME SPECIFICATION

• Specification	BSEN60947-2
• Current Range	25 – 200A
• Ue Rated Operation Voltage	240V SP 415V TP
• Ui Rated Insulation Voltage	660V AC
• Rated Frequency	50/60Hz
• Release	Thermal Magnetic
• Thermal Adjustment	0.7 – 1.0 x Rated Current
• Instantaneous Adjustment	Non-adjustable
• Short Circuit Breaking Capacity	Icu at 415V = 25KA, Ics = 75%Icu
• Ambient Range	-20°C to 55°C
• Humidity Range	0 – 90%
• Weight	SP – 0.7Kg TP – 1.8Kg TP & Sw N – 2.4Kg

FEATURES

From J Frame to N Frame Powerstar MCCBs feature escutcheons of the same height allowing any of the frame sizes to be grouped together in a single panel cutout.

Front adjustable thermal tripping elements.

OPTIONS

- ST UVR
- Aux SW
- Rotary Handle
- Padlocking
- Terminal Shrouds
- 4th Poles when fitted are left hand side

(See Product Section for selection)

SHORT CIRCUIT BREAKING CAPACITY

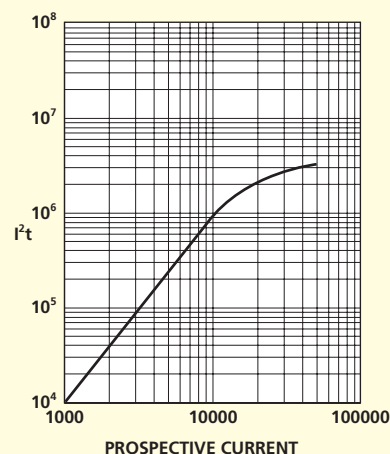
Ue	Icu
220 V	50 kA
380 V	32 kA
415 V	25 kA
Ics = 75% Icu	

INSTANTANEOUS TRIP BANDS

J Frame	JM Frame
25 – 63A = 400A	
80 – 125A = 800A	
160 – 200A = 1600A	50 – 200 = 1600A

TERMINALS

Front-connected clamps –
25A to 200A – 120mm² solid/150mm² stranded



AUXILIARY EQUIPMENT OPTIONS

- UVR & Auxiliary Switch
- Shunt Trip & Auxiliary Switches
- Two Auxiliary Switches each to change over

Shunt Trip Voltage Range 70 – 110%

Under Voltage Release Threshold 70 – 35%

UVR Power Pack 10VA

(110V & 415V units also supplied with transformer additional to Powerpack.).

Auxiliary Contact Ratings

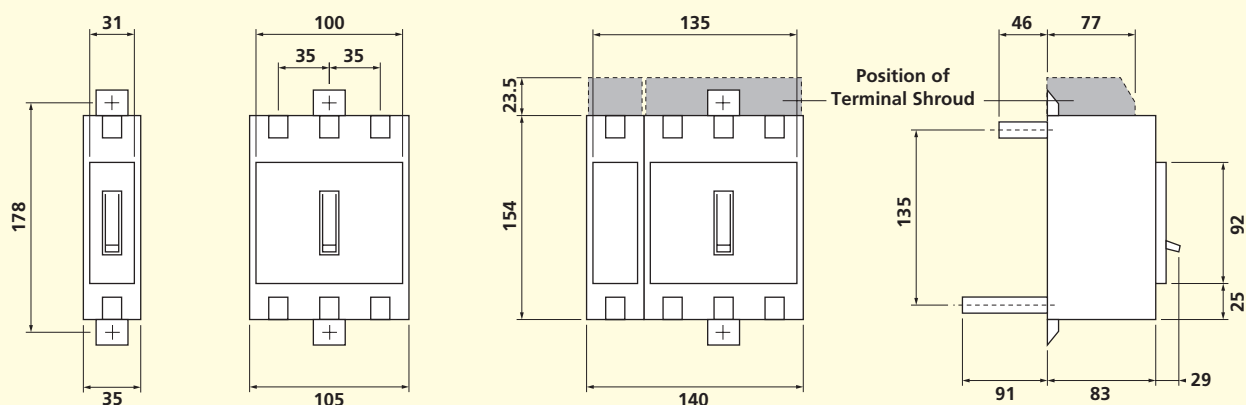
Voltage	Resist' Load (A)	Tungsten NC (A)	Load NO (A)	Induct' Load (A)
AC				
125	10	2	1	10
250	10	1.5	1	10
DC				
30	10	3	1.5	10
50	3	0.8	0.8	2.5
125	0.5	0.5	0.5	0.07

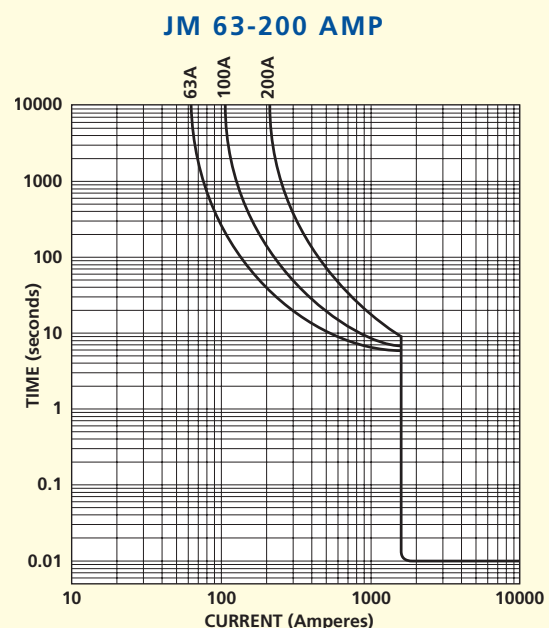
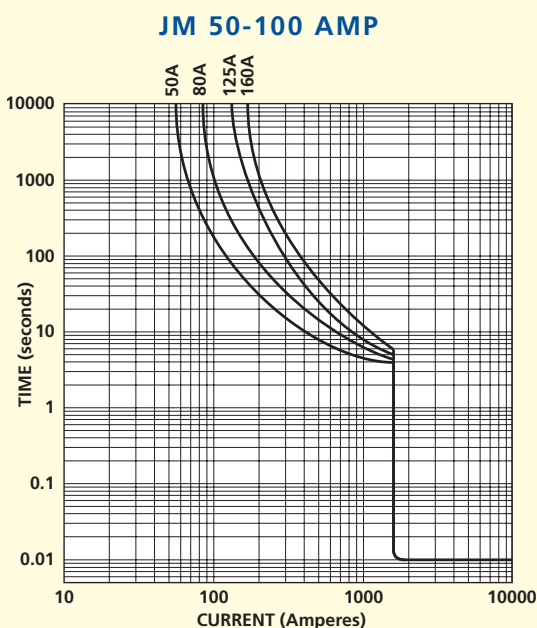
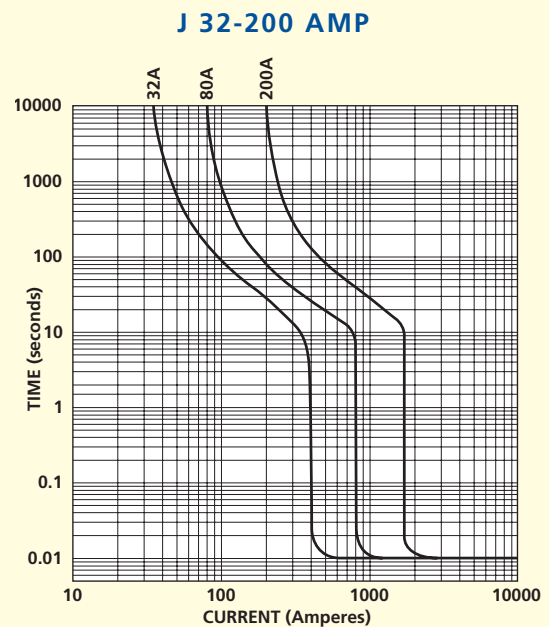
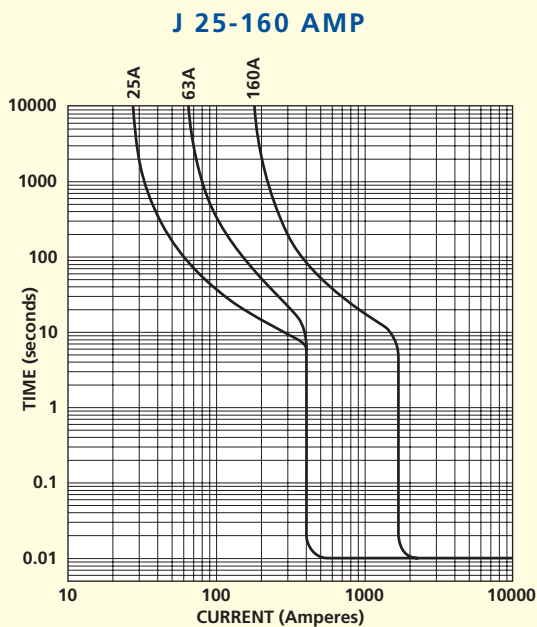
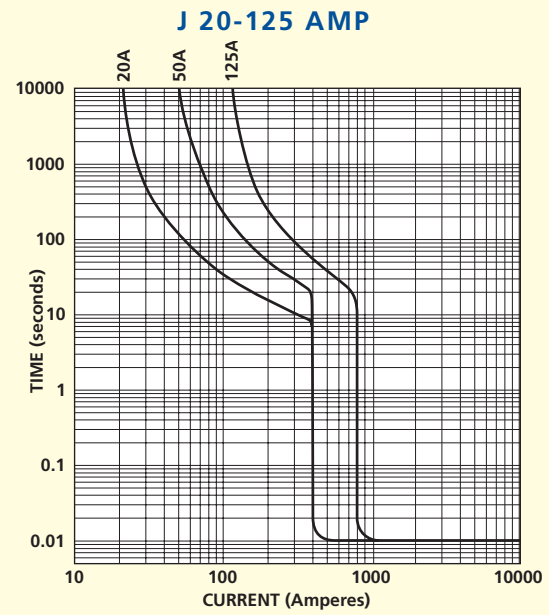
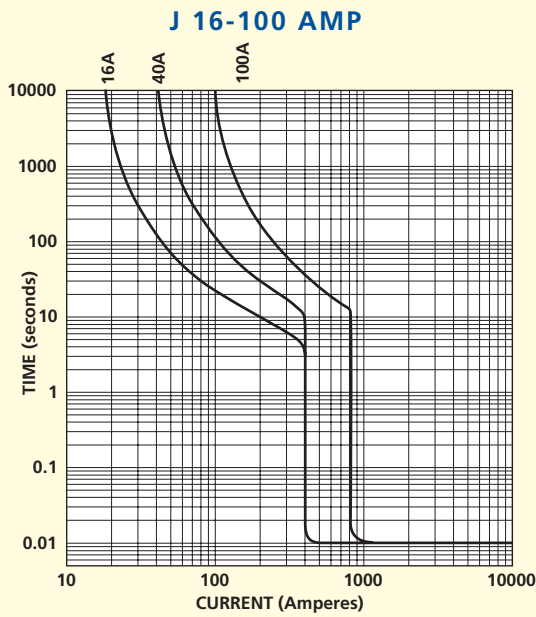
POWERSTAR JN FRAME MAXIMUM EARTH LOOP IMPEDANCES Zs (ohms) for Uo = 240V~

Current Rating (A)	16/20/25	32	40	50	63	80	100	125	160	200
0.4 Sec Disconnection Time	0.500Ω	0.500Ω	0.500Ω	0.500Ω	0.500Ω	0.250Ω	0.250Ω	0.250Ω	0.125Ω	0.125Ω
5.00 Sec Disconnection Time	0.500Ω	0.500Ω	0.500Ω	0.500Ω	0.500Ω	0.250Ω	0.250Ω	0.250Ω	0.125Ω	0.125Ω

POWERSTAR JM FRAME MAXIMUM EARTH LOOP IMPEDANCES Zs (ohms) for Uo = 240V~

Current Rating (A)	50	63	80	100	125	160	200
0.4 Sec Disconnection Time	0.125Ω	0.125Ω	0.125Ω	0.125Ω	0.125Ω	0.125Ω	0.125Ω
5.00 Sec Disconnection Time	0.125Ω	0.125Ω	0.125Ω	0.125Ω	0.125Ω	0.125Ω	0.125Ω





Tolerance on Instantaneous Current Values $\pm 10\%$

F FRAME MCCBs TECHNICAL SPECIFICATION

F FRAME SPECIFICATION

Current Range:	25 – 250A
I_n Rated Current:	250A
I_U Rated Uninterrupted Current:	250A
U_e Rated Operation Voltage:	415V
U_i Rated Insulation Voltage:	660V
I_{cm} Rated Short Circuit Making Capacity:	S Type - 73.5kA peak (at 415V) H Type - 105kA peak

Trip Unit Type	
Magnetic trip setting:	(25 - 32A) 500A (40 - 80A) 800A (100 - 125A) 1250A (160 - 250A) 1600A

Rated Ultimate Short Circuit Breaking Capacity

I_{cu} Rated Service Short Circuit Triple Pole:	S Type - 35kA H Type - 50kA
I_{cs} Breaking Capacity:	50% I_{cu}
Mechanical duration:	8,000 operations

Ambient Temperature Range:	-20 to 55°C
Humidity Range:	0 - 90%
Terminal Type:	M8 Screw
Terminal Capacity:	185mm ² (cable) 22mm wide (strip)

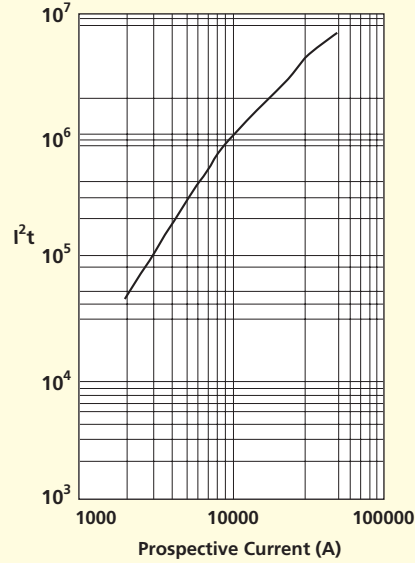
Shunt Release

Max. on time 1 cycle:	10 seconds
Max. on time con. cycle	6 seconds
24V dc	30W
115V ac	43VA
230V ac	43VA

Closed Power Consumption
10% Duty Cycle

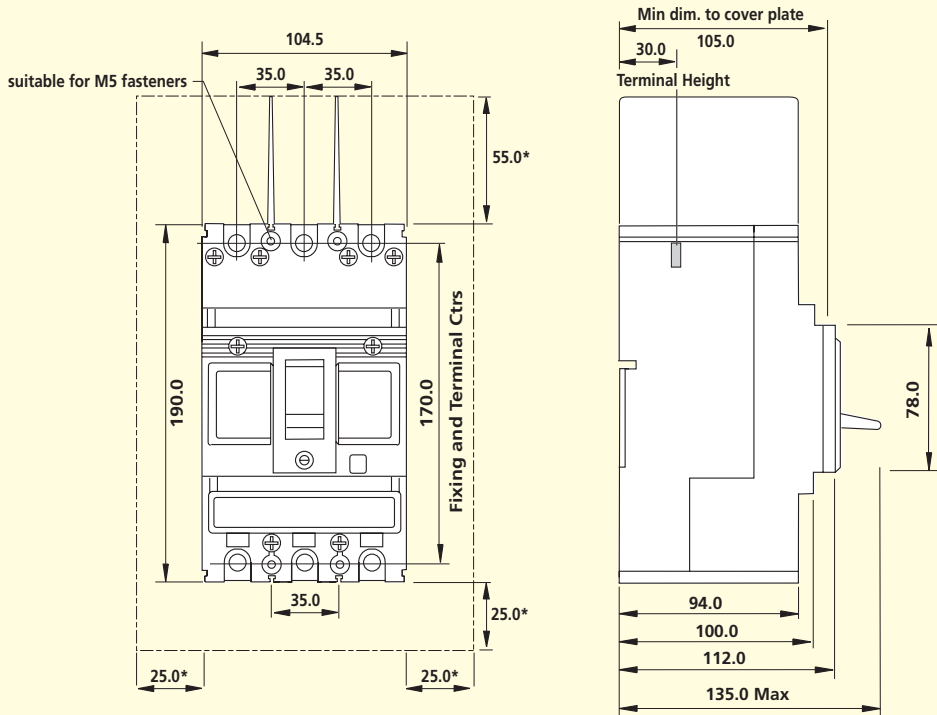
Auxiliary Contacts

	Resistive Load	Inductive Load	Tungsten Lamp Load NC	Tungsten Lamp Load NO
50V dc	3A	2.5A	0.8A	0.8A
125V ac	10A	10A	2A	1A
250V ac	10A	10A	1.5A	1A



F FRAME MAXIMUM EARTH LOOP IMPEDANCES Z_s (ohms) for $U_o = 240V \sim$

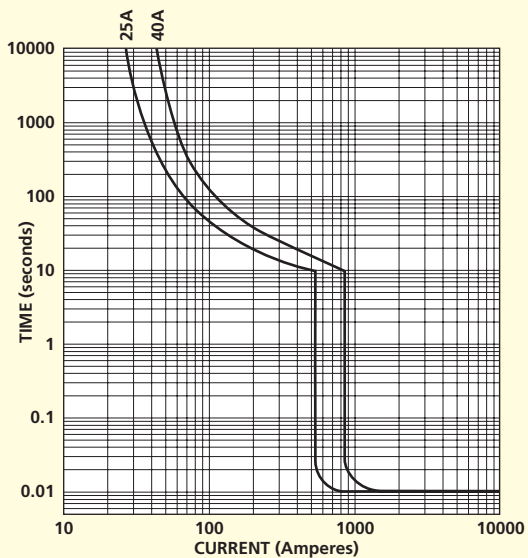
Current Rating (A)	25	32	40	50	63	80	100	125	160	200	250
0.4 Seconds Disconnection Time	0.40Ω	0.40Ω	0.25Ω	0.25Ω	0.25Ω	0.25Ω	0.16Ω	0.16Ω	0.125Ω	0.125Ω	0.125Ω
5.00 Seconds Disconnection Time	0.40Ω	0.40Ω	0.25Ω	0.25Ω	0.25Ω	0.25Ω	0.16Ω	0.16Ω	0.125Ω	0.125Ω	0.125Ω



