



Fig. 2: Four pole, Closed Transition Transfer Switch rated 1000 Amperes in Type 1 enclosure.

Delayed Transition Transfer Switching

ASCO Delayed Transition Transfer Switches are designed to provide transfer of loads between power sources with a timed load disconnect position for an adjustable period of time. Applications include older style variable frequency drives, rectifier banks, and load management applications.

- Available in 150 through 4000 Amperes.
- Utilizes reliable, field proven solenoid operating mechanisms.
- Mechanical interlocks to prevent direct connection of both sources.
- Indicator light (16mm, industrial grade type LED) for load disconnect position.
- Adjustable time delay for load disconnect position.

Closed Transition Transfer Switching

ASCO Automatic Closed Transition Transfer Switches feature main contacts that overlap, permitting the transfer of electrical loads without power interruption. The switch transfers in a make-before-break mode if both sources are within acceptable parameters. Control logic continuously monitors source conditions and automatically determines whether the load transfer should be open (conventional non-overlap mode) or closed transition. Available 150 through 4000 Amperes.

Closed Transition Transfer within 5 electrical degrees is achieved passively, without control of engine generator set. Therefore, no additional control wire runs are required between the ATS and engine generator set governor. Plus, protective relaying may not be required under normal operation since the contact overlap time is less than 100 milliseconds (consult your local utility on protective relay requirements).

Failure to synchronize indication and extended parallel time protection is built-in to all 7000 SERIES closed transition controls to prevent abnormal operation.



Fig. 3: Four pole, Delayed Transition Transfer Switch rated 2000 Amperes.

Non-Automatic Transfer Switching

ASCO Non-Automatic Transfer Switches are electrically operated units which are operated with manual control switches mounted locally or at remote locations.

- Sizes from 30 through 4000 Amperes.
- Microprocessor based controller provides for addition of optional accessories.
- Controller prevents inadvertent operation under low voltage conditions.
- Low control circuit operating currents allow for long line runs between remotely mounted manual control switches and the transfer switch.
- Source acceptability lights inform operator if sources are available to accept load.
- Standard inphase monitor can be activated for transferring motor loads.



Fig. 4: Three pole Non-Automatic, electrically operated 400 ampere switch shown in Type 1 enclosure.

Withstand and Close-On Ratings for all 7000 SERIES Products

Switch Rating (Amps)		UL 1008 Withstand and Close-On Ratings ¹									
		Ratings (RMS Symmetrical)						Recommended Fuses		Short Time Ratings @ 480V ⁴	
Transfer Switches	Bypass Switches	"Specific" Breaker ²	Volts Maximum	"Any" Breaker ³	Volts Maximum	Current-Limiting Fuse Rating	Volts Maximum	Max Size, A	Class	Rating (RMS Sym), A	Duration (Cycles)
30	-			10kA	600V	100kA	480V	60	J	N/A	-
70, 100, 125, 150	-	22kA	480V	10kA	600V	200kA	480V	200	J	N/A	-
200	-	22kA	480V	10kA	480V	200kA	480V	200	J	N/A	-
230	-	22kA	480V	10kA	480V	100kA	480V	300	J	N/A	-
260, 400, 600	150, 200, 230, 260, 400, 600	50kA	480V	65kA	240V	200kA	600V	600	J	N/A	-
				42kA ⁶	480V						
		42kA	600V	35kA	600V			800	L		
800 - 1200	800 - 1200	65kA	600V	50kA	600V	200kA	600V	1600	L	36kA	18
1600, 2000	1600, 2000	125kA ⁷	480V	100kA ⁵	600V	200kA	600V	3000	L	42kA	18
2600, 3000	3000	-	600V	100kA	600V	200kA	600V	4000	L	42kA	18
4000	4000	-	600V	100kA	600V	200kA	600V	5000	L	85kA	8
										65kA	30

