ASCO SERIES 230 Automatic Transfer Switch

ASCO Power Technologies™

Technical Catalogue

ascopower.com

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ASCO Power Technologies™

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Technical catalogue

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 the normal power source under/over voltage, under/over frequency, or phase loss. The switch has three operational positions (Source I, Center-off, Source II). The series 230 is available in 5 different frame sizes up to 800A and can operate in multiple control modes including automatic, remote and manual operation.

Application

The Series 230 transfer switch is available in single and three phase configurations up to 80A, and for higher power applications

in three phase configurations up to 800A, up to 415 volts and for both 50 and 60 Hz. Typical applications include commercial

and residential buildings, hospitals, telecom, subway and transportation, data centers, military and fire pumps.

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Application

Rated Operational Current Ie (A)		16	32	63	80	100	125	160	200	225	250	315	400	500	630	800
Rated Insulation Voltage U_i (V)		800				1000			1000			1000		1000		
Rated Impulse Withstand Voltage U_{imp} (kV)		8				8			12			12		12		
Rated Operational Voltage U_e (V)		220, 230, 240, 380, 400, 415														
Rated Frequency (Hz)		50 / 60														
Poles		2,4				3,4										
Rated Short-Time Withstand Current I_{cw} (kA, RMS)		6 (0.03s)				10 (0.1s)			15 (0.1s)			25 (0.1s)		40(0.1s)/ 20(1s)		
Rated Short-Circuit Making Capacity I_{cm} (kA, PEAK)		8				17			31.5			65		80		
Withstand and Making Conditional Short-Circuit Rating I_q (kA)	When Used With Current Limiting Fuses	65				65			200			200		200		
	When Used With Specific Circuit Breakers	15				50			150			150		80		
Making and Breaking Capacity		10 I_e														
Mechanical Operation Performance (cycles)		10,000														
Utilization Category		AC-32A, AC-33B														
Operational Voltage range (AC)	Ue=220V / 230V / 240V /380V / 400V	125～300V (L-N)				(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)		4 contacts maximum				8 contacts maximum										

Series 230 Automatic Transfer Switch Product Features

Performance Features

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 andFlicker
- EN 61000-4-5: Immunity to Surge
- EN 61000-4-4: Immunity to Electrical FastTransient
- EN61000-4-2: Immunity to ElectrostaticDischarge
- EN61000-4-3: Immunity to Radiated ElectricFields
- EN 61000-4-6: Immunity to ContinuousConducted Interference

Structure

- PC Class ATS
- High ability to withstand lightning strikes (40kA 8/20μs)
- Simple reliable mechanism, compact and stylish appearance
- Modular design, convenient operation, easy maintenance
- Three operating positions. Both sources can becut off in a center-off position

Arc Extinguish

- The utilization categories are AC-32A, AC-33B,and the ability to make and break is10 I_e
- Rotating dual contact design extinguishes thearc quickly and effectively
- Arcing contacts and main contacts are separate;main contacts are protected from arc damage
- Wiping-action contacts are self cleaning
- High short-circuit making and short-timewithstand ratings

Switching Mechanism

- Unique contacts design limits contact bounce
- Unique clutch design makes manual operation easy and low force
- Electrical and mechanical interlocks prevent two sources from connecting simultaneously
- PMDC motor as power mechanism has large starting torque and wide range of operation voltage
- Innovative motor circuit protection ensures precision operation
- Cast steel bevel gear mechanism provides high transmission efficiency, and extends operating life

Controller

- Different Operating Modes (Automatic, Remote Control and Manual)
- C300 and C2000 can work with an external 24VDC power supply
- High frequency switching power supply, and wide power voltage range
- Data (e.g. Event log, Setting, etc) remains intact if power is lost
- Intelligent fault diagnostics enable self-protecting motor feature
- RS485 communication interface is available
- Priority Source Swap

