ASCO *Series 230 Automatic Transfer Switch*

ASCO

EMERSON
Network Power

Global Headquarters-Florham Park, New Jersey

ASCO

ASCO was founded in 1888, and manufactured the first ATS in 1920, ASCO focuses on the development of ATS, and has become the leader in the ATS industry.

The picture on above is ASCO's headquarters, located in Florham Park, New Jersey. ASCO has more than 1600 employees and more than 4 factories covering over 500,000 square feets of manufacturing floor space in North America and Asia. ASCO has installed more than 500,000 automatic transfer switches worldwide. No other manufacturer comes close.

The more you know, the more confidence you have in choosing ASCO

ASCO provides diversified products and solutions to match different requirements:

- Automatic Transfer Switch ATS
- Closed Transition Transfer Switch CTTS
- Delayed Transition Transfer Switch DTTS
- Automatic Transfer Bypass-Isolation Switch ATB
- Automatic Closed Transition Bypass-Isolation Switch ACTB
- Static Transfer Switch STS
- Soft Load Transfer Switch SLTS
- Medium Voltage Automatic Transfer Switch MVATS
- Medium Voltage Closed Transition Transfer Switch MVCTTS
- Three Position Automatic Transfer Switch Center-off
- Multi-Sources Transfer System
- Multi-Generator Parallel Power Connection Systems
- Emergency Power Management System
- Lighting Control Contactors
- Surge Protection Device

ASCO Standards

- GB14048.11
- IEC/EN 60947-6-1
- UL1008
- NFPA20,70,99,110
- IEEE241.446
- NEMA ICS101993

The Recognized Leader in Power Transfer Switch Technology Offers the Most Advanced Transfer Switches in the World.

Product Overview

The Series 230 automatic transfer switch consists of an intelligent controller and a modular load break switch which automatically transfers the load to the emergency power source when it detects under/over voltage, under/over frequency, or phase failure. The switch has three operation positions (source one - center off - source two). The two sources can be isolated in the center off position. A position locking mechanism is also provided.

Application

The Series 230 capacity is up to 400A, available from 220 to 415 volts, 50 and 60Hz, single phase and three phase. Typical applications include office buildings, residential buildings, telecom, hospital, subway, data center, military, transportation, and fire pump applications.

Parameter

Rated Operational Current Ie (A)		32	40	50	63	80	100	125	160	200	225	250	315	500	400	630	800
Rated Insulation Voltage U_i (V)		800								800			800		800		
Rated Impulse Withstand Voltage U_{imp} (kV)		8								12			12		12		
Rated Operation Voltage U_e (V)		220, 230, 240, 380, 400, 415															
Rated Frequency (Hz)		50 / 60															
Poles		2, 3, 4															
Rated Short-Time Withstand Current I_{cw} (kA, RMS)		10 (0.1s)								15 (0.1s)			25 (0.1s)		40KA(0.1s)/ 20KA(1s)		
Rated Short-Circuit Making Capacity I_{cm} (kA, PEAK)		17								31.5			65		80		
Withstand and Close-On Rating I_q (kA)	When Used With Current Limiting Fuses	65								200			200		200		
	When Used With Specific Circuit Breakers									150			150		80		
Making and Breaking Capacity		10 I_e															
Mechanical Operation Performance (cycles)		10,000															
Utilization Category		AC - 33B															
Operation Voltage range (AC)	Ue=208V	(0.75 ~ 1.2)Ue															
	Ue=220V / 230V / 240V / 380V / 400V	(0.7 ~ 1.2) × Ue															
	Ue= 415V	(0.7 ~ 1.15) × Ue															
EMC Class		Class A															
Wiring Way		Front															
Separate Lock Mechanism		Standard															
Auxiliary Contact		Optional (8 contacts maximum)															

ASCO Series 230 Automatic Transfer Switch Product Features

Performance feature

- Meets or exceeds the requirements of the following regulatory agencies
- EN60947-6-1/IEC60947-6-1: transfer switching
- EN55022: Radiated and Conducted Emission, Class A
- EN61000-3-2: Harmonic Current Emission, Class A
- EN61000-3-3: Limits of Voltage fluctuation and Flicker
- EN 61000-4-5: Immunity to Surge
- EN 61000-4-4: Immunity to Electrical Fast Transient:
- EN61000-4-2: Immunity to Electrostatic Discharge
- EN61000-4-3: Immunity to Radiated Electric Fields
- EN 61000-4-6: Immunity to Continuous Conducted Interference