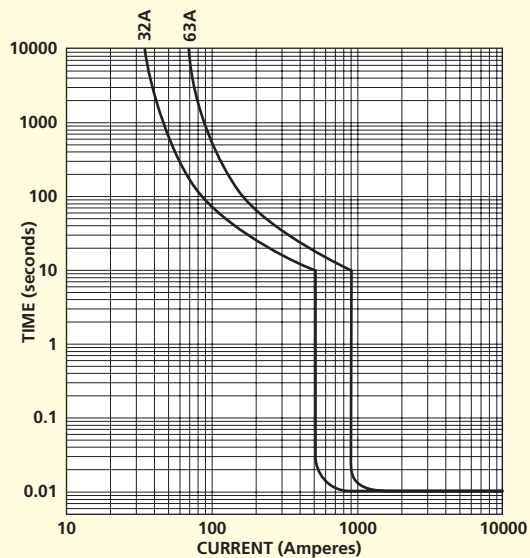
* Denotes Min distance to earthed metal

Panel cutout 105 wide x 80 deep

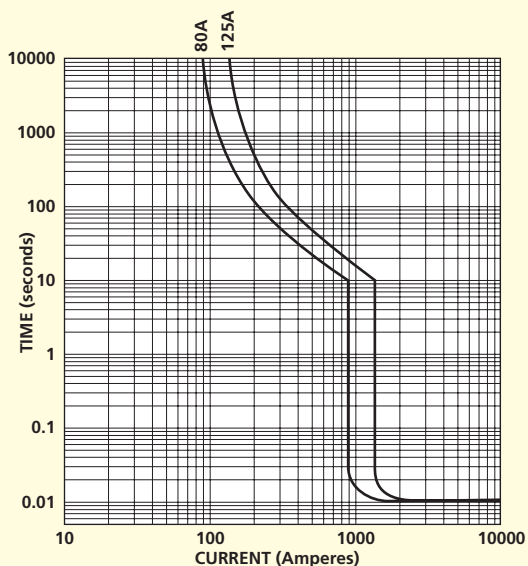
F 25-40 AMP



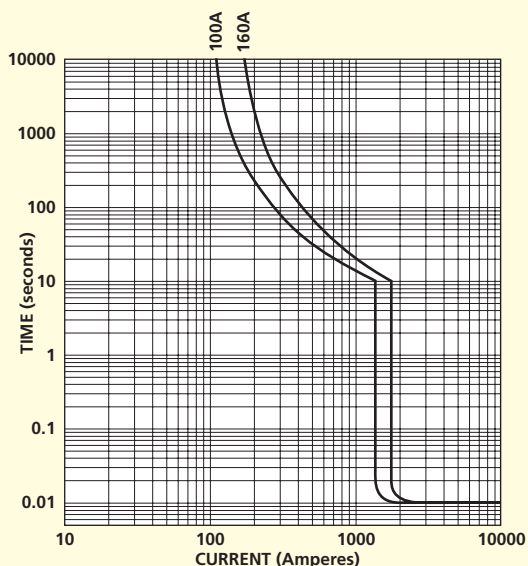
F 32-63 AMP



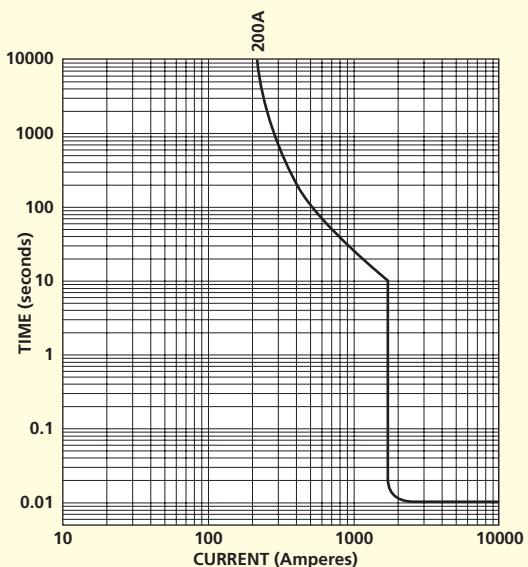
F 80-125 AMP



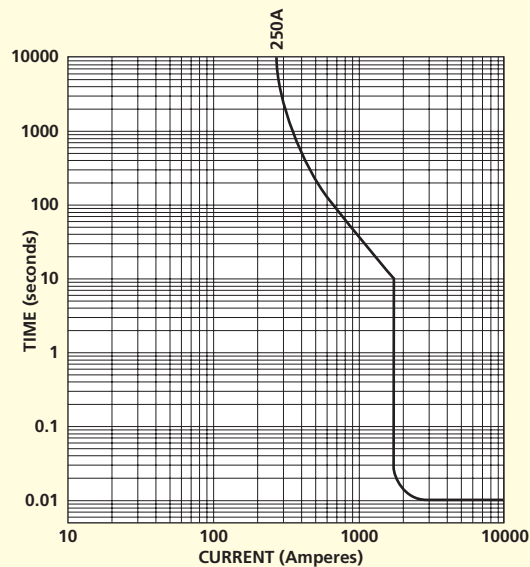
F 100-160 AMP



F 200 AMP



F 250 AMP

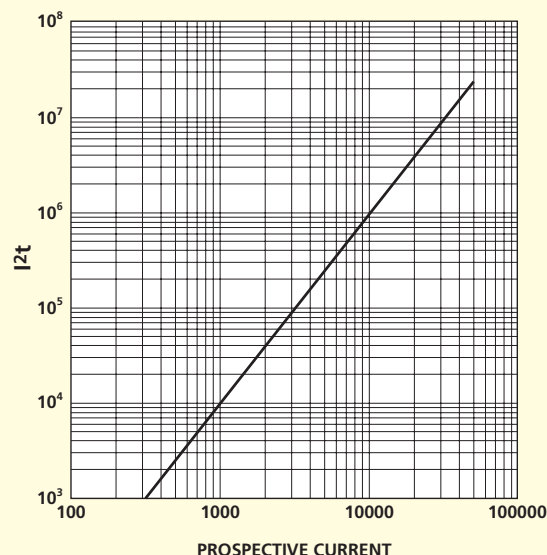


Tolerance on Instantaneous Current Values $\pm 10\%$

LS & LH FRAME MCCBs TECHNICAL SPECIFICATION

L FRAME SPECIFICATION

• Specification	BSEN60947-2
• Current Range	250 – 800Amps
• Ue Rated Operation Voltage	415V
• Ui Rated Insulation Voltage	660V AC
• Rated Frequency	50/60Hz
• Icu (415V) Short Circuit Breaking Capacity	LS-32kA, LH-50kA
• Release	Thermal Magnetic
• Thermal Adjustment	70 – 100% Rated Current
• Instantaneous Adjustment	Adjustable – see below
• Ambient Range	-20°C to 55°C
• Humidity Range	0 – 90%
• Weight	TP – 9.2Kg TP & Sw N – 11.6Kg



L FRAME FEATURES

From J Frame to N Frame Powerstar MCCB's feature escutcheons of the same height to simplify switchboard installations. Front adjustable thermal and instantaneous tripping elements

AVAILABLE OPTIONS

- ST UVR
- Aux SW
- Key Interlock Direct Mounting
- Rotary Handle
- Padlocking
- Dolly Extension
- 4th Poles when fitted are left hand side (See Product Section for selection)

SHORT CIRCUIT BREAKING CAPACITY

Ue	Icu
220 V	40 kA
380 V	32 kA
415 V	32 kA
Ics = 50% Icu	
with correct line 'load' connection	

MAGNETIC TRIP BANDS

Magnetic – (250 – 315A) Adjustable 5 – 10x In
– (400 – 800A) Adjustable 4 – 10x In

TERMINALS

Cranked front connection terminals c/w M12 connection bolts for direct coupling of cable sockets. Supplied with 2 interphase barriers.

AUXILIARY EQUIPMENT OPTIONS

L Frame MCCBs

- UVR & Auxiliary Switch
- Shunt Trip & Auxiliary Switches
- Two Auxiliary Switches

Note: All Shunt Trips supplied with coil disconnection Auxiliary Switch.

Shunt Trip Voltage Range 70 – 110%
UVR Power Pack 10VA

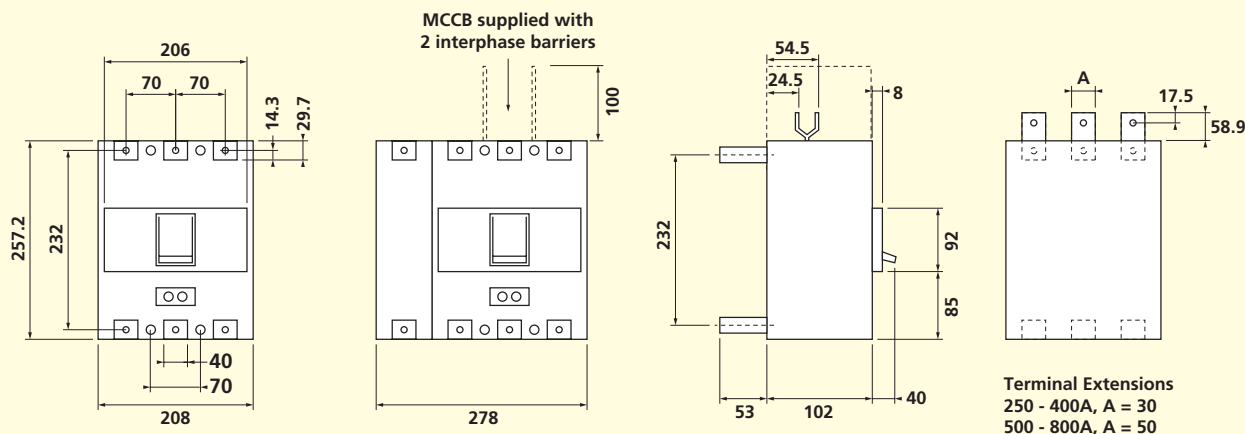
(110V & 415V units supplied with Transformer in addition to Powerpack.).

Auxiliary Contacts

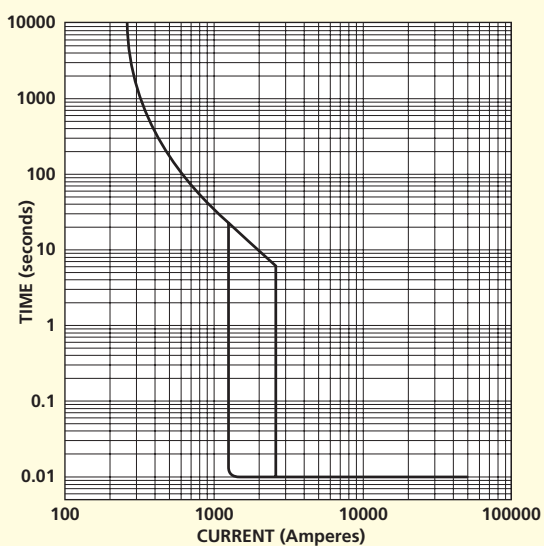
Volts	Resistive Load (A)	Tungsten Load NC (A)	Inductive Load NO (A)	Inductive Load (A)
AC				
125	15	1.5	1.0	5
250	15	0.7	0.5	5
DC				
30	2	3	1.5	1
50	0.7	0.7	0.7	0.5
125	0.5	0.4	0.4	0.03

POWERSTAR LS & LH FRAME MAXIMUM EARTH LOOP IMPEDANCES Z_s (ohms) for U_o = 240V~

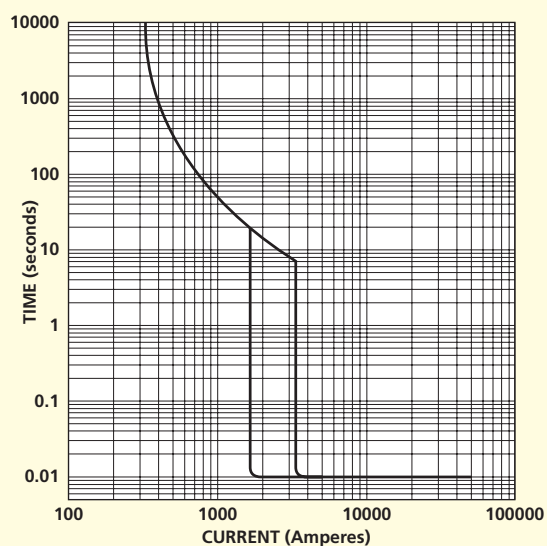
Current Rating (A)	250	315	400	500	630	800	Magnetic Trip Setting
0.4 Seconds Disconnection Time	0.0872Ω	0.0692Ω	0.0545Ω	0.0436Ω	0.0346Ω	0.0272Ω	High
5.00 Seconds Disconnection Time	0.1745Ω	0.1385Ω	0.1363Ω	0.1090Ω	0.0865Ω	0.0681Ω	Low



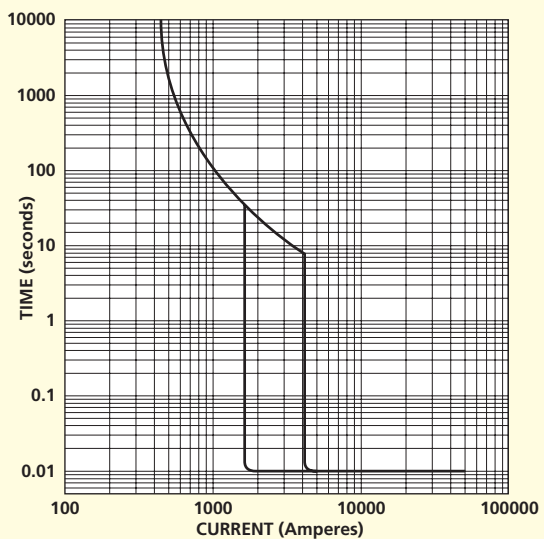
LS/LH 250 AMP



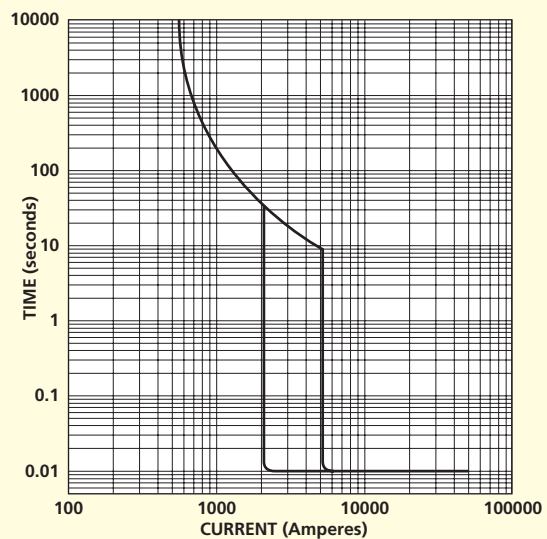
LS/LH 315 AMP



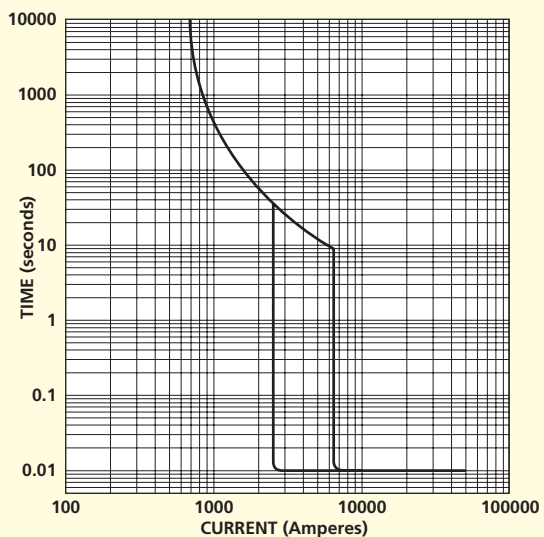
LS/LH 400 AMP



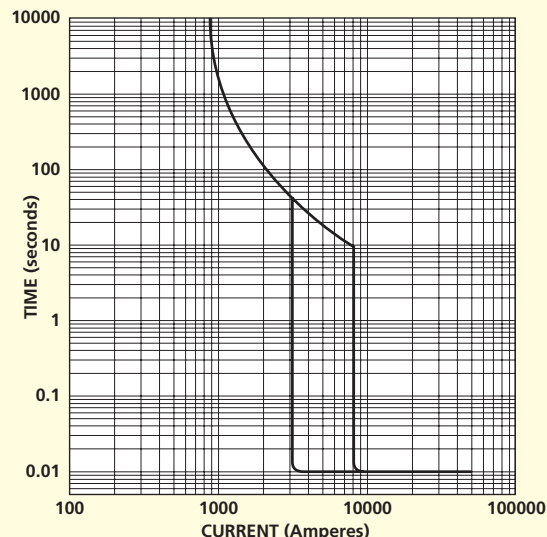
LS/LH 500 AMP



LS/LH 630 AMP



LS/LH 800 AMP



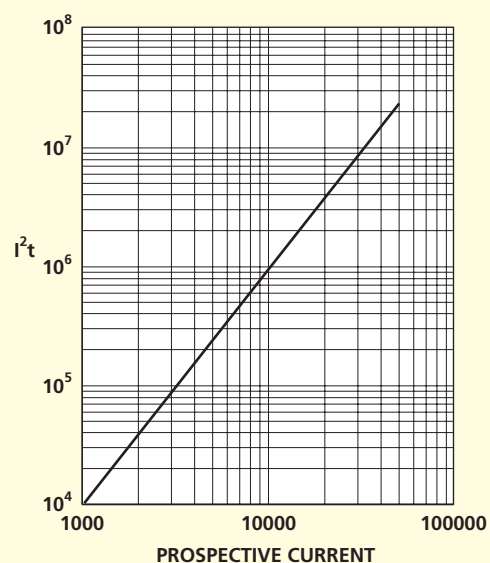
Tolerance on instantaneous current values $\pm 10\%$.

N FRAME MCCBs TECHNICAL SPECIFICATION

N FRAME SPECIFICATION

• Specification	BSEN60947-2
• Current Range	800 – 1600Amps
• Uie Rated Operation Voltage	415V
• Ui Rated Insulation Voltage	660V AC
• Rated Frequency	50/60Hz
• Icu (415V) Short Circuit Breaking Capacity	50kA
• Thermal Adjustment	See Detail Page over
• Instantaneous Adjustment	See Detail Page over
• Ambient Range	-20°C to 55°C
• Humidity Range	0 – 90%
• Weight	Rear Terminals 17kg Front Flat 19kg

N Frame MCCB Energy Let Through



N FRAME FEATURES

From J Frame to N Frame Powerstar MCCB's feature escutcheons of the same height to simplify switchboard installations.
Front adjustable thermal and instantaneous tripping elements.

AVAILABLE OPTIONS

- ST UVR
- Aux SW
- Key Interlock Direct Mounting
- Rotary Handle
- Padlocking
- Dolly Extension
(See Product Section for selection)

SHORT CIRCUIT BREAKING CAPACITY

Ue	Icu
220 V	70kA
380 V	50kA
415 V	50kA
Ics = 75% Icu	

TERMINALS

Back connected units supplied with 6 tee terminals which can be positioned either vertically or horizontally.
Front connected units supplied with 6 front flat terminals.

AUXILIARY EQUIPMENT OPTIONS

- UVR & Auxiliary Switch
- ST & Auxiliary Switch
- N Frame 3 Auxiliary C/O Switches

Shunt Trip Voltage Range 70 – 110%
UVR Power Pack 10VA

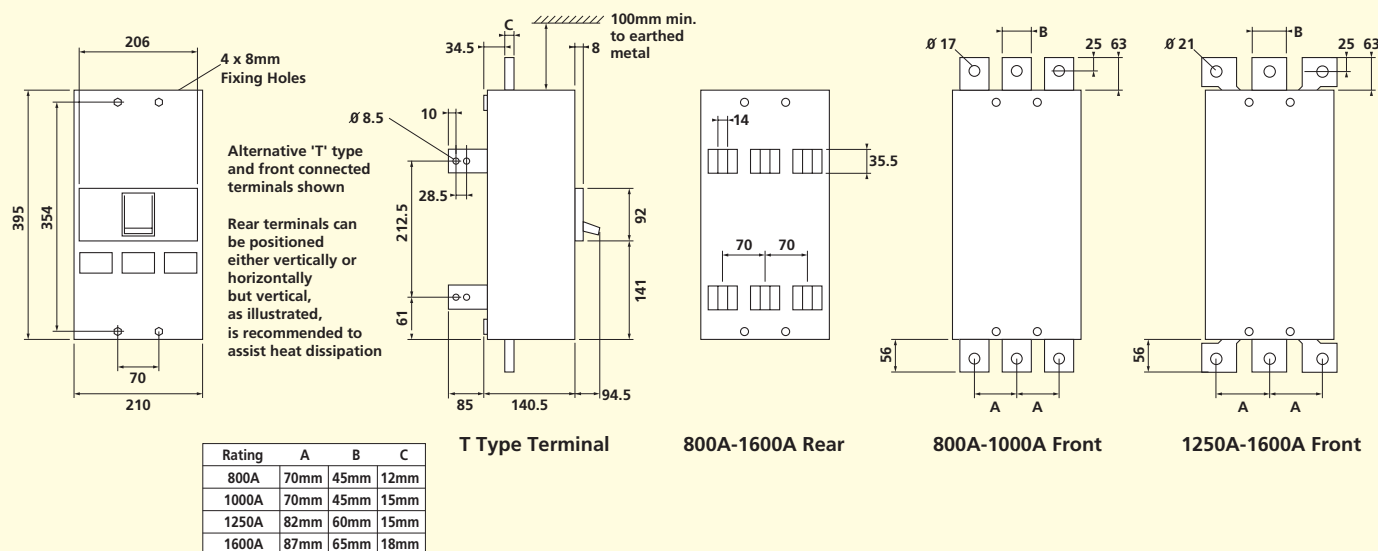
(110V & 415V units supplied with Transformer in addition to Powerpack.).