1) All WCR values indicated are tested in accordance with the requirements of UL 1008. See ASCO Pub. 1128 for more WCR information.
 2) Application requirements may permit higher WCR for certain sizes of switch. Contact ASCO for guidance if application requires higher WCR.
 3) Based on 3 cycles for 260-4000A and 1.5 cycles for 30-230A switches. Applicable to circuit breakers with instantaneous trip elements.
 4) Short Time ratings are provided for applications involving circuit breakers that utilize trip delay settings for system selective coordination.
 5) Optional front connected service (Accy 40MY and 40NY) limits 1600 and 2000A G Frame switches to 85kA Any Breaker rating.
 6) J Frame switches utilizing overlapping neutral (code "C") are limited to 35kA Any Breaker rating at 480V.
 7) 7000 Series Bypass Switches ONLY

Automatic Transfer Bypass-Isolation Switches



Fig. 5: Rated 150-600 Amps



Fig. 6: Rated 600-1200 Amps



Fig. 7: Rated 800-3000 Amps



Fig. 8: Rated 4000 Amps

ASCO Automatic Transfer & Bypass-Isolation Switches are available in open transition, closed transition and delayed transition designs. The bypass and isolation features allow the primary automatic transfer switch to be inspected, tested, and maintained without any interruption of power to the load. They also provide redundant power transfer in the event the ATS is disabled or removed from service.

- Available 150 to 4000 Amperes.
- Allows bypass-isolation without load interruption.
- Bypass switch and transfer switch have identical electrical ratings.
- Heavy duty mechanical interlocks prevent undesirable operation.
- Bypass contacts carry current only during bypass mode.
- Transfer switch is drawout design for ease of maintenance.
- Bypass and isolation handles are permanently mounted. The bypass switch has dead front quick-make, quick-break operation for transferring of loads between live sources.
- Bypass switch is fully rated for use as a manual 3-position transfer switch.
- Bypass and isolation functions are simple, requiring a total of two operating handles.
- No toggle switches, push buttons, selector switches or levers are required for bypass-isolation operation.
- Mechanical indicators show bypass and transfer switch positions.
- 800 -1200 ampere available in shallow depth, front connected or rear connected designs.

Transfer Switch Drawout Features (150-4000 Amperes)

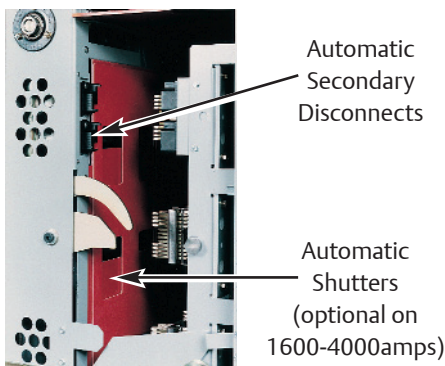


Fig. 9: Bypass-Isolation Transfer Switch secondary disconnects and optional automatic shutters.

- Automatic secondary disconnects remove all control power as switch is withdrawn.
- Drawout carriage provides for easy transfer switch maintenance and/or removal via commercially available breaker hoists.
- Optional transfer switch lifting yoke kit available
- Optional automatic shutters which close when the transfer switch is withdrawn to provide bus isolation, specify accessory 82C.(1600-4000A only)

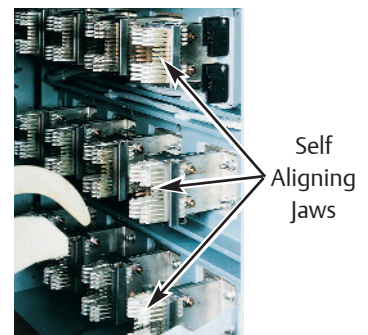


Fig. 10: Bypass-Isolation Transfer Switch self aligning power jaws.