Structure

- PC Class ATS
- High ability of withstanding lightning strikes (40kA 8/20μs)
- Simple reliable mechanism, compact and stylish appearance
- Modular design, convenient operation, easy maintenance
- Three operation positions. Two sources can be isolated in the center-off position

Arc Extinguish

- The utilization category is AC-33B, and the ability of withstand and break is10 I_e
- Rotating dual contacts design extinguishes the arc quickly and effectively
- Arcing contacts and main contacts are separate, avoids main contacts from being destroyed by an arc
- Clamping contacts are self cleaning wiping action type
- High short-circuit closing ability

Switching Mechanism

- Both automatic and manual operation are available
- Unique contacts design limits contact bounce
- Unique clutch technique makes manual operation easy to do
- Electrical and mechanical interlocks prevent two sources from connecting simultaneously
- Innovative motor circuit protection technique, provides precision control
- Cast steel bevel gear mechanism provides high transmission efficiency, and extends the operation life

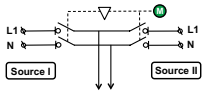
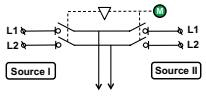
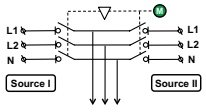
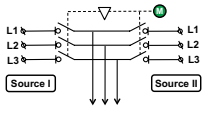
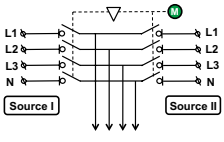
Controller

- Different Operating Modes (Source I priority/ No Source priority)
- C2000 has ability to work with external 24VDC power supply
- High frequency switching power supply, and wide power voltage range
- Controller remains operational when power is lost, and avoids data loss
- Diagnosis fault intelligent with self - protection function (Motor-Protection)
- RS485 communication interface is available

Make Life and Business More Reliable
By Using ASCO

ASCO Series 230 Transfer Switch Ordering Information

Type sample: **Switch category**

B2ADTL	B3	250	H	E	0	0	Line and Neutral					AC Voltage (V)	
①	②	③	④	⑤	⑥	⑦	Poles	L1	L2	L3	N	L-L	L-N
	B1		D				2P	√			√	-	220
	B1		E					√			√	-	230
	B1		F					√			√	-	240
	02		C					√	√			208	
	02		D					√	√			220	-
	02		E					√	√			230	-
	02		F					√	√			240	-
	B2		D				3P	√	√		√	220	110
	B2		E					√	√		√	230	115
	B2		F					√	√		√	240	120
	03		C					√	√	√		208	-
	03		D					√	√	√		220	-
	03		H					√	√	√		380	-
	03		J					√	√	√		400	-
	03		K					√	√	√		415	-
	B3		C				4P	√	√	√	√	208	-
	B3		D					√	√	√	√	220	-
	B3		H					√	√	√	√	380	220
	B3		J					√	√	√	√	400	230
	B3		K					√	√	√	√	415	240

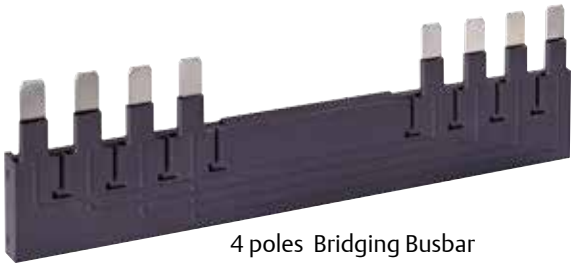
①	Frame	B2ADTL	B2ADTL Frame 32A-160A										
		C2ADTL	C2ADTL Frame 200A-250A										
		D2ADTL	D2ADTL Frame 315A-400A										
③	Amps	0032	32A		0100	100A		0250	250A		0630	630A	
		0040	40A		0125	125A		0315	315A		0800	800A	
		0050	50A		0160	160A		0315	315A				
		0063	63A		0200	200A		0400	400A				
		0080	80A		0225	225A		0500	500A				
⑤	Controller	D	C1000 Controller										
		E	C2000 Controller										
⑥	Optional Accessories	0	Without Accessories										
		X	B2ADTL Frame Bridging Bus Bar: 132JA ~ 132JC, Auxiliary Contacts: 132A ~ 132F 1H, 72D See Page 5										
⑦	Enclosure	0	Without Enclosure										

