

ASCO *Series 230 Automatic Transfer Switch*



ASCO


EMERSON[™]
Network Power



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 two sources are isolated when the switch is in the center-off position. A center-off position locking mechanism is also provided.

Application

The Series 230 transfer switch is rated up to 800A and is available from 220 to 415 volts for both 50 and 60 Hz, single and three phase. Typical applications include commercial and residential buildings, hospitals, telecom, subway and transportation, data centers, military and fire pumps.

Parameter

Rated Operational Current I _e (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 Operation Voltage U _e (V)		220, 230, 240, 380, 400, 415														
Rated Frequency (Hz)		50 / 60														
Poles		2,4				2, 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 _{cn} (kA, PEAK)		8				17			31.5			65		80		
Withstand and Close-On 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														
Operation Voltage range (AC)	U _e =220V / 230V / 240V / 380V / 400V	125~300V (L-N)				(0.7~1.2) U _e										
	U _e = 415V					(0.7~1.15) U _e										
EMC Class		Class A														
Wiring Way		Front														
Separate Lock Mechanism		Standard														
Auxiliary Contact (Optional)		4 contacts maximum				8 contacts maximum										



ASCO 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
- EN60947-3/IEC60947-3: Suitable for Isolation
- 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 to withstand lightning strikes (40kA 8/20 μ s)
- Simple reliable mechanism, compact and stylish appearance
- Modular design, convenient operation, easy maintenance
- Three operating positions. Both sources can be isolated in a center-off position

Arc Extinguish

- The utilization categories are AC-32A, AC-33B, and the ability to withstand and break is 10 I_e
- Rotating dual contact design extinguishes the arc 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 closing ratings

Switching Mechanism

- Automatic, manual and remote operation are available
- 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
- Innovative motor circuit protection ensures precision operation
- Cast steel bevel gear mechanism provides high transmission efficiency, and extends operating life

Controller

- Different Operating Modes (Source I priority / No Source priority)
- 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



*Make Life and Business More Reliable
By Using ASCO*

ASCO Series 230 Transfer Switch Ordering Information

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

E2ADTL		B3	0800	H		D		X	0		1H
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*	Insert "X" If optional accessories are required	O	Open type	132JA ~ 132JC B2ADTL Frame BusBar
B2ADTL	100 ~ 160A Frame	02: 2 poles (L-L) (2-wire without Neutral)	0063, 0080	E	230V	D	C1000		C	IP20	132A ~ 132F Auxiliary Contacts
C2ADTL	200 ~ 250A Frame		0100, 0125	F	240V	E	C2000		Q	IP54	
D2ADTL	315 ~ 400A Frame	B2: 3 Poles (3-wire with Neutral)	0160, 0200	H	380V						72D C300, C1000 with RS-485
E2ADTL	500 ~ 800A Frame	03: 3 Poles (3-wire without Neutral)	0225, 0250	J	400V						1H C2000 with Energy Storage
		B3: 4 Poles (4-wire with Neutral)	0315, 0400	K	415V						
			0500, 0630								
			0800								

* The A2ADTL frame is only available with the embedded C300 controller



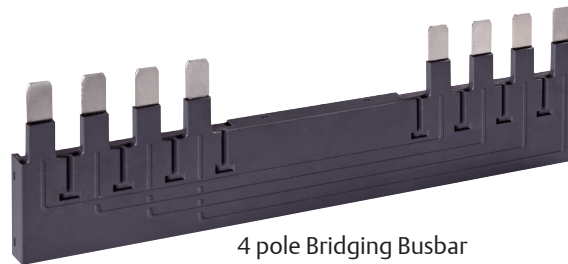
Optional Accessory Model Description and Order Information

B2ADTL Frame Bridging Bus Bar

132 J A

— Poles
 A: 2 poles (02356097)
 B: 3 poles (02357091)
 C: 4 poles (02355942)

— Function Code 132J: Bridging Busbar



4 pole Bridging Busbar

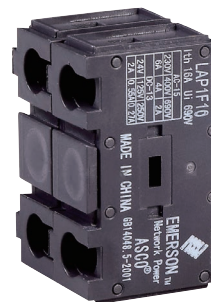
For example: **132JC** , means Bridging Busbar for a 4 pole transfer switch

Auxiliary Contacts

132 A A

— Auxiliary Contact Quantity
 BLANK: 1 contact
 A: 2 contacts
 B: 3 contacts
 C: 4 contacts

— Function Code 132A-132F: Auxiliary Contact



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 Code		
		132A	132B	132C
I				
O				
II				
Auxiliary Contact Code	LAP1F100 (16021426)	✓	✓	-
	LAP1F010 (16021427)	-	-	✓
Auxiliary Contact Mounting Position (only showing C2ADTL, D2ADTL, E2ADTL).				

