SERIES 230 E2ADTL Transfer Switch User Manual

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Emerson Network Power provides customers with technical support. Users may contact the nearest Emerson Network Power sales office or service center.

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Chapter 1 Overview

ASCO Series 230 E2ADTL transfer switch is a professional PC class dual power transfer switch. It adopts a reliable mechanism and an electric design built on a modular concept, and is suitable for various electric continuity applications. All Series 230 transfer switch products meet EN60947-6-1 and IEC60947-6-1 requirements.

This chapter will introduce the model description, appearance, product composition, application environment and mechanical parameters of this transfer switch.

1.1 Model Description and Order Information

1.1.1 Model Description

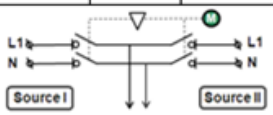
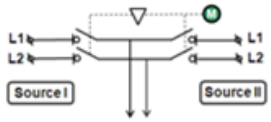
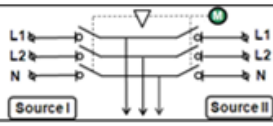
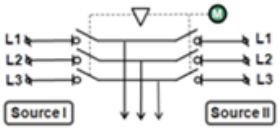
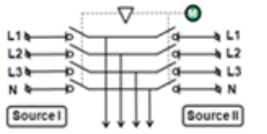
Taking E2ADTLB30800HE00 as an example, the model description is shown in Table 1-1.

Table 1-1 Model Description and Order Information

E2ADTL		B3	0800	H	E	0	0
①		②	③	④	⑤	⑥	⑦
Description							
①	Series 230 E2ADTL Automatic Transfer Switch	E2ADTL	Series 230 E2ADTL Automatic Transfer Switch Center-off (three-position design)				
②	Number of Poles, Configuration	B1	2 Poles (Sigle Phase 220V-240V, 2-Wire with Neutral Line)				
		02	2 Poles (Two Phase 220V-240V, 2-Wire without Neutral Line)				
		B2	3 Poles (Two Phase 220V-240V, 3-Wire with Neutral Line)				
		03	3 Poles (Three Phase 380V-415V, 3-Wire without Neutral Line)				
		B3	4 Poles (Three Phase 380V-415V, 4-Wire with Neutral Line)				
③	Rated Operating Current Code	0500	500A				
		0630	630A				
		0800	800A				
④	Rated Operating Voltage Code	C	208V				
		D	220V				
		E	230V				
		F	240V				
		H	380V				
		J	400V				
		K	415V				
⑤	Controller	D	C1000 Controller				
		E	C2000 Controller				
		0	Without Controller				
⑥	Accessory	0	No accessory				
⑦	Enclosure	0	No enclosure				

Notes: Default frequency setting is 50Hz. If application frequency requires 60Hz, please indicate this when ordering Series 230 product.

1.1.2 Configuration Description and Number of Poles

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

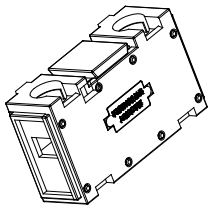
1.1.3 Accessory Model Description and Order Information

Auxiliary Contacts (Optional Accessory)

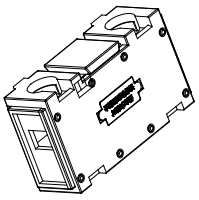
132 A A

Auxiliary Contact Quantity
Blank: 1 Contact
A: 2 Contacts
B: 3 Contacts
C: 4 Contacts

Function Code (See Diagram Bel
132A-132F: Auxiliary Contact



Auxiliary Contact NO
LAP1F100



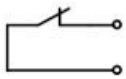
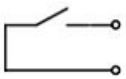
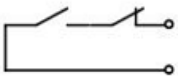
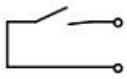
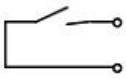
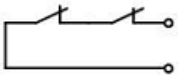
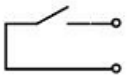
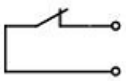
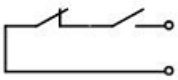
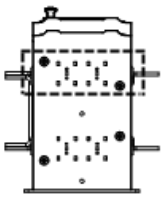
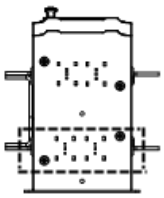
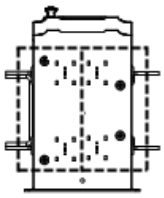
Auxiliary Contact NC
LAP1F010

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

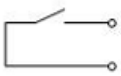
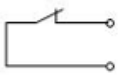
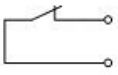
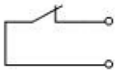
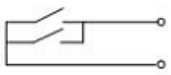
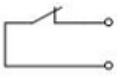
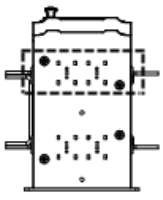
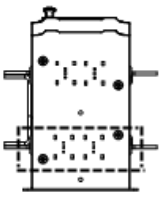
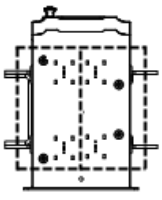
The Auxiliary Contact Code Definitions

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				

Schematic 1 132A-132C Diagram

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

Schematic 2 132D-132F Diagram

1.2 Appearance

The appearance of the transfer switch is shown in Figure 1-1.

Figure 1-1 Appearance

1.3 Product Composition

Series 230 automatic transfer switch includes one transfer switch and one controller. The E2ADTL Size has multiple ampere rating options. Series 230 transfer switch unit can work with either the C1000 or C2000 controller.

The following accessories are included as standard in the Series 230 E2ADTL automatic transfer switch package, see Table 1-2:

Table 1-2 Series 230 E2ADTL Transfer Switch Standard Accessories

Standard Accessories	Model and Specification	Part Number	2-Pole	3-Pole	4-Pole
Mounting Fastener Package	M8 × 20	02357789	1 Pack	1 Pack	1 Pack
Terminal Screws	M12 × 40	26010895	8 pcs	12 pcs	16 pcs
Terminal Washers	D12	26010336 / 26010349			
Terminal Nuts	M12	26010385			
Bridging Busbar	LBP1F0800	63123117	2 pcs	3 pcs	4 pcs
Pole Partition	LIP1F0800	63201894	4 pcs	8 pcs	12 pcs
Handle	LHS1F	21501605	1 pcs	1 pcs	1 pcs
Connection Cable	Power Cable & Signal Cable	04119032	1 set	1 set	1 set
Fuse	0215.500MXP/UDA.500	19040399	2 pcs	2 pcs	2 pcs
User Manual	Series 230 E2ADTL Transfer Switch User Manual	31012823	1 copy	1 copy	1 copy