Optional Accessory Model Description and Order Information

B2ADTL Frame Bridging Bus Bar

132 J A

- A: Poles
  - A: 2 poles
  - B: 3 poles
  - C: 4 poles
- J: Function Code 132J: Bridging Busbar



4 poles Bridging Busbar

For example: ***132JC*** , means Bridging Busbar for a 4 poles transfer switch

Auxiliary Contacts

132 A A

- A: Auxiliary Contact Quantity
  - BLANK: 1 contact
  - A: 2 contacts
  - B: 3 contacts
  - C: 4 contacts
- A: Function Code 132A-132F: Auxiliary Contact

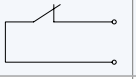
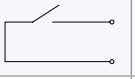
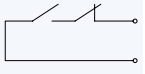
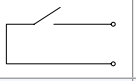
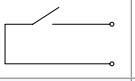
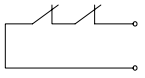
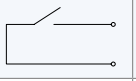
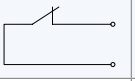
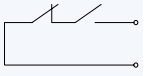
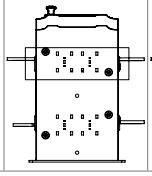
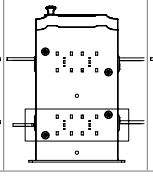
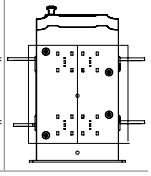
Auxiliary Contact

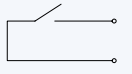
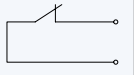
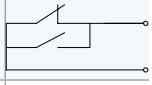
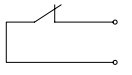
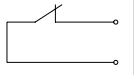
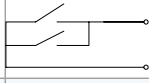
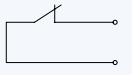
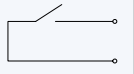
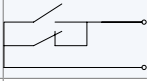
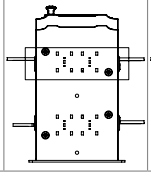
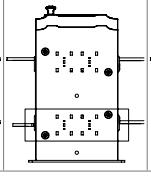
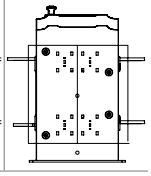
For example: ***132BA*** , means 2 sets of contacts, closed when the ATS transfer to source II position.

The Auxiliary Contact Definition

132A-132C : The auxiliary contacts can be used to indicate positions with the CLOSE contact , see Schematic 1.

132D-132F: The auxiliary contacts can be used to indicate positions with the OPEN contact ,see Schematic 2.

Position of The Transfer Switch		Auxiliary Contact Function Code		
		132A	132B	132C
I				
O				
II				
Auxiliary Contact Code	LAP1F100	✓	✓	-
	LAP1F010	-	-	✓
Auxiliary Contact Mounting Position				

Position of The Transfer Switch		Auxiliary Contact Function Code		
		132D	132E	132F
I				
O				
II				
Auxiliary Contact Code	LAP1F100	-	-	✓
	LAP1F010	✓	✓	-
Auxiliary Contact Mounting Position				

72D

C1000 Controller with RS-485 interface

A RS485 interface installed in the C1000 controller to enable serial communications. Supporting MODBUS protocol. The Accessory can be installed in the factory only. If you want this function, please tell us when you order the controller.

1H

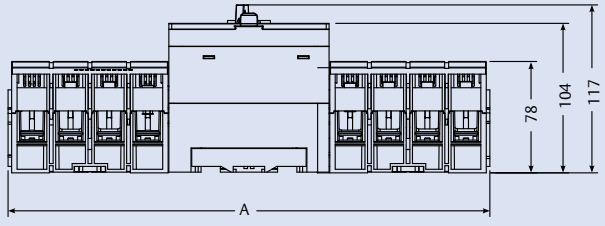
C2000 Controller with energy storage

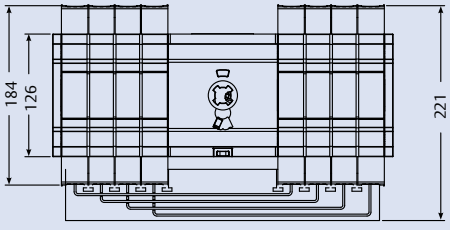
The optional controller with energy storage (Accessory 1H) has the added feature to switch the transfer switch to center-off position during Source I and Source II failure at the same time. This optional feature can work in Source I Priority and No Source Priority operating modes. And this feature is available only after the controller has been powered by AC input for 10 minutes. The Accessory can be installed in the factory only. If you want this function, please tell us when you order the controller.