Series 230 Transfer Switch Ordering Information

ASCO SERIES 230 Automatic Transfer Switch

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To order an ASCO Series 230 Automatic Transfer Switch, complete the following catalogue number:

E2ADTL	B3	0800	H	D	X	0	72D
Frame size	Poles	Amperes Continuous Rating	Voltage Code	Controller	Options	Enclosure	Optional Accessories

A2ADTL	16 ~ 80A Frame	B1: 2 Poles (L-N) (2-wire with Neutral)	0016, 0032	D	220V	B	C300*	0 = No Ac	O	Open type	72D
B2ADTL	100 ~ 160A Frame	(Available on A2ADTL only)	0063, 0080	F	230V 240V	D	C1000	X = Optional	C	IP20	C300, C1000 with RS-485
C2ADTL	200 ~ 250A Frame	03: 3 Poles (3- wire, no Neutral)	0100, 0125	H	380V	E	C2000	Accessories Required	Q	IP54	
D2ADTL	315 ~ 400A Frame	(Not available on A2ADTL)	0160, 0200	J	400V						
E2ADTL	500 ~ 800A Frame	B3: 4 Poles (4-wire with Neutral)	0225, 0250	K	415V						
			0315, 0400								
			0500, 0630								
			0800								

* The C300 embedded controller is only applicable to the A2ADTL frame

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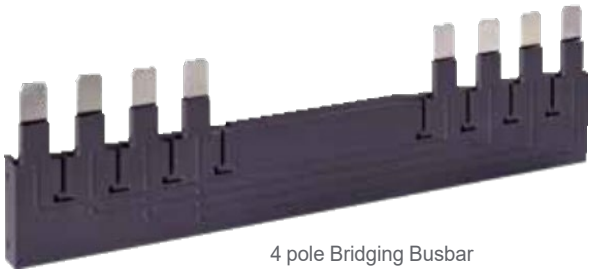
Additional Accessory Model Description and Order Information

(Need to be ordered separately)

B2ADTL Frame Bridging Bus

132 J B

- Poles
  - B: 3 poles (02357091)
  - C: 4 poles (02355942)
- Function Code 132J: Bridging Busbar



4 pole Bridging Busbar

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

Auxiliary Contacts

132 A A

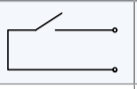
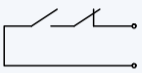
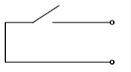
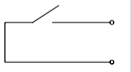
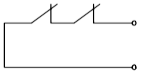
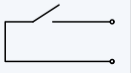
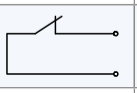
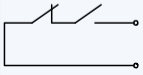
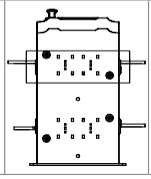
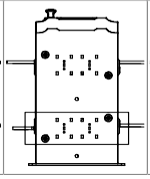
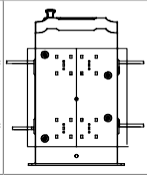
- Auxiliary Contact Quantity
  - BLANK: 1 contact
  - A: 2 contacts
  - B: 3 contacts
  - C: 4 contacts
- Function Code 132J: Bridging Busbar

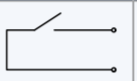
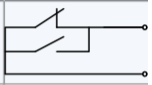
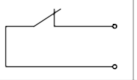
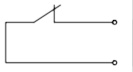
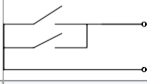
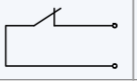
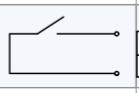
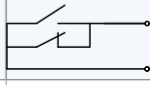
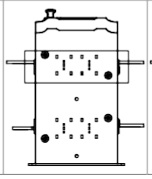
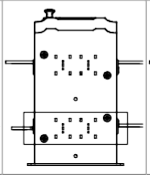
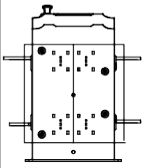
Auxiliary Contact

For example: **132BA** , means 2 sets of contacts, which close when the ATS transfers to the Source II position.

