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Electronics



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ENERGY DIVISION

DIN Panel Meters

Moving Iron AC Ammeters and Voltmeters with Selector Switch

Crompton Instruments, a business unit of Tyco Electronics, is pleased to add the new moving iron AC ammeter and voltmeter with selector switch to its comprehensive range of panel meters. These 96mm and 72mm units offer Class 1.5 true RMS measurement of three-phase AC voltage or current with various switch notation options. The integral selector switch eliminates the necessity for a separate selector switch, saving valuable panel space and providing installation benefits. Both ammeters and voltmeters feature a slide-in dial, scaled for VT or CT values to suit application primary values.

These robust moving iron meters incorporate a clapper type repulsion design which utilises a pivot, hairspring and jewel movement. The bottom jewel is oil filled to provide damping while the top is sprung for resilience. Voltmeters are manufactured with internal voltage dropper resistors.



Product Codes – AC Ammeters with Selector Switch

Code	Case size	Full scale deflection	Switch notation
E243-02E-G-LS**-C7-AMP3	72mm	0/5 A AC	OFF L1 L2 L3
E244-02E-G-LS**-C7-AMP3	96mm	0/5 A AC	OFF L1 L2 L3
E243-022E-G-LS**-C7-AMP3	72mm	0/5/10A AC	OFF L1 L2 L3
E244-022E-G-LS**-C7-AMP3	96mm	0/5/10A AC	OFF L1 L2 L3
E243-02E-G-LA**-C7-AMP3	72mm	0/1 A AC	OFF L1 L2 L3
E244-02E-G-LA**-C7-AMP3	96mm	0/1 A AC	OFF L1 L2 L3
E243-022E-G-LA**-C7-AMP3	72mm	0/1/2A AC	OFF L1 L2 L3
E244-022E-G-LA**-C7-AMP3	96mm	0/1/2A AC	OFF L1 L2 L3

**Insert applicable CT primary value.

Product Codes – AC Voltmeters with Selector Switch

Code	Case size	Full scale deflection	Switch notation	3-Phase
E243-02Q-G-PM**-C7-SW6	72mm	0/120 V AC	OFF L1L2 L2L3 L3L1	3W
E243-02Q-G-PZ**-C7-SW6	72mm	0/150 V AC	OFF L1L2 L2L3 L3L1	3W
E243-02Q-G-PZ-PZ-C7-SW6	72mm	0/150 V AC	OFF L1L2 L2L3 L3L1	3W
E243-02Q-G-RX-RX-C7-SW6	72mm	0/300 V AC	OFF L1L2 L2L3 L3L1	3W
E243-02Q-G-SF-SF-C7-SW3	72mm	0/500 V AC	L1L3 L1L2 L2L3 L3N L2N L1N	4W
E243-02Q-G-SJ-SJ-C7-SW3	72mm	0/600V AC	L1L3 L1L2 L2L3 L3N L2N L1N	4W
E244-02Q-G-PZ**-C7-SW6	96mm	0/150 V AC	OFF L1L2 L2L3 L3L1	3W
E244-02Q-G-PZ-PZ-C7-SW6	96mm	0/150 V AC	OFF L1L2 L2L3 L3L1	3W
E244-02Q-G-RX-RX-C7-SW6	96mm	0/300 V AC	OFF L1L2 L2L3 L3L1	3W
E244-02Q-G-SF-SF-C7-SW3	96mm	0/500 V AC	L1L3 L1L2 L2L3 L3N L2N L1N	4W
E244-02Q-G-SF-SF-C7-SW3	96mm	0/600V AC	L1L3 L1L2 L2L3 L3N L2N L1N	4W

**Insert applicable VT primary and secondary value, e.g. 15kV/110V.

Product Codes – Options

Description
Non reflecting glass window
Polycarbonate shatterproof window
Red supplementary pointer, externally adjustable
Red index mark (triangle)

Please state any required options at time of ordering.