Avoid Losing Critical information
When Power is Lost

ASCO Series 230 Dimensions and Weight

B2ADTL Frame



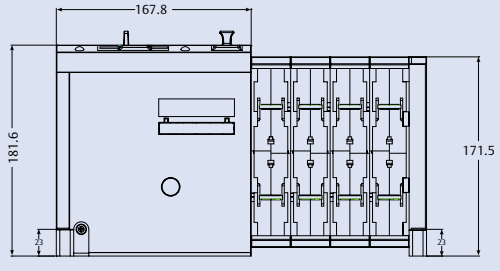


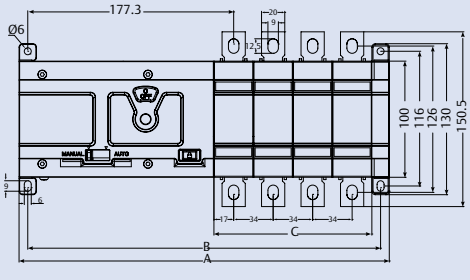
(unit: mm)

B2ADTL		2P	3P	4P
Size (mm)	A	241.0	349.0	349.0
Weight (kg)		2.6	2.8	2.8

Note: It must be installed in DIN35 Rail to the cabinet

C2ADTL Frame

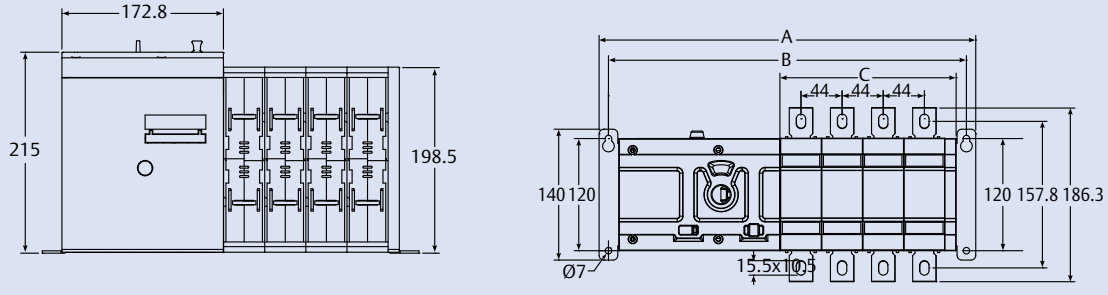




(unit: mm)

C2ADTL		2P	3P	4P
Size (mm)	A	251.0	285.0	319.0
	B	236.0	270.0	304.0
	C	68.0	102.0	136.0
Weight (kg)		4.6	5.2	5.8

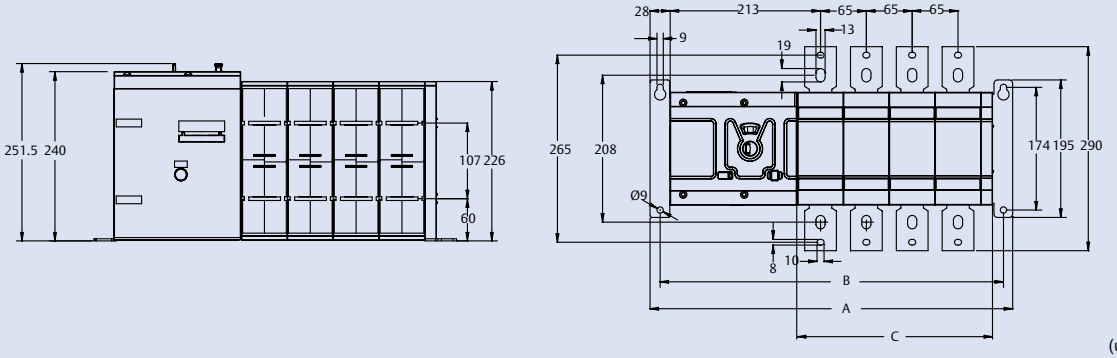
D2ADTL Frame



(unit: mm)

D2ADTL		2P	3P	4P
Size (mm)	A	317.0	361.0	405.0
	B	297.0	341.0	385.0
	C	103.0	147.0	191.0
Weight (kg)		8.6	9.8	11.0

