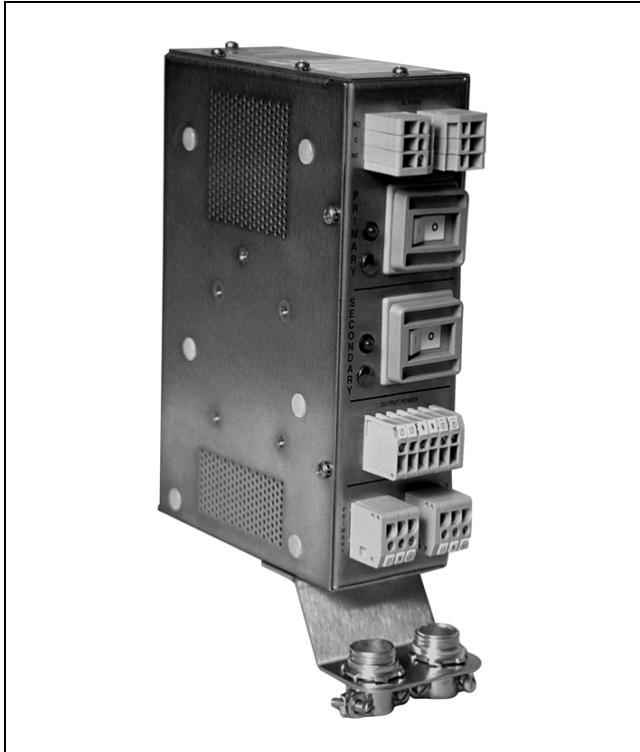


I/A Series® Hardware

50 Series ac Transfer Switch



As symbolized by the “CE” Logo marking on the product, this product conforms to the Applicable European Union Directives.

The ac Transfer Switch provides the capability for two separate and independent sources of ac input power to feed 50 Series equipment. It supports continuous operation of 50 Series devices by automatically switching over to a secondary mains in the event of a failure or voltage drop on the primary mains. When the primary mains voltage is restored, return transfer takes place within the transfer time. High-speed relay logic allows both line and neutral feeds of each ac source to be simultaneously switched. This allows the use of two independent and totally isolated sources of ac power (power sources can be out of phase).

Two independent circuit breaker/switches provide protection and allow switching of primary/secondary power feeds.

One ac Transfer Switch can power all the configurable devices for a 50 Series enclosure or MIW bay. For other applications, the loading requirements must be computed.

Two individual conditions of backup power degradation are monitored:

- If secondary power is low, or entirely absent, switchover is not initiated as long as the primary voltage remains above 60% of nominal value.
- If the secondary source fails entirely, a delayed return transfer to primary takes place if primary voltage is available. A quality secondary power source is required to maintain system performance reliability.

Two separate terminal blocks accept customer wiring for both primary and secondary input power. Output power is distributed from a 6 position terminal block (two branched output feeds).

Two green LEDs indicate presence of both primary and secondary ac power inputs to the ac Transfer Switch. Two independent isolated Form C relay contacts (primary and secondary alarm contacts) provide status information on the condition and switchover states of the transfer switch assembly.

Transfer Time

The transfer time for a primary-to-secondary or secondary-to-primary line failure or low voltage condition is 30 ms maximum (50 Series devices continue to operate).

Primary Alarm Contact

This alarm indicates the primary voltage is below specification or has failed. The alarm condition is removed within 1.5 s after the primary voltage has been restored. See Alarm Status section.

Secondary Alarm Contact

This alarm indicates that the secondary ac voltage is below specification or has failed. The alarm condition is removed within 1 s after the secondary ac voltage has been restored. See Alarm Status section.

Alarm Status

The table below summarizes status information when using a normally open to common configuration:

Primary Alarm Relay	Secondary Alarm Relay	Alarm Defined State
0	0	No (or low) Primary and Secondary Power.
0	1	Primary Failed - Now on Secondary Power.
1	0	Now on Primary Power - Secondary Power NOT available.
1	1	Now on Primary Power - Secondary Power IS available.

Where "0" is defined as isolated relay contacts closed (deenergized).

Where "1" is defined as isolated relay contacts opened (energized).

Full status information can be obtained through a loop-back into a Contact Input Fieldbus Module.

Mounting

The ac Transfer Switch is provided with brackets that allow it to be mounted in any one of the following locations:

- Modular Mounting Structure (occupies the space of one "B Module")
- DIN rail (vertically mounted)
- DIN rail (horizontally mounted)
- Vertical 19-inch mounting rail with integral EIA 19-inch mounting hole pattern

ac Power Requirements

Input Power Line Sizing Considerations

In sizing the ac power wiring to the 50 Series equipment, consideration must be given to the repetitive peak and switching inrush currents. Use of low impedance power line feeds are required to maintain output loads within specified performance limits. Low impedance feeds are required to minimize erroneous cyclic transfer between primary and secondary power mains. The power lines feeding the equipment must be sized such that the 50 Series does not see more than a 2% voltage drop.

Secondary Power Requirements

Avoid the use of secondary power sources that may go below the input limits. The secondary line must be capable of providing the inrush currents required by the 50 Series loads when transfer takes place.

LED Indicator Front Panel Status

The PRIMARY LED is illuminated when the primary power is present and PRIMARY circuit breaker is switched on. The SECONDARY LED is illuminated when secondary power is present and SECONDARY circuit breaker is switched on. LEDs are used for general power present indication only. Actual ac Transfer Switch status must be obtained through the status relay contact states.