Features

- Integral selector switch
- True RMS measurement
- Slide-in dials
- Scaled for customer VT or CT primary values
- DIN 72 and DIN 96 models
- Terminal cover as standard
- Shock resistant sprung pivot and jewel movement
- x2 overload ammeters

Benefits

- Space and time saving
- Competitive cost
- Local indication
- Ease of installation
- Low maintenance
- Customised options and features

Applications

- Switchgear
- Distribution systems
- Generator Sets
- Control panels
- Energy management
- Building management

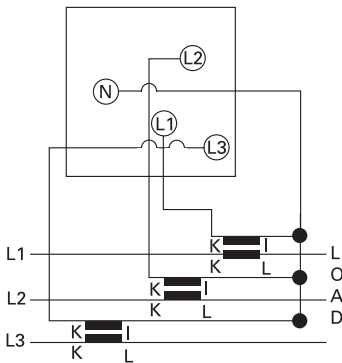
Compliant with

IEC61010-1B2001, EMC and LVD

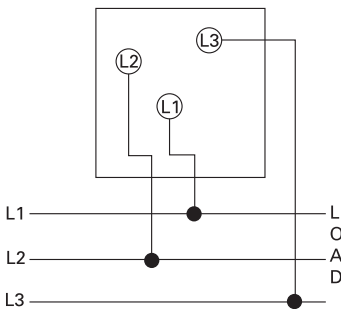


Connections

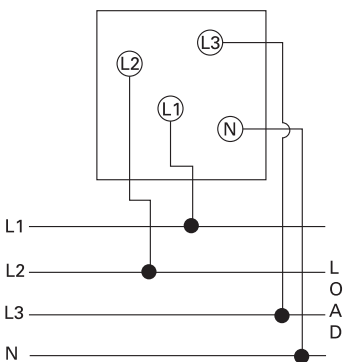
AC Ammeters with Selector Switch



AC Voltmeters 3-Phase 3-Wire



AC Voltmeters 3-Phase 4-Wire

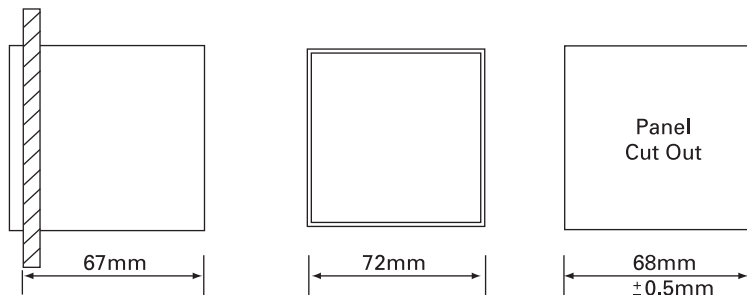


Specifications

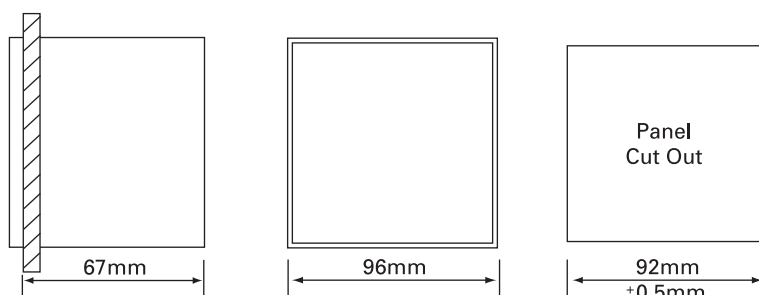
Accuracy:	1.5% of full scale deflection (FSD)
Input rating:	Ammeter: 1A, 5A 1/2A or 5/10A moving iron, direct connected Voltmeter: 120, 300, 500 and 600V AC
Frequency:	50 or 60Hz (400Hz on request)
Burden at 50Hz:	Ammeters: 0.5VA Voltsmeters: 4-5VA max
Overload ammeter:	2 x In continuous for 2 minutes, 4 x In for 1 minute
Overload voltmeter:	1.2 x continuous 2 x for 5 seconds
Movement:	Moving iron shock resistant sprung pivot and jewel
Scale length:	DIN72: 54mm DIN96: 97mm
Enclosure style:	Panel mount to DIN 42700
Enclosure material:	Grade UL94 VO (Lexan 500R)
Bezel style:	Black matte DIN43802
Window:	Standard sheet glass
Terminals:	M4 captive screw clamp
Fixing:	2 corner fixing clamps with tensioning thumb screws
Mounting position:	Vertical mount to DIN 16257, inclination of dial surface $\pm 15\%$
Damping time:	
Compliant with:	IEC61010-1B2001, CAT III 600V, EMC and LVD
Operating temperature:	-20 to +55°C
Storage temperature:	-40 to +75°C
Calibration temperature:	23°C
Relative humidity:	95% (non condensing)
Dimensions:	96DIN: 96mm high x 96mm wide x 63mm deep 72DIN: 72mm high x 72mm wide x 63mm deep
Panel cut-out:	DIN96: 92mm x 92mm DIN72: 68mm x 68mm
IP protection:	IP40
Weight:	E243-02E 275g E243-02Q 300g E244-02E 360g E244-02Q 390g