Auxiliary Contact Definition

132A-132C : The auxiliary contacts can be used to indicate position with the CLOSE contact, see Schematic 1. 132D-132F: The auxiliary contacts can be used to indicate position with the OPEN contact, see Schematic 2.

Position of The Transfer Switch		Auxiliary Contact Function		
		132A	132b	132C
I				
O				
II				
Auxiliary Contact Code	(16021426)	√	√	-
	LAP1F010	-	-	√
Auxiliary Contact Mounting Position (only showing C2ADTL, D2ADTL, E2ADTL).				

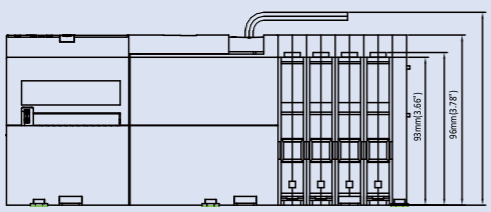
Position of The Transfer Switch		Auxiliary Contact Function		
		132D	132E	132F
I				
O				
II				
Auxiliary Contact Code		-	-	√
	LAP1F010	√	√	-
Auxiliary Contact Mounting Position (only showing C2ADTL,D2ADTL,				

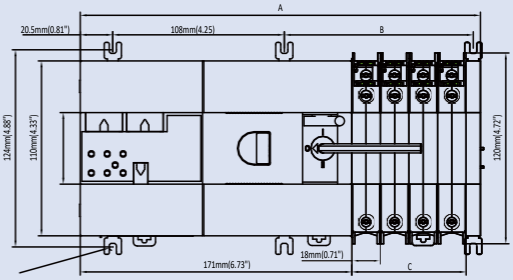
72D

C300 or C1000 Controller with RS-485Interface

A RS485 interface installed in the C300 or C1000 controller to enable serial communications, supporting MODBUS protocol. This Accessory can only be installed in the factory. Use accessory code 72D when ordering this function.

A2ADTL Frame



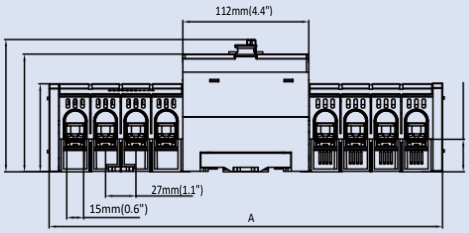


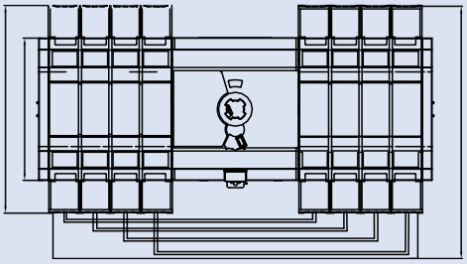
Unit: mm(inch)

A2ADTL		2P	4P
Size (mm)	A	216.0	252.0
Weight (kg)		1.6	2.

Note: unit must be installed in the cabinet using a DIN35 rail

B2ADTL Frame





Unit: mm(inch)

A2ADTL		2P	4P
Size (mm)	A	216.0	252.0
Weight (kg)		1.6	2.