The following accessories are included as optional in the Series 230 E2ADTL automatic transfer switch package, see Table 1-3:

Table 1-3 Series 230 E2ADTL Transfer Switch Optional Accessories

Function Code	Accessories Name	Model and Specification	Part Number	Quantity
132A,132AA,132AB,132AC	Auxiliary Contact (NO)	LAP1F100	16021426	1,2,3,or 4
132B,132BA,132BB,132BC	Auxiliary Contact (NO)	LAP1F100	16021426	1,2,3,or 4
132C,132CA,132CB,132CC	Auxiliary Contact (NC)	LAP1F010	16021427	2,4,6,or 8
132D,132DA,132DB,132DC	Auxiliary Contact (NC)	LAP1F010	16021427	1,2,3,or 4
132E,132EA,132EB,132EC	Auxiliary Contact (NC)	LAP1F010	16021427	1,2,3,or 4
132F,132FA,132FB,132FC	Auxiliary Contact (NO)	LAP1F100	16021426	2,4,6,or 8

Note: The optional accessories are an additional order item, and need Configuration in site according requirements.

1.4 Panel Description

For the transfer Switch panel description, see Figure 1-2.

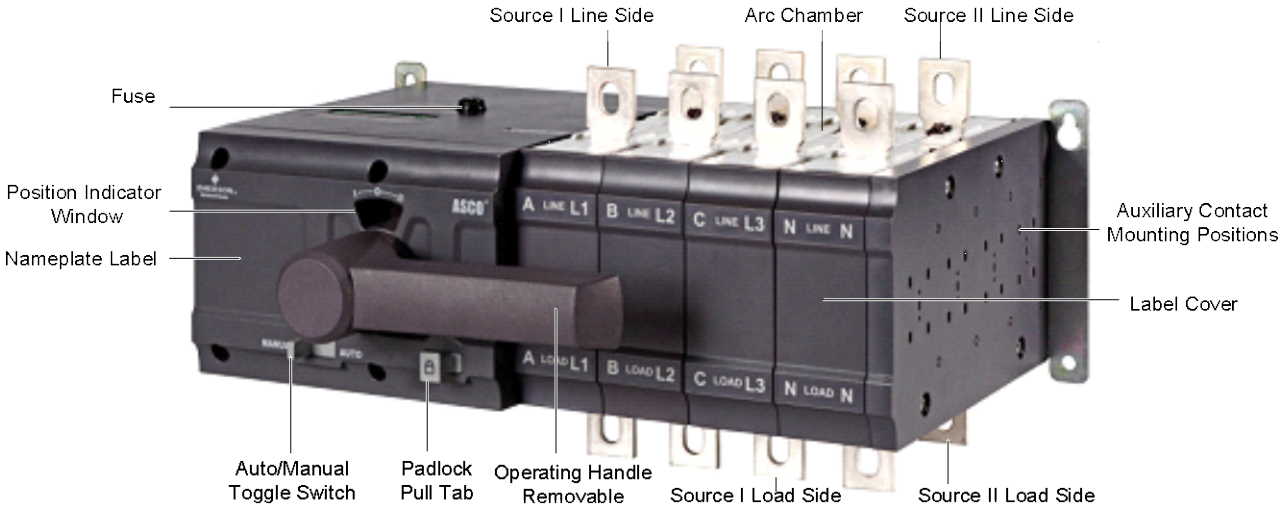


Figure 1-2 Panel Description

1.5 Application Environment

- Altitude: 2000 meter or less
- Temperature: -5°C to +40°C
- Humidity: Within 95%, No condensation
- Pollution Class: Class III
- Mounting Method: Horizontal or Vertical
- Product Standards Met: EN60947-6-1 and IEC60947-6-1
- Environmental Standards Met: RoHS and WEEE

1.6 Technical Parameters

For the technical parameters, see Table1-4.

Table 1-4 Technical Parameters

Item	Parameter	
Rated Operating Voltage Ue (Vac)	208 / 220 / 230 / 240（2 poles） 380 / 400 / 415（3 poles / 4 poles）	
Operating Voltage Range (V)	Ue=220 / 230 / 240 / 380 / 400	（0.7～1.2）× Ue
	Ue= 415	（0.7～1.15）× Ue
	Ue= 208	（0.75～1.2）× Ue
Utilization Category	AC-33B	
Rated Insulation Voltage Ui (V)	800	
Rated Impulse Withstand Voltage Uimp (kV)	12	
Rated Short-time Making Capacity Icm (peak) (kA)	80	
Rated Short-circuit Withstand Current Icw (kA/0.1s)	40	
Rated Conditional Short-circuit Current Iq (rms) (kA)	200	
Operating Transfer Time (s)	＜4	

Chapter 2 Installation And Operation

DANGER

DANGER is used in this manual to warn of a hazard situation which, if not avoided, will result in death or serious injury.

WARNING

WARNING is used in this manual to warn of a hazardous situation which, if not avoided, could result death or serious injury.

CAUTION

CAUTION is used in this manual to warn of a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE is used in this manual to comments or suggestion of a fault situation which, if not avoided, could result in fault.

An experienced licensed electrician must install the ATS.

Each automatic transfer switch contains a rating label (Name plate) to define the loads (Ampere rating). Refer to the label on the transfer switch for specific values.

DANGER
Do not exceed the values on the rating label. **Exceeding the rating can cause personal injury or serious equipment damage.**

2.1 Installation

1. Connect with the controller

   See the corresponding controller user manual for controller installation details.

2. Connect Surge Protection Device

   The Automatic transfer switch is connected to an electronic circuit with a power supply, that is vulnerable to overvoltage damage, therefore, it is recommended that users install Class C Surge Protection Devices when using automatic transfer switches, and the right wiring methods. See Appendix 1 (Surge Protection Device) for additional details and recommended wiring methods.

2.1.2 Installation of Transfer Switch

Install the transfer switch to the cabinet according to the mounting dimensions shown in Figure 2-1.