Position of The Transfer Switch		Auxiliary Contact Function Code		
		132D	132E	132F
I				
O				
II				
Auxiliary Contact Code	LAP1F100 (16021426)	-	-	✓
	LAP1F010 (16021427)	✓	✓	-
Auxiliary Contact Mounting Position (only showing C2ADTL, D2ADTL, E2ADTL).				

72D

C300 or C1000 Controller with RS-485 interface

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.



1H

C2000 Controller with energy storage

The optional controller with energy storage (Accessory 1H) has an added feature to switch the transfer switch to the center-off position during Source I and Source II failure at the same time. The controller will remain in center-off until either Source I or Source II power is restored and voltage and frequency are both stable. This optional feature can work in Source I Priority and No Source Priority operating modes. This feature is available only after the controller has been powered by AC input for at least 10 minutes to charge a capacitor. This Accessory can only be installed in the factory. Use accessory code 1H when ordering this function.

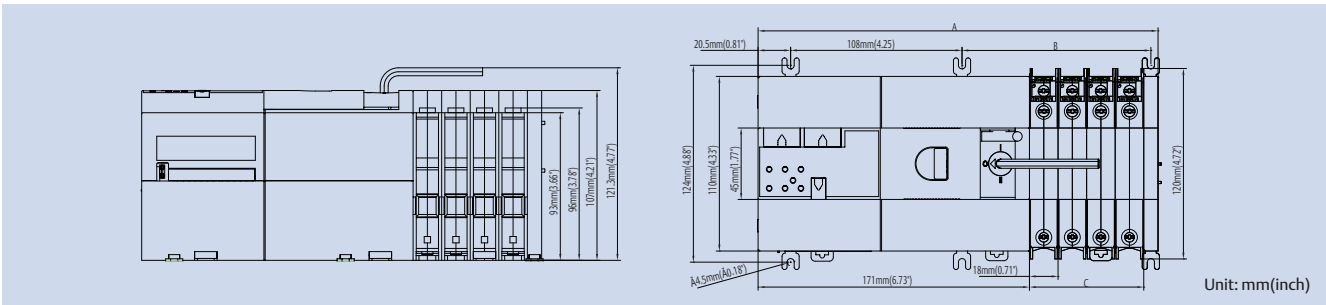


Avoid Losing Critical information
When Power is Lost



ASCO Series 230 Dimensions and Weight

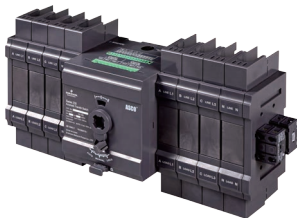
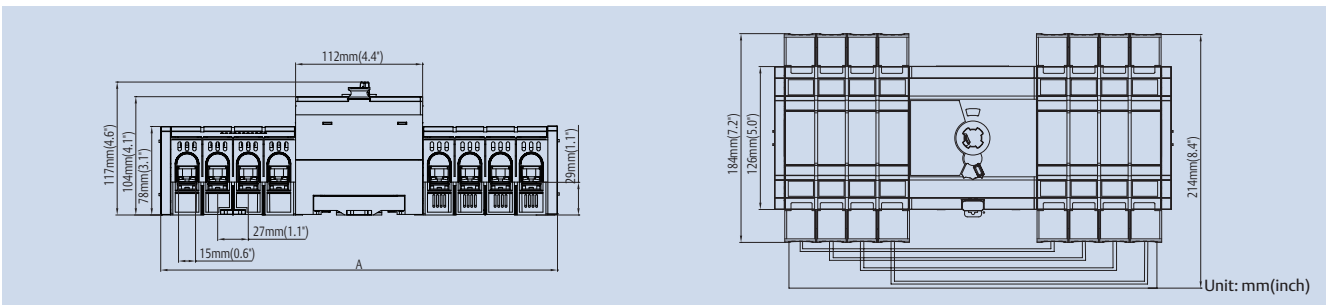
A2ADTL Frame