E2ADTL Frame



E2ADTL		2P	3P	4P
Size (mm)	A	384	449	514
	B	357	422	487
	C	146	211	276
Weight (kg)		14	17	20

Shipping Dimensions and WeightsShipping Dimension and Weights (Including TS and controller, without options)

Frame	Width (MM)	Height (MM)	Depth (MM)	Weight (KG) with C1000			Weight (KG) with C2000		
				2P	3P	4P	2P	3P	4P
B2ADTL	602	220	267	4.9	5.5	5.7	5.2	5.8	6.0
C2ADTL	602	335	227	8.9	9.5	10.1	9.2	9.8	10.4
D2ADTL	650	350	300	13.0	14.5	16.0	13.4	14.9	16.4
E2ADTL	767	350	352	16	19	22	16.5	19.5	22.5

** All information is subject to change, for the latest information please contact ASCO sales team.*

Series 230 Controller Feature Comparisons

C1000 Controller

Voltage and Frequency Sensing

- 3-Phase under and over voltage settings on source I and source II
- Phase lose sensing on source I and source II
- Under and over frequency settings on source I and source II

Time Delays

- Time delay sensing accuracy is ±1%
- Transfer time delay can be set manually

Controller Display and Keypad

- LED display
- Touch pad for clearing alarm and manual operation
- Switch position indicator lights
- Source acceptability indicator lights

Operating Modes

- Automatic and manual operation available
- Source I Priority/ No Source Priority

Center-off with time delay and center-off with protection

- The center-off time delay can be set to avoid large current rushes to inductive loads
- Center-off with protection is available to protect critical loads (e.g. Fire Pump)

Remote Control and Communication

- Can control switch remotely (e.g. Position Control, Time Delay, etc.)
- Fire control signal input (24VDC)

Power Supply of Controller

- Operation Voltage (VAC): 220/ 230/ 240/ 380/ 400/ 415

C2000 Controller

Voltage and Frequency Sensing

- 3-Phase under and over voltage settings on source I and source II
- Under and over frequency settings on source I and source II
- Voltage unbalance detection between phases

Time Delays

- Time delay can be set by operating parameter setting menu
- Time delay sensing accuracy is ±1%
- Time delay can be set under different working modes
- Transfer time delay can be set manually

Controller Display and Keypad

- LCD display
- Touch pad for programming the features and settings
- Switch position indicator lights
- Source acceptability indicator lights

Operating Modes

- Automatic and manual operation available
- Source I Priority/ No Source Priority

Center-off with time delay and center-off with protection

- The center-off time delay can be set to avoid large current rushes to inductive loads
- Center-off with protection is available to protect critical loads (e.g. Fire Pump)

Events Display

- Event log displays: 100 logged events with time and date of each event, event type and event reason

Remote Control and Communication

- Uses RS485 interface, and supports MODBUS Communication
- Can control switch remotely (e.g. Position Control, Time Delay, etc.)
- Fire control signal input (24VDC)

Power Supply of Controller

- Operation Voltage (VAC): 220/ 230/ 240/ 380/ 400/ 415
- C2000 has ability to work with 24VDC power supply

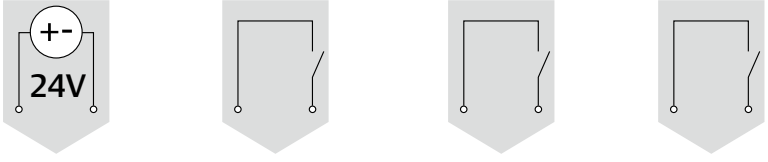
24-hours Protection No Matter When Trouble Strikes