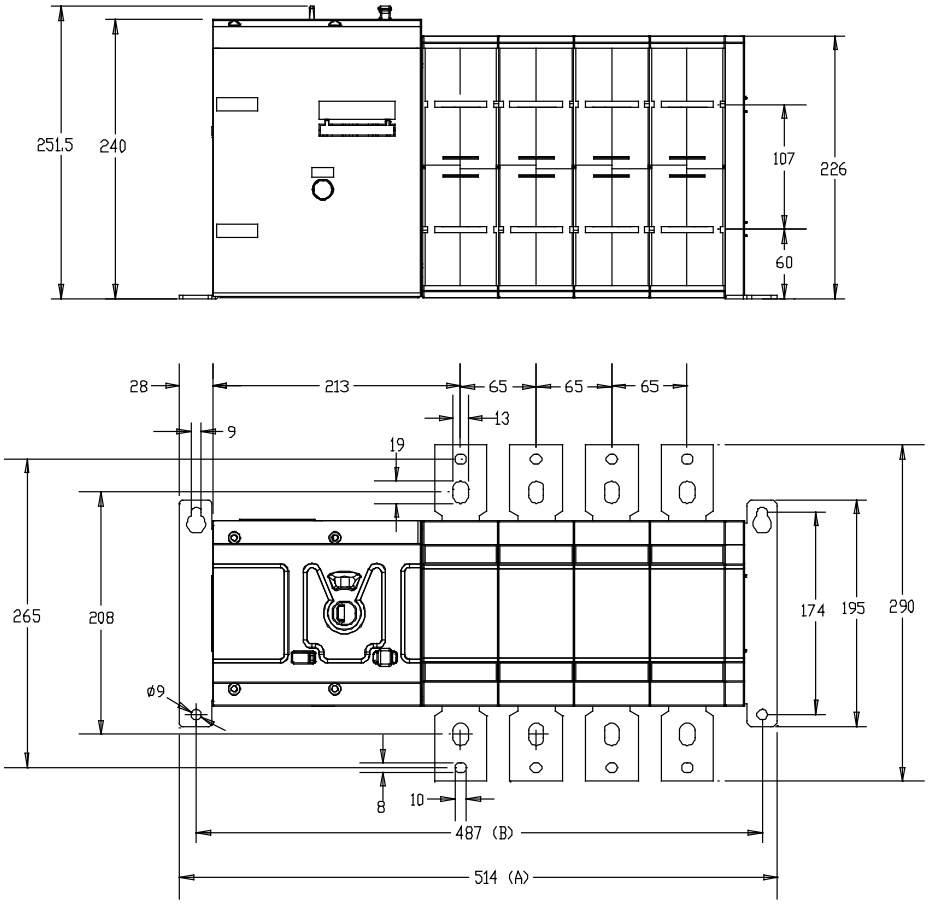


Figure 2-1 Mounting Dimension (unit: mm)

Dimensions of A, B, and C in Figure 2-1 are shown in Table 2-1.

	2 Pole	3 Pole	4 Pole
A (mm)	384	449	514
B (mm)	357	422	487
Weight (KG)	14	17	20

Table 2-1 A, B, and C Dimensions

WARNING

1. The transfer switch inlet and outlet shall be properly connected. If a power is emergency power such as a generator, emergency power supply should be connected to the Source II.
2. Recommended torque to be used for transfer switch mounting screws during installation: M8: 11 N·m.

2.1.3 Accessory Installation

1. Bridging Busbar

It is used to connect the switch I and II load side terminals together.

The installation procedures are as follows:

1) Identify the transfer switch load side terminals.

2) As shown in Figure 2-2, insert the bridging bus bars between the Source I load side terminal and the Source II load side terminal with M12 hardware. One bridging bus bar is made of two separate L-shaped bus bars which are attached together with M6 hardware.

To eliminate the force between the bridging busbars and the load side terminal, the installation procedures are as follows. And the bridging bus bars should be installed with one direction.

Step 1: Attach and tighten the (M12) screws between the L-shaped bridging bus bars and the load terminals separately (prior to attaching the 2 separate L-shaped bus bars together).----①

Step 2: Finally, attach and tighten the (M6) screws between the two L-shaped bus bars together to make a single bridging bus bar between the load terminals.---- ②

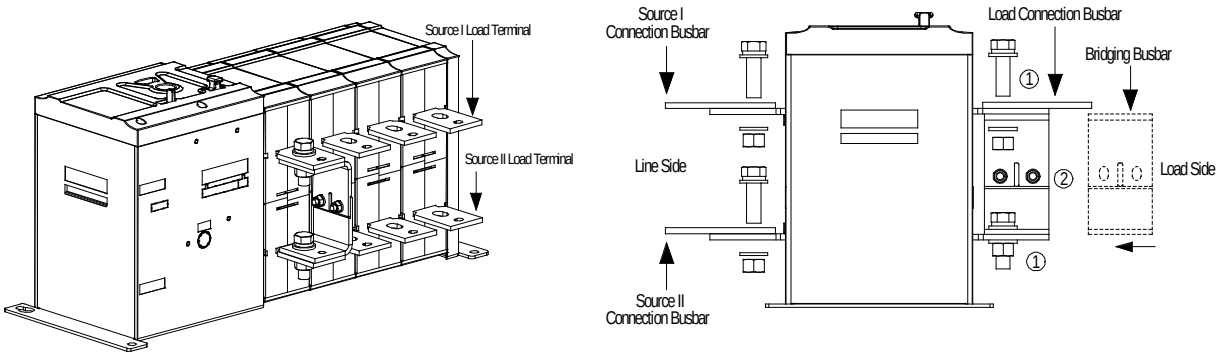


Figure 2-2 Installation of Bridging Busbar

WARNING

1. Make sure to install the bridging busbar in such a way that its long center plate must make solid contact with the arc chamber surface.
2. The bridging busbar can only be used for the LOAD SIDE of the switch.
3. Recommended torque to be used for the bridging busbar connecting screws: M12: 39 N·m. M6: 5 N·m.

2. Pole Partition

The pole partition is used to isolate and insulate the poles and ensure electric safety.

The installation procedures are as follows:

1) The pole partition as shown in Figure 2-3.

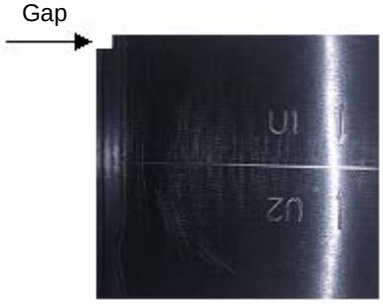


Figure 2-3 Pole Partition

2) Remove all label covers on the arc chamber: A/B/C/N. Insert the first pole partition between two arc chambers with the gap facing DOWN and insert another pole partition with the gap facing upward. Repeat for each slot between each pole. When finished, snap each label cover back into its **original position**. Make sure that the correct label (LINE versus LOAD) is showing on the correct side. See Figure 2-4 for more details.