Dimensions

72DIN Models



96DIN Models



DIN Panel Meters – Power

Wattmeters and VArmeters

The 244/246 models are self contained and able to measure active and reactive power in both balanced and unbalanced, single and 3-phase 3- or 4-wire systems. Wattmeters are ideal for clear precise analogue indication of power in applications such as power generation, industrial control panels and power distribution.



Specifications

Accuracy:	Short-scale: Class 2.5 Long-scale: Class 1.5
Measuring ranges:	Voltage: 94-106% Current: 0-120%
Frequency influence:	0.4%Hz
Rating:	Current: 0.2-5A, direct connected 1A-5A for CTs. Voltages: 57.7-480V
Overload:	120% of nominal continuous voltage up to 600V maximum
Maximum input:	600V
Frequency:	50Hz or 60Hz
Power factor:	Unity power factor assumed range 0.5/1/0.5
Burden:	Current: 1VA per phase Voltage: 1VA per phase
Warm-up time:	<15 minutes

Product Codes – Short-Scale Models

Bezel size mm	72	96	144
Scale length mm	65	95	145
Wattmeters product code			
Single phase	E243-015-G-FA+256-TWK	244-210	246-210
3-phase 3-wire balanced load	E243-015-G-FA+256-TWL	244-211	246-211
3-phase 4-wire balanced load	E243-015-G-FA+256-TWH	244-21C	246-21C
3-phase 3-wire unbalanced load	E243-015-G-FA+256-TWM	244-213	246-213
3-phase 4-wire unbal. star CT	E243-015-G-FA+256-TWN	244-214	246-214
3-phase 4-wire unbal. delta CT	E243-015-G-FA+256-TWJ	244-21E	246-21E
3-phase 4-wire 3-element	E243-015-G-FA+256-XWW	244-21Y	246-21Y
VArmeters product codes			
3-phase 3- or 4-wire balanced load	E243-016-G-FA+256-TXG	244-310	246-310
3-phase 3-wire unbalanced load	E243-016-G-FA+256-TXM	244-31S	246-31S
3-phase 4-wire unbal. star CT	E243-016-G-FA+256-TXN	244-314	246-314
3-phase 4-wire unbal. delta CT	E243-016-G-FA+256-TXJ	244-31E	246-31E

Product Codes – Long-Scale Models

Bezel size mm	72	96	144
Scale length mm	112	150	230
Wattmeters product code			
Single phase	243-055G-FA+256-TWK	244-215	246-215
3-phase 3-wire balanced load	243-055G-FA+256-TWL	244-216	246-216
3-phase 4-wire balanced load	243-055G-FA+256-TWH	244-21D	246-21D
3-phase 3-wire unbalanced load	243-055G-FA+256-TWM	244-218	246-218
3-phase 4-wire unbal. star CT	243-055G-FA+256-TWN	244-219	246-219
3-phase 4-wire unbal. delta CT	243-055G-FA+256-TWJ	244-21F	246-21F
3-phase 4-wire 3-element	243-055G-FA+256-XWW	244-21Z	246-21Z
VArmeters product codes			
3-phase 3- or 4-wire balanced load	243-056G-FA+256-TXG	244-315	246-315
3-phase 3-wire unbalanced load	243-056G-FA+256-TXM	244-31L	246-31L
3-phase 4-wire unbal. star CT	243-056G-FA+256-TXN	244-319	246-319
3-phase 4-wire unbal. delta CT	243-056G-FA+256-TXJ	244-31F	246-31F

Models E243-015, E243-016, E243-055 and E243-056 use a separate transducer. Crompton transducers are ideal for this application. Our product code reference assumes a 1mA output. Other outputs of 5, 10, 20 or 4/20mA can also be used.