ASCO® 7000 SERIES Power Switching Solutions

Bypass and Isolation Handles - Simple as 1, 2, 3

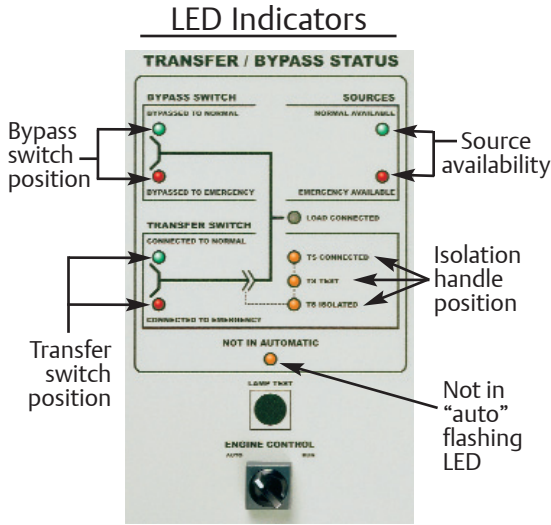


Fig. 11: Transfer Bypass Status Panel*

*Standard on switches up through H 1200A. Specify ACC 82E for G frame 1600-4000A

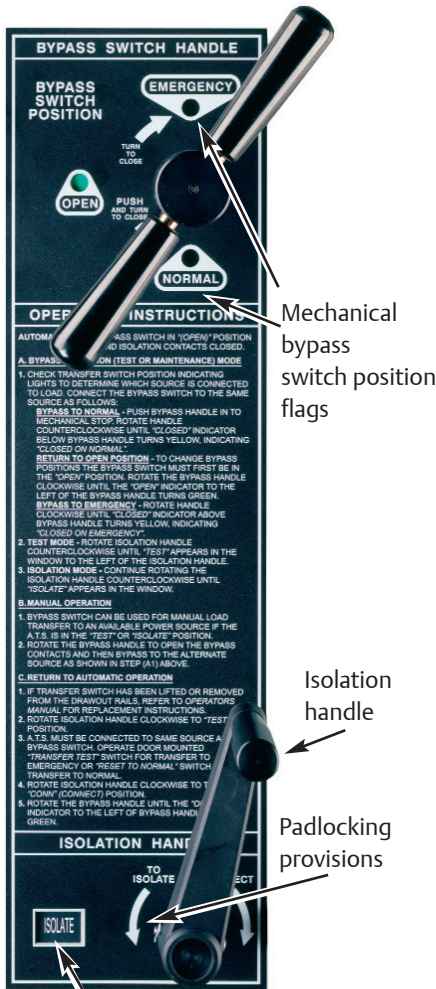
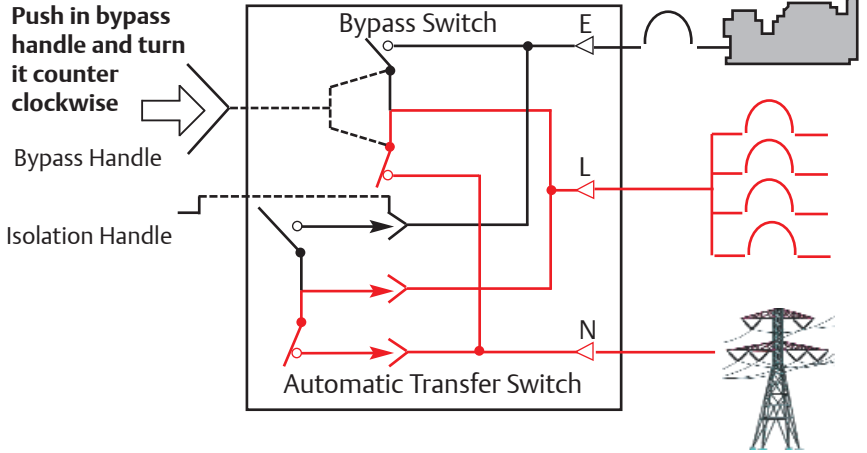
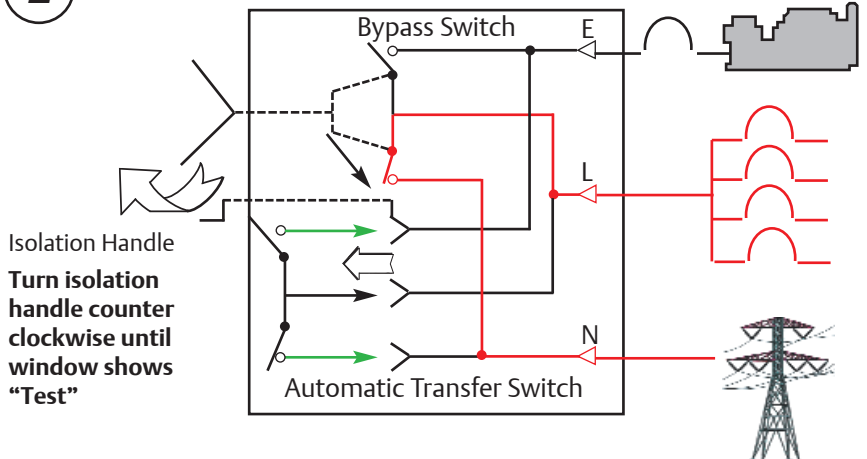