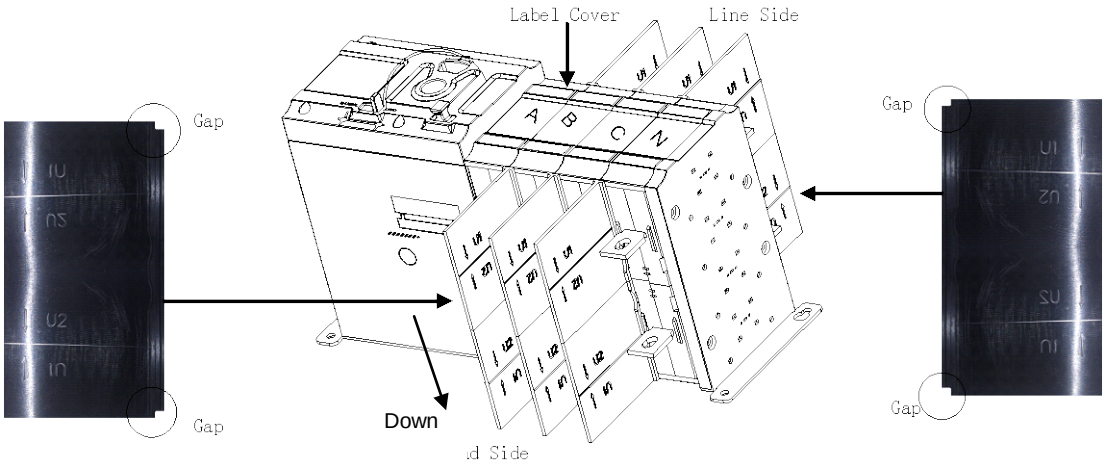


Figure 2-4 Pole Partition Installation

CAUTION

1. The gap in the pole partition is used to make room for the label covers and the base of the switch. If the gap is inserted in the wrong direction, the label cover will not be able to be snapped back into position correctly.
2. Make sure that the correct label (LINE versus LOAD) is showing on the correct side AND make sure that the corresponding phase labels on the cover (A/B/C/N) are in their correct positions as well with A Phase being closest to the main gear driver box area.

3. Auxiliary Contacts (Optional Accessory)

There are many different optional auxiliary contact configurations available for the E2ADTL TS unit, See the Figure 2-5 below for what options exists.

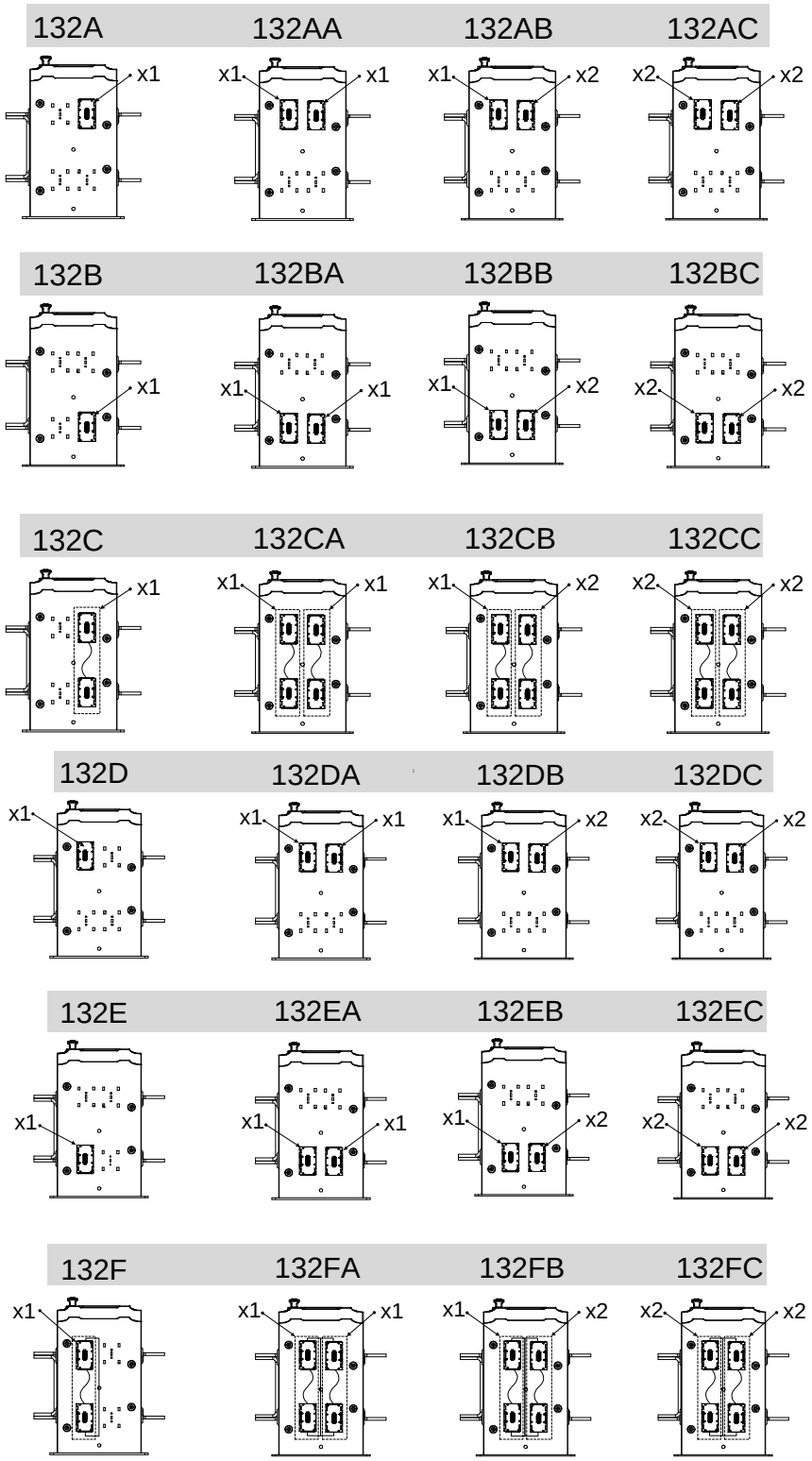


Figure 2-5 Auxiliary Contact Order Code and Installation

The Auxiliary Contact Locations are shown in Figure 2-6.