FUNCTIONAL SPECIFICATIONS

Power Requirements (at input to ac transfer switch assembly)

INPUT VOLTAGE

Nominal	Range
110 V ac	93.5 to 121 V ac
120 V ac	102 to 132 V ac
220 V ac	187 to 242 V ac
230 V ac	195.5 to 253 V ac
240 V ac	204 to 264 V ac

FREQUENCY RANGE

47 to 63 Hz

MAXIMUM RATED LOAD CURRENT CAPABILITY

Rated Watts @ Power Factor (PF)								
V ac	A rms	VA	PF=	1.0	0.9	0.8	0.7	0.6
110	7.50	825		825 W	743 W	660 W	578 W	495 W
120	7.50	900		900 W	810 W	720 W	630 W	540 W
220	3.75	825		825 W	743 W	660 W	578 W	495 W
230	3.90	900		900 W	810 W	720 W	630 W	540 W
240	3.75	900		900 W	810 W	720 W	630 W	540 W

NOTE

All V ac ranges have inrush currents rated at 13X circuit breaker current ratings (see INPUT BREAKER TRIP CURRENT) for one line cycle.

PRIMARY/SECONDARY TRANSFER LEVELS

The RMS values of transfer voltage levels shown below are factory set. Actual transfer levels may vary depending on the inherent distortion of the ac mains voltage.

Primary Transfer Voltage and Alarm Levels		
Nominal Voltage (RMS)	Primary Transfer to Secondary (RMS)	Return to Primary (RMS)
110	92.5	100.5
120	100.5	109.0
220	184.0	200.0
230	193.0	209.5
240	201.0	218.0
Secondary Transfer Voltage and Alarm Levels		
Nominal Voltage (RMS)	Secondary Off* (RMS)	Secondary Return (RMS)
110	84.0	94.0
120	90.0	101.0
220	165.0	185.0
230	172.5	193.5
240	180.0	202.0

* Point at which backup not within usable limits, now forced to Primary line feed operation.

Power Requirements (Cont.)

INPUT BREAKER TRIP CURRENT (FRONT PANEL CIRCUIT BREAKERS/SWITCHES) (PRIMARY AND SECONDARY)

110 V ac	10A RMS
120 V ac	10A RMS
220 V ac	5A RMS
230 V ac	5A RMS
240 V ac	5A RMS

TRANSFER TIME

30 ms maximum (primary-to-secondary or secondary-to-primary transfer)

INPUT HARMONIC DISTORTION

10% (maximum)

CONSUMPTION

10 W

Alarm Relay Contacts - Form C

PRIMARY

30 V dc at 0.1 A dc (maximum) (Resistive)

SECONDARY

30 V dc at 0.1 A dc (maximum) (Resistive)

Connections

INPUT CONNECTIONS

Primary Input Terminal Block

Screw terminal wire compression connector to accept 3 conductors – (12 AWG maximum) for customer wiring.

Secondary Input Terminal Block

Screw terminal wire compression connector to accept 3 conductors – (12 AWG maximum) for customer wiring.

OUTPUT CONNECTIONS

ac Output Terminal Block

Connection to accept 6 conductor(s) – (14 AWG) maximum
2 branch circuits for Foxboro internal enclosure wiring.

Output Alarm Relay Contacts

PRIMARY

Screw terminal wire compression connectors (two wires) to accept 14 AWG – 22 AWG relay contacts rated 30 V dc at 0.1 A dc (maximum).

SECONDARY

Screw terminal wire compression connectors (two wires) to accept 14 AWG – 22 AWG relay contacts rated 30 V dc at 0.1 A dc (maximum).

ENVIRONMENTAL SPECIFICATIONS

Operating

TEMPERATURE

0 to 50°C (32 to 122°F)

RELATIVE HUMIDITY

5 to 95% (noncondensing) at 30°C (86°F)

ALTITUDE

-300 to +3,000 m (-1,000 to +10,000 ft)

VIBRATION

5 to 200 Hz, 0.5 G peak amplitude

Storage

TEMPERATURE

-40 to 75°C (-40 to 167°F)

PHYSICAL SPECIFICATIONS

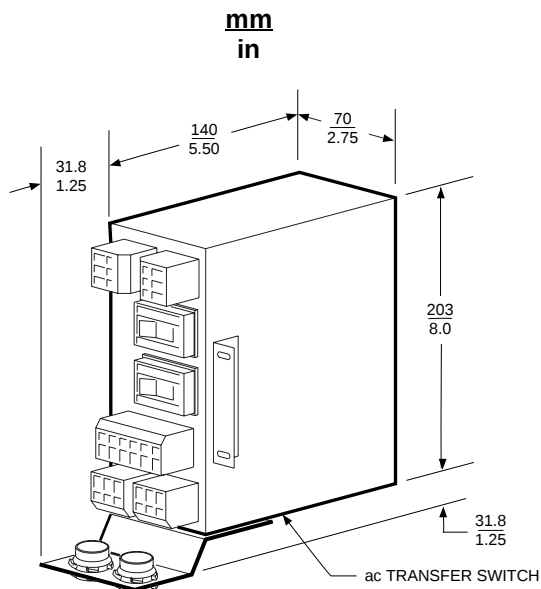
Mass

2.42 kg (5.34 lb)

Material and Finish

15 gauge cold-rolled steel, yellow chromate

DIMENSIONS—NOMINAL



NOTE: Bracket position shown as typical.

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