Note: unit must be installed in the cabinet using a DIN35 rail

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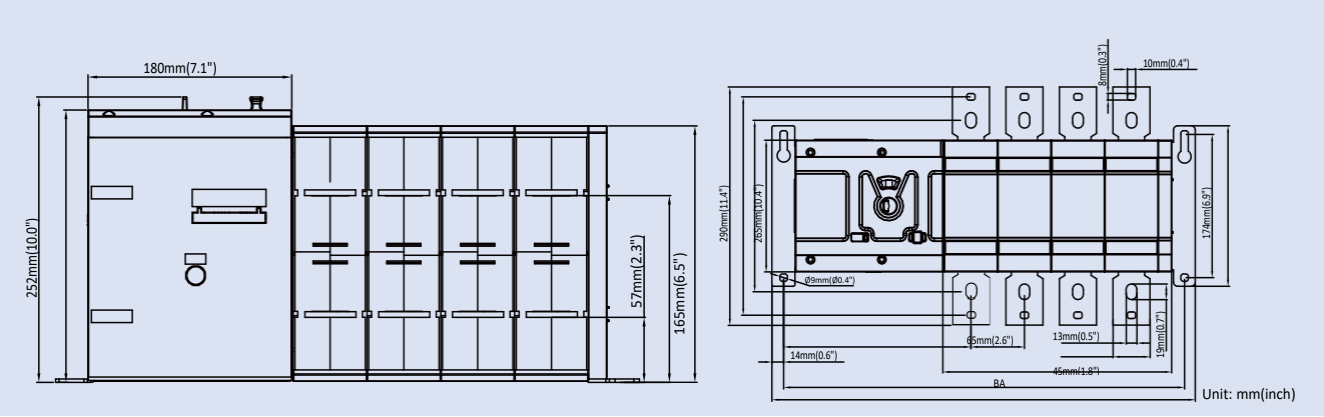
ASCO Power Transfer Switch Solutions for Powerful Peace of Mind

E2ADTL Frame



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

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

Frame	Width (mm)	Height (mm)	Depth (mm)	Weight (kg) with C300		Weight (kg) with C1000		Weight (kg) with C2000	
				2P	4P	3P	4P	3P	4P
A2ADTL	310	170	175	1.9	2.3				
B2ADTL	602	220	267			5.5	5.7	5.8	6.0
C2ADTL	602	335	227			9.5	10.1	9.8	10.4
D2ADTL	650	350	300			14.5	16.0	14.9	16.4
E2ADTL	767	350	352			19.0	22.0	19.5	22.5

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

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Series 230 Controller Feature Comparisons

C300 Controller

Voltage and Frequency Sensing
- Adjustable under and over voltage settings on Source I and Source II
- Phase loss sensing on Source I and Source II[5]
- Adjustable 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
- DIP switches for settings
- Cycle any DIP switch to clear alarm
- Switch position indicator lights
- Source acceptability indicator lights

Operating Modes
- Automatic (Source I Priority, No Source Priority)
- Priority Source Swap
- Remote Control
- Manual

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

Remote Control and Communication
- Remote position control signal input
- Fire control signal input (24VDC)
- Optional accessory 72D: RS485 interface, supporting MODBUS communication

Power Supply of Controller
- Operation Voltage (VAC): 220/ 230/ 240
- C300 has ability to work with 24V DC power supply

C1000 Controller

Voltage and Frequency Sensing
- Adjustable under and over voltage settings on Source I and Source II
- Phase loss sensing on Source I and Source II (L1 and L3 voltage, L2 frequency only)
- Adjustable 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
- DIP switches for settings
- Button to clear alarm
- Switch position indicator lights
- Source acceptability indicator lights

Operating Modes
- Automatic (Source I Priority, No Source Priority)
- Priority Source Swap
- Remote Control
- Manual

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

Remote Control and Communication
- Remote position control signal input
- Fire control signal input (24VDC)
- Optional accessory 72D: RS485 interface, supporting MODBUS communication

Power Supply of Controller
- Operation Voltage (VAC): 220/ 230/ 240/ 380/ 400/ 415

C2000 Controller

Voltage and Frequency Sensing
- Adjustable under and over voltage settings on Source I and Source II
- Adjustable under and over frequency settings on Source I and Source II
- Voltage unbalance detection between phases

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

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 (Source I Priority, No Source Priority)
- Priority Source Swap
- Remote Control
- Manual

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

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

Remote Control and Communication
- Remote position control signal input
- Fire control signal input (24VDC)
- Standard feature: RS485 interface, supporting MODBUS communication