A2ADTL		2P	4P
Size (mm)	A	216.0	252.0
Weight (kg)		1.6	2.0

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

B2ADTL Frame

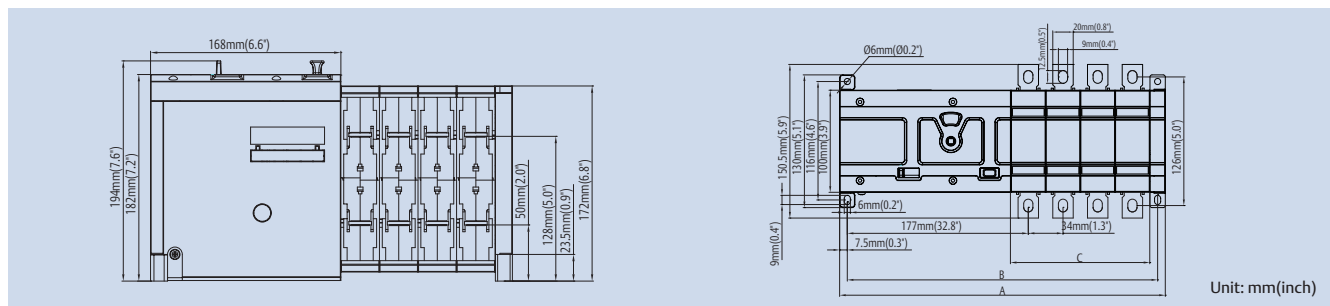


B2ADTL		2P	3P	4P
Size (mm)	A	241.0	349.0	349.0
Weight (kg)		2.6	2.8	2.8

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

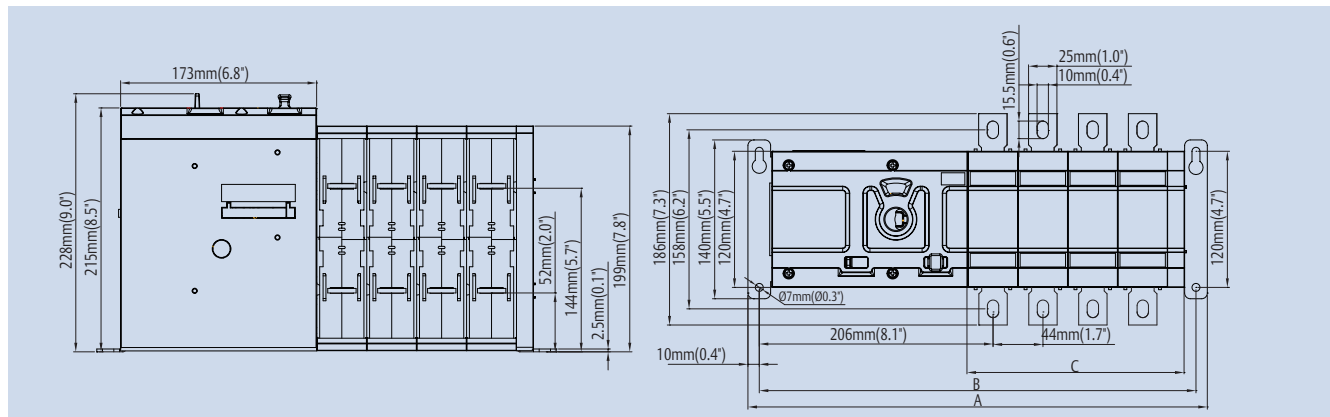


C2ADTL Frame

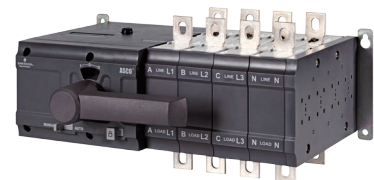


C2ADTL		2P	3P	4P
Size (mm)	A	251.0	285.0	319.0
	B	236.0	270.0	304.0
	C	68.0	102.0	136.0
Weight (kg)		4.6	5.2	5.8