Fig. 12: Bypass-Isolation Switch user interface

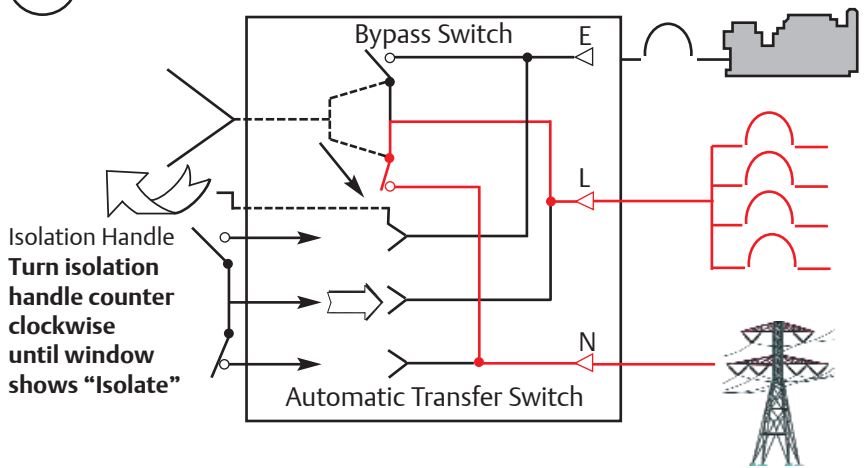
1 Bypass to Normal



2 Test Position



3 Isolation Position



Key:

- Represents Current Flow
- In test position control panel energized to allow for electrical operation of a transfer switch.

ASCO® 7000 SERIES Service Entrance Power Transfer Switches

The ASCO Service Entrance Power Transfer Switch combines automatic power switching with a disconnect and overcurrent protective device on the utility source. The power transfer switch meets all National Electric Code requirements for installation at a facility's main utility service entrance. Service entrance rated transfer switches generally are installed at facilities that have a single utility feed and a single emergency power source. A circuit breaker serves as the utility disconnect and links are provided to disconnect both neutral and ground connections.