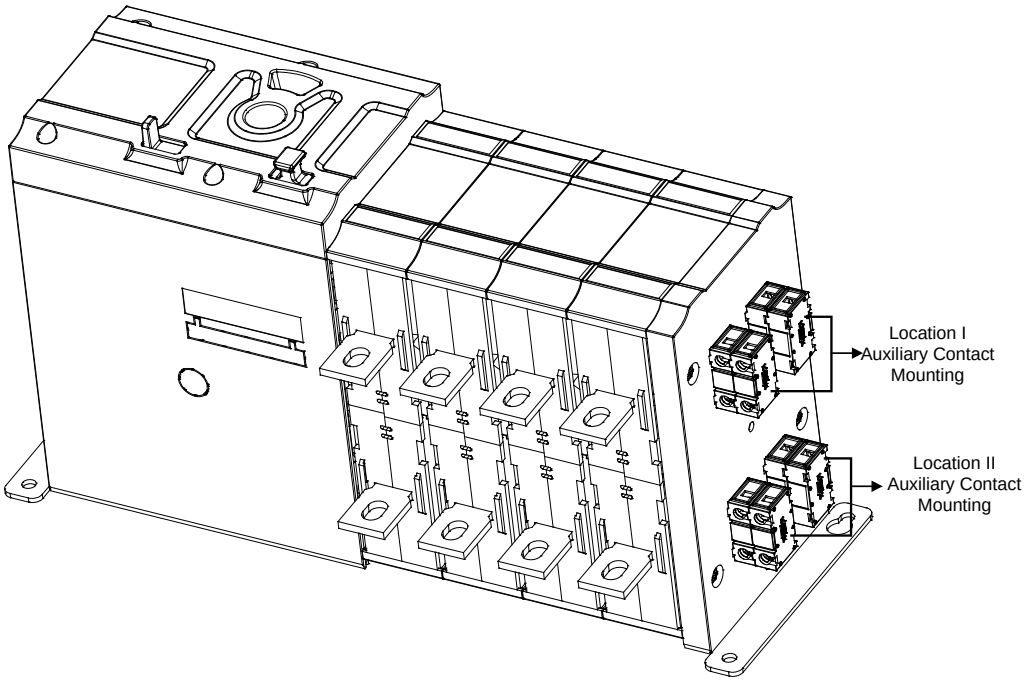


Figure 2-6 Auxiliary Contact Location Definition

The installation procedures are as follows:

1. With the auxiliary contact screw holes facing outward, snap the 4 claws into the corresponding 4 holes on the transfer switch side plate, and then force it into position, as shown in Figure 2-7.

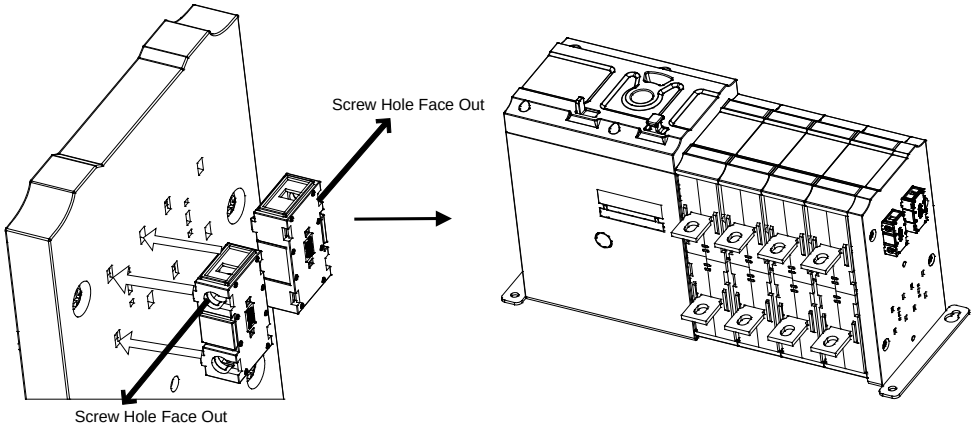


Figure 2-7 Auxiliary Contact Installation to Side Plate

2. When mounting an additional auxiliary contact on top of another contact, remove the sticker located in the center of the contact that is being mounted, then like before, with the screw holes facing outward, snap the 4 claws into the corresponding 4 holes on the previously installed auxiliary contact and then force it into position, as shown in Figure 2-8. If installing an additional auxiliary contact on top of another, need to remove sticker on the base auxiliary contact, otherwise do not remove sticker to protect auxiliary contact from dust debris.

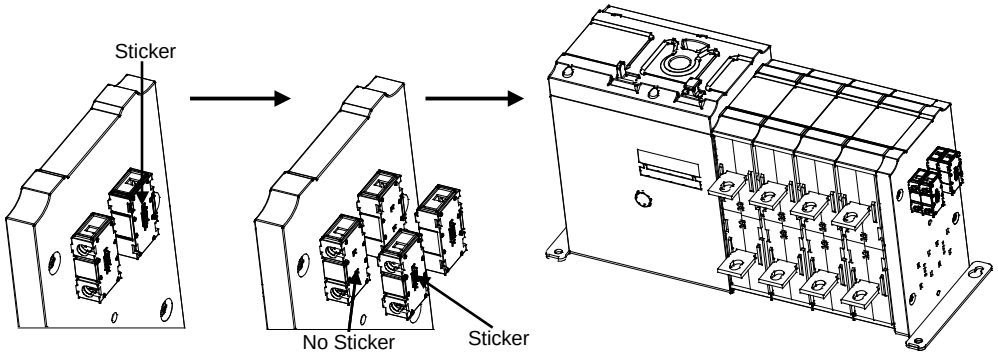


Figure 2-8 Auxiliary Contact Installation on Top of Another Contact

NOTICE

1. The center sticker on the auxiliary contact that is in direct contact with the side plate must be removed before installation of the additional auxilary contact on top of it.
2. Keep the center sticker on the outer most auxiliary contact in place to avoid any debris or dust from getting inside.
3. The maximum auxiliary contacts that can be used on the side plate are 8 contact s, or 2 contacts per slot location. There are 4 slot locations.

3. Next, punch out the small holes on the side plate in order to insert the cable clamps into the small round holes on the transfer switch side plate. See figure 2-9. There should be 2 clamps packaged together with each optional auxiliary contact.

Figure 2-9 Cable Clamp

4. After wiring the auxiliary contacts, affix the corresponding cable with the closest cable clamp using a cable tie to facilitate and optimize the wiring layout as shown in Figure 2-10.