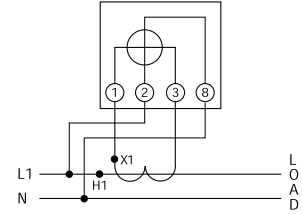
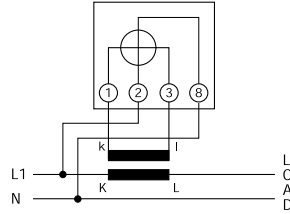


DIN Panel Meters – Power

Wattmeter Connection Diagrams

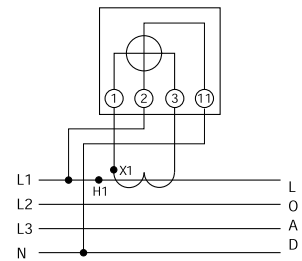
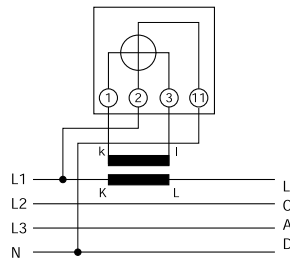
Single Phase

224-210, 244-215, 246-210, 246-215



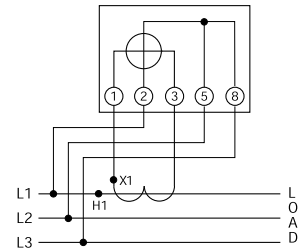
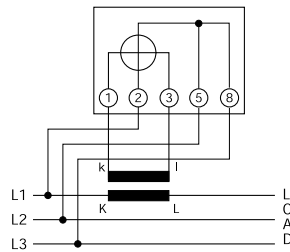
3-phase 4-wire balanced load

244-21C, 246-21C, 244-21D, 246-21D



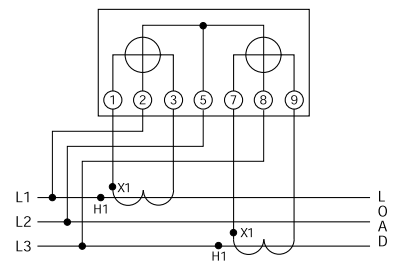
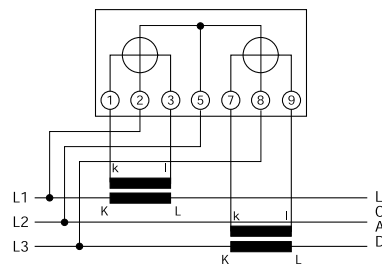
3-phase 3-wire balanced load

244-211, 246-211, 244-216, 246-216



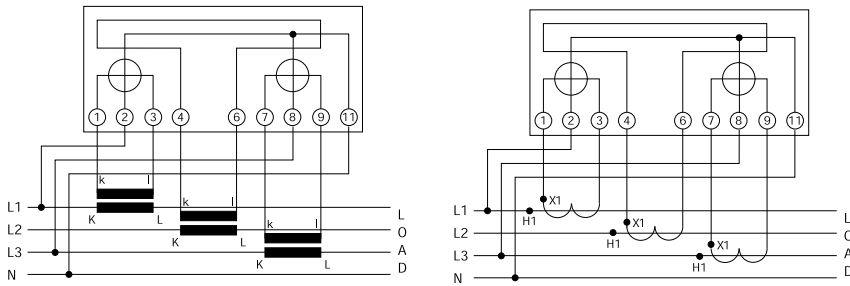
3-phase 3-wire unbalanced load 2-element