D2ADTL Frame



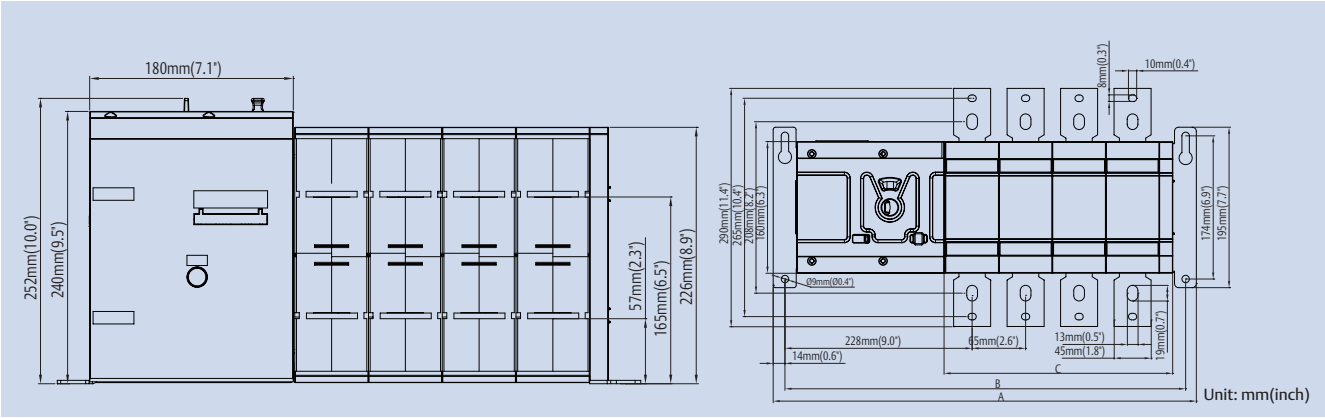
D2ADTL		2P	3P	4P
Size (mm)	A	317.0	361.0	405.0
	B	297.0	341.0	385.0
	C	103.0	147.0	191.0
Weight (kg)		8.6	9.8	11.0



ASCO Power Transfer Switch Solutions for Powerful Peace of Mind



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 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	2P	3P	4P	2P	3P	4P
A2ADTL	310	170	175	1.9	2.3						
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			16.0	19.0	22.0	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

C300 Controller

Voltage and Frequency Sensing

- Single phase under and over voltage settings on Source I and Source II
- Phase loss 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 $\pm 1\%$
- Transfer time delay can be set manually

Controller Display and Keypad

- LED display
- Touch key 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
- Priority Source Swap

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

- 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
- C300 has ability to work with 24VDC power supply

C1000 Controller

Voltage and Frequency Sensing

- Single phase under and over voltage settings on Source I and Source II
- Phase loss 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 $\pm 1\%$
- 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
- Priority Source Swap

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

- 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 $\pm 1\%$
- 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
- Priority Source Swap

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




- 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-hour Protection No Matter When Trouble Strikes