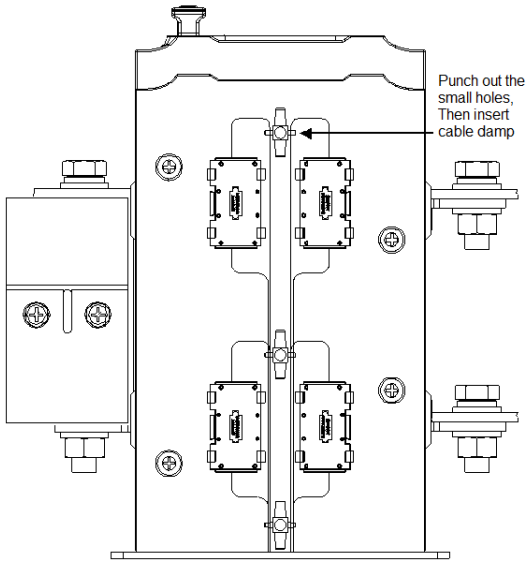


Figure 2-10 Schematic Diagram for Cable Routing

5. Auxiliary Contact Specifications:

a) Ratings:

Rated thermal current Ith /A	Rated insulation voltage V	Rated impulse withstand voltage Uimp/kV	Protection class of enclosure	Pollution degree	Maximum cable cross section
16	690	4	IP20	3	2.5mm^2

b) Additional Information:

	AC-15		DC-12		DC-13	
U_e / V	I_e / A	U_e / V	I_e / A	P / W	I_e / A	P / W
230	6	24	10	240	2	48
400	4	72	4	288	0.8	58
690	2	125	2	250	0.55	69
		250	0.55	138	0.27	68

CAUTION

In order to obtain higher reliability, the auxiliary contact circuit should meet the requirments: Current⩾5mA

2.2 Operation

2.2.1 Manual Operation

The procedures are as follows:

1. Move the auto/manual toggle switch from ‘AUTO’ (automatic) to ‘MANUAL’ position, as shown in Figure 2-11.

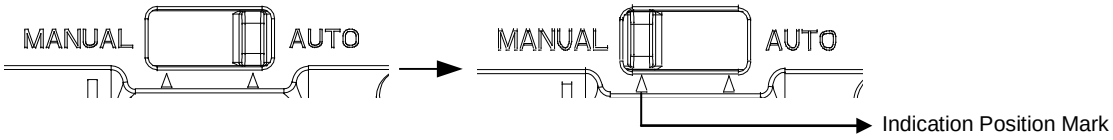


Figure 2-11 Switching the toggle Switch from AUTO to MANUAL

CAUTION
Make sure toggle switch lines up with the correct indication position mark

2. Insert the operating handle into the handle hole, and rotate the handle according to the position and direction shown in the position indicator widow.

1) When the window initially displays ‘OFF’ (Center-off Position), do the following operations as needed:

- If you need to switch to Position I (Normal Source), rotate the handle 90 degrees counter-clockwise. After hearing a ‘click', and the window displays ‘I’, it indicates that the position has been successfully switched to Position I.
- If you need to switch to Position II (Emergency Source), rotate the handle 90 degrees clockwise. After hearing a ‘click', and the window displays ‘II’, it indicates that the position has successfully switched to Position II.

2) When the window initially displays ‘I’ (Normal Source), do the following operations as needed:

- If you need to switch it to the Position OFF (Center-Off Position), rotate the handle 90 degrees clockwise. After hearing a 'click', and the window displays ‘OFF’, it indicates that the position has successfully switched to Position OFF.
- If you need to switch it to Position II (Emergency Source), rotate the handle 180 degrees clockwise. After hearing a 'click’, and the window displays ‘II’, it indicates that the position has successfully switched to Position II.

3) When the window initially displays ‘II’ (Emergency Source), do the following operations as needed:

- If you need to switch it to the OFF Position (Center-off Position), rotate the handle 90 degrees counter-clockwise. After hearing a 'click', and the window displays ‘OFF’, it indicates that the position has successfully switched to the Position OFF.

- If you need to switch it to Position I (Normal Source), rotate the handle 180 degrees counter-clockwise. After hearing a 'click', and the window displays ‘I’, it indicates that the position has successfully switched to Position I.

The detailed handle rotation positions are shown in Figure 2-12.

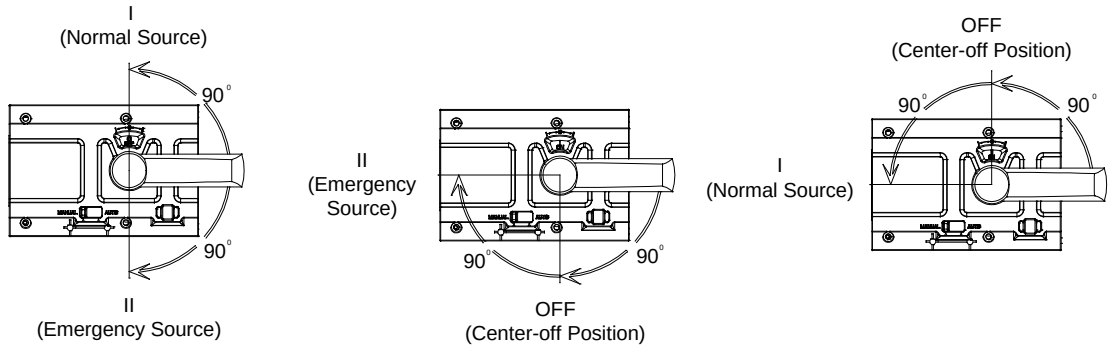


Figure 2-12 Switch Rotation Diagram

CAUTION

1. If the toggle switch is not in the right position (MANUAL), the handle cannot be inserted.
2. The manual handle operation torque should greater than 16 N·m.
3. Due to high torque of the handle during operation, the operator should be careful to avoid from getting injured from touching the toggle switch and padlock pull tab objects portruding from the surface.

2.2.2 Auto Operation

1. Remove the operating handle from the handle hole.
2. Move the auto/manual toggle switch from ‘MANUAL’ to ‘AUTO’ Position, as shown in Figure 2-13.

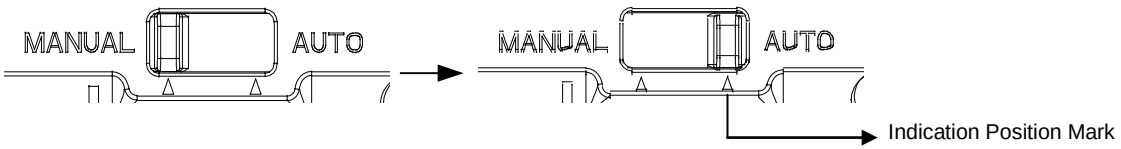


Figure 2-13 Switching Toggle from MANUAL to AUTO

CAUTION

Make sure toggle switch lines up with the correct indication position mark

3. Once auto/manual toggle switch is in the 'AUTO' Position, the switch will automatically transfer to the position that is currently set in the controller. (For a description of how to set the positions in the controller, refer to the *Series 230 C1000 Controller User Manual or Series 230 C2000 Controller User Manual*).