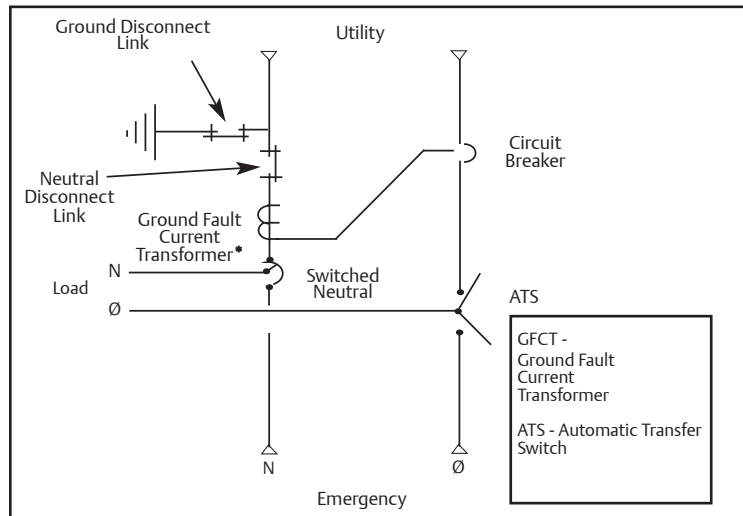
This product is either UL 1008 or UL 891 listed and is available up to 600V and 4000A in Standard, Delayed, Closed Transition, Soft Load, and Bypass Isolation Configurations.



Fig. 13: Ground and neutral disconnect links

Standard Features

- Available from 150 to 4000 Amperes
- ASCO 7000 SERIES Power Transfer Switch is UL 1008 Listed
- Standard UL Type 1 Enclosure
- Disconnect and overcurrent protective device on the utility source: molded case circuit breaker 150 to 2000 Amp; insulated case 3000 to 4000 Amp
- Disconnect link on Neutral
- Disconnect link on Ground
- Ground and Neutral Bus, all silver-plated copper
- Solderless screw type terminals for External Power Connections
- Meets all NEC requirements for use as service entrance
- Internet enabled monitoring and control
- Service entrance breakers rated 100% for 1000 Amps and above; 80% below 1000Amps



One line diagram of a typical service entrance rated transfer switch available in Solid, Switched or Overlapping Neutral

* Ground fault trip protection provided on sizes of 1000 Amperes and above

Optional Features

- Enclosures - Secure Double Door
 - UL Type 3R w/strip heater & thermostat
 - UL Type 4 or 4X
 - UL Type 12
- Connections
 - Crimp lugs
 - Bus Riser on Normal, Emergency or Load
- Protective Relays/Metering
 - Accessory 85L , see page 15
- Surge Suppression
 - Accessory 73, Surge protector (see pg. 14)
- Communications
 - ASCO 72E Ethernet Connectivity module
 - ASCO POWERQUEST® 32.15E, see page 18
 - ASCO 5500 SERIES Thin Web Server for internet connection , see page 20
- Additional Breaker(s)
 - Circuit Breaker on Emergency
 - Load Distribution Panel
- Optional high AIC ratings on breakers

Consult ASCO for additional features

ASCO[®] 7000 SERIES Microprocessor Controller

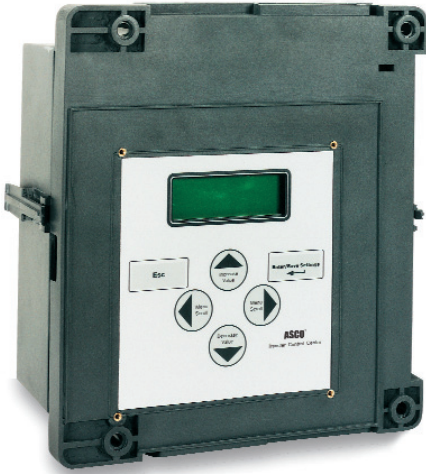


Fig. 14: 7000 SERIES Microprocessor Controller.

The 7000 SERIES Microprocessor Based Controller is used with all sizes of Power Transfer Switches from 30 through 4000 Amperes. It represents the most advanced digital controller in the industry and includes, as standard, all of the voltage, frequency, control, timing and diagnostic functions required for most emergency and standby power applications.

Because of severe voltage transients frequently encountered with industrial distribution systems, the microprocessor logic board is separated and isolated from the power board as shown below. This improves electrical noise immunity performance and helps assure compliance with the rigorous transient suppression standards highlighted below.