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

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	C300	C1000	C2000
			
Rated Operation Voltage Ue(V)	220/230/240 (1)	380/400/415	380/400/415
Rated Frequency (Hz)	50/60Hz	50/60Hz	50/60Hz
Display Indicator			
Source(I,II) Available	□	□	□
ATS Position	□	□	□
Control Mode			
Manual/Automatic	□	□	□
Source I Priority	□	□	□
No Source Priority	□	□	□
Remote Control	□	□	□
Unique Control Funcation			
Remote control Priority (2)	□	□	□
Priority Source Swap	□	(3)	□
Diagnosis fault intelligent with self -protection function	□	□	□
Source Sensing Setting			
Voltage Sensing(4)	L1-N,L2-N,L3-N	L1-L3	L1-L2,L2-L3,L3-L1
Frequency Sensing	□	□	□
Power loss	□	□	□
Phase loss (5)	L1,L2,L3	L1,L3	L1,L2,L3
Undervoltage	65%, 70%, 80%, 85%	70%, 85%	70% ~ 98%
Overvoltage (6)	120% / OFF	120% / OFF	102% ~ 120% / OFF
Overfrequency Transfer	115%	115%	102% ~ 115%
Underfrequency Transfer	85%	85%	85% ~ 98%
Time Delay Setting			
Override Momentary Source Outage	1s	1s	0 ~ 3s
Transfer to Source II	0s, 5s, 30s, 5min	0 ~ 5min	0 ~ 5min
Transfer to Source I	1s, 30s, 5min, 30min	1s ~ 30min	0 ~ 30min
Engine Cooldown	2min	2min	0 ~ 60min
Center-Off Position Delay	OFF / 5s	OFF / 5s	0 ~ 5s
Others			
RS-485	Optional	Optional	□
Additional 24V DC Power Input	□		□
Generator Control Signal Output	□	□	□
Fire Control Signal Input	□	□	□
Alarm	□	□	□
Auxiliary Contact	Optional	Optional	Optional
Event Log			□
Display Type	LED	LED	LED+LCD
Installation	DIN rail installation and Panelinstallation	DIN rail installation and Panelinstallation	Panel installation

□: Yes, Standard; Blank: Not Available/ Not Applicable

Remarks：
1. For 3 phase application the C300 is powered by L-N voltage
2. Only available for source priority mode
3. C1000 controller with priority swap function requires special soft ware to be field installed
4. For C300 controller, Source II Voltage sensing is only on L1
5. For C300 controller, Source II Phase loss sensing is only on L1
6. When the controller is used on 415V, its Overvoltage Droupout is 115% both on Source I and Source II