WARNING

1.If the handle has not been removed, the auto/manual toggle switch cannot be switched to the 'AUTO' Position.
2.After the manual operation, the operator must ensure that the auto/manual toggle switch moves back to the 'AUTO' Position, and the auto/manual toggle switch lines up with the 'AUTO' Position indicator mark. Otherwise, the transfer switch will not work in Automatic Mode.

2.2.3 Padlock

In order for the Padlock Pull Tab to function properly, one must ensure that the switch is in Manual Mode AND the handle is in the Position Off. To do this, do the following in this order:

1. Ensure that the auto/manual toggle switch is in ‘MANUAL’ position.

CAUTION

If the auto/manual toggle switch is not in MANUAL position, the padlock pull-tab cannot be pulled up.

2. Ensure that 'OFF' is displayed in the position indicator window. If not, use the manual operating handle to switch the transfer switch to Position OFF according to the directions shown in the position indicator window.

CAUTION

When the switch is not in OFF Position, the padlock pull-tab cannot be pulled in place.

3. Finally, pull the padlock pull-tab out and lift up to expose the lock hole. Then insert the proper padlock into the hole to lock it.

CAUTION

The specified diameter of the E2ADTL transfer switch padlock **must be** φ5mm to φ6mm.

Chapter 3 Maintenance and Troubleshooting

This chapter describes the transfer switch installation, commissioning and common faults and maintenance methods.

3.1 Start Up / Function Test

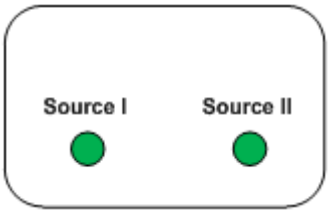
1. To Test Manual Operation

Two power supply Sources must be disconnected before manual testing can begin. Refer to chapter 2.2.1 to run Manual Operation mode. Operate the transfer switch from I position to II position and turn back to I position with handle. The operation should be smooth, without interruption. If so, switch is operating correctly in manual mode.

2. To Verify Voltage Detection

First make sure the rated voltage of the transfer switch on the nameplate is the same as the dual-power supply rated voltages. Next, review the C2000 or the C1000 controller, to make sure the power is being supplied to transfer switch. Source I and Source II Auxiliary Indication LED lights are on (green), This should indicate your wiring is correct.

If using the C2000 controller, Double-check and measure the dual-supply voltage, to make sure voltages are consistent to what is indicated on the C2000 controller .



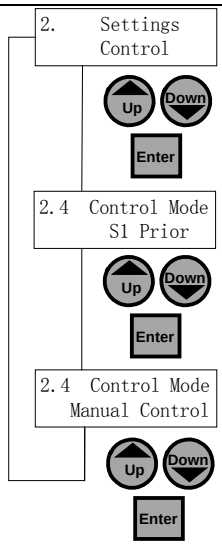
DANGER
When measuring Voltage, pay attention to not touch the terminals and copper bars, otherwise it could result in death, or serious injury.

3. To Test Electric Operation

This is used to test the controller in electric operation mode and operate the transfer switch electrically.

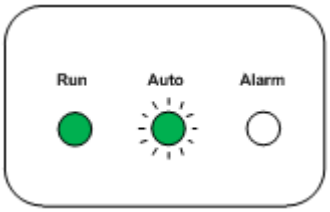
Using C2000 controller:

Menu Setting



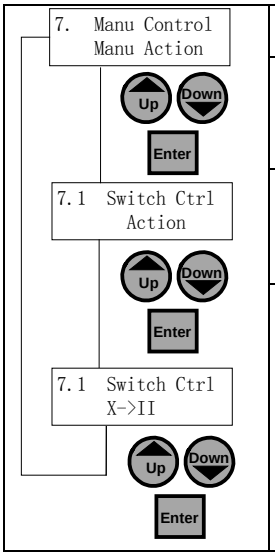
Menu	Operation	Description
Settings	Scrolling the main menu to “Setting” ,and press “Enter” button.	
Control Mode	Scrolling the Setting menu to “Control Mode” ,and press “Enter” button.	The Control Mode Menu will display the last settings.for example,the default control mode is S1 Prior.
Control Mode	Scrolling the Control Mode menu to “Manual Control” ,and press “Enter” button.and then setting is ok,system will be reset.	Must press the “Enter” button when the Control Mode is setted,the contorller will be reset to complete the set.

Once you, successfully set up the manual control mode, the “Auto” LED on the controller panel will blink.



(1) Electric Operation Test

The transfer switch can now transfer and return. The operation should be smooth. Description of the operation is as follows.



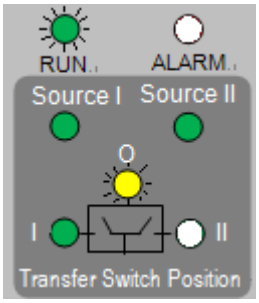
Menu	Operation	Description
Manu Control	Scrolling the main menu to “Manu Control” ,and press “Enter” button.	
Switch Ctrl	Next,Scrolling the menu to “Switch Control” ,and press “Enter” button.	
Switch Ctrl	Then Scrolling the menu to the target location,such as the transfer switch is in location I,scrolling the menu to “X→II” and press “Enter” button,the switch should be transferred to Location II.	Operate the switch again,it can be tansferred to Location I,Location OFF or Location II.If the switch is in Location I,scrolling the menu to “X→I” and press Enter,the switch will not tranfer.

(2) Return To The Original Control Mode

After completing the electric operation test, you can return to the original control mode by using the menu settings.

Using C1000 Controller:

(1) According to The 230 Series Automatic Transfer Switch C1000 Intelligent Controller User Manual, the DIP 7-8 is set to ON, ON, the run LED will blink, and one of the switch’s Position Indication LED’s will blink, The controller is now in manual control mode.



(2) The blinking LED is the target position that the switch will transfer to. Press the key less than 3 seconds, the position indication LED will blink alternately to show which position is target transfer. Choose a transfer target position.

(3) Press the key 3 Sec, and the switch will transfer to the target position.

(4) The switch can transfer and return by this method, and the operation should be smooth.