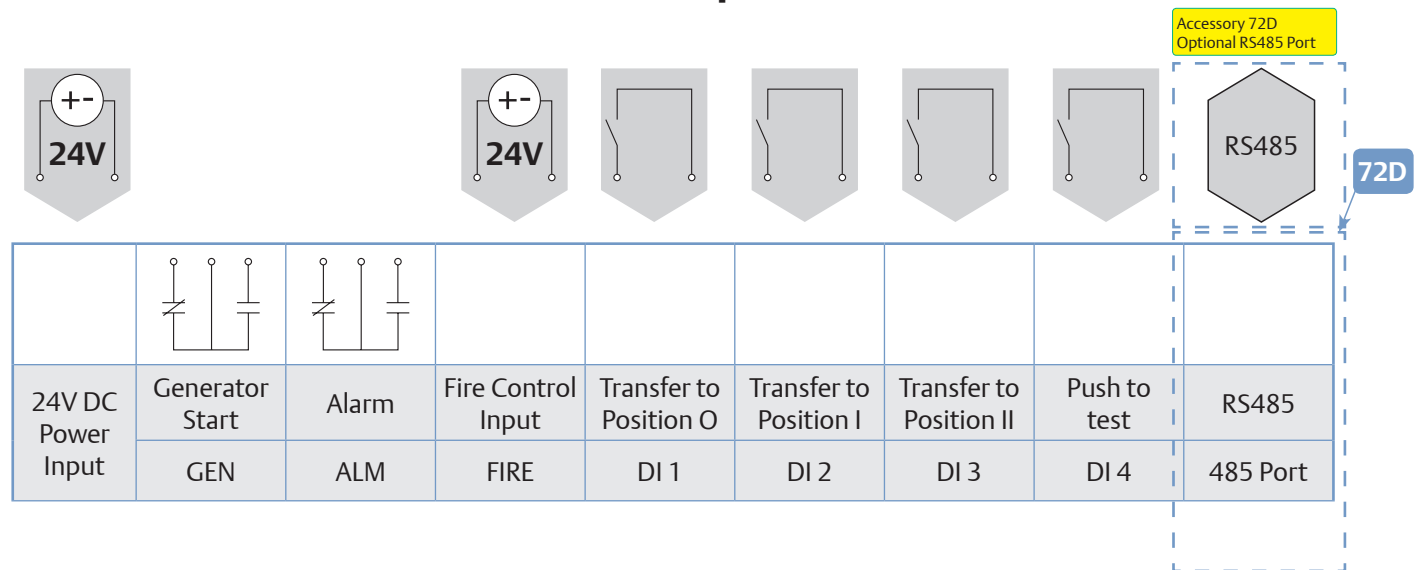
	C300	C1000	C2000
			
Rated Operation Voltage Ue(V)	220/230/240	220/230/240/380/400/415	220/230/240/380/400/415
Rated Frequency (Hz)	50/60Hz	50/60Hz	50/60Hz
Display Indicator			
Source(I,II) Available	■	■	■
ATS Position	■	■	■
Control Mode			
Manual/Automatic	■	■	■
Source I Priority	■	■	■
No Source Priority	■	■	■
Remote Control	■	■	■
Unique Control Function			
Remote control Priority ⁽¹⁾	■	■	■
Priority Source Swap	■	■ ⁽²⁾	■
Center-off with protection when Source I and II are lost ⁽³⁾			Optional