Auxiliary Contact Ratings

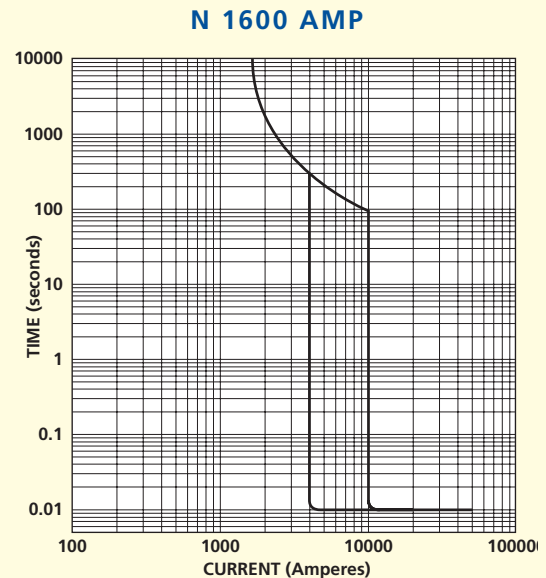
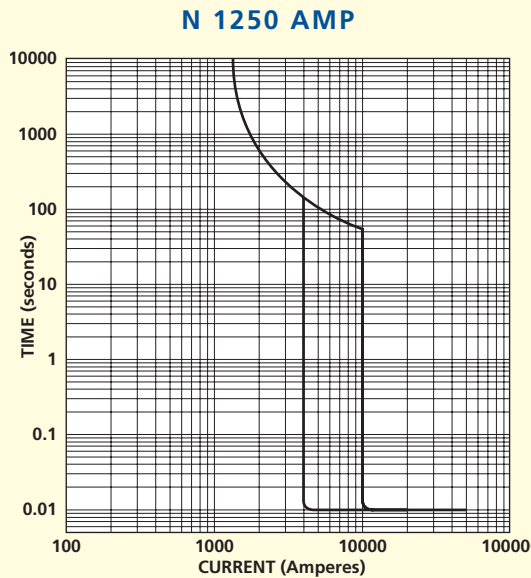
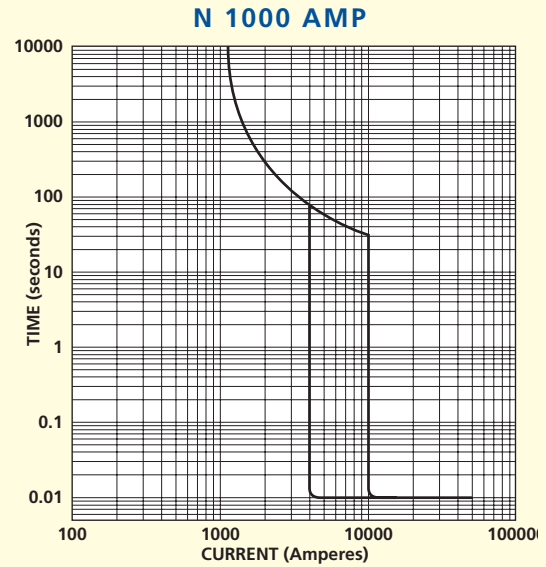
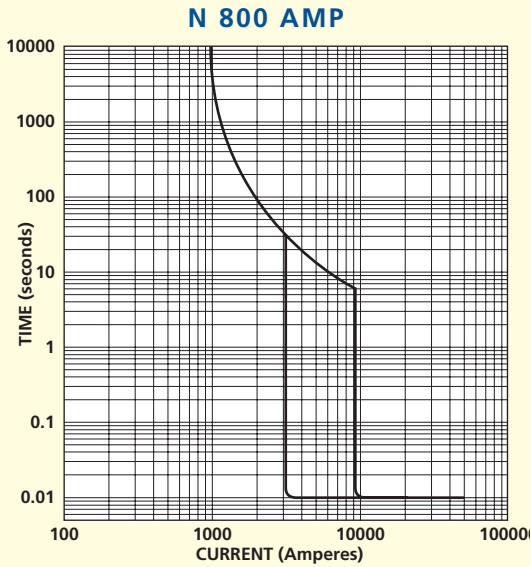
Voltage	Resist' Load (A)	Tungsten Load NC (A)	Induct' Load NO (A)	Induct' Load (A)
AC				
125	3	0.5	0.5	3
250	3	0.5	0.5	3
DC				
30	3	3	0.5	3
50	1	0.7	0.7	1
125	0.5	0.4	0.4	0.05

POWERSTAR N FRAME MAXIMUM EARTH LOOP IMPEDANCES Zs (ohms) for Uo = 240V~

Current Rating (A)	800	1000	1250	1600	Magnetic Trip Setting
0.4 Seconds Disconnection Time	0.0242Ω	0.0218Ω	0.0218Ω	0.0218Ω	High
5.00 Seconds Disconnection Time	0.0727Ω	0.0545Ω	0.0545Ω	0.0545Ω	Low



N FRAME MCCBs - TYPICAL TIME/CURRENT CHARACTERISTICS



Tolerance on Instantaneous Current Values $\pm 10\%$

N FRAME OVERLOAD SETTINGS I_{th} @ 50/60Hz

Ambient Rating (A) **7PBNH3800**

Temp(°C) 450 500 550 600 650 700 750 800 850 900 950

20			1	2	2	3	3	4	5	5
25		1	1	2	2	3	4	4	5	
30		1	1	2	3	3	4	5	5	
35		1	2	2	3	4	4	5		
40		1	2	3	3	4	5	5		
45	1	1	2	3	3	4	5	5		
50	1	2	2	3	4	4	5			

* 800A 'N' Frame Instantaneous Trip: 3000A Low, 9,000A High

Ambient Rating (A) **7PBNH31250**

Temp(°C) 750 800 850 900 950 1000 1050 1100 1150 1200 1250 1300 1350 1400 1450

20		1	1	1	2	2	3	3	3	4	4	5	5
25		1	1	2	2	2	3	3	4	4	5	5	5
30		1	1	2	2	3	3	3	4	4	5	5	
35	1	1	1	2	2	3	3	4	4	4	5	5	
40	1	1	2	2	2	3	3	4	4	5	5		
45	1	1	2	2	3	3	3	4	4	5	5		
50	1	1	2	2	3	3	3	4	4	4	5		

* 1250A 'N' Frame Instantaneous Trip: 4000A Low, 10,000A High

Ambient Rating (A) **7PBNH31000**

Temp(°C) 600 650 700 750 800 850 900 950 1000 1050 1100 1150 1200

20			1	1	2	2	3	3	4	4	5	5
25			1	1	2	2	3	3	4	4	5	5
30		1	1	2	2	3	3	4	4	5	5	
35		1	1	2	2	3	3	4	4	5	5	
40		1	1	2	2	3	3	4	5	5		
45		1	1	2	3	3	4	4	5	5		
50		1	1	2	3	3	4	5	5			

* 1000A 'N' Frame Instantaneous Trip: 4000A Low, 10,000A High

Ambient Rating (A) **7PBNH31600**

Temp(°C) 1100 1150 1200 1250 1300 1350 1400 1450 1500 1550 1600

20						1	1	2	2	3
25						1	1	2	2	3
30					1	1	2	2	3	3
35				1	1	2	2	3	3	4
40			1	1	2	2	3	3	4	5
45		1	1	2	2	3	3	4	4	5
50	1	1	2	2	3	3	4	4	5	

* 1600A 'N' Frame Instantaneous Trip: 4000A Low, 10,000A High

POWERSTAR MCCB, downstream device Instantaneous Trip Set at Low

POWERSTAR MCCB Upstream Device - Instantaneous Trip set at High

		GB & GN 16/25kA										JN 25kA										JM 25kA			
		16	20	25	32	40	50	63	80	100	125	16	20	25	32	40	50	63	80	100	125	160			200
GB & GN	16	800 800 1000 1000										800 800 1600 1600 1600										1600	16	GB & GN	
	20	800 800 1000 1000										800 800 1600 1600 1600										1600	20		
	25	800 800 1000 1000										800 800 1600 1600 1600										1600	25		
	32	800 800 1000 1000										800 800 1600 1600 1600										1600	32		
	40	800 800 1000 1000										800 800 1600 1600 1600										1600	40		
	50	800 800 1000 1000										800 800 1600 1600 1600										1600	50		
	63	1000 1000										1600 1600 1600										1600	63		
	80	1000 1000										1600 1600 1600										1600	80		
	100											1600 1600 1600										1600	100		
16 & 25kA	125											1600 1600 1600										1600	125	16 & 25kA	
JN	16											800 800 1600 1600 1600										1600	16	JN	
	20											800 800 1600 1600 1600										1600	20		
	25											800 800 1600 1600 1600										1600	25		
	32											800 800 1600 1600 1600										1600	32		
	40											800 800 1600 1600 1600										1600	40		
	50											800 800 1600 1600 1600										1600	50		
	63											800 800 1600 1600 1600										1600	63		
	80											1600 1600 1600										1600	80		
	100											1600 1600 1600										1600	100		
	125											1600 1600 1600										1600	125		
	160																						160		
	25kA	200																							200
JM	25kA																						All	JM	25kA
FS & FH	25																						25	FS & FH	
	32																						32		
	40																						40		
	50																						50		
	63																						63		
	80																						80		
	100																						100		
	125																						125		
	160																						160		
	200																						200		
35 & 50kA	250																						250	35 & 50kA	
LS & LH	250																						250	LS & LH	
	315																						315		
	400																						400		
	500																						500		
	630																						630		
	32 & 50kA	800																							800
NH	800																						800	NH	
	1000																						1000		
	1250																						1250		
	50kA	1600																							1600

POWERSTAR MCCB Upstream Device - Instantaneous Trip set at High

		FS & FH 35/50kA											LS & LH 32/50kA						NH 50kA					
		25	32	40	50	63	80	100	125	160	200	250	250	315	400	500	630	800	800	1000	1250	1600		
GB & GN	16	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	16	GB & GN	
	20	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	20		
	25	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	25		
	32	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	32		
	40	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	40		
	50	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	50		
	63	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	63		
	80	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	80		
	100	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	100		
16 & 25kA	125	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	125	16 & 25kA	
JN	16	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	16	JN	
	20	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	20		
	25	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	25		
	32	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	32		
	40	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	40		
	50	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	50		
	63	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	63		
	80	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	80		
	100	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	100		
	125	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	125		
	160	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	160		
	25kA	200	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000		200
JM																								JM
25kA	All												2500 3000 4000 5000 6300 8000						8000 9000 10000 10000				All	25kA
FS & FH	25	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	16	FS & FH	
	32	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	20		
	40	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	25		
	50	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	32		
	63	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	40		
	80	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	50		
	100	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	63		
	125	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	80		
	160	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	100		
	200	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	125		
35 & 50kA	250	800	800	800	800	1250	1250	1600	1600	1600	1600	2500	3000	4000	5000	6300	8000	8000	9000	10000	10000	160	35 & 50kA	
LS & LH	250												3000 4000 5000 6300 8000						8000 9000 10000 10000				250	LS & LH
	315												4000 5000 6300 8000						8000 9000 10000 10000				315	
	400												5000 6300 8000						8000 9000 10000 10000				400	
	500												6300 8000						8000 9000 10000 10000				500	
	630												8000						8000 9000 10000 10000				630	
	32 & 50kA	800																		8000 9000 10000 10000				
NH	800																		9000 10000 10000				800	NH
	1000																		10000 10000				1000	
	1250																						1250	
	50kA	1600																						

MOTOR PROTECTION

Motor Rating HP	Approx. Full Load Current (A) KW	@ 415V	G	Direct On Line MCCB Rating/Type				Star/Delta MCCB Rating/Type				N
				J	JM	LS/LH	N	G	J	JM	LS/LH	
10	7.5	14	25	25	–	–	–	25	25	–	–	–
12.5	9	17	25	25	–	–	–	25	25	–	–	–
15	11	21	25	25	–	–	–	25	25	–	–	–
20	15	28	32	32	–	–	–	32	32	–	–	–
25	19	35	40	–	–	–	–	40	40	–	–	–
30	22	41	50	–	50	–	–	50	50	50	–	–
40	30	52	63	–	63	–	–	63	63	63	–	–
50	37	69	–	–	80	–	–	–	80	80	–	–
60	45	80	–	–	100	–	–	–	100	100	–	–
75	55	97	–	–	125	–	–	–	125	125	–	–
100	75	125	–	–	160	–	–	–	160	160	–	–
125	90	156	–	–	–	250	–	–	–	200	–	–
150	112	190	–	–	–	315	–	–	–	–	250	–
175	130	225	–	–	–	315	–	–	–	–	315	–
200	149	255	–	–	–	315	–	–	–	–	315	–
220	160	275	–	–	–	400	–	–	–	–	400	–
250	186	320	–	–	–	400	–	–	–	–	400	–
300	224	375	–	–	–	500	–	–	–	–	500	–
350	261	449	–	–	–	630	600	–	–	–	630	600
400	298	505	–	–	–	630	600	–	–	–	630	600

The figures shown are based on motor starting conditions.
 Direct online 7 x full load current for 5 seconds.
 Star/Delta 4 x full load current for 12 seconds.

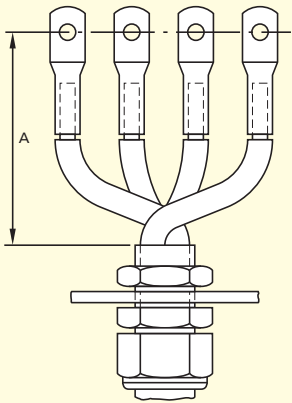
BS5372 SPREADING ROOM

The scope of BS5372 relates to dimensions which should be observed in the design of cable terminations, having uninsulated conductor fittings, for external cables on electrical equipment to enable the cables to be connected satisfactorily.

The standard is based upon the use of compression type conductor terminations and allows for the cores to be crossed within the terminal enclosure because this combination requires more space.

The diagram and table below gives the dimensions quoted by this standard.

4 CORE TERMINATIONS, SPREADING ROOM

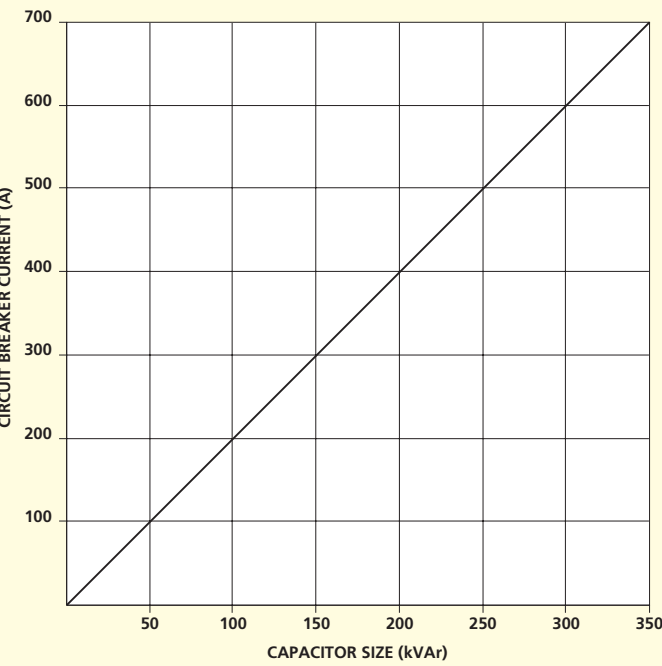


Cable Size (mm ²)	Dimension 'A' (mm ²)
16	103
25	127
35	142
50	167
70	197
95	224
120	245
150	272
185	297
240	333
300	375

CAPACITOR CIRCUIT

Circuit breakers are widely used to protect circuits containing capacitors. Because of circuit harmonics and high “in rush” transients associated with capacitor circuits it is necessary to select a circuit breaker with a current rating not less than 1.5 times the capacitor current.

Powerstar circuit breakers are suitable for off load switching of capacitors only.



CONTACTOR SPECIFICATION

FEATURES	UNITS	C3	C7	C10	C14	C19	C22	C30	C43	C63
Main poles		3	3	3	3	3	3	3	3	3
Auxiliary poles - standard		1	1	1	1	1	0	0	2	2
Rated impulse withstand voltage (Uimp)	Kv	6	6	6	6	6	6	6	6	6
Rated impulse withstand voltage (Ui) - main poles	V	690	690	690	690	690	690	690	690	690
Rated impulse withstand voltage (Ui) - Aux. poles	V	690	690	690	690	690	–	–	690	690
Rated operational current (Ie) 400/415V 50Hz										
AC1 Non-inductive (@45 degrees)	A	20	20	25	25	25	35	35	75	85
AC3 Squirrel cage motors - normal switching	A	5	8.5	8.5	11	14	22	28	40	55
AC4 Squirrel cage motors - plugging/inching	A	5	8.5	8.5	8.3	11	14	22	28	40
Other ratings										
Conventional thermal rating (Ith) open @45 degrees)	A	20	20	25	25	25	35	35	75	85
Star-delta starter	A	–	–	14.4	19	24	–	–	69	95
Transformer primary switching	A	5	5.7	8.3	10	11	–	–	32	36
Tungsten and infra red lamps	A	–	4.5	8.5	10	13	–	–	37	48
Non-compensated high-pressure mercury, sodium vapour and halide lamps	A	–	8.5	8.5	11	18	–	–	44	50
Compensated high-pressure mercury, sodium vapour and halide lamps	A	–	4.5	4.5	7	14	–	–	22	24
Capacitor switching (single bank only) 400/415V	kVAr	–	–	–	–	–	–	–	17	25
Mechanical durability - number of operations	x10 ⁶	10	10	10	10	10	10	10	3	3
Maximum operations per hour (AC3)		3000	3000	3000	3000	3000	3000	3000	3000	3000
Maximum HRC back up fuse links (50kA)										
-Type 2 co-ordination	A	20	20	–	–	–	–	–	–	–
-Type 1 co-ordination	A	25	25	25	25	35	50	50	80	125
Rating of auxiliary poles and relays (AC15)										
- 230/2400V (Built in aux pole)	A	6	6	6	6	6	–	–	6	6
- 400/415V	A	4	4	4	4	4	–	–	4	4
- 500V	A	2	2	2	2	2	–	–	2	2
Operating coil voltage range										
Consumption, ac coil variants										
- pull in	VA	37	32	66	66	66	66	66	130	130
- hold in	VA	5.5	5.5	8	8	8	8	8	10	10
Average operating times, ac coil variants										
- pick up	ms	6-12	6-12	–	–	–	–	–	10-20	10-20
- drop out	ms	5-10	5-10	–	–	–	–	–	8-15	8-15
Cable termination -maximum conductor size										
Main pole terminals										
- single or stranded	mm	2.5	2.5	4	4	4	10	10	35	35
- flexible	mm	2.5	2.5	2.5	2.5	2.5	6	6	25	25
Auxiliary pole terminals - single or stranded	mm	2.5	2.5	2.5	2.5	2.5	–	–	2.5	2.5
- flexible	mm	2.5	2.5	2.5	2.5	2.5	–	–	2.5	2.5
Ambient temperature limits - open	deg C	-20/+60	-20/+60	-20/+60	-20/+60	-20/+60	-20/+60	-20/+60	-20/+60	-20/+60
- enclosed	deg C	-20/+45	-20/+45	-20/+45	-20/+45	-20/+45	-20/+45	-20/+45	-20/+45	-20/+45
Weight	kg	0.16	0.18	0.3	0.3	0.3	0.32	0.32	0.93	0.93

OVERLOAD RELAYS SPECIFICATION

	UNITS	51500/-	55500/-	57500/-	49500/-
Range - Direct on	A	0.3-12.5	0.15-16	0.15-40	0.15-40
- Star delta	A	–	4.1-27.6	4.1-69	23-109
Rated impulse withstand voltage (Uimp)	kV	6	6	6	6
Rated insulation voltage (Ui) - main poles	V	690	690	690	690
- auxiliary poles	V	500	500	500	500
Auxiliary contact rating					
AC15 -230/240V	A	2	3	3	2
- 400/415V	A	1	2	2	1
- 500V	A	0.5	1	1	0.5
Cable termination - maximum conductor size					
Main pole terminals					
- single or stranded	mm	4	16	16	25
- flexible	mm	4	10	10	16
Auxiliary pole terminals					
- single or stranded	mm	2.5	2.5	2.5	2.5
- flexible	mm	1.5	1.5	1.5	1.5
Control circuit fuse maximum (normal or slow)	A	6	10	10	6
Ambient temperature limits - open	deg C	-20/+55	-20/+60	-20/+60	-20/+55
- closed	deg C	-20/+55	-20/+40	-20/+40	-20/+55
Weight	kg	0.16	0.16	0.16	0.3
Maximum HRC back up fuse links (50kA)					
Type 1 or type 2 co-ordination					

HRC BACK-UP FUSE LINKS, OVERLOAD RELAY CHARACTERISTICS & CONTACT LIFE

CEICON C3–C63 OVERLOAD RELAYS

CEICON overload relays should be backed up by HRC fuse links selected from the following table.

When selecting a motor rated fuse link the recommended rating relates to the largest rated current, eg for an application requiring a 50A fuse link, a motor rated fuse link marked 32M50 should be used.

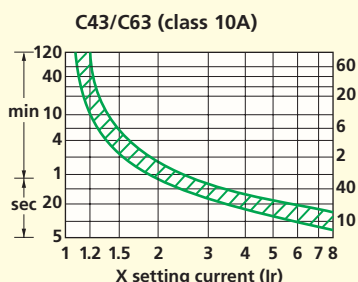
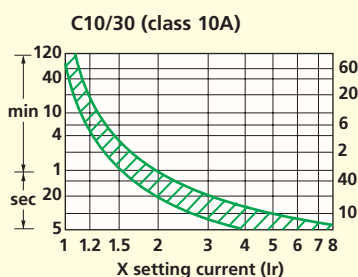
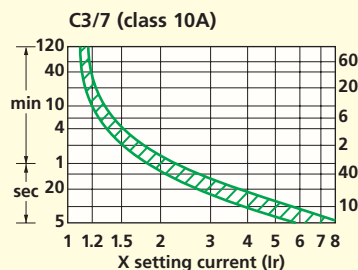
OVERLOAD RELAY			FUSE LINK RATING (A)	
Type	LIST No series	Rating (A)	Type gL	MPSCC
C3/7	51500/DC	0.3–0.45	2	80kA
	51500/EC	0.45–0.67	2	80kA
	51500/FC	0.67–1.0	4	80kA
	51500/GC	1.0–1.5	6	80kA
	51500/HC	1.4–2.1	6	80kA
	51500/IC	1.8–2.7	10	80kA
	51500/JC	2.4–3.6	10	80kA
	51500/KC	3.5–5.0	16	80kA
	51500/LC	4.0–6.0	20	80kA
	51500/MC	5.5–8.5	20	80kA
	51500/NC	8.5–12.5	25	80kA
C10/30	55 or 57 500/BC	0.15–0.25	1	80kA
	55 or 57 500/CC	0.24–0.4	1	80kA
	55 or 57 500/DC	0.38–0.63	1	80kA
	55 or 57 500/FC	0.6–1	2	80kA
	55 or 57 500/GC	0.96–1.6	4	80kA
	55 or 57 500/HC	1.5–2.5	6	80kA
	55 or 57 500/JC	2.4–4	10	80kA
	55 or 57 500/KC	3.8–6.3	16	80kA
	55 or 57 500/LC	6–10	20	80kA
	55 or 57 500/MC	9.6–16	25	80kA
	57500/PC	15–25	50	80kA
	57500/QC	24–40	80	80kA
	57500/RC	40–63	125	80kA
C43/63	49500/AD	13–21	50	80kA
	49500/BD	16–25	50	80kA
	49500/CD	21–32	63	80kA
	49500/DD	25–40	80	80kA
	49500/ED	32–50	100	80kA
	49500/FD	50–63	125	80kA

CEICON OVERLOAD RELAY CHARACTERISTICS

The 3-phase overload tripping characteristics are taken from a cold condition in an ambient temperature of 20°C and are therefore worst case curves.

The tripping times should not be longer than those shown (it will be noted that they apply over a range: curves for individual units will operate within a narrower band).

It should be noted that the best single phasing protection is obtained when the overload relay is operating at or near its maximum rating.