Controller	C1000	C2000
Intended Application	Residential, Light Commercial	Commercial, Industrial
Rated Operation Voltage U_e (V)	220/230/240/380/400/415	220/230/240/380/400/415
Rated Frequency (Hz)	50/60Hz	50/60Hz
Display Indicator		
Source I Available	■	■
Source II Available	■	■
Source I Accepted (Load Connected)	■	■
Source II Accepted (Load Connected)	■	■
Center-off Position	■	■
Control Mode		
Manual/Automatic	■	■
Source I Priority	■	■
No Source Priority	■	■
Source Sensing Setting		
Phase Selection		■
Source I Voltage	■	■
Source II Voltage	■	■
Source I Frequency	■	■
Source II Frequency	■	■
Source I power loss	■	■
Source II power loss	■	■
Source I phase loss	■	■
Source II phase loss	■	■
Source I Voltage Dropout (Undervoltage)	70% or 85%	70% to 98%
Source II Voltage Dropout (Undervoltage)	70% or 85%	70% to 98%
Source I Overvoltage Trip	OFF or 120% [1]	102% to 120% or OFF[1]
Source II Overvoltage Trip	OFF or 120% [1]	102% to 120% or OFF[1]
Source I Overfrequency Transfer	110% or 115%	102% to 115%
Source II Overfrequency Transfer	110% or 115%	102% to 115%
Source I Frequency Dropout (Underfrequency)	85% or 90%	85% to 98%
Source II Frequency Dropout (Underfrequency)	85% or 90%	85% to 98%
Source I Voltage Pick Up	75% or 90%	85% to 100%
Source II Voltage Pick Up	75% or 90%	85% to 100%
Source I Frequency Pick Up	90% or 95%	90% to 100%
Source II Frequency Pick Up	90% or 95%	90% to 100%
Time Delay Setting		
Override Momentary Source I Outage	0 to 3 Seconds	0 to 3 Seconds
Override Momentary Source II Outage	0 to 3 Seconds	0 to 3 Seconds
Transfer to Source I	1s to 30 Minutes	0 to 30 Minutes
Transfer to Source II	0 to 5 Minutes	0 to 5 Minutes
Engine Cooldown	5 Minutes Fixed	0 to 60 Minutes
Center-Off Position Delay	OFF or 5 Seconds	0 to 5 Seconds
Others		
RS-485		■
Modbus		■
24VDC Capable		■
Generator Control Signal Output	■	■
Fire Control Signal Input	■	■
Alarm	■	■
Auxiliary Contact	Optional	Optional
Events Log		■
Display Type	LED	LED+LCD
Installation	Din rail installation and Panel installation	Panel installation
Controller with Energy Storage		optional

■-Yes, Standard Blank-Not Available/ Not Applicable

[1] the controller used on 415V, its Overvoltage Droupout is 115% both on Source I and Source II