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 Panel installation	DIN rail installation and Panel installation	Panel installation

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

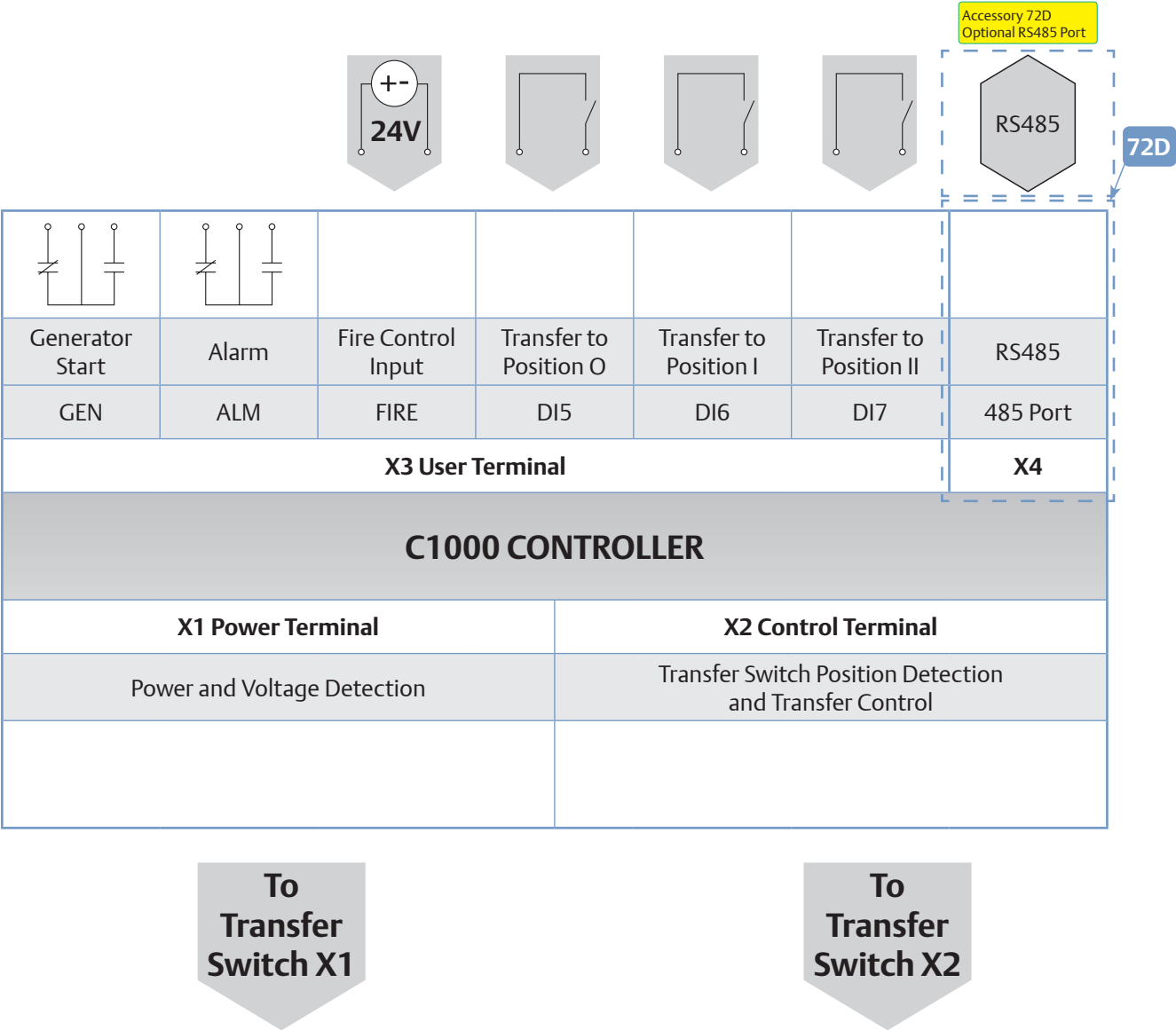
- Remarks:
1. Only available for source priority mode
 2. C1000 controller with priority swap function requires special soft ware to be field installed
 3. Need to use controller with energy storage (Accy 1H)
 4. For C300 controller, Source II Voltage sensing is only on L1
 5. For C300 controller, Source 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