CONTACT LIFE FOR CEICON C3/181 CONTACTORS

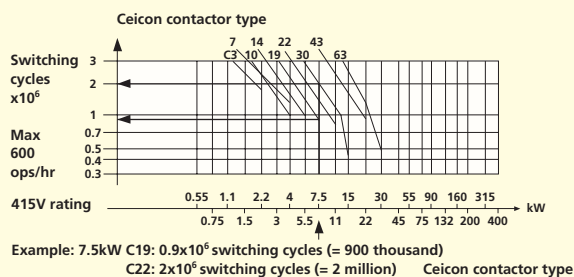
Normal switching conditions for squirrel-cage motors Utilisation category AC3

OPERATING CHARACTERISTICS

Switching on: From standstill 6xFLC of motor
Switching off: While running 1xFLC of motor

TYPICAL APPLICATIONS

Compressors, lifts, mixers, sluices, pumps, escalators, stirrers, barrels, blowers, conveyors, centrifuges, air-conditioning, general drives on manufacturing and processing machinery



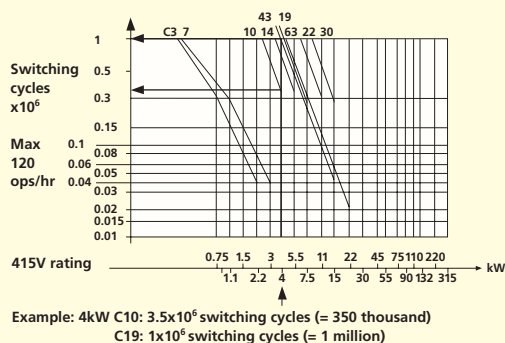
Severe conditions for squirrel-cage motors Utilisation category AC4

OPERATING CHARACTERISTICS

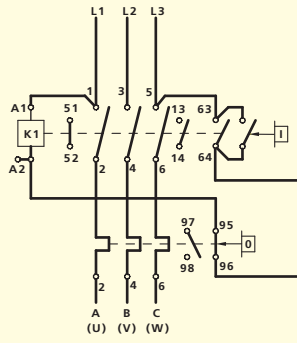
Inching, reverse-power braking, plugging
Switching on: 6xFLC of motor
Switching off: 6xFLC of motor

TYPICAL APPLICATIONS

Printing presses, wire-drawing machines, centrifuges, special drives on manufacturing and processing machinery



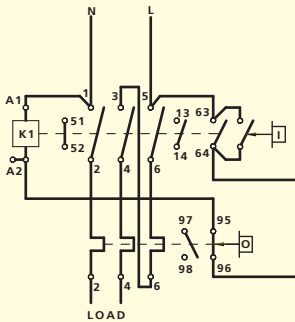
C10-C30 DIRECT-ON STARTER



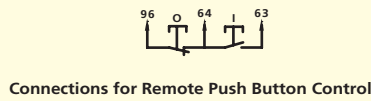
Connections for 3 phase 3 wire supply - as shown above

Connections for 3 phase 4 wire supply

1. Remove connection 1(L1) - A1
2. Connect neutral to terminal A1

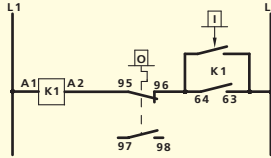


Connections for Single Phase Motors

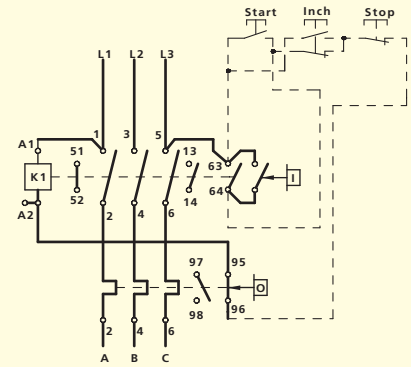


Connections for Remote Push Button Control

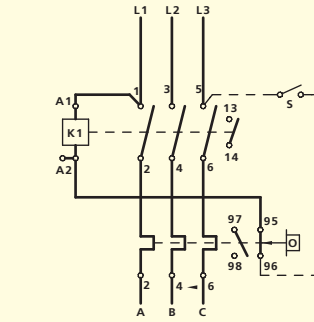
1. Remove connections 96 - 64
2. Connect as illustrated



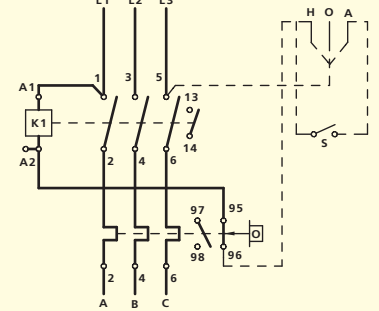
Schematic Diagram



Connections for Remote Start-Inch-Stop Control

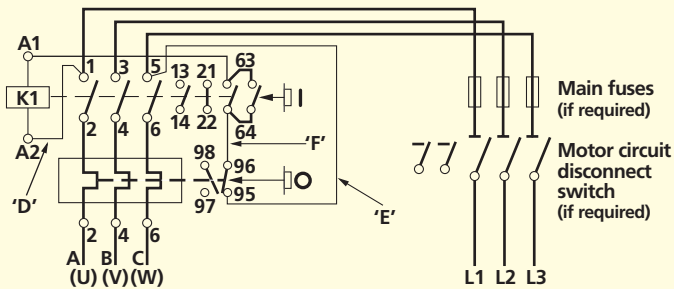


Connections for Remote Pilot Switch Control



Connections for Remote Hand-Off-Auto Control

C43-C63 DIRECT-ON STARTER

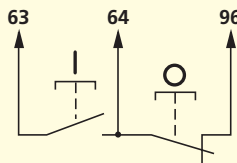


Control circuit supply arrangements

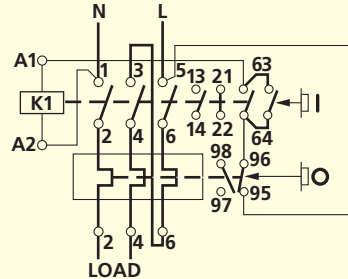
SUPPLY	CONNECTIONS
Phase to phase	Connect as shown
Phase to neutral	Omit connection D Connect neutral to terminal A2 on coil
Separate	Omit connections D & E Connect separate coil supply feed to terminal A2 on coil & terminal 95 on overload relay

Remote push-button control

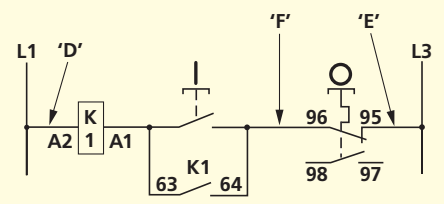
1. Omit connection F
2. Connect as illustrated



Connections for single phase motors

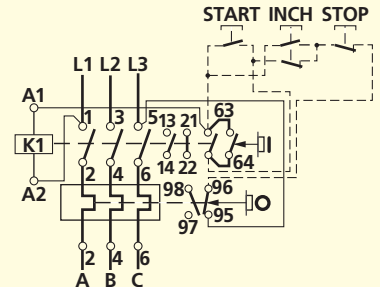
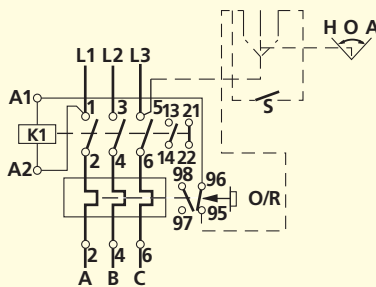
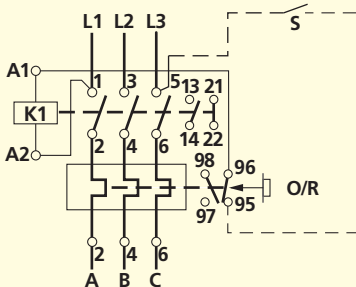


Schematic diagram

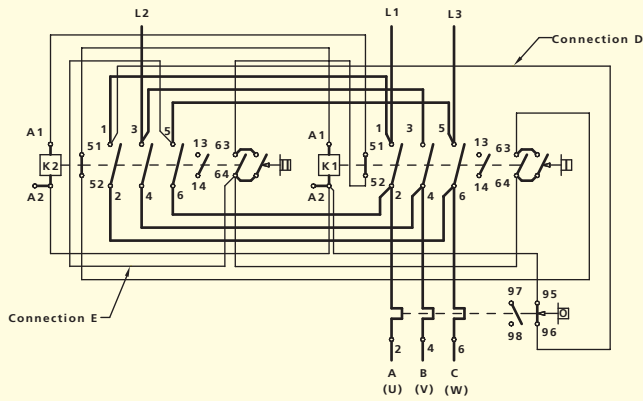


Connections for remote start inch stop control

Connections for remote pilot switch control



C10-C30 REVERSING STARTER



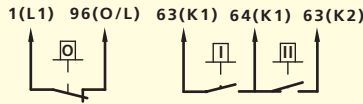
Note:-
Auxiliary contact 13-14 fitted to C10-C19 contactors only as standard.

Control Circuit Supply Arrangements

SUPPLY	CONNECTIONS
Phase to Phase	Connect as shown
Phase to Neutral	Omit connection D Connect neutral to terminal 96
Separate	Omit connections D and E Connect separate coil supply to terminal 96 on overload and terminal 64 on contactor K2

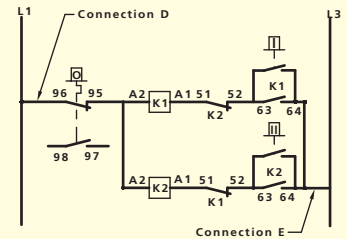
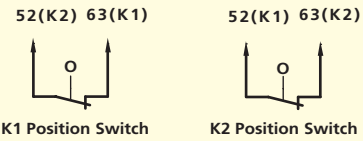
Connections for Remote Push Button Control

- 1 Omit connection D
- 2 Connect as illustrated



Connections if overtravel position switches are required

1. Remove connections 52 to 63
2. Connect as illustrated

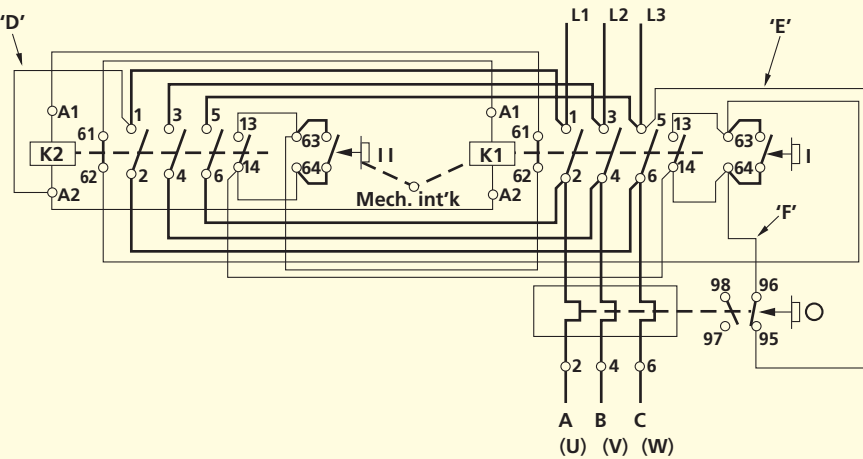


Schematic diagram

Push to Run

A simple push-to-run arrangement can be achieved in either or both directions by changing the top adder start switches.
Contact Technical Services Dept.

C43-C63 REVERSING STARTER



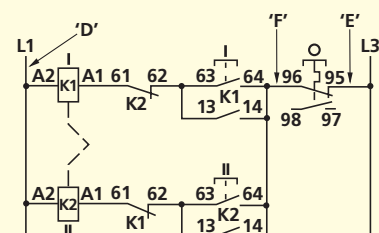
Push-to-run control

A simple push-to-run arrangement can be achieved in either or both directions by removing connections 13 to 63 as appropriate

Control circuit supply arrangements

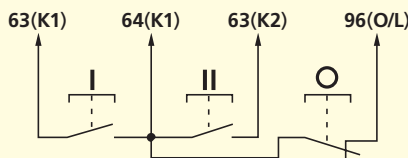
SUPPLY	CONNECTIONS
Phase to phase	Connect as shown
Phase to neutral	Omit connection D Connect neutral to terminal A2 on coil
Separate	Omit connections D & E Connect separate coil supply feed to terminal A2 on coil & terminal 95 on overload relay

Schematic diagram



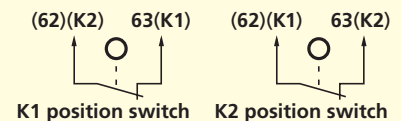
Connections for remote push-button control

- 1 Connection F is omitted
- 2 Connect as illustrated

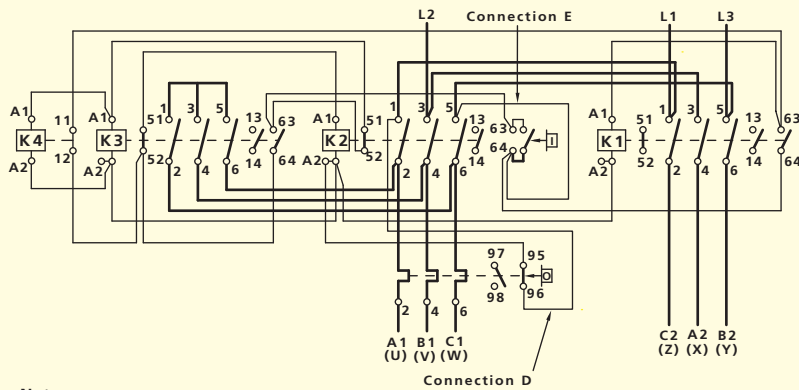


If overtravel position switches are required

- 1 Remove connections 62 to 63
- 2 Connect as illustrated



C19-C30 STAR-DELTA STARTER



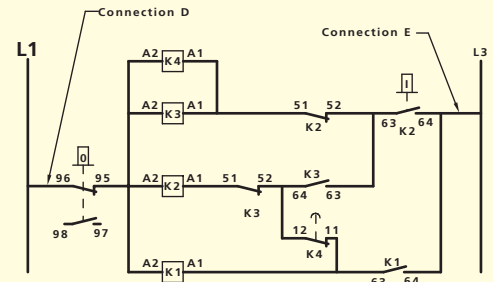
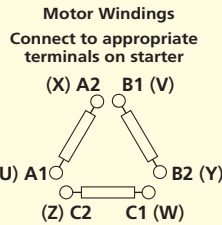
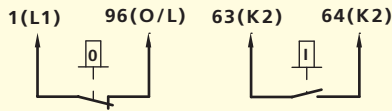
Note:-
Auxiliary contact 13-14 fitted to C10-C19 contactors only as standard.

Control Circuit Supply Arrangements

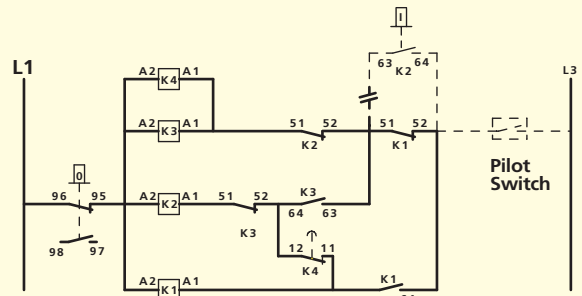
Supply	Connections
Phase to Phase	Connect as shown
Phase to Neutral	Omit connection D Connect neutral to terminal 96
Separate	Omit connections D and E Connect separate coil supply to terminal 96 on overload and terminal 64 on contactor K2

Connections for Remote Push Button Control

- 1 Omit connection D
- 2 Connect as illustrated



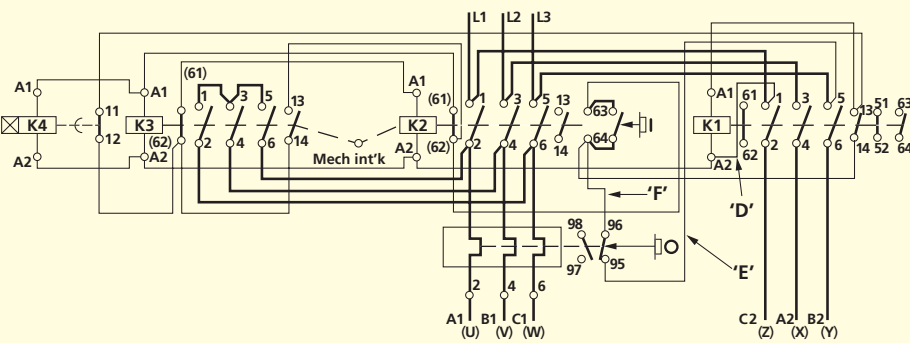
Schematic Diagram (Push Button Control)



Schematic Diagram (Remote Pilot Switch Control)

- 1 Remove connection 63 to 52 on K2 contactor
- 2 Connect between 52 and 64 on K1 contactor and from terminal 51 on K1 contactor to terminal 52 on K2 contactor
- 3 Connect pilot switch in place of connection E
- 4 Set overload relay to hand reset position

C43-C63 STAR-DELTA STARTER

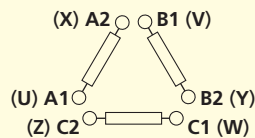


Control circuit supply arrangement

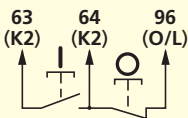
SUPPLY	CONNECTIONS
Phase to phase	Connect as shown
Phase to neutral	Omit connection D Connect neutral to terminal A2 on coil
Separate	Omit connections D & E Connect separate coil supply feed to terminal A2 on coil & terminal 95 on overload relay

Motor windings

Connect to appropriate terminals on starter.

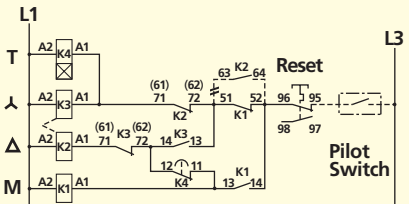


Connections for remote push-button (start/stop) control



- 1 Connection F is omitted
- 2 Connect as illustrated

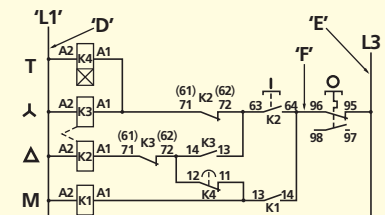
Remote pilot switch control schematic diagram



Connections for remote pilot switch control

- 1 Remove connection 63 to (62) on K2 contactor
- 2 Connect between 52 and 14 on K1 contactor and from terminals 51 on K1 contactor to terminal (62) on K2 contactor
- 3 Connect pilot switch in place of connection E
- 4 Set overload relay to hand reset position

Push-button control schematic diagram



SPECIFICATION R22 PUSH-BUTTON UNITS

Conventional thermal current(<i>I</i> _{th}) - open	12A						
- enclosed	10A						
Rated operating current (AC15)	V	120	240	380	480	500	600
	A	6	3	1.9	1.5	1.4	1.2
Rated operating current (DC15)	V	12	250	440	500	600	
	A	1.1	0.55	0.31	0.27	0.2	
Cable termination - min conductor size	1 x 0.5mm ²						
- max conductor size	2 x 2.5 or 1 x 3.3mm ²						
Back-up protection HRC fuse gG	10A						
Ambient temperature limits - operation	°C -20 to +55						
- storage	°C -30 to +70						
Standards (type tests)	IEC947-5-1, BS EN60947-5-1						

MCS SPECIFICATION DATA

RATING IN AMPS	16A	25A	32A	40A	63A	80A
Rated Insulation Voltage U _i (V)	800	800	800	800	800	800
Dielectric Strength (kV) 50 Hz 1min	3	3	3	3	3	3
Shock Resistance U _{imp} (kV)	8	8	8	8	8	8

OPERATIONAL CURRENT I_e (A)

415 V AC - AC 21 A / AC 21 B	16	25	32	40	63	80
AC 22 A / AC 22 B	16	25	32	40	63	80
AC 23 A / AC 23 B	16	25	32	40	63	80
500 V AC - AC 21 A / AC 21 B	16	25	32	40	63	80
AC 22 A / AC 22 B	16	25	32	40	63	80
AC 23 A / AC 23 B	16	25	32	40	63	80
690 V AC - AC 20 A / AC 20 B	16	20	32	40	63	80
AC 21 A / AC 21 B	16	20	32	40	63	80
AC 22 A / AC 22 B	16	20	32	40	63	80
AC 23 A / AC 23 B	16	25	25	25	50	50

MOTOR POWER (KW) AC 23

415 V AC	7.5	9	11	11	18.5	22
500 V AC	7.5	9	11	15	22	30
690 V AC	11	11	11	18.5	25	30

OVERLOAD CAPACITY

Fuse rating gG	16	25	32	40	63	80
Short circuit current with fuses (kA Rms)	50	50	50	50	50	40
Asymetric short time rating current (kA peak)	6	6	6	6	9	9
Admissible short time current 1 s. (kA Rms)	1.26	1.26	1.26	1.26	1.5	1.5

MAKING & BREAKING CHARACTERISTICS

Breaking capacity (A Rms)						
415 V AC 23 A	128	200	256	320	504	640
Making capacity (A Rms)						
415 V AC 23 A	160	250	320	400	630	800

WITHSTAND

Mechanical (number of operations) x 1000	100	100	100	100	30	30
Electrical (number of operations at 415V AC 23A) x 1000	3	3	3	3	1.5	1.5

CONNECTION

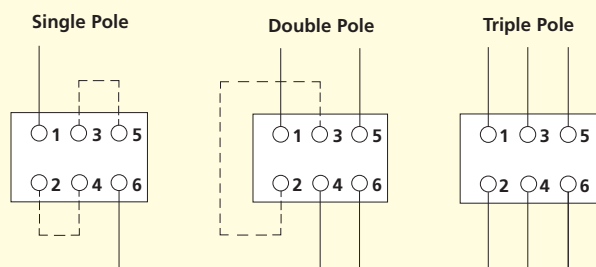
Maximum Cu cable section (mm ²) I _{th}	16	16	16	16	50	50
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INSTALLATION CONTACTORS

CONNECTION DIAGRAMS

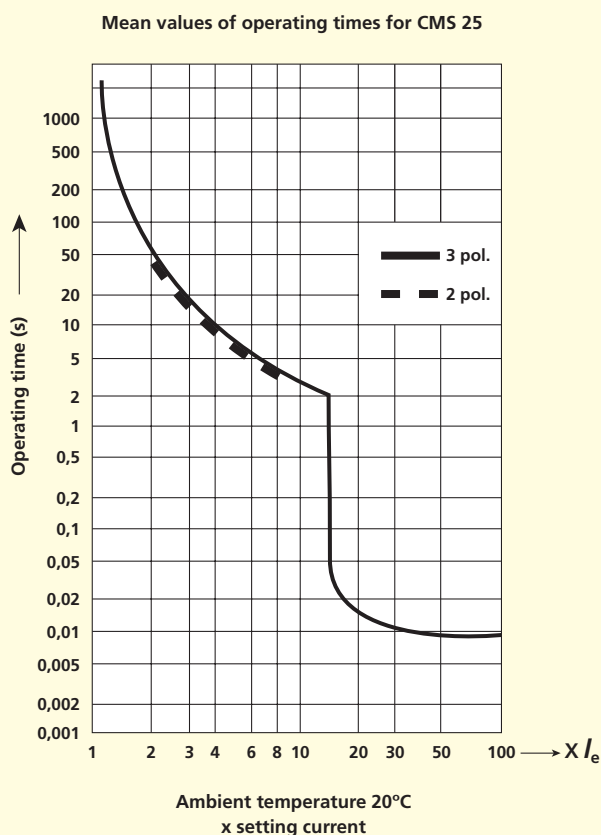
Control circuit

- 230V 50/60 Hz AC
- Rectified Coil



MANUAL MOTOR STARTERS

TIME CURRENT CHARACTERISTIC CMS25



FULL LOAD CURRENTS OF MOTORS (approx)

Please note that the kW and HP ratings given below and elsewhere in this publication are to be used only as a guide to the selection of the required starter. The actual full load current of the motor should be determined to ensure that a starter having a suitably rated overload relay is chosen.