(5) According to The 230 Series Automatic Transfer Switch C1000 Intelligent Controller User Manual, the DIP 7-8 is set to automatic or remote Mode, and the controller will exit manual control mode.

3.2 Maintenance

To ensure consistent reliability of the transfer switch to make sure it is operating normally, regular maintenance testing should be conducted. It is recommended to do so once every three months.

3.3 Common Troubleshooting

Table 3-1 Troubleshooting Guideline

Troubleshooting Issues	Recommended Action
No response in auto mode	·Check if the auto/manual toggle switch is in 'AUTO' Position. ·Check if the wiring is routed correctly ·Check if the power supply meets the rated voltage range. ·Check if the fuse is properly installed and /or destroyed
The handle cannot be inserted in order to operate the switch manually.	·Check if the auto/manual toggle switch is in 'MANUAL' Position ·Check if the transfer switch has been locked.
Once handle is inserted, one cannot operate the handle	·Check if the handle is turning in the correct direction based on Chapter 2.2.1. ·Check if operator is applying enough force to handle (recommend operating torque is greater than16 N·m and less than 18 N·m)
The auto/manual toggle switch cannot be set to 'AUTO' Position	·Check to make sure the handle has been removed from the handle hole. ·Check to make sure the padlock pull-tab has been pushed all the way down to the original unlocked position.
The padlock pull-tab cannot be pulled up	·Check if 'OFF' is displayed in the position indicator window. ·Check to make sure the auto/manual toggle switch is in 'MANUAL' Position

For all other issues, please contact Emerson Network Power.

Check and Replace Fuse:

1. Before checking the condition of the fuse, the operator **MUST** switch the manual/auto toggle switch to the 'MANUAL' Position.

2. Then, the operator can open the fuse housing cover, take out the fuse, and check the fuse resistance by ohmmeter or multi-meter to determine if fuse is blown out or not.

3. If fuse is blown out (damaged), then replace it using an equivalent rated fuse. For more information, go to Table 1-2. Finally, close the fuse housing cover.

4. After new fuse has been replaced, and if the operator wants to use Auto Mode, then switch the **manual/auto toggle switch back to the 'AUTO' Position.**

DANGER

1. Only a professional electrician should operate to check and replace the the fuse. Such a person **MUST** be equiped with insulated rubber boots, insulated gloves, and insulated tools.
2. Before removing the damaged fuse, the operator **MUST** switch the manual/auto toggle switch to the 'MANUAL' Position.

Appendix 1 Surge Protection Device

1. In order to run the Automatic Transfer Switch reliably, SPD's are needed before connecting the Automatic Transfer Switch to Source I and Source II. It is recommended that the SPD wire connections use V shape wiring method shown in Appended Figure 1. When limited by practical conditions, and if it is difficult to adopt V shape wiring, one can also use routine direct-parallel-connection method shown in Appended Figure 2. The connection wire should be as short as possible (less than 0.5m) when using direct-parallel-connection method to achieve better protective performance.

2. The connection wires should be multi-core copper wire with a cross-sectional area greater than 10mm^2 (AWG6).

3. Appropriate MCB or Fuse should be serial-connected to the front-end of the SPD for AC power supply. The MCB should have the "C" tripping characteristic.

4. The power supply should be cut off when installing SPD's. Live installation is prohibited. All the wires must be connected properly, and using correct wires.

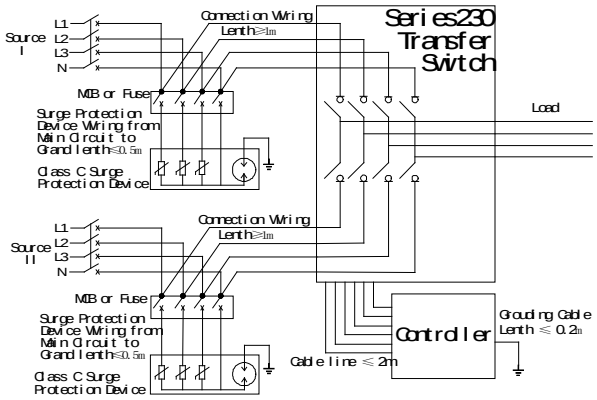
5. While the SPD does not need special maintenance, it is recommended that one periodically checks whether the indicators of the SPD are functioning normally and to make sure the modules are not loose.

6. If either of the following situations appear, the SPD has failed and needs to be replaced.

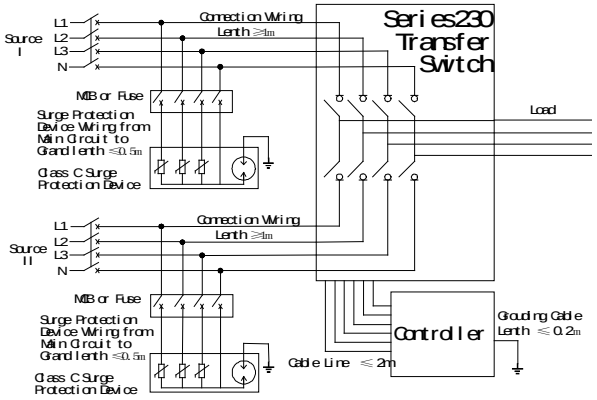
1) The SPD indicator turns red.

2) The SPD remote signal contact becomes an open-circuit.

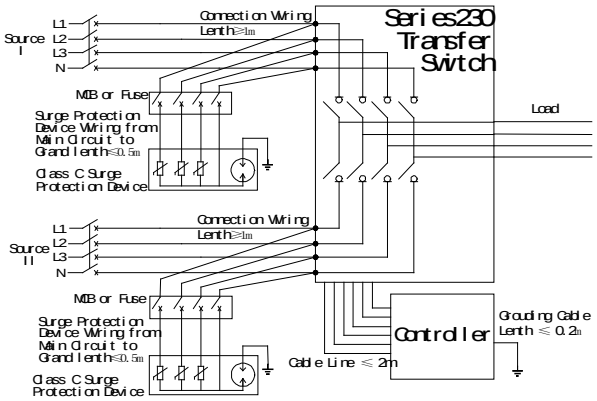
7. The Wiring method show in Appended Figure 3 is forbidden. If SPD is wired similar to Appended Figure 3, the wiring needs to be modified to Appended Figure 1 or Appended Figure 2.



Appended Figure 1: V Shape Wiring Method



Appended Figure 2: Direct-Parallel-Connection Method



Appended Figure 3: Wrong Connection Method

Appendix 2 Glossary

ATS	Automatic Transfer Switch
NC	Normally Close
NO	Normally Open