244-213, 246-213, 244-218, 246-218

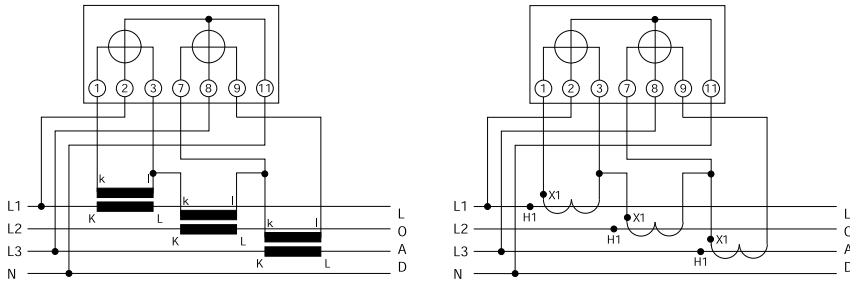


Wattmeter Connection Diagrams

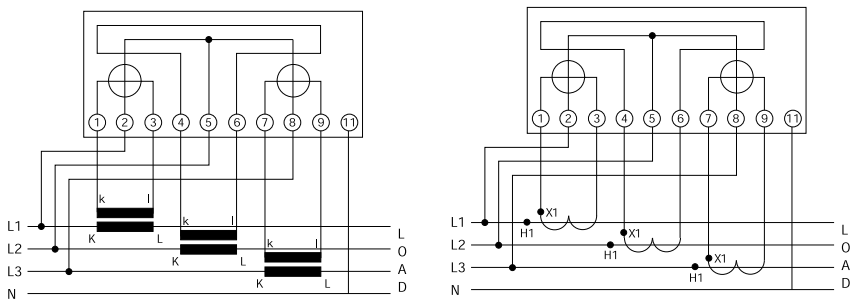
3-phase 4-wire unbalanced load star connected CTs 2¹/₂-element
 244-214, 246-214, 244-219, 246-219

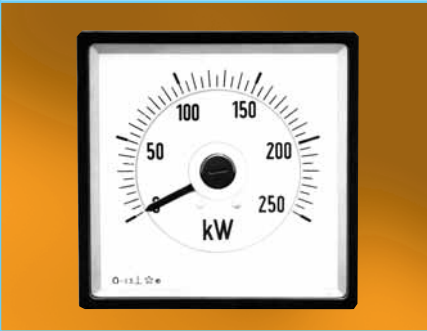


3-phase 4-wire unbalanced load delta connected CTs
 244-21E, 246-21E, 244-21F, 246-21F



3-phase 4-wire unbalanced load star connected CTs 3-element
 244-21Y, 246-21Y, 244-21Z, 246-21Z

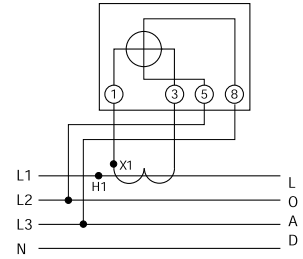
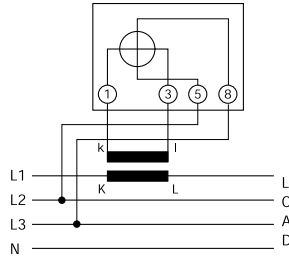




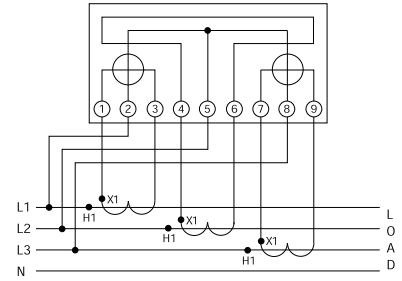
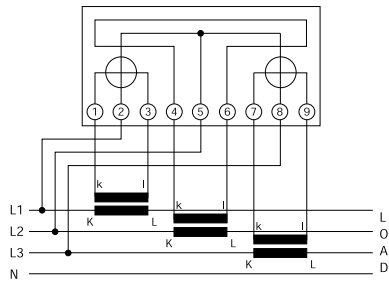
DIN Panel Meters – Power

VArmeter Connection Diagrams

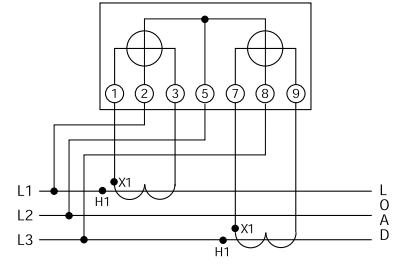
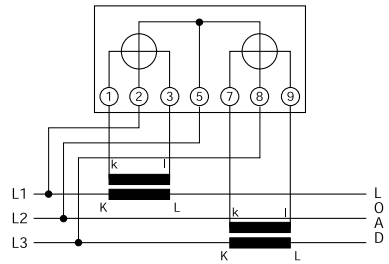
3-Phase 3- or 4-Wire Balanced Load, 1-Element
 244-310, 246-310, 244-315, 246-315



3-Phase 4-Wire Unbalanced Star Connected CTs, 2 1/2-Element
 244-314, 246-314, 244-319, 246-319



3-Phase 3-Wire Unbalanced Load, 2-Element
 244-31S, 246-31S, 244-31L, 246-31L



3-Phase 4-Wire Unbalanced Delta Connected CTs, 2 1/2-Element
 244-31E, 246-31E, 244-31F, 246-31F