RATING OF MOTOR		ALTERNATING CURRENT (A)					
kW	HP	Single phase 240V	Three phase 220V	380V	415V	440V	500V
0.06	0.08	1.2	0.38	0.22	0.21	0.19	0.16
0.09	0.12	1.5	0.56	0.33	0.30	0.28	0.24
0.12	0.16	1.8	0.76	0.42	0.39	0.37	0.33
0.18	0.25	2.8	1.1	0.58	0.52	0.49	0.46
0.25	0.33	3.2	1.4	0.88	0.71	0.64	0.59
0.37	0.50	3.5	2.1	1.3	1.2	1.1	0.85
0.55	0.75	4.8	2.7	1.5	1.4	1.3	1.2
0.75	1.0	6.2	3.3	2.1	2.0	1.7	1.5
1.1	1.5	8.7	4.9	2.6	2.5	2.3	2.1
1.5	2.0	11.8	6.2	3.6	3.5	3.1	2.6
2.2	3.0	17.5	8.7	5.1	5.0	4.4	3.8
3.0	4.0	20	11.6	6.6	6.5	5.8	5.1
3.7	5.0	24	14.2	8.2	7.5	7.1	6.2
4.0	5.5	29	15.3	8.5	7.7	7.6	6.5
5.5	7.5	36	21	11.5	11	10.3	8.9
7.5	10	45	27	15.5	14	13.5	11.9
11.0	15	70	39	22	21	19.3	16.7
15.0	20	91	53	30	29	27	23
18.5	25	113	64	37	35	32	28
20	27	128	70	40	38	35	31
22	30	135	75	43	40	38	33
25	34	156	85	50	45	42	38
30	40	180	101	60	54	51	44
37	50		124	72	66	62	54
40	54		134	79	77	67	60
45	60		150	85	80	74	65
55	75		181	105	98	90	79
59	80		194	112	105	97	85
75	100		245	140	135	123	106
90	125		292	170	165	146	128
100	134		325	188	179	162	143
110	150			205	200	178	156
129	175			242	230	209	184
132	180			245	236	214	186
147	200			273	259	236	207
160	220			295	278	256	220
184	250			340	325	295	259
200	270			370	350	321	278

DIMENSIONS

	page
WIRING ACCESSORIES	249-252
CABLE MANAGEMENT	253
STARBREAKER	254-255
LOADSTAR - DCP	256
LIFESTAR	257-259
CONTROL EQUIPMENT	260-264

7259

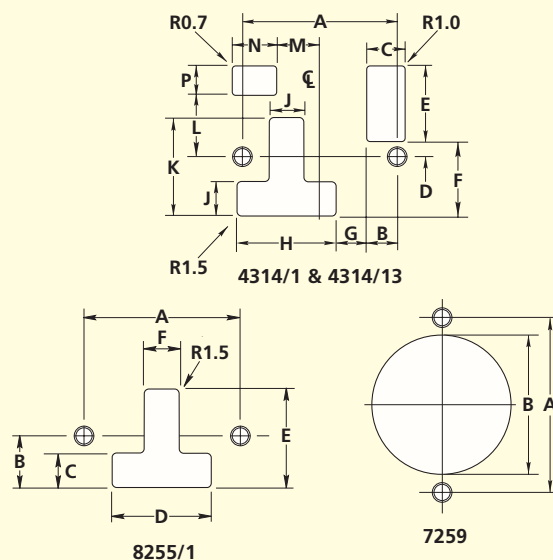
PANEL CUT-OUT DETAILS

CAPITAL 13A SINGLE SOCKET OUTLET INTERIORS

List No	*A	B	C	D	E	F	G	H	J	K	L	M	N	P
4314/1	60.3	12.0	15.4	5.7	28.6	30.4	10.8	38.8	14.2	38.4	-	-	-	-
4314/13	60.3	12.0	15.4	5.7	28.6	30.4	10.8	38.8	14.2	38.4	23.4	16.8	16.6	10.5
7259	60.3	50.0	-	-	-	-	-	-	-	-	-	-	-	-
8255/1	60.3	21.6	14.2	38.9	38.4	14.3	-	-	-	-	-	-	-	-

* Fixing holes drill to accept 4mm countersunk screws.

Max panel thickness 1.6mm (except 7259 – 2.5mm).

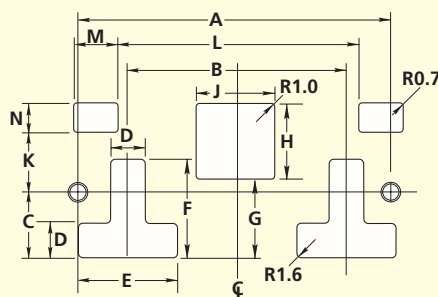


CAPITAL 13A TWIN SOCKET OUTLET INTERIORS

List No	*A	B	C	D	E	F	G	H	J	K	L	M	N
4316/1	120.6	84.4	24.7	14.2	38.8	38.4	30.4	28.6	29.9	-	-	-	-
4316/13	120.6	84.4	24.7	14.2	38.8	38.4	30.4	28.6	29.9	23.4	94.1	16.6	10.5
8257/1	120.6	60.0	21.6	14.3	38.9	38.4	-	-	-	-	-	-	-

* Fixing holes drill to accept 4mm countersunk screws.

Max panel thickness 1.6mm.



CAPITAL 45A DP 'SLIMLINE' COOKER CONTROL UNIT INTERIORS

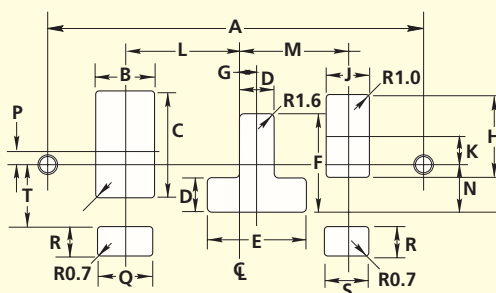
List No	*A	B	C	D	E	F	G	H	J	K	L	M	N	P
4522/1	120.6	21.7	40.2	14.2	38.8	38.4	7.6	30.2	17.0	10.0	40.5	41.6	19.2	5.0
4522/13	120.6	21.7	40.2	14.2	38.8	38.4	7.6	30.2	17.0	10.0	40.5	41.6	19.2	5.0

List No	Q	R	S	T
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4522/13	21.5	10.5	16.6	25.75
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* Fixing holes drill to accept 3.5mm countersunk screws.

Max panel thickness 1.6mm.

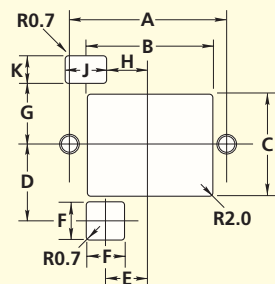


CAPITAL 13A FUSED CONNECTION UNIT INTERIORS

List No	*A	B	C	D	E	F	G	H	J	K
4831/1	60.3	22.0	38.0	-	-	-	-	-	-	-
4832/1	60.3	48.0	38.0	-	-	-	-	-	-	-
4832/13	60.3	48.0	38.0	-	-	-	23.4	16.8	16.6	10.5
4836/1	60.3	22.0	38.0	29.0	17.0	14.0	-	-	-	-
4837/1	60.3	48.0	38.0	29.0	17.0	14.0	-	-	-	-
4837/13	60.3	48.0	38.0	29.0	17.0	14.0	23.4	16.8	16.6	10.5

* Fixing holes drill to accept 4mm countersunk screws.

Max panel thickness 1.6mm.



CAPITAL TELEPHONE & CO-AXIAL OUTLETS

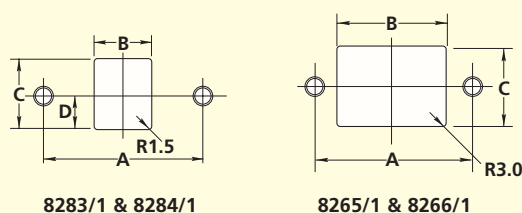
List No	*A	B	C	D	List No	*A	B	C
8283/1	60.3	20.3	23.3	16.2	8265/1	60.3	21	30
8284/1	60.3	20.3	23.3	16.2	8266/1	60.3	41	30

* Fixing holes drill to accept 3.5mm countersunk screws.

Max panel thickness 1.7mm.

* Fixing holes drill to accept 4mm countersunk screws.

Max panel thickness 1.6mm.



All dimensions in mm. General tolerance $\pm 0.13\text{mm}$. These dimensions are a guideline only, more detailed drawings are available upon request.

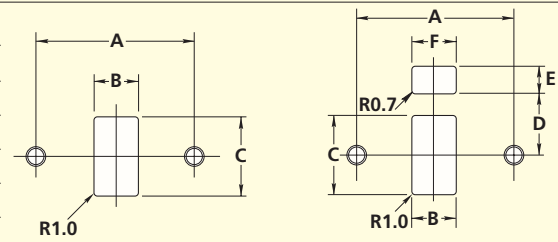
PANEL CUT-OUT DETAILS

CAPITAL 10AX/20A/32A SWITCH INTERIORS

List No	*A	B	C	D	E	F
All 1 gang	60.3	17.1	30.6			
6172/1	60.3	33.4	30.6			
6173/1	60.3	49.7	30.6			
4011/1 & 4012/1	60.3	17.1	30.6	-	-	-
4011/13 & 4012/13	60.3	17.1	30.6	23.7	10.5	16.6

* Fixing holes drill to accept 4mm countersunk screws.

Max panel thickness 2.5mm.



6172/1 & 6173/1

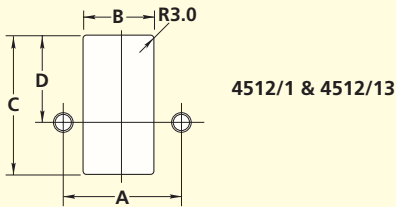
4011/1 & 4012/1
4011/13 & 4012/13

CAPITAL 50A DP SWITCHES

List No	*A	B	C	D
4512/1	52	31	61.3	38.5
4512/13	52	31	61.3	38.5

* Fixing holes drill to accept 3.5mm countersunk screws.

Max panel thickness 2.5mm.



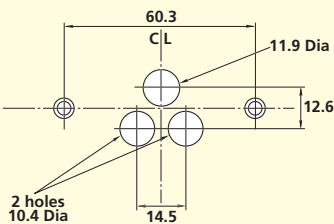
4512/1 & 4512/13

CAPITAL 2A ROUND PIN SOCKET OUTLETS

List No
8075/1

* Fixing holes drill to accept 3.5mm countersunk screws.

Max panel thickness 1.6mm.

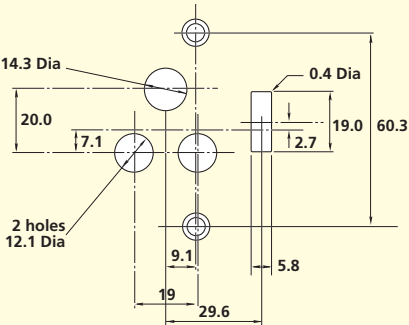


CAPITAL 5A ROUND PIN SOCKET OUTLETS

List No
2240/1

* Fixing holes drill to accept 3.5mm countersunk screws.

Max panel thickness 1.6mm.

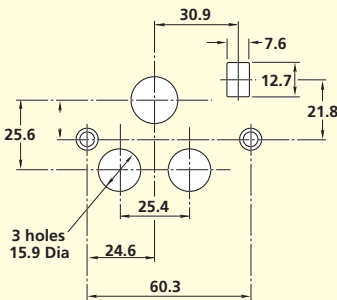


CAPITAL 15A ROUND PIN SOCKET OUTLETS

List No
2272/1

* Fixing holes drill to accept 3.5mm countersunk screws.

Max panel thickness 1.6mm.

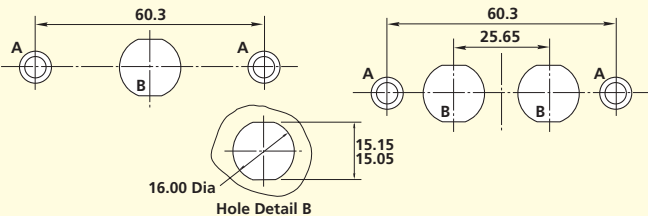


ROCKERGRID TOGGLE SWITCH PLATES

List No
6551/_ _ - 1 gang
6552/_ _ - 2 gang

* Fixing holes drill to accept 3.5mm countersunk screws.

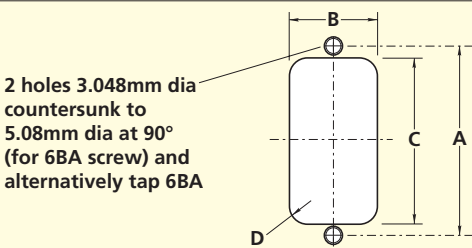
Max panel thickness 1.6mm.



ROCKERGRID PANEL CUT OUT DETAILS

For Rockergrid switches and accessories, single screw fixing to grid, second fixing hole facilitates panel mounting if required. Extra screws to order.

Dimensions	A = 40mm
	B = 18mm
	C = 35mm
	D = 3mm

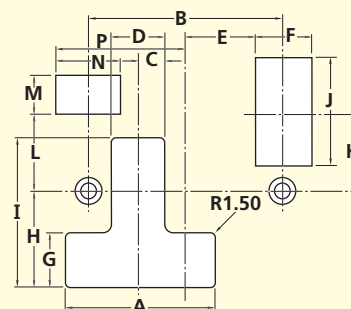


These dimensions are a guideline only, more detailed drawings are available upon request.

PANEL CUT-OUT DETAILS

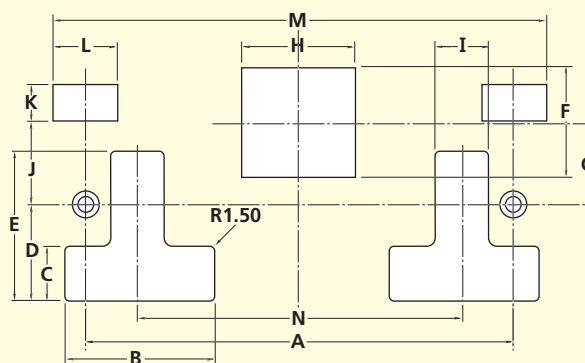
PLATINUM 13A SINGLE SOCKET OUTLET

List No	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P
1314/1	38.4	50.0	12.0	13.8	18.7	14.4	13.8	24.5	38.0	28.5	20.0	-	-	-	-
1314/13	38.4	50.0	12.0	13.8	18.7	14.4	13.8	24.5	38.0	28.5	20.0	19.65	10.30	16.30	33.15



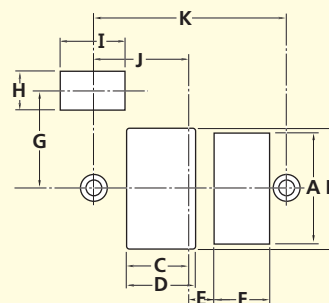
PLATINUM 13A TWIN SOCKET OUTLET

List No	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1316/1	110	38.4	13.8	24.5	38.0	28.5	20.0	29.0	13.8	-	-	-	-	-
1316/13	110	38.4	13.8	24.5	38.0	28.5	20.0	29.0	13.8	20.15	10.3	16.3	127.3	84.4



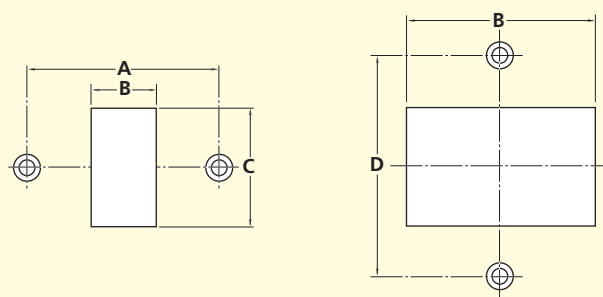
PLATINUM 13A FUSED CONNECTION UNIT

List No	A	B	C	D	E	F	G	H	I	J	K
1832/1	27.7	30.5	1.50	17.75	6.20	14.60	-	-	-	-	50.0
1832/13	27.7	30.5	1.50	17.75	6.20	14.60	24.8	10.2	16.2	25.0	50.0

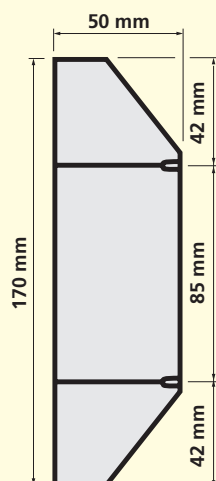


PLATINUM 10AX SWITCH

List No	A	B	C	D
1170/1	50.0	16.5	30.0	-
1096/1	50.0	16.5	30.0	-
1172/1	50.0	32.8	30.0	-
1173/1	-	49.5	30.0	55.8



These Dimensions are a guideline only, more detailed drawings are available upon request.



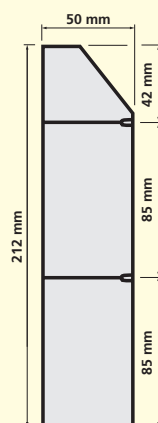
EXTERNAL DIMENSIONS, WARWICK 1

Profile assembly includes:

- Base Unit
- 2 x Angled Covers
- 1 x Main Cover

Overall Size:

- 170mm x 50mm



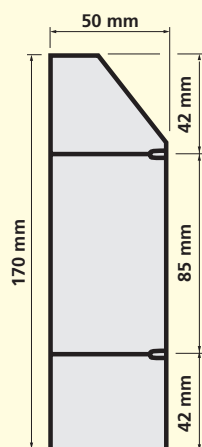
EXTERNAL DIMENSIONS, WARWICK 4

Profile assembly includes:

- Base Unit
- 1 x Base Extension
- 1 x Angled Cover
- 2 x Main Covers

Overall Size:

- 212mm x 50mm



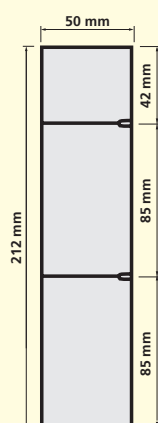
EXTERNAL DIMENSIONS, WARWICK 2

Profile assembly includes:

- Base Unit
- 1 x Angled Cover
- 1 x Main Cover
- 1 x Square Cover

Overall Size:

- 170mm x 50mm



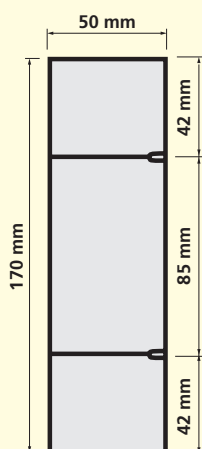
EXTERNAL DIMENSIONS, WARWICK 5

Profile assembly includes:

- Base Unit
- 1 x Base Extension
- 1 x Angled Cover
- 2 x Main Covers

Overall Size:

- 212mm x 50mm



EXTERNAL DIMENSIONS, WARWICK 3

Profile assembly includes:

- Base Unit
- 2 x Square Covers
- 1 x Main Cover

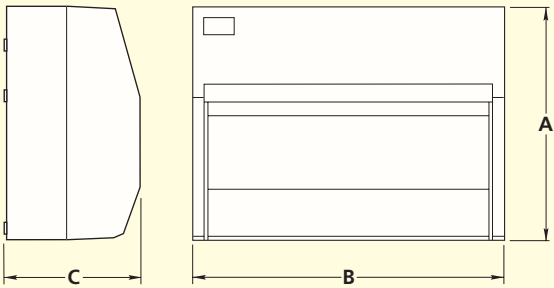
Overall Size:

- 170mm x 50mm

APPROXIMATE DIMENSIONS (mm)

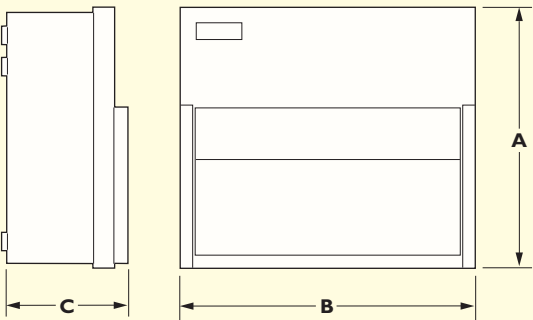
SURFACE ALL-INSULATED ENCLOSURES

List No	A	B	C
404/0A	160	117	102
406/0A	230	190	120
409/0A	230	243	120
412/0A	230	294	120
415/0A	230	344	120
420/0A	230	439	120