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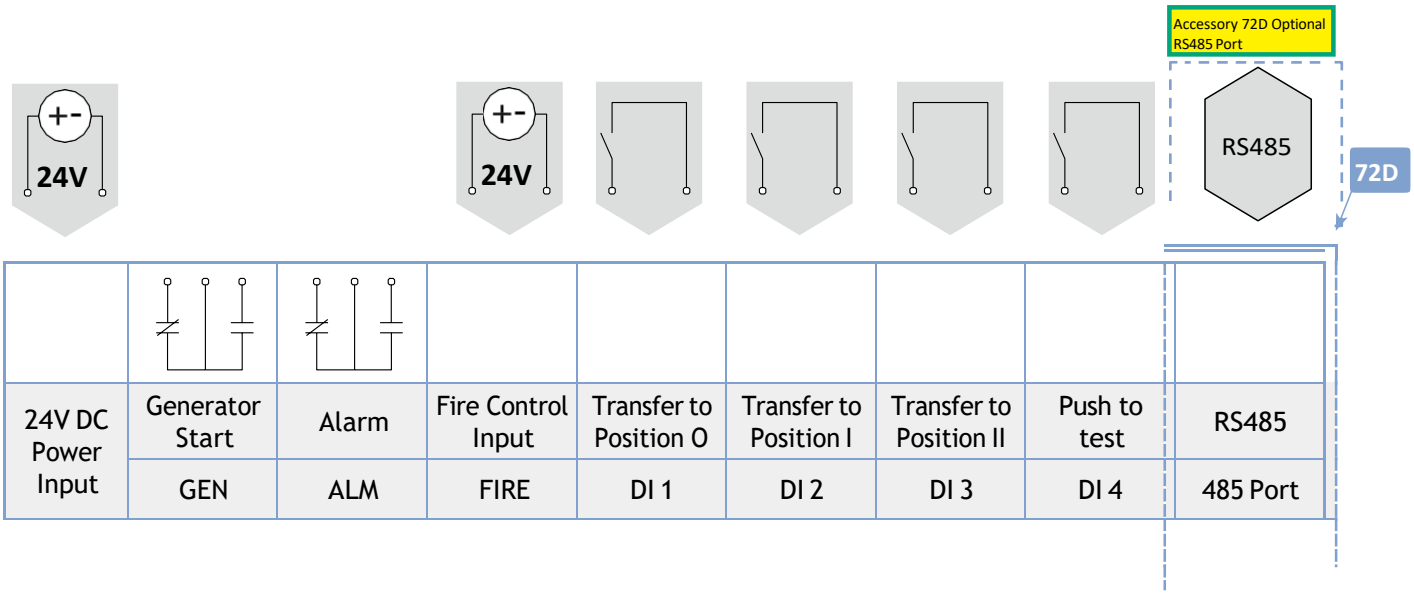
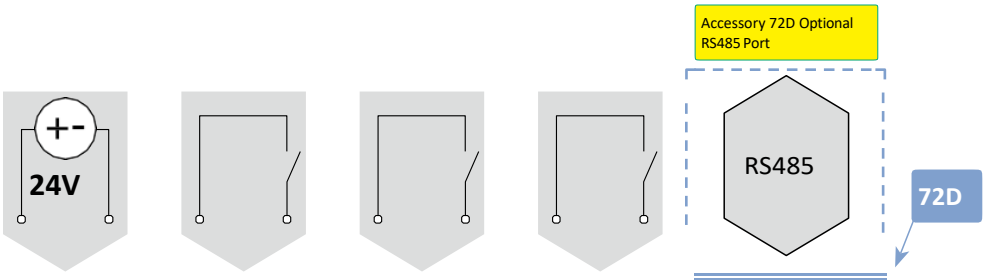
C300 Controller Port Function Description



24V DC Power Input	Generator Start	Alarm	Fire Control Input	Transfer to Position O	Transfer to Position I	Transfer to Position II	Push to test	RS485
	GEN	ALM	FIRE	DI 1	DI 2	DI 3	DI 4	485 Port

C1000 Controller Port Function Description



Generator Start	Alarm	Fire Control Input	Transfer to Position O	Transfer to Position I	Transfer to Position II	RS485
GEN	ALM	FIRE	DI5	DI6	DI7	485 Port
X3 User Terminal						**X4**

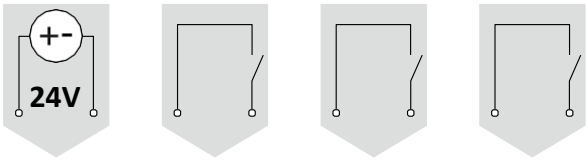
C1000 CONTROLLER

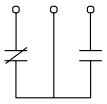
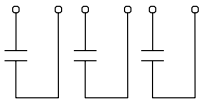
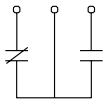
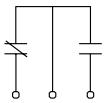
X1 Power Terminal	**X2 Control Terminal**
Power and Voltage Detection	Transfer Switch Position Detectionand Transfer Control

To Transfer Switch X1

To Transfer Switch X2

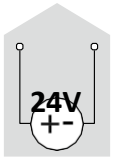
C2000 Controller Port Function Description



								
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**			
Power and Voltage Detection				Transfer Switch Position Detection and Transfer Control		24V DC Power Input	Lost Power		
									