C1000 Controller Port Function Description

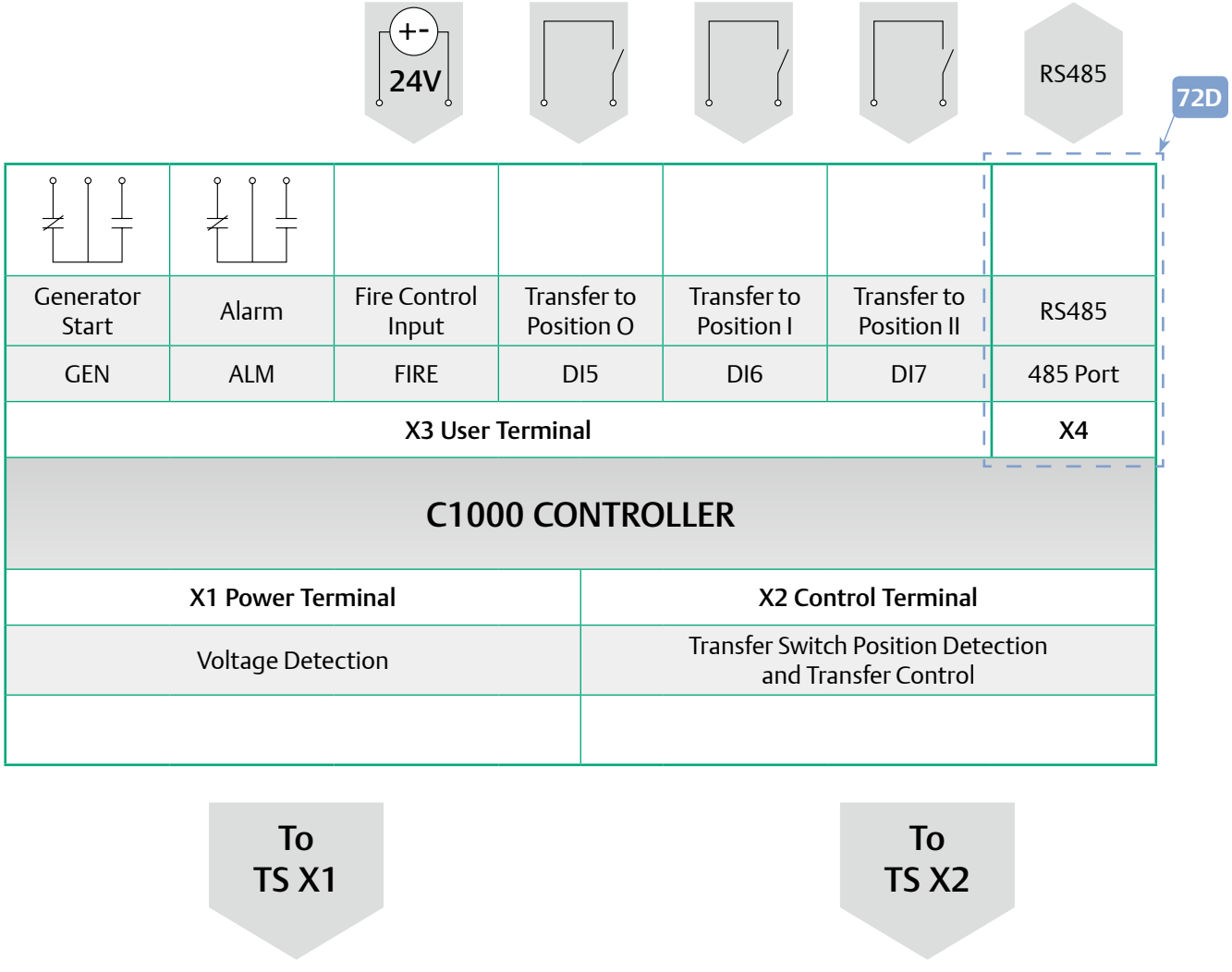


Generator Start	Alarm	Fire Control Input	Transfer to Position O	Transfer to Position I	Transfer to Position II
GEN	ALM	FIRE	DI5	DI6	DI7
X3 User Terminal					
C1000 CONTROLLER					
X1 Power Terminal			**X2 Control Terminal**		
Voltage Detection			Transfer Switch Position Detection and Transfer Control		

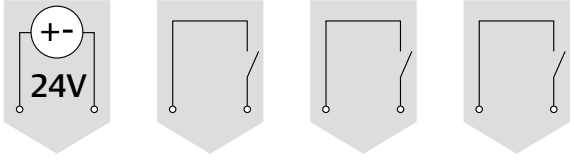
To Transfer Switch X1

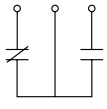
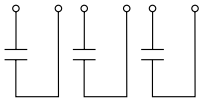
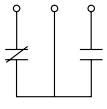
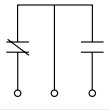
To Transfer Switch X2

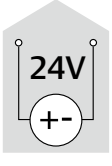
C1000 with RS485 Controller Port Function Description



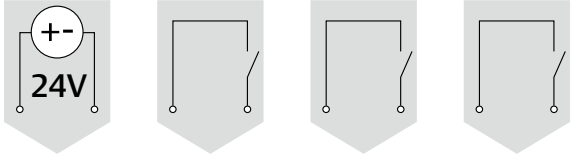
C2000 Controller Port Function Description



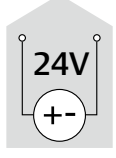
								
Alarm	O I II TS Position			Generator Start	RS485	Fire Control Input	Transfer to Position O	Transfer to Position I	Transfer to Position II
ALM	DO1	DO2	DO3	GEN	485 PORT	FIRE	DI5	DI6	DI7
X4 User Terminal									
C2000 CONTROLLER									
X1 Power Terminal				**X2 Control Terminal**			**X3 User Terminal**		
Voltage Detection				Transfer Switch Position Detection and Transfer Control			24V DC Power Input	Lost Power	
									



C2000 Controller with Energy Storage Appearance Port Function Description



Alarm	O I II TS Position			Generator Start	RS485	Fire Control Input	Transfer to Position O	Transfer to Position I	Transfer to Position II
ALM	DO1	DO2	DO3	GEN	485 PORT	FIRE	DI5	DI6	DI7
X4 User Terminal									
C2000 CONTROLLER									
X1 Power Terminal				X2 Control Terminal		X3 User Terminal			X5
Voltage Detection				Transfer Switch Position Detection and Transfer Control		24V DC Power Input	Lost Power		C.Output