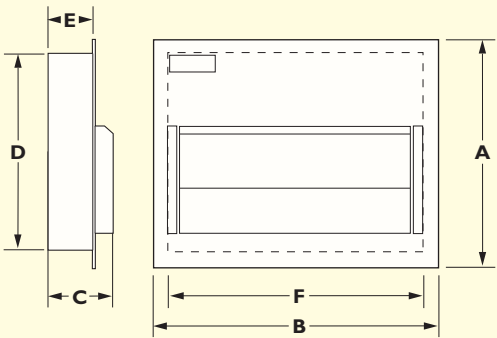
SURFACE METAL-CASED ENCLOSURES

List No	A	B	C
804/0A	177	120	100
806/0A	210	188	122
809/0A	210	242	122
812/0A	210	292	122
815/0A	210	343	122
820/0A	210	439	122



FLUSH METAL-CASED ENCLOSURES

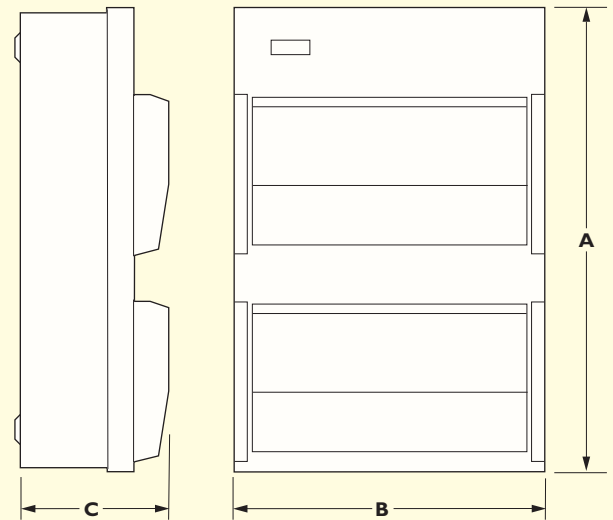
List No	A	B	C	D	E	F
809/0AF	250	281	122	203	90	235
812/0AF	250	332	122	203	90	286
815/0AF	250	393	122	203	90	336
820/0AF	250	478	122	203	90	431



APPROXIMATE DIMENSIONS (mm)

2 BANK SURFACE METAL CASED ENCLOSURES

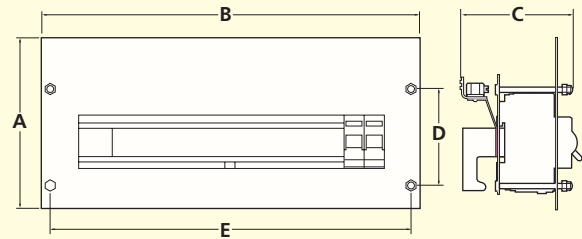
List No	A	B	C
824/2A	450	292	121
830/2A	450	353	121
840/2A	420	438	121



SPINE BACKPLATE ASSEMBLIES (METAL COVER)

List No	A	B	C	D	E
915/0M	152	335	100	85	319

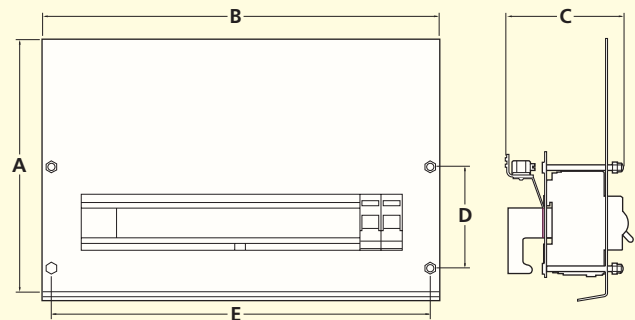
* Allow 4mm for dolly clearance.



SPINE BACKPLATE ASSEMBLIES (WHITE PVC COVER)

List No	A	B	C	D	E
915/0W	221	335	100	85	319

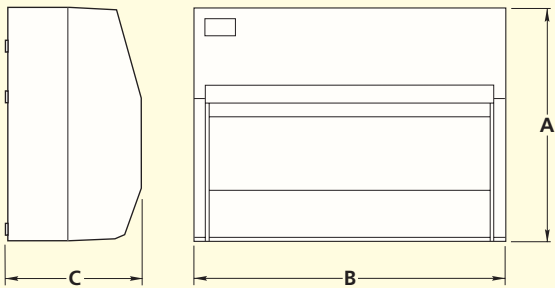
* Allow 4mm for dolly clearance.



APPROXIMATE DIMENSIONS (mm)

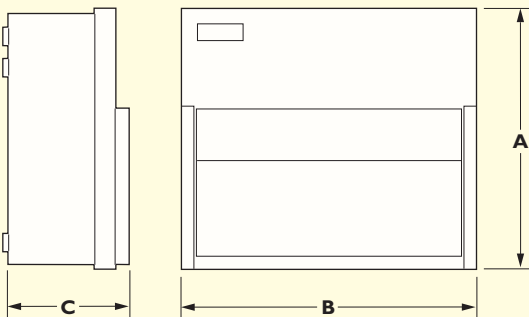
SURFACE ALL-INSULATED ENCLOSURES

List No	A	B	C
18LC2	160	117	102
18LC5	230	190	120
18LC8	230	243	120
18LC11	230	294	120
18LC14	230	344	120
18LC19	230	439	120
18LC9SL	230	294	120
18LC12SL	230	344	120
18LC17SL	230	439	120



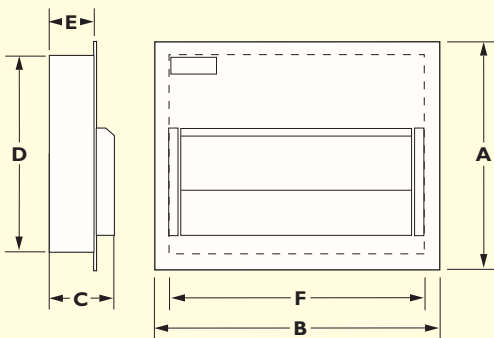
SURFACE METAL-CASED ENCLOSURES

List No	A	B	C
18P-2	177	120	90
18P-5	210	188	122
18P-8	210	242	122
18P-11	210	292	122
18P-14	210	343	122
18P-19	210	439	122
18PRSL09	210	292	122
18PRSL12	210	343	122
18PRSL17	210	439	122



FLUSH METAL-CASED ENCLOSURES

List No	A	B	C	D	E	F
18P-8F	250	286	122	203	90	235
18P-11F	250	335	122	203	90	286
18P-14F	250	387	122	203	90	336
18P-19F	250	482	122	203	90	431
18PRFL09	250	335	122	203	90	286
18PRFL12	250	387	122	203	90	336
18PRFL17	250	482	122	203	90	431

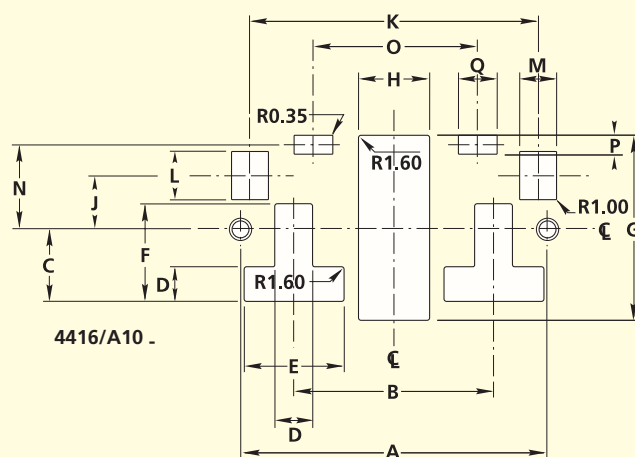


APPROXIMATE DIMENSIONS (mm)

13A 2 GANG SRCD (SAFETY SOCKET)

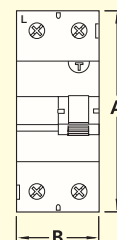
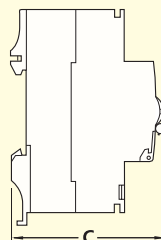
List No	A	B	C	D	E	F	G	H
4416/A10	120.6	79.5	28.45	14.2	38.8	38.4	72.8	27.3

J	K	L	M	N	O	P	Q
20.85	113.1	12.9	13.9	32.7	63.5	7.4	14.5



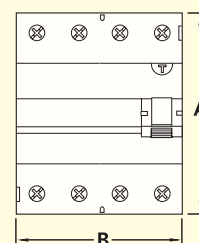
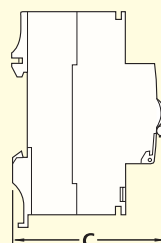
2 MODULE RESIDUAL CURRENT CIRCUIT BREAKERS

List No	A	B	C
223/A010	90	35	75
224/ ---, 226/ ---, 228/ ---	90	35	75
224/A ---, 226/A ---, 228/A ---	90	35	75



4 MODULE RESIDUAL CURRENT CIRCUIT BREAKERS

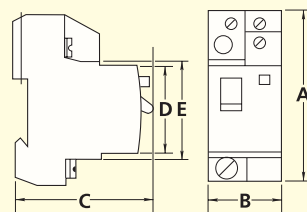
List No	A	B	C
244/ ---, 246/ ---, 241/ ---	90	70	75
244/A ---, 246/A ---, 241/A ---	90	70	75



2 MODULE RCBOs (MCB/RCDs)

List No	A	B	*C	D	E
6132/0 - 0	87	36	75	45	50

* Allow 4mm for dolly clearance.

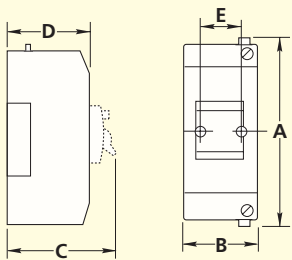


APPROXIMATE DIMENSIONS (mm)

3 MODULE GENERAL PURPOSE ENCLOSURE IP20

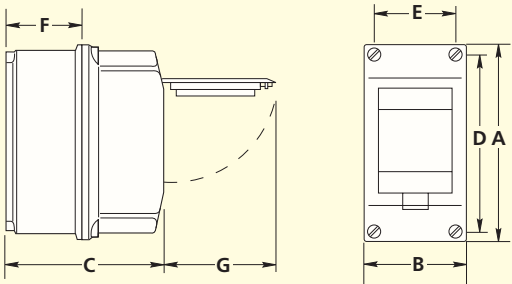
List No	A	B	*C	D	E
744/3	150	60	89	68	38

* Allow 4mm for dolly clearance.



3 MODULE ALL-PURPOSE ENCLOSURE IP65

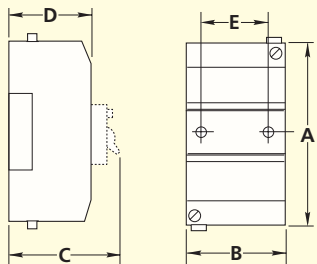
List No	A	B	C	D	E	F	G
CBE3	160	85	114	140	65	69	96



4 MODULE GENERAL PURPOSE ENCLOSURES IP20

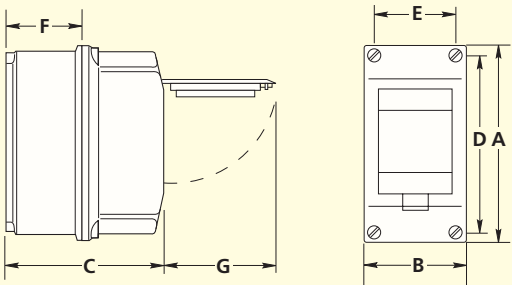
List No	A	B	*C	D	E
744/4	150	77	105	68	56

* Allow 4mm for dolly clearance.



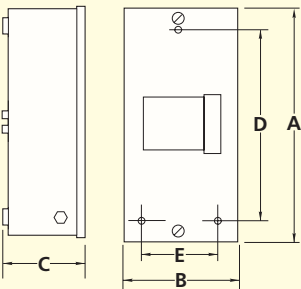
4 MODULE ALL-PURPOSE ENCLOSURE IP65

List No	A	B	C	D	E	F	G
CBE4	160	110	114	140	90	69	96



4 MODULE FABRICATED STEEL ENCLOSURE IP20

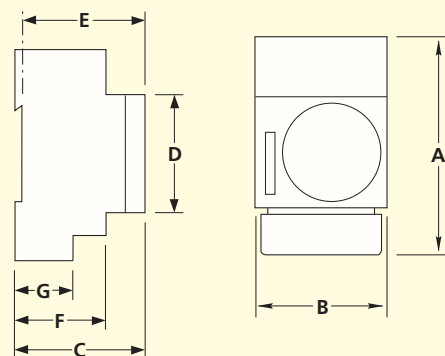
List No	A	B	C	D	E
844/4	223	112	66	184	73



APPROXIMATE DIMENSIONS (mm)

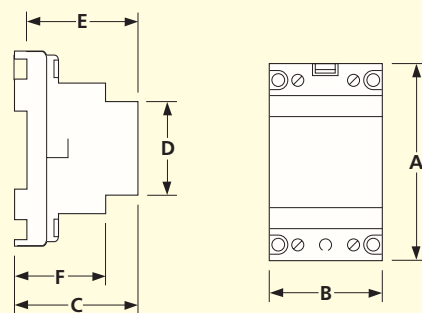
TIME SWITCHES

LIST No	A	B	C	D	E	F	G	H	J	K	L
Analogue											
303/TS24	90	54	66	45	60	46	-	-	-	-	-
303/TQ24	90	54	66	45	60	46	-	-	-	-	-
303/TQ7	90	54	66	45	60	46	-	-	-	-	-
Digital											
302/TD1	86	36	66	45	60	40	-	-	-	-	-
302/TD2	86	36	66	45	60	40	-	-	-	-	-
Staircase											
301/S7	84	18	70	45	60	43	25	-	-	-	-



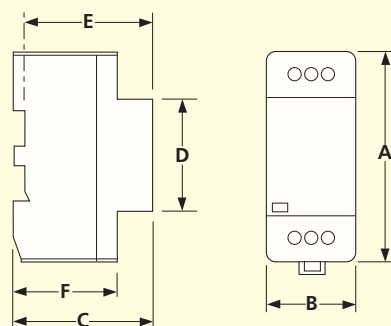
BELL TRANSFORMER

LIST No	A	B	C	D	E	F	G	H	J	K	L
303/B12	85	36	65	45	58	50	-	-	-	-	-
301/B6, B8, & B12	90	17.5	70	45	64	51	-	-	-	-	-



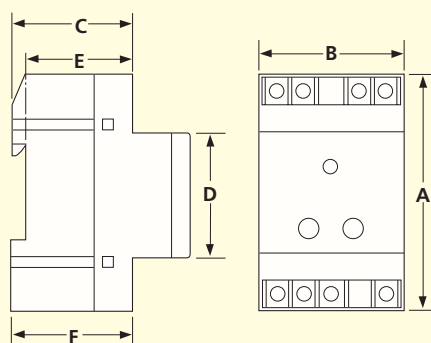
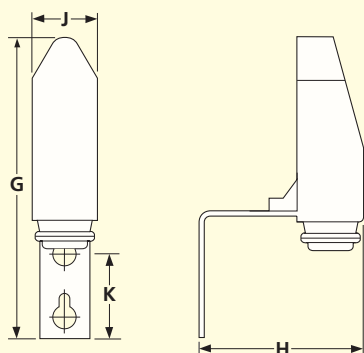
CONTACTORS & IMPULSE RELAYS

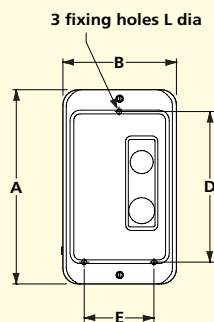
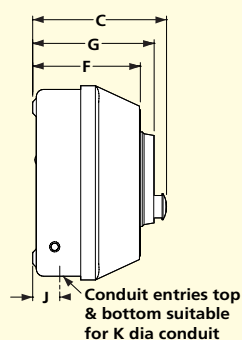
LIST No	A	B	C	D	E	F
CIK22-20	84	17.5	65.5	45	60	48.5
CIK24-30	84	35	65.5	45	60	48.5
CIK24-40	84	35	65.5	45	60	48.5
CIK40-20	84	53.5	65.5	45	60	48.5
CIK40-30	84	53.5	65.5	45	60	48.5
CIK63-31	84	53.5	65.5	45	60	48.5
CIK63-40	84	53.5	65.5	45	60	48.5



TWILIGHT SWITCH

LIST No	A	B	C	D	E	F	G	H	J	K	L
303/P2	86	54	66	45	60	46	116	61	27	25	-

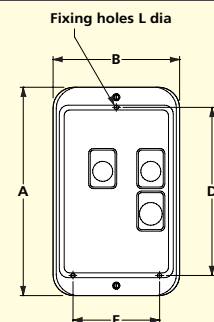
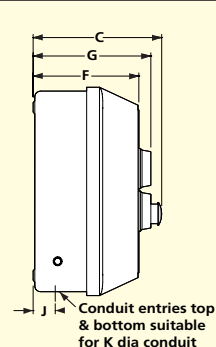




APPROXIMATE DIMENSIONS (mm)

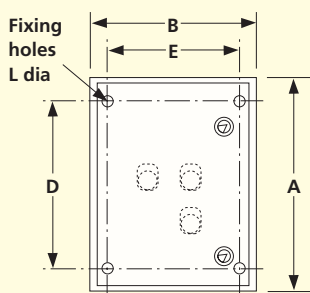
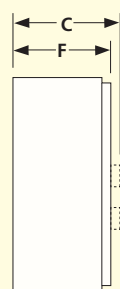
ENCLOSURES FOR CONTACTORS & DIRECT-ON STARTERS

IP66	A	B	C	D	E	F	G	H	J	K	L
C10/14/19 contactor	212	124	—	164	76	117	—	—	29.5	3x20	5.5
C10/14/19 direct-on	212	124	146	164	76	117	132.5	—	29.5	3x20	5.5
C22/30 contactor	212	124	—	164	76	117	—	—	29.5	3x20	5.5
C22/30 direct-on	212	124	146	164	76	117	132.5	—	29.5	3x20	5.5
C43/63 contactor	260	158	—	210	108	132	—	—	27.5	2x20	5.5
C43/63 direct-on	260	158	160	210	108	132	147	—	27.5	2x20	5.5



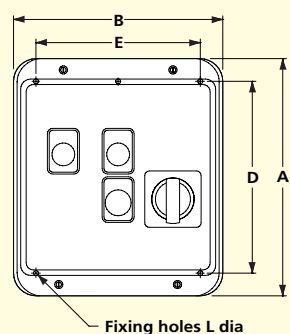
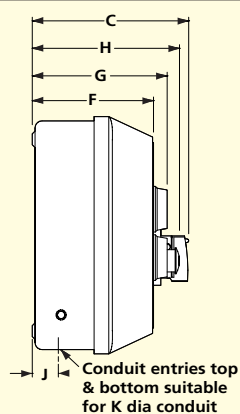
ENCLOSURES FOR REVERSING & STAR-DELTA STARTERS

IP66	A	B	C	D	E	F	G	H	J	K	L
C10/14/19/22/30 reversing	260	158	160	210	108	132	147	—	27.5	2x20 3x5.5	1x25
C19/22/30 star-delta	260	230	161	210	180	133	148	—	28.5	2x20 4x5.5	1x25



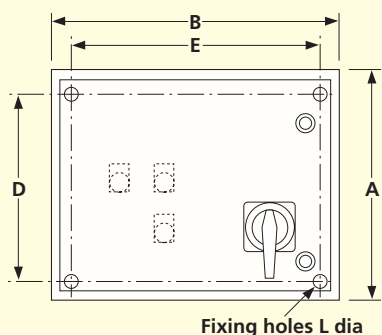
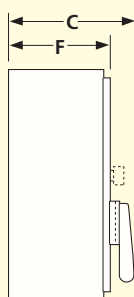
IP55	A	B	C	D	E	F	G	H	J	K	L
C43/63 reversing	400	300	209	350	250	177	—	—	—	—	8
C43/63 star-delta	400	300	209	350	250	177	—	—	—	—	8

Sheet steel enclosures are supplied with removable top and bottom gland plates.



ENCLOSURES WITH MOTOR CIRCUIT SWITCH FOR CONTACTORS, DIRECT-ON, REVERSING & STAR-DELTA STARTERS

IP66	A	B	C	D	E	F	G	H	J	K	L
C10/14/19/22/30 contactor + MCS	212	124	156	164	78	117	—	—	29.5	3x20 3x5.5	
C10/14/19/22/30 direct-on + MCS	212	124	156	164	76	117	132	146	29.5	3x20 3x5.5	
C10/14/19/22/30 reversing + MCS	260	230	171	210	180	133	148	161	28.5	2x20 4x5.5	1x25
C19/22/30 star-delta + MCS	260	332	171	210	282	133	148	161	28.5	2x20	5.5



IP55	A	B	C	D	E	F	G	H	J	K	L
C43/63 reversing	400	500	222	350	450	177	—	—	—	—	8
C43/63 star-delta	400	500	222	350	450	177	—	—	—	—	8

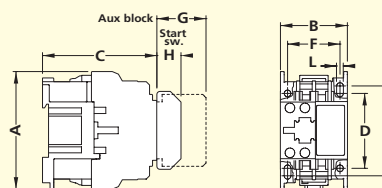
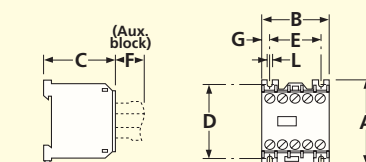
Sheet steel enclosures are supplied with removable top and bottom gland plates.