C300 Controller Port Function Description

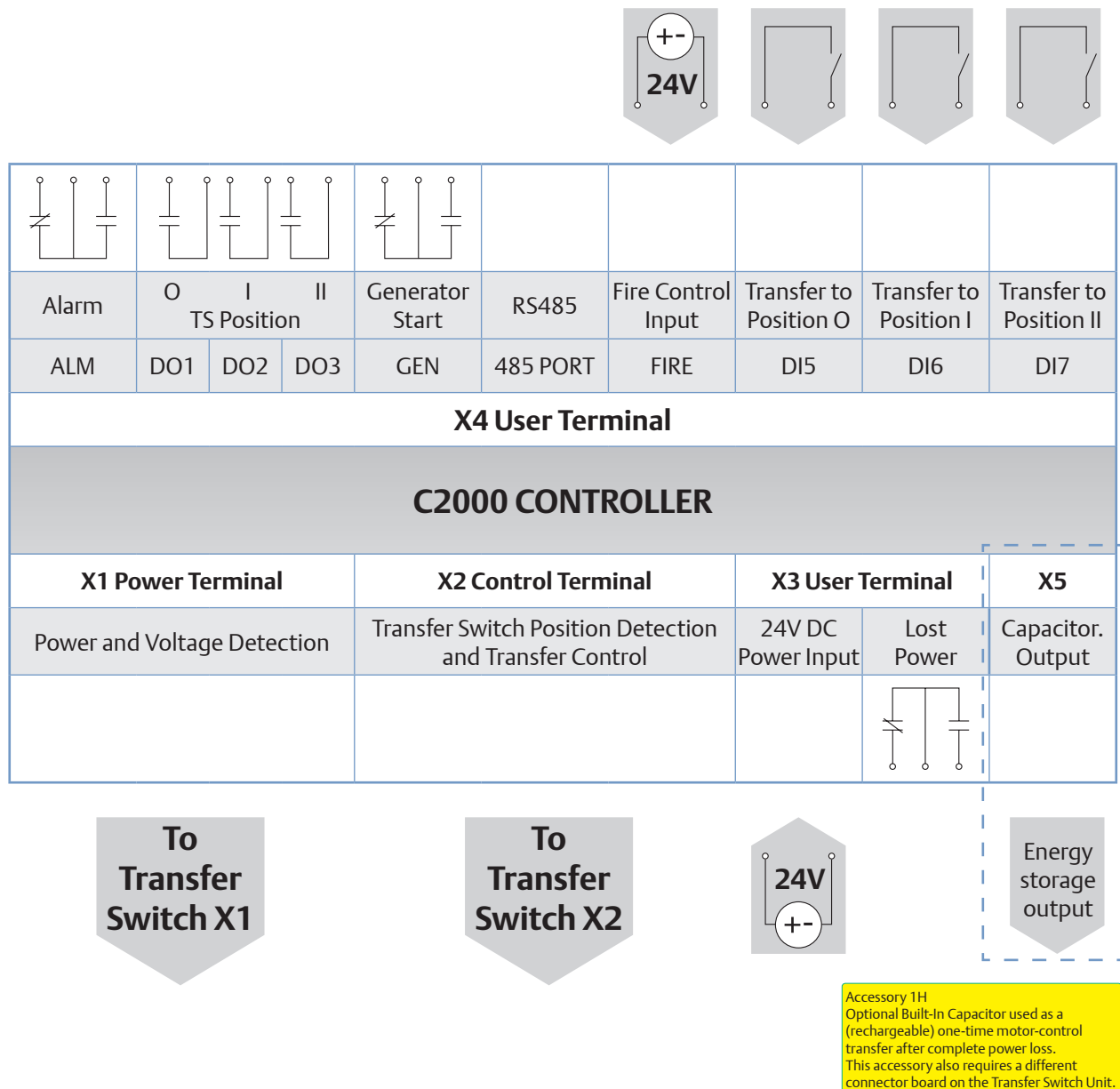


C1000 Controller Port Function Description





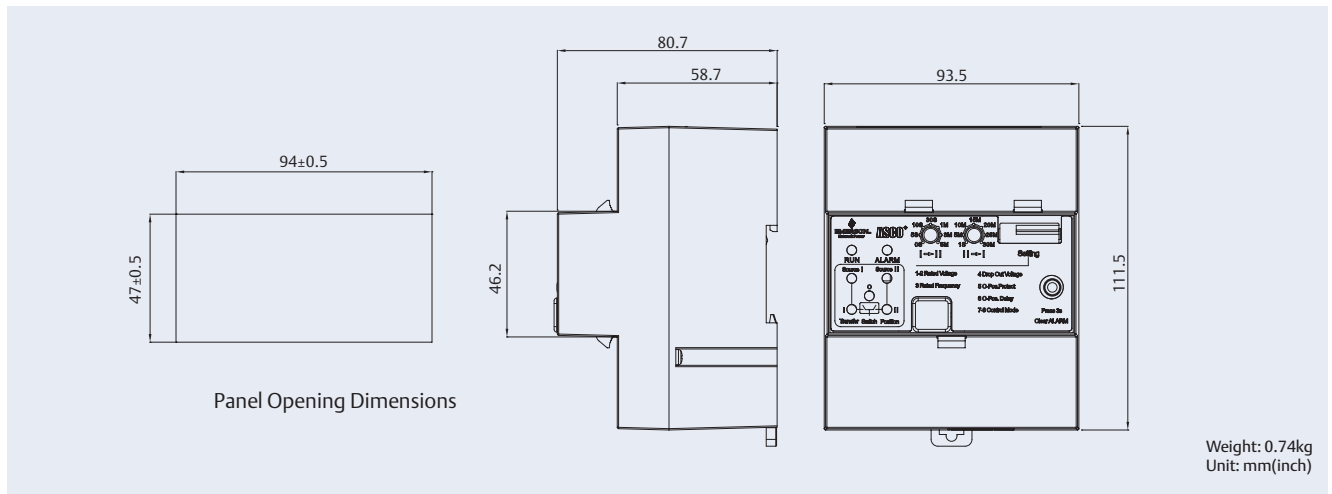
C2000 Controller Port Function Description