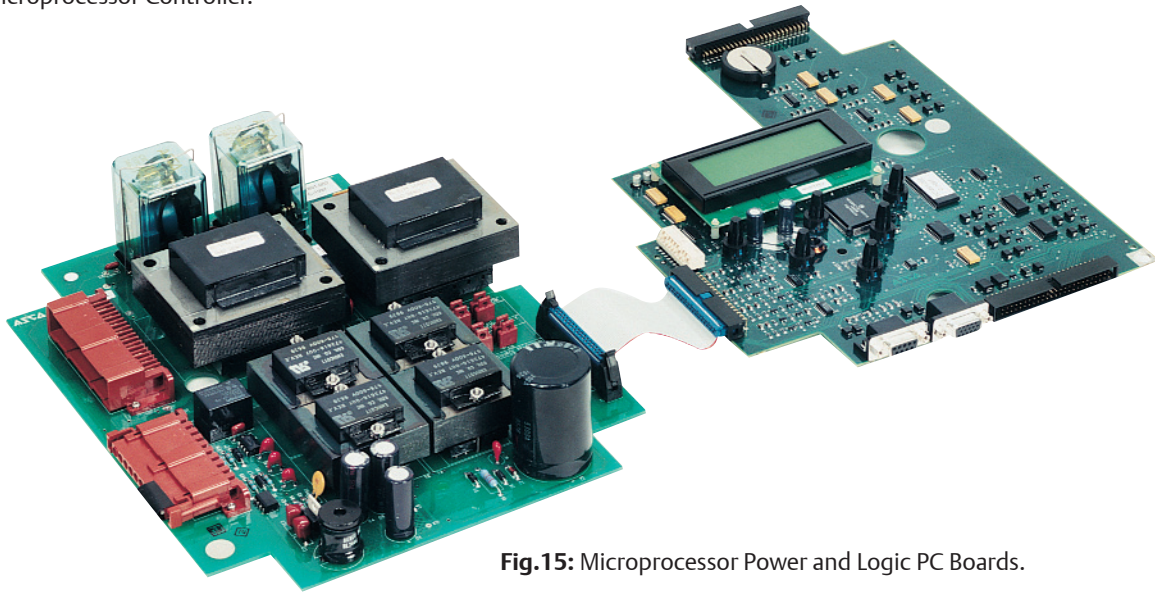


Fig.15: Microprocessor Power and Logic PC Boards.

7000 SERIES Microprocessor Based Controller	
Emission Standard - Group 1, Class A	EN 55011:1991
Generic Immunity Standard, from which:	EN 50082-2:1995
Electrostatic Discharge (ESD) Immunity	EN 61000-4-2:1995
Radiated Electromagnetic Field Immunity	ENV 50140:1993
Electrical Fast Transient (EFT) Immunity	EN 61000-4-4:1995
Surge Transient Immunity	EN 61000-4-5:1995
Conducted Radio-Frequency Field Immunity	EN 61000-4-6:1996
Voltage Dips, Interruptions and Variations Immunity	EN 61000-4-11:1994

ASCO® 7000 SERIES Power Monitoring & Control

ASCO POWERQUEST Solutions

ASCO POWERQUEST® communications products allow for the monitoring and control of power transfer switches in your Emergency or Standby Power Distribution System. Local Area networks and Remote networks are supported with either single or multiple points of access, and web-enabled communications allow access to your power system from anywhere around the world.

Features

- Monitors and controls Power Transfer Switches and Engine Generators
- Monitors normal and emergency voltages and frequency
- Indicates transfer switch position and source availability
- Provides transfer and re-transfer of loads for system testing
- View normal and emergency voltage and frequency settings
- View transfer switch time-delay settings
- Provides transfer switch rating and identification
- Automatic paging notifies personnel, by e-mail or text message, of selected system alarms
- View current, power and power factor with ASCO Power Managers Connected to the System
- View transfer switch event log
- Provides transfer switch test schedule

ASCO® POWERQUEST Typical Network Architecture