APPROXIMATE DIMENSIONS (mm)

CONTROL RELAYS & CONTACTORS

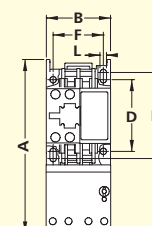
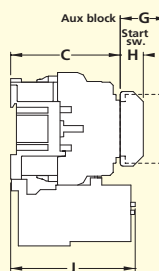
	A	B	C	D	E	F	G	H	J	K	L
C3	62.5	35	49	50	25.5	26	-	-	-	-	4.1
C7	56.5	45	49	50	35	26	-	-	-	-	4.1

	A	B	C	D	E	F	G	H	J	K	L
C10/14/19	78.5	45	76.5	50	60	35	33	16	-	-	4.5
C22/30	78.5	45	86	50	60	35	33	16	-	-	4.5
C43/63	107	65	109	70	-	50	33	16	-	-	4.5



DIRECT-ON STARTERS

	A	B	C	D	E	F	G	H	J	K	L
C7	98	45	49	50	-	35	26	-	87	-	4.1
C10/14/19	121	45	76.5	50	60	35	33	16	87	-	4.5
C22/30	121	45	86	50	60	35	33	16	87	-	4.5
C43/63	170	65	109	70	-	50	33	16	124	-	4.5



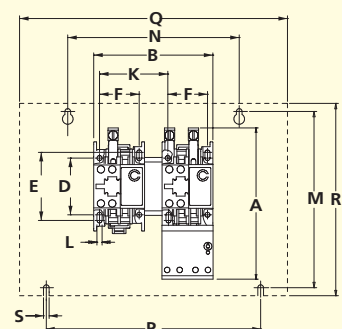
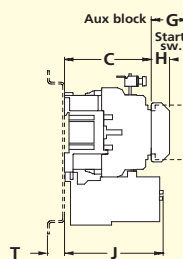
REVERSING STARTERS

For DIN rail or screw mounting

	A	B	C	D	E	F	G	H	J	K	L
C10/14/19	134	105	76.5	50	60	35	33	16	87	60.2	4.5
C22/30	134	105	86	50	60	35	33	16	87	60.2	4.5

Supplied mounted on backplate

	A	B	C	D	E	F	G	H	J	K	L
C43/63	-	-	-	-	-	50	33	-	-	-	-
	M	N	P	Q	R	S	T	U	V		
	210	160	200	250	225	5.3	15	-	-		



STAR-DELTA STARTERS

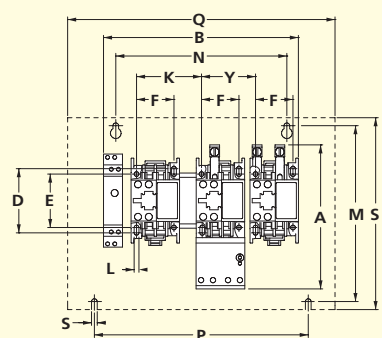
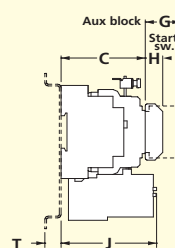
For DIN rail or screw mounting

	A	B	C	D	E	F	G	H	J	K	L
C10/14/19	134	180	76.5	50	60	35	33	16	87	60.2	4.5
	M	N	P	Q	R	S	T	U	V		
	-	-	-	-	-	-	-	56.7	-		

	A	B	C	D	E	F	G	H	J	K	L
C22/30	134	180	86	50	60	35	33	16	87	60.2	4.5
	M	N	P	Q	R	S	T	U	V		
	-	-	-	-	-	-	-	56.7	-		

Supplied mounted on backplate

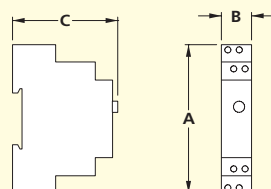
	A	B	C	D	E	F	G	H	J	K	L
C43/63	-	-	-	-	-	50	33	-	-	-	-
	M	N	P	Q	R	S	T	U	V		
	210	160	200	250	225	5.3	15	70	-		



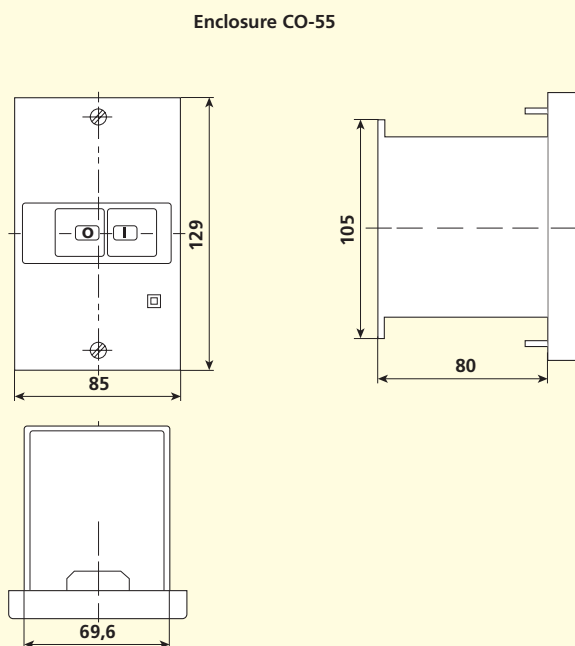
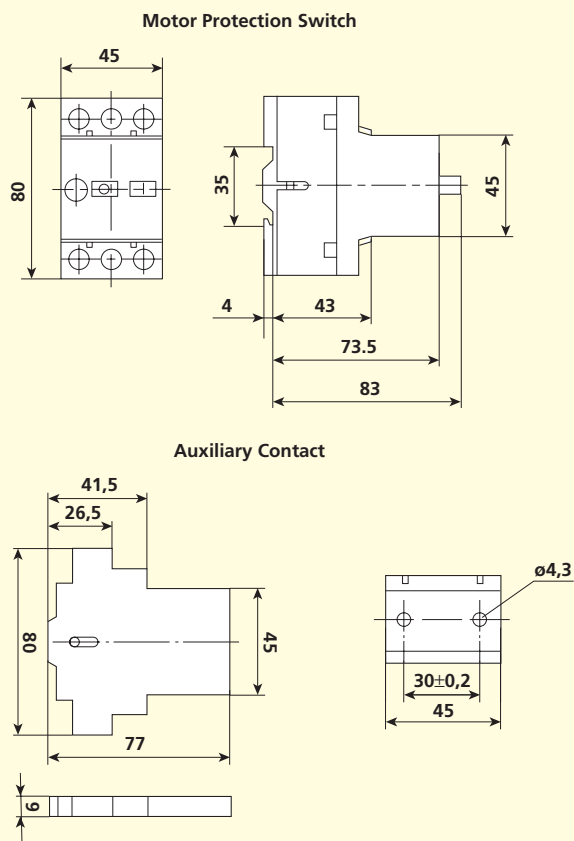
ELECTRONIC TIMER FOR RAIL MOUNTING

	A	B	C	D	E	F	G	H	J	K	L
Electronic timer	86	17.5	61	-	-	-	-	-	-	-	-

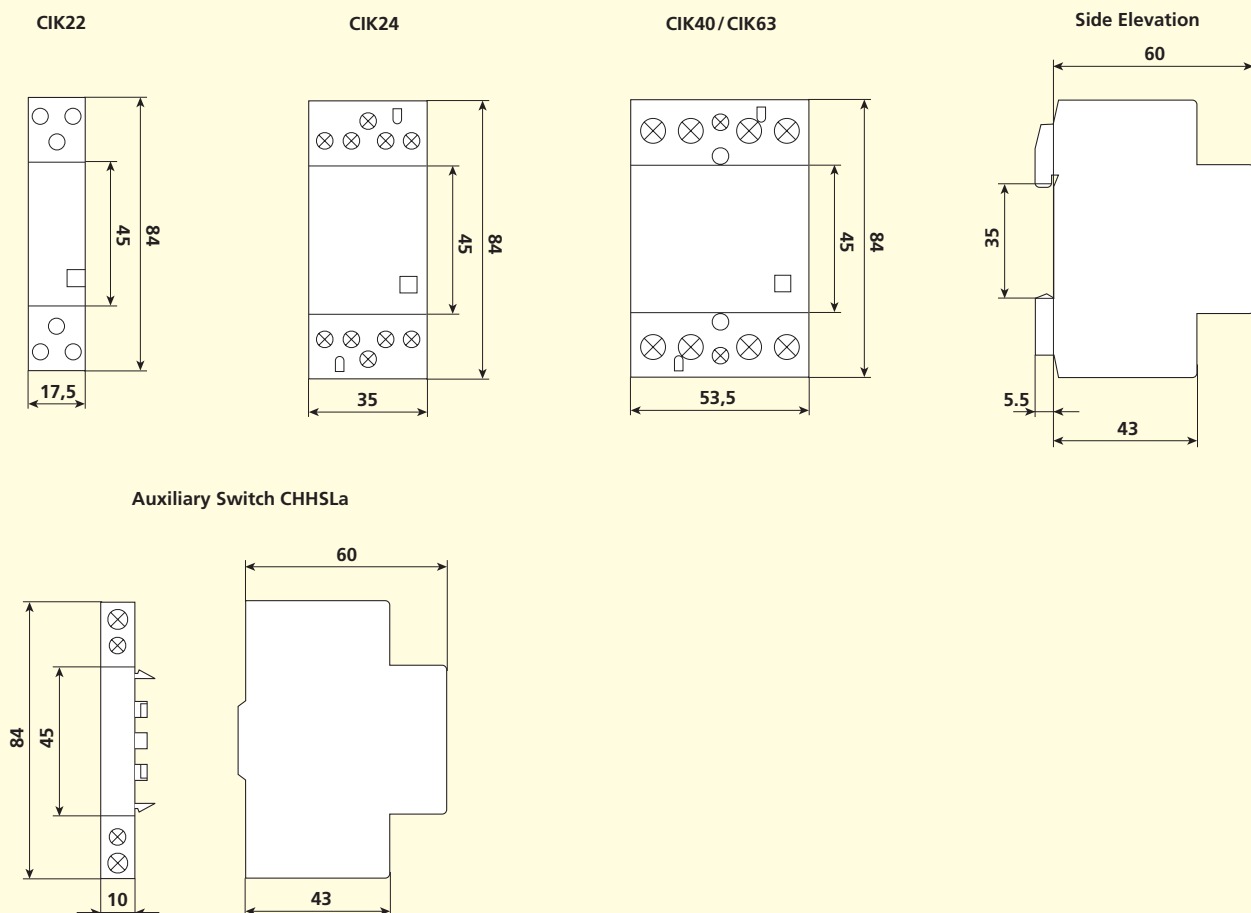
Fits 35mm DIN rail to BS5584: 1978, EN50 022-35.



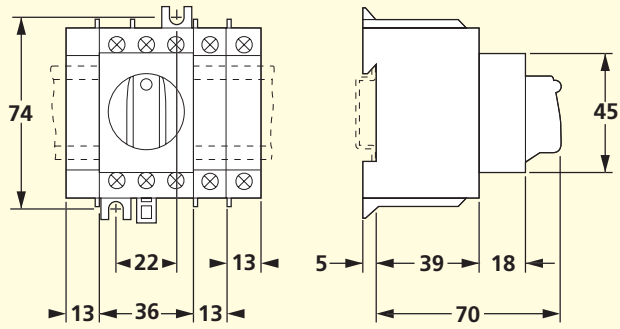
DIMENSIONS CMS25 MANUAL MOTOR STARTER



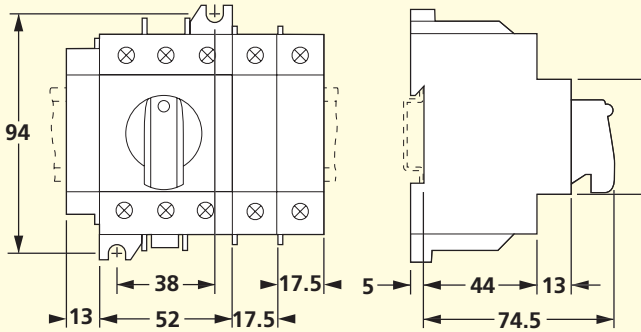
DIMENSIONS CIK SILENT OPERATION INSTALLATION CONTACTORS



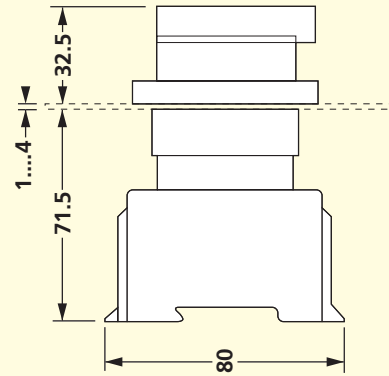
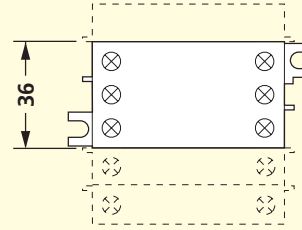
MCS DIMENSIONS



16A - 40A MCS



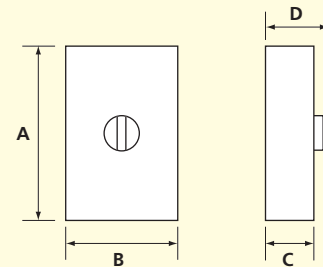
63A - 80A MCS



Door Mounting Details

IP65 ENCLOSURES

BOX SIZE	A	B	C	D
A	130	85	75	105
B	175	125	100	137
C	250	175	100	135
D	310	200	135	170
1	212	124	117	156

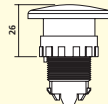


DIMENSIONS R22 PUSH-BUTTON UNITS

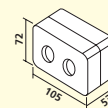
22ER
22MR



22EF
22MF



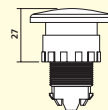
22EV2



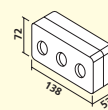
22ERR
22MRR



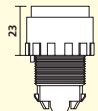
22EFB
22MFB
22EFBL
22MFBL



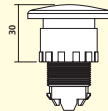
22EV3



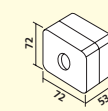
22ER/PP
22MR/PP
22ERL/PP
22MRL/PP



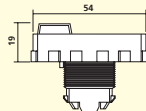
22EFBC
22MFBC



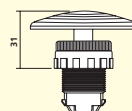
22EV1
22EVK1



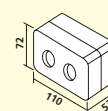
22EPD/0-1
22EPDL/0-1



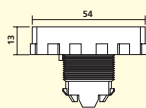
22EFBA
22MFBA



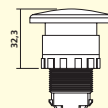
22EVK2



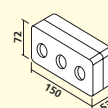
22EPD/F
22EPDL/F



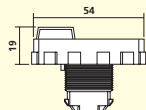
22EFB/PP
22MFB/PP
22EFBL/PP
22MFBL/PP



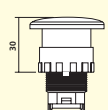
22EVK3



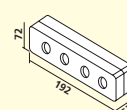
22EPDR/0-1
22EPDLR/0-1



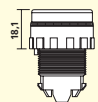
22EFC
22MFC



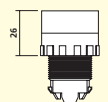
22EVK4



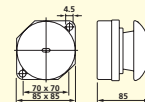
22EL
22ML



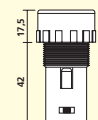
22ERL
22MRL



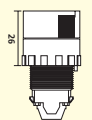
22EV90



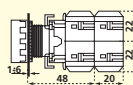
22ELE



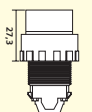
22ES
22MS



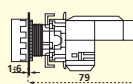
With contact block fitted
22EC
22ECD



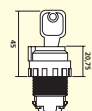
22ESL-L
22MSL-L



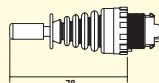
With contact block fitted
22ECT
22ECL



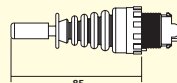
22ESC
22MSC



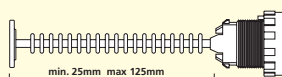
22EM
22MM



22EMB
22MMB



22RESET
22MRESET



NUMERICAL INDEX

- WIRING ACCESSORIES
- CABLE MANAGEMENT
- CIRCUIT PROTECTION
- CONTROL EQUIPMENT

5855

4426/A03BG

61/B16 *708/383*

7094

9562/ES

4836/BZ

4306

WIRING ACCESSORIES

1367 & 1368	67	5005	87	7695	85	4016/3	9
1901	31, 38, 39, 40, 45, 46, 47	5006	87, 89	7697	21, 85	4017/1	9
1902	31, 38, 39, 40, 45, 46, 47	5009	87	7915	23, 57	4020/3BG & 4021/3BG	62
1903	31, 38, 40, 45, 46, 47	5010	87, 89	9040 to 9054	83	4096/2WB	16
1904	31, 38, 39, 40, 45, 46, 47	5017 to 5019	87	9406	83	4096/B & 4096/P	16
1906	38, 40, 45, 47,	5170	17	9561 to 9567	75, 76	4097/B & 4097/P	17
1908	38, 40, 45, 47	5172 & 5173	17	9571 to 9579	74, 76	4130/PU	16
1932	63	5175	17	9700 to 9724	74	4132/PU	16
2041	17	5177	17	100215	85	4190/PU	16
2141	17	5543 & 5544	32	706097	85	4192/PU	16
2147	17	5571 to 5574	66, 70	735023	85	4211/BLANK	10
2161	13	5576	66, 70	735032	85	4214/3BG & 4214/BG	61
2163	13	5801	18	735033	85	4214/BG/RD	63
2167	13	5850 & 5851	18	735038	85	4216/3BG & 4216/BG	61
2330	7	5855 & 5856	18	735050	85	4216/BG/RD	63
2382	7	5860 & 5861	19	1011/1_ _ & 1011/13_ _	42, 49	4304/3D & 4304/D	6
2400	13, 17	6509	85	1012/1_ _ & 1012/13_ _	42, 49	4304/RED & 4304/WH/RD	11
3401	21	6852	21	1017/1_ _	41, 48	4306/3D & 4306/D	6
3410	20	6878	21	1075/1	41, 48	4306/RED & 4306/WH/RD	11
3420	20	6880	21	1091/1 & 1092/1	24, 31, 43, 49	4307/3	6
3422	20	6900	21, 85	1096/1_ _	42, 49	4307/RD	11
3432	20	6901 to 6904	66, 69	1170/1_ _ to 1173/1_ _	42, 49	4314/_ _ & 4314/_ _/6	52
3442	20	6906	67, 69	1250W/_ _	54	4314/1 & 4314/13	79
3443	19	6913	85	1272/1_ _	41, 48	4314/136/_ _ & 4314/16/_ _	80
3450	20	6915	23, 25, 57	1314/1_ _	41, 48	4314/3_ _ & 4314/3_ _/6	52
3467	85	6940	67, 68	1314/13_ _	48	4316/_ _ & 4316/_ _/6	52
3711	85	6988 to 6989	84	1316/1_ _ & 1316/13_ _	41, 48	4316/1 & 4316/13	79
3713	85	7011	8	1340/1	41, 48	4316/136/_ _ & 4316/16/_ _	80
3767	85	7044	7	13NP	8	4316/3_ _ & 4316/3_ _/6	52
4001 to 4004	7	7046 & 7047	7	13NPRD	8	4318/_ _	57
4005 & 4006	83	7060	23, 43, 57	1400W/_ _	54	4406/A03	6
4009	16	7061 & 7062	7	1410/1	43, 48	4416/A03_ _	56
4015 to 4018	9	7063	23, 31, 43, 57	1512/1_ _ & 1512/13_ _	42, 49	4416/A03BG	62
4070	16	7064	23, 57	1522/1_ _ & 1522/13_ _	42, 49	4416/A103	79
4075	11	7065	23, 31, 43, 57	1832/1_ _ & 1832/13_ _	41, 48	4426/A03BG	62
4170 to 4176	16	7067	23, 31, 43, 57	1837/1_ _ & 1837/13	41, 48	4430/6_ _	40, 47, 67, 69
4177 to 4180	17	7069	23, 31, 43, 57	1932/F	63	4430/7_ _	38, 45
4304	6	7071	23, 43, 57	2167/_ _	56	4430/BK & 4430/RD	68
4306	6	7074	23, 57	224/030	76	4450/6_ _	40, 47, 67, 69
4307	6	7080 & 7081	23, 31, 43, 57	2240/1	80	4450/7_ _	38, 45
4425	69	7082	23	2240/BG	62	4450/BK & 4450/RD	68
4430	31, 67, 68, 77	7086	23	2250W/_ _	54	4451/7/WH	38, 45
4435	67, 68	7087	23, 43, 57	2272/1	80	4451/ELT	68
4436	67, 68, 77	7091	24	2272/BG	62	4460/_ _	67, 68, 71,
4440	69	7094	24	2340/_ _	53	4460/6_ _	40, 47, 69
4450	31, 67, 68, 77	7111	8	2372/_ _	53	4460/7_ _	38, 45
4451	67, 68	7172	23, 31, 43, 57	2400/E	13, 17	4460/BO & 4460/WM	71
4460	31, 67, 68, 77	7173	23	2400W/_ _	54	4460/RD	68
4461	67, 68, 77	7174	23, 43	2402/E	13, 17	4461/7/WH	38, 45
4469	67, 68	7176	23	2411/_ _	58	4461/ELT	68
4480	68	7211	8	2551/ELT	68	4469/_ _	67
4489	31, 67, 68, 77	7221	8	3442/CFL & 3443/HALO	19	4489/6_ _	40, 47, 67, 69,
4490 to 4493	67, 68	7255	6	3450/9	20	4489/7_ _	38, 45
4494	67, 68, 77	7257	6	3450/LECFL	19	4490/6_ _	67
4499	67, 68	7259	79	3462/_ _	20	4490/7_ _	38, 45
4500	11	7265 to 7271	25	3463/_ _	20	4490/BK & 4490/RD	68
4506 to 4507	10	7283 & 7284	25	3809BG & 3899BG	63	4491/BK	68
4523	10	7286	25	4011/_ _	55	4493/BK	68
4530	31, 67, 68	7288	25	4011/1 & 4011/13	81	4500/_ _	11
4535	31, 67, 68, 77	7305	25	4011/3_ _ & 4011/31_ _	55	4512/_ _	56
4550	31, 67, 68	7318	25	4012/1 & 4012/13	81	4512/1 & 4512/13	81
4551 to 4553	67, 68	7324	25	4012/3_ _	55	4512/3_ _	56
4674	85	7348	25	4013/3	9	4512/3BG & 4512/BG	62
4827 to 4828	6	7501 to 7503	25	4014/3_ _	55	4520/1 & 4520/31	10
5001 to 5003	87	7505	25	4015/3 & 4015/31	9	4521/1 & 4521/31	10