To TS X1

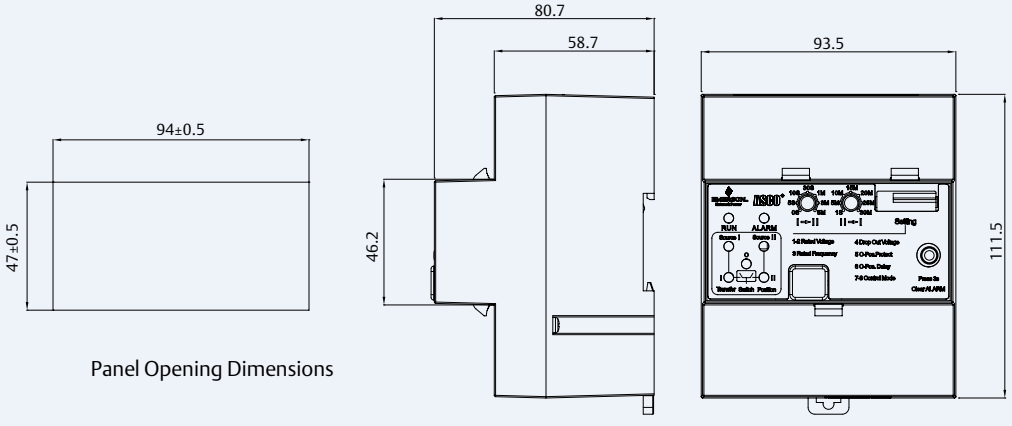
To TS X2

Energy storage out put

1H

Controller Dimensions and Weight*

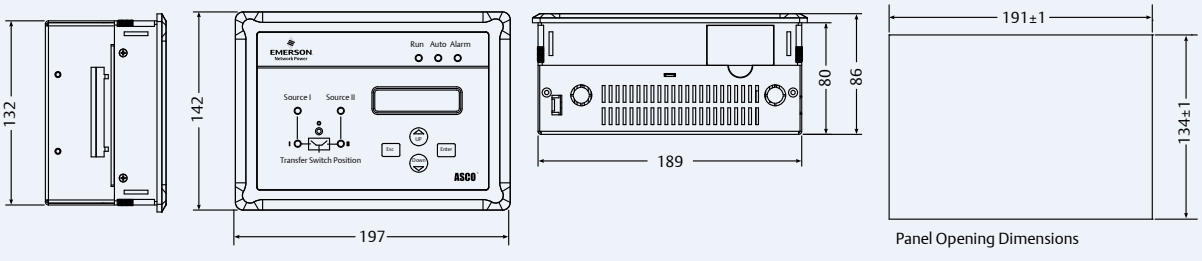
C1000 Controller



Panel Opening Dimensions

Weight: 0.74kg
(unit: mm)

C2000 Controller

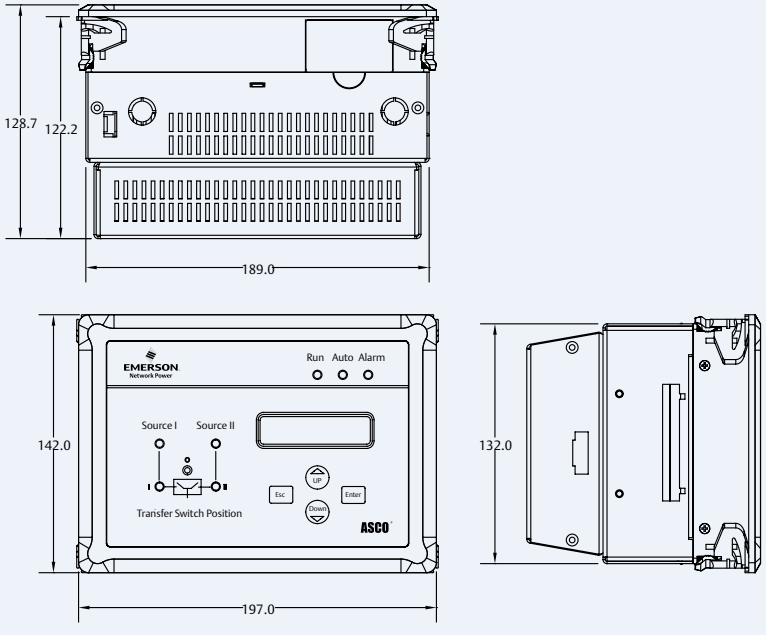


Panel Opening Dimensions

Weight: 1kg
(unit: mm)

*Not Shipping weight, Actually unit weight

C2000 Controller with Energy Storage Appearance



Weight: 1.64kg
(unit: mm)

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