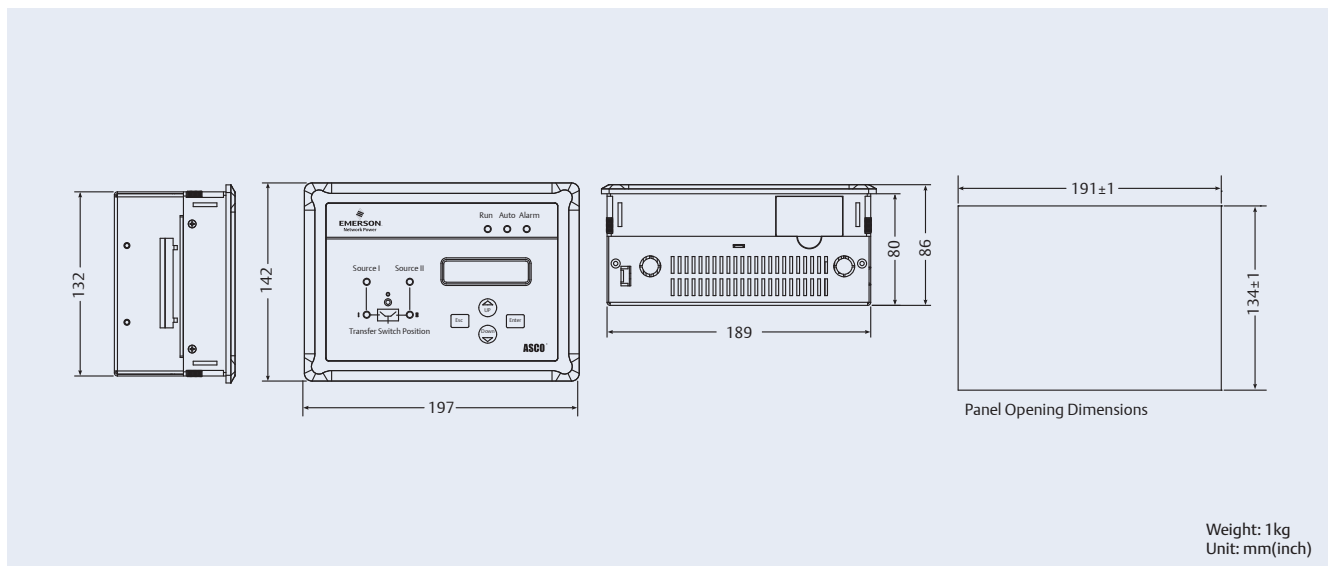


Controller Dimensions and Weight*

C1000 Controller (With or Without optional 72D Accessory)



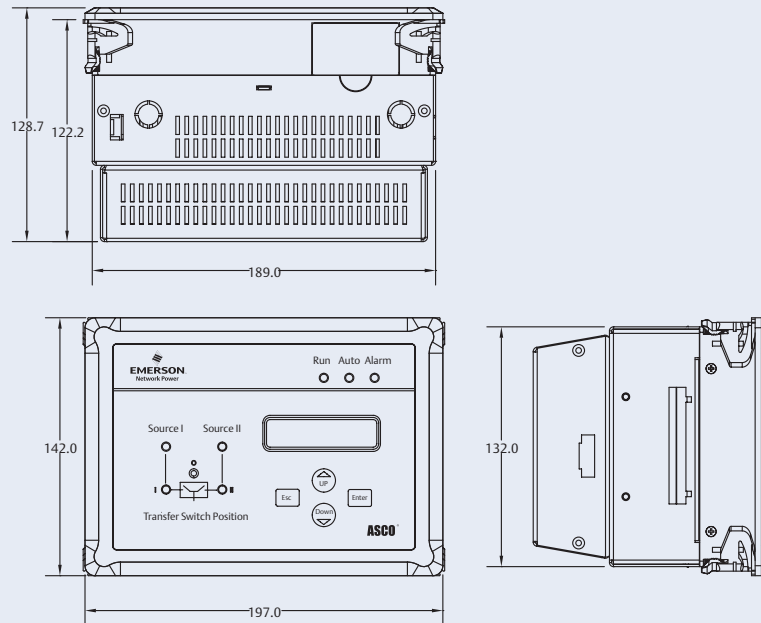
C2000 Controller





Critical Loads Demand ASCO

C2000 Controller with Energy Storage (Accessory 1H)



Weight: 1.64kg
Unit: mm(inch)

*Not Shipping weight, Actual unit weight

About Emerson Network Power

Emerson Network Power, a business of Emerson (NYSE:EMR), protects and optimizes critical infrastructure for data centers, communications networks, healthcare and industrial facilities. The company provides new-to-the-world solutions, as well as established expertise and smart innovation in areas including AC and DC power and renewable energy, precision cooling systems, infrastructure management, embedded computing and power, integrated racks and enclosures, power switching and controls, and connectivity. Our solutions are supported globally by local Emerson Network Power service technicians. Learn more about Emerson Network Power products and services at:

www.emersonnetworkpower.com

About Emerson

Emerson (NYSE: EMR), based in St. Louis, Missouri (USA), is a global leader in bringing technology and engineering together to provide innovative solutions for customers in industrial, commercial, and consumer markets around the world. The company is comprised of five business segments: Process Management, Industrial Automation, Network Power, Climate Technologies, and Commercial & Residential Solutions. Sales in fiscal 2013 were \$24.7 billion.

For more information, visit:

www.emerson.com



Official Wechat



Official Weibo

Legal statement: While every precaution has been taken to ensure accuracy and completeness herein, Emerson assumes no responsibility, and disclaims all liability, for damages resulting from use of this information or for any errors or omissions. Specifications subject to change without notice.

Emerson Network Power Co., Ltd.

Address: Block B2 Nanshan Park No.1001 Xueyuan
Road Nanshan Dist. Shenzhen, 518055 China
China Telephone: 86-755-86010808
Postcode: 518055

Pre-sales hotline:

400-887-6526

After-sales hotline:

400-887-6510

www.emersonnetworkpower.com.cn

Emerson Network Power, ASCO, the Emerson Network Power logo and ASCO logo are trademarks and service marks of Emerson Electric Co. ©2015 Emerson Electric Co.
E-X6216497-0915

EMERSON. CONSIDER IT SOLVED.™