WIRING ACCESSORIES

4522/1 & 4522/13	80	5545/3WH & 5545/WH	32	6576/_ _	70	7400/D1WH & 7400/D2WH	30
4522/3_ _ & 4522/3_ _/HB	56	5546/WH	32	6576/BZ	66	7400/RD1_ _ & 7400/TD1_ _	37, 42
4523/3	10	5550/_ _	39, 46, 69	6576/HPC	66	7410/RD & 7410/WH	85
4530/6_ _	40, 47, 67, 69	5552/_ _	39, 46, 69	6576/PB	66	7410RD & 7410WH	21
4530/7_ _	38, 45	5561/WH to 5583/WH	32	6576/PSS	66	7411/_ _	37
4530/RD	68	5855/_ _	18	6576/SC	66	7411/WH	31
4535/_ _	67	6017/_ _	55	6577/_ _	58	7501/_ _	33, 42
4535/6_ _	40, 47, 69	6096/_ _	54	6578/_ _	70	7501/2	25
4535/7_ _	38, 45	6096/1	81	6578/BZ	66	7502/_ _ & 7503/_ _	33, 42
4535/RD	68	6125/_ _	54	6578/HPC	66	7504/_ _ to 7506/_ _	33, 41
4550/6_ _	40, 47, 67, 69	6141/_ _ & 6142/_ _	54	6578/PB	66	7504/3_ _	33, 41
4550/7_ _	38, 45	6151/_ _ & 6152/_ _	54	6578/PSS	66	7506/3_ _	33, 41
4550/BK & 4550/RD	68	6170/_ _ to 6175/_ _	54	6578/SC	66	7507/_ _	24, 33, 43
4551/7/WH	38, 45	6170/1 to 6175/1	81	6578/WH	66	7508/_ _ & 7508/3_ _	33, 41
4552/6_ _	40, 47, 67, 69	6551/_ _ & 6552/_ _	70	6579/_ _	70	7509/_ _	24, 33, 43
4552/7_ _	38, 45	6570/_ _	70	6579/BZ	66	7510/_ _ to 7515/_ _	33, 43
4553/6_ _	67, 69	6570/18_ _	70	6579/HPC	66	7516/_ _	40
4553/7_ _	38, 45	6570/18BZ	67	6579/PB	66	7518/_ _	40
4581/BG to 4583/BG	62	6570/18HPC	67	6579/PSS	66	7520/_ _	33, 42
4587/BG	63	6570/18PB	67	6579/SC	66	7520/3_ _	33, 42
4827/3	6	6570/18PSS	67	6579/WH	66	7521/_ _ & 7521/3_ _	37
4827/RD & 4827/RED	11	6570/18SC	67	6580/18BG & 6580/24BG	67, 71	7521/WH	30
4828/3	6	6570/18WH	67	6580/BG	66, 71	7532/_ _	33, 33, 42
4828/RED	11	6570/24_ _	70	6581/1BG & 6581/BG	66, 71	7532/3_ _	33, 42
4831/_ _	52	6570/24BZ	67	6582/1BG & 6582/BG	66, 71	7533/_ _ & 7533/3_ _	41
4831/1	79	6570/24HPC	67	6583/BG to 6589/BG	66, 71	7545/_ _ & 7545/3_ _	33, 42
4831/3_ _	52	6570/24PB	67	6591/_ _ & 6592/_ _	70	7546/_ _	33, 42
4832/_ _ & 4832/_ _/6	52	6570/24PSS	67	6591/BZ & 6592/BZ	67	7546/3_ _	42
4832/1 & 4832/13	79	6570/24SC	67	6591/HPC & 6592/HPC	67	7560/_ _	41
4832/136/_ _ & 4832/16/_ _	80	6570/24WH	67	6591/PB & 6592/PB	67	7561/_ _ to 7565/_ _	33
4832/3_ _ & 4832/3_ _/6	52	6570/BZ	66	6591/PSS & 6592/PSS	67	7575/_ _ to 7579/_ _	33, 43
4836/_ _	52	6570/HPC	66	6591/SC & 6592/SC	67	7579/WH	32
4836/1	79	6570/PB	66	6591/WH & 6592/WH	67	7583/_ _	33
4837/_ _ & 4837/_ _/6	52	6570/PSS	66	6900/1	21	7711/_ _ to 7718/_ _	38
4837/1 & 4837/13	79	6570/SC	66	6900/1RD	21, 85	7765/_ _	37
4837/136/_ _ & 4837/16/_ _	80	6570/WH	66	6900/1WH	85	7765/WH	31
4837/3_ _ & 4837/3_ _/6	52	6571/_ _ & 6571/1_ _	70	6900/2 & 6900/2RD	21, 85	7775/_ _	36
4841/3BG & 4841/BG	61	6571/1BZ	66	6920/_ _	8	7777/_ _	36
4842/3BG & 4842/BG	61	6571/1SC	66	7011/_ _ & 7011/3_ _	37	7783/_ _ & 7784/_ _	37
4846/BG	61	6571/BZ	66	7011/3WH & 7011/WH	30	7783/WH & 7784/WH 31	31
4847/3BG & 4847/BG	61	6571/HPC	66	7012/3WH & 7012/WH	30	7832/_ _	36
5001/CVR	87	6571/PB	66	7015/_ _ & 7015/3_ _	37	7832/3_ _	36
5002/3 & 5002/5	87	6571/PSS	66	7015/3WH & 7015/WH	30	7832/3WH	30
5006/2 to 5006/4	89	6571/SC	66	7017/_ _	37	7832/WH	30
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HOME

1 Contract Terms Quotations & Orders

- 1.1 Unless other terms and conditions are expressly accepted by Electrium by means of a specific written amendment hereto signed by Electrium or a Director of Electrium the contract will be on the terms and conditions set out below ("the Contract Terms") to the exclusion of any other terms and conditions (except those implied in favour of a seller which are not inconsistent with the Contract Terms) whether or not the same are endorsed upon, delivered with or referred to in any purchase order or other document delivered or sent by the Customer to Electrium or by Electrium to the Buyer reference made by Electrium to the Customer's order, specification or like document will not be deemed to imply that any terms or conditions endorsed upon, delivered with or referred to in such order, specification or like document will have effect to the exclusion or amendment of the Contract Terms. No variation, addition or modification of the Contract Terms conditions shall be binding on Electrium unless such variation, addition or modification be agreed to in writing under the signature of a Director of Electrium.
- 1.2 Any quotation is given on the basis that no contract will come into existence until the Customer places an order pursuant thereto. Any quotation is valid for a period of 30 days only from its date provided that Electrium has not previously withdrawn it.

2 Price

The price of Goods supplied hereunder ("the Goods") is exclusive of VAT or any successor tax thereto unless otherwise agreed in writing. The price for the Goods shall be (unless otherwise agreed by Electrium in writing) the list price of Electrium current at the date of despatch and in the case of an order for delivery by instalments the price payable for each instalment shall be Electrium's list price current at the date of despatch for each instalment. All prices are based on standard pack sizes and quantities and Electrium reserves the right to levy an additional charge if such packs must be broken up to fulfil an order. The price of Goods is inclusive of costs of carriage to the Customer's premises in Great Britain and Northern Ireland except on individual orders having a net value calculated by reference to the Company's most recent price list of less than £200 (excluding VAT) which shall be subject to an additional charge of not less than £15.00 (excluding VAT) to cover carriage and packing. The price of Goods is based on the costs of materials, labour, sub-contracts, transport, taxes, duties and currency exchange rates ruling at the date of the quotation. Electrium reserves the right to amend the contract price to take account of any variations in these costs or the imposition of any new taxes or duties occurring from whatever cause before delivery of the Goods.

3 Payment

The due date for payment shall be the last day of the month following the month of despatch of Goods supplied by Electrium. Payment made before the due date for payment shall be subject to a settlement discount of 2.5% VAT is calculated on the discounted value of the invoice and is not subject to settlement discount. Interest at an annual rate of 3% per month will accrue daily and be calculated on a daily basis on overdue accounts from the date of invoice until payment. Notwithstanding any Contract Term allowing the Customer credit payment shall become due and payable to Electrium immediately upon the termination of the contract. The Customer shall not be entitled to exercise any right of set-off or lien or any similar right or claim in connection with the Goods or the price payable therefor.

4 Packing Materials

Packing cases and cartons will be provided free of charge by Electrium. All pallets used shall remain at all times the property of Electrium and are to be returned to Electrium on demand in good condition. Electrium reserves the right to alter the method of packing without reference to the Customer.

5 Damage or Loss in Transit

Electrium will not be liable in respect of any damage or discrepancy, shortage or loss in transit or any claim that the Goods delivered do not otherwise comply with the contract unless the Customer shall have informed the Company in writing, telex or facsimile as follows:

- Within three days of delivery in the event of any damage, discrepancy or shortage.
 - Within seven days of delivery in the event that the Goods do not comply with the contract,
- and
- Within twenty-one days of receipt of the Company's invoice in the event of non-delivery.

Where the Goods are accepted from the Company's carriers they shall be deemed to have been checked by the Purchaser and accepted unless the delivery receipt is signed and endorsed "unexamined" and the packing and its contents are retained for later inspection.

6 Delivery

The place of delivery for Goods shall be the Customer's premises or as otherwise agreed by Electrium in writing. The time of delivery will be as agreed between the parties or if no such agreement has been reached will be within a reasonable time and the Company will be entitled to make delivery by instalments. In no circumstances will Electrium be liable for loss or damage of any kind whatsoever caused directly or indirectly by any delay in the delivery of Goods, nor unless such delay exceeds 180 days will any delay entitle the Customer to terminate or rescind the contract. Notwithstanding any other Contract Term, risk in the Goods shall pass to the Buyer when the Goods are delivered to the Customer or its agent.

7 Title of Goods

Until Electrium has been paid in full for the Goods comprised in this and/or any other contract between the Customer and Electrium, the Customer shall hold the Goods in a fiduciary capacity as bailee for Electrium and:

- the title to, ownership of, and the property in, the Goods shall remain vested in Electrium (notwithstanding delivery of the same and parting of the risk therein to the Customer) until payment in full for all Goods comprised in this and every other contract between Electrium and the Customer has been received by Electrium.
- The Customer shall be in possession of the Goods as Electrium's bailee. If so required the Customer shall store the Goods for Electrium without charge to Electrium separate from any goods which are the property of the Customer and/or any third party and ensure that they are clearly marked and identified as belonging to Electrium.
- Electrium reserves the right to require the Customer to return the Goods and may recover and sell the same at any time. For that purpose Electrium's servants and agents together with all necessary

and appropriate transport shall be entitled to unrestricted access to the Customer's premises and any other location where the Goods are situated to take possession of the Goods and, if necessary, dismantle the Goods from any article or articles to which they may have been attached and to remove the Goods from the Customer's premises.

- Prior to the property in the Goods passing to the Customer Electrium permits the Customer to deliver the Goods to a third party pursuant to a bona fide and arms-length agreement to re-sell the Goods and allows the Customer to convert or incorporate the Goods into or mix the Goods with other goods but such liberty will cease upon the termination of the contract.
- Where Electrium is unable to determine whether any goods are Electrium's Goods the Customer shall be deemed to have sold all goods of the kind sold by Electrium to the Customer in the order in which they were invoiced to the Customer.

8 Descriptive Matter

Descriptive matter, illustrations, dimensions and weights issued by Electrium are to be regarded as being for guidance only and cannot be held as binding in any way. In pursuance of Electrium's policy of product improvement Electrium reserves the right to alter patterns and designs without prior notice.

9 Guarantee

Electrium will make good by replacement (or its option by repair) defects which under proper use appear in the Goods within a period of twelve calendar months after the Goods have been despatched, and which arise solely from faulty design, materials or workmanship provided always that defective Goods have been returned to Electrium and Electrium is notified of the defect or suspected defect immediately the same became known to the Customer. The cost of carriage on such returned Goods and the cost of re-delivery of the repaired or new Goods to be borne by Electrium. Save for the Electrium's control equipment which has been correctly repaired or modified by the use of standard parts supplied by Electrium for such purpose, Electrium excludes all liability in respect of any Goods which have been re-finished and dismantled or altered in any way or if the Goods were improperly installed or connected or if the Customer fails to observe or perform the requirements of any maintenance procedures relating to the Goods. Any Goods replaced will belong to Electrium. Any repaired or replacement Goods will be guaranteed on these terms for the unexpired portion of the twelve month period. In addition, the obligations of Electrium under this condition will not apply if the Customer is in breach of this or any other contract with Electrium. Subject to this condition, all conditions, warranties and representations, whether express or implied (by statute or otherwise) relating to the Goods are hereby excluded insofar as the same can be excluded without such exclusion being void or unenforceable.

Electrium will be under no liability under the contract for any personal injury, death, loss or damage of any kind whatsoever (other than death or personal injury resulting from Electrium's negligence) whether consequential or otherwise including but not limited to loss of profits and Electrium hereby excludes all conditions, warranties and stipulations express or implied, statutory, customary or otherwise which but for such exclusion would or might subsist in favour of the Customer except that such exclusion will not apply to any implied condition that Electrium has or will have the right to sell the Goods when the property is to pass; or when Electrium deals as a consumer (as defined in section 12 of the Unfair Contract Terms Act 1977), any implied term relating to the conformity of the Goods with their description or sample or as to their quality or fitness for a particular purpose. In no circumstances will Electrium or its employees, agents or sub-contractors be liable for any loss or damage of any kind whatsoever (other than death or personal injury resulting from Electrium's negligence) whether consequential or otherwise caused directly or indirectly by any negligence or other tortious act or breach of statutory duty on the part of Electrium or on the part of any of its employees, agents or sub-contractors in connection with or arising out of the manufacture or supply of the Goods or in connection with any statement given or made (or advice not given or made) by or on behalf of Electrium.

10 Patents

Electrium will indemnify the Customer against any claim of infringement of letters patent, registered design, trademark or copyright (existing at the date of the contract) arising from the use or sale of any article or materials supplied by Electrium to the Customer and against all costs and damages which the Customer may incur in any action for such infringement or for which the Customer may become liable in any such action provided always that this indemnity shall not apply to any infringement which arises in connection with any design or instruction issued or given by the Customer to Electrium or to the use of such article or material in a manner or for a purpose outside the UK or to any infringement which is due to the use of such article or material in association or combination with any other article or material not supplied by Electrium and provided also that this indemnity is conditional on the Customer making no admission in respect of such alleged infringement and giving Electrium the earliest possible notice in writing of any claim being made or action threatened or brought against the Customer and on the Customer permitting Electrium at Electrium's expense to conduct any litigation that may ensue and all negotiations for the settlement of a claim.

The Customer warrants that any design or instruction issued or given by the Customer shall not be such as will cause Electrium to infringe any letters patent, registered design, trademark or copyright in the execution of the Customer's order and the Customer agrees to indemnify and keep Electrium indemnified against all liability in the event that such warrant is found to be untrue, misleading or breached.

11 Advice

Advice which Electrium or its agents may give to the Customer shall be given in good faith but Electrium shall not be liable for any loss or damage arising directly or indirectly therefrom or attributable thereto unless contained in any written representation or statement issued directly by Electrium.

12 Safety

The Customer shall ensure that any modifications whatsoever made to the Goods supplied hereunder comply with the requirements of any applicable Safety Regulations. Plugs supplied hereunder shall be so connected as to ensure that they are safe and in full compliance with any applicable Safety Regulations. The Customer shall ensure that any kits supplied hereunder are so assembled as to ensure that the assembled product is safe and complies with the requirements of any applicable Safety Regulations. Without prejudice to the above provisions, where Electrium provides the Customer with information about the use for which Goods are designed and have been tested and about any conditions to ensure that when put to that use they would be safe and

without risk to health, the Customer shall use the Goods accordingly and comply with the said conditions. To be properly used the Goods shall be selected, installed, commissioned and maintained in accordance with good engineering practice and under the supervision of suitably qualified personnel.

13 Statutory and other Regulations

If the cost to Electrium of performing its obligations under any contract shall be increased or reduced by reason of making or amendment after the date of its quotation of any law or of any other order, regulation or bye-law having the force of law that shall affect the performance of Electrium's contractual obligations, the amount of such increase or reduction shall be added to or deducted from the contract price as the case may be.

14 Cancellation

If the Customer cancels, extends or delays or purports to cancel, extend or delay the contract or part thereof, or fails to take delivery of any Goods at the time agreed (if any) or if no time is agreed within a reasonable time, then the Customer will be liable (without prejudice to any other rights of Electrium to claim damages) to indemnify and keep indemnified Electrium against any resulting loss, damage or expense incurred by Electrium in connection with the supply or non-supply of the Goods including the cost of any material, used or intended to be used therefor and the cost of labour and other overheads including a percentage in respect of profit. If Electrium is unable (whether temporarily or permanently) to procure any services or goods necessary to enable it to supply the Goods or if the supply of the Goods is prevented or hindered by reason of any cause beyond Electrium's reasonable control which for the avoidance of doubt and without prejudice to the generality of the foregoing shall include governmental action, war, riot, civil commotion, fire, flood, epidemic, labour disputes including labour disputes involving the work force or any part thereof of Electrium, restraints or delays affecting shipping or carriers, currency restrictions and Act of God, Electrium may cancel the contract by notice in writing to the Customer so far as it relates to Goods not then supplied or work not then done and such cancellation shall not give rise to any claims by the Customer provided that the Customer shall remain liable to pay for Goods delivered prior to the date of such cancellation.

15 General

- The headings herein are inserted for convenience only and shall not affect the interpretation of the Contract Terms.
- Should any clause contained in the Contract Terms be held to be invalid such invalidity will not affect the validity of the remaining clauses.
- Any dispute arising out of this contract or the Contract Terms shall be referred in writing to an independent arbitrator who shall be appointed by agreement between Electrium and the Customer or in default of agreement by the President for the time being of the Institute of Electrical Engineers whose decision shall be binding on both parties.
- The formation, interpretation and operation of the contract will be subject to English Law and the Customer submits himself to the non-exclusive jurisdiction of the English Courts.
- Electrium will be entitled to assign sub-contract or sub-let the contract or any part thereof.
- Failure by Electrium to enforce any of the Contract Terms will not be construed as a waiver of any of its rights hereunder.

EXPORT

All Contract Terms set out above apply to overseas transactions (ie sales outside the United Kingdom), where appropriate, except the following:

- 1.2 Any quotation is given on the basis that no contract will come into existence until Electrium despatches an acknowledgement of order to the Customer. Any quotation is valid for a period of 30 days only from its date provided that Electrium has not previously withdrawn it.

2 Price

The price of Goods includes the cost of packing for shipment FOB British Port or Airport except that orders having a net value of £500 and below shall be subject to an additional charge to cover packing and carriage. No allowance will be made in lieu of transportation if the Customer accepts delivery at the factory, container depot or at any other inland destination or provides his own transportation or where packing of a lesser standard is required.

3 Payment

First orders from overseas Customers should be accompanied by bank references to enable payment terms to be agreed. Unless otherwise agreed in writing, payment is due on delivery. Goods shall be deemed to have been delivered when the invoice has been presented in the United Kingdom accompanied by the appropriate documents of title.

16 Others

The Goods will be sold FOB British Port or Airport and the Seller will be under no obligation to give the Buyer notice as specified in Section 32(3) of the Sale of Goods Act 1979. CIF or C & F arrangements can be made if requested by the Customer, at cost, and Electrium will, on receipt of Customer's indemnity, take all reasonable steps to recover from the Underwriters any loss or damage for which they may be liable. The Customer shall be solely responsible for complying with all legislation and regulations governing the importation of the Goods into the country of destination including import and export licences and the payment of duties thereon including but not limited to customs duties and VAT. The Customer shall indemnify Electrium against all costs claims and demands arising out of any breach by the Customer of this Agreement.

CONDITIONS OF USE

The products listed in this publication should be installed by suitably qualified personnel in accordance with the requirements of relevant legislation, regulations (including the IEE Wiring Regulations) and the accepted practice in the industry. Any further information which may be required about the use for which any specific product has been designed and tested, or about conditions of use, is available on request. In pursuance of our policy of continuing product improvement, equipment described in this publication is subject to change without notification.



Electrium



ELECTRIUM SALES LIMITED A SIEMENS COMPANY
Commercial Centre, Lakeside Plaza, Walkmill Lane, Bridgtown, Cannock WS11 0XE.
eMail: info@electrium.co.uk Web: www.electrium.co.uk

UK SALES

Telephone: 01543 455010 Facsimile: 01543 455011 eMail: crabtree.sales@electrium.co.uk

TECHNICAL

Telephone: 01543 438310 Facsimile: 01543 438311 eMail: crabtree.technical@electrium.co.uk

EXPORT SALES

Telephone: +44 1543 455049 Facsimile: +44 1543 455048 eMail: export@electrium.co.uk

DUBAI OFFICE

Telephone: +971 4 3660395 Facsimile: +971 4 3660019

DUBLIN OFFICE

Telephone: +353 1 4513303 Facsimile: +353 1 4513242

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