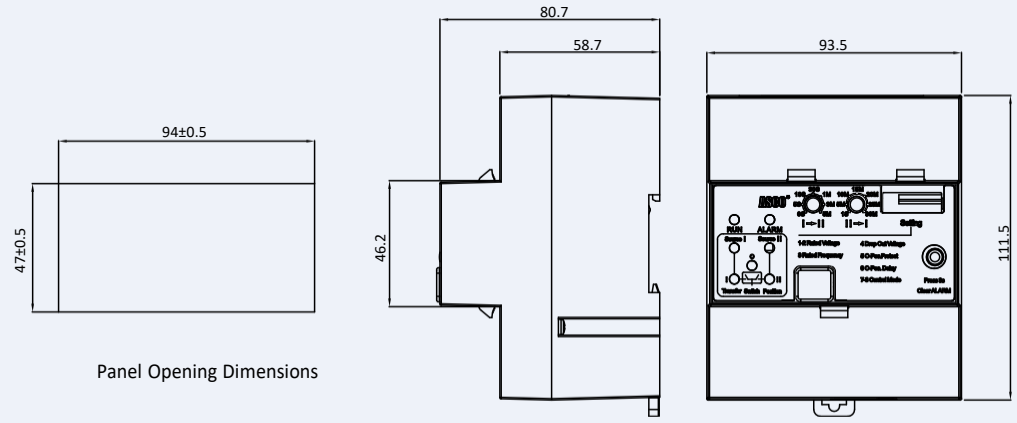
To Transfer Switch X1

To Transfer Switch X2



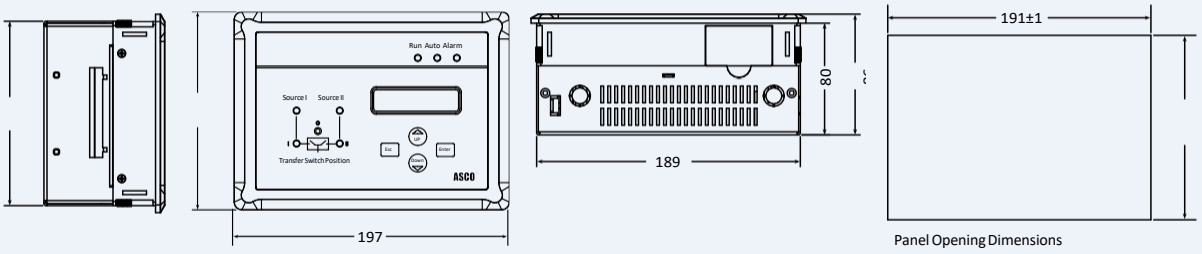
Controller Dimensions and Weight*

C1000 Controller (With or Without optional 72D Accessory)



Weight: 0.74kg
Unit: mm(inch)

C2000 Controller



Weight: 1kg
Unit: mm(inch)

Surge Suppression

Every facility depends on electronics to run everything from computers to security to production lines. Transfer switches provide an essential level of protection against power anomalies or total loss of a power source. However, disturbances other than a loss of power can disrupt or damage equipment, resulting in loss of data and an increase in downtime.

Terms used to describe power disturbances vary: surges, transients, spikes, swells, or noise. These high-energy events last for only microseconds, and differ based on how they are generated or where they occur in the facility. Such disturbances can flow through the facility and put downstream equipment at risk, including robust and sophisticated transfer switch controls.

ASCO offers Surge Suppression solutions to address power transients of various severity and frequency. With over 40 years of experience designing and manufacturing world-class surge protection products, we have established a comprehensive and cost effective product set for both IEC and UL market applications.

For critical power applications, Advanced Transient Detection and Power Quality Analysis provide monitoring of surge conditions, enabling real-time power quality measurements, logging of transient events, statistical summaries, and protection of your Series 230 transfer switch controls and other downstream equipment. Understanding the severity, type and timing of disruptive power events allows analysis of trends to better manage the electrical system needs.

Contact your regional ASCO sales professional or distribution partner for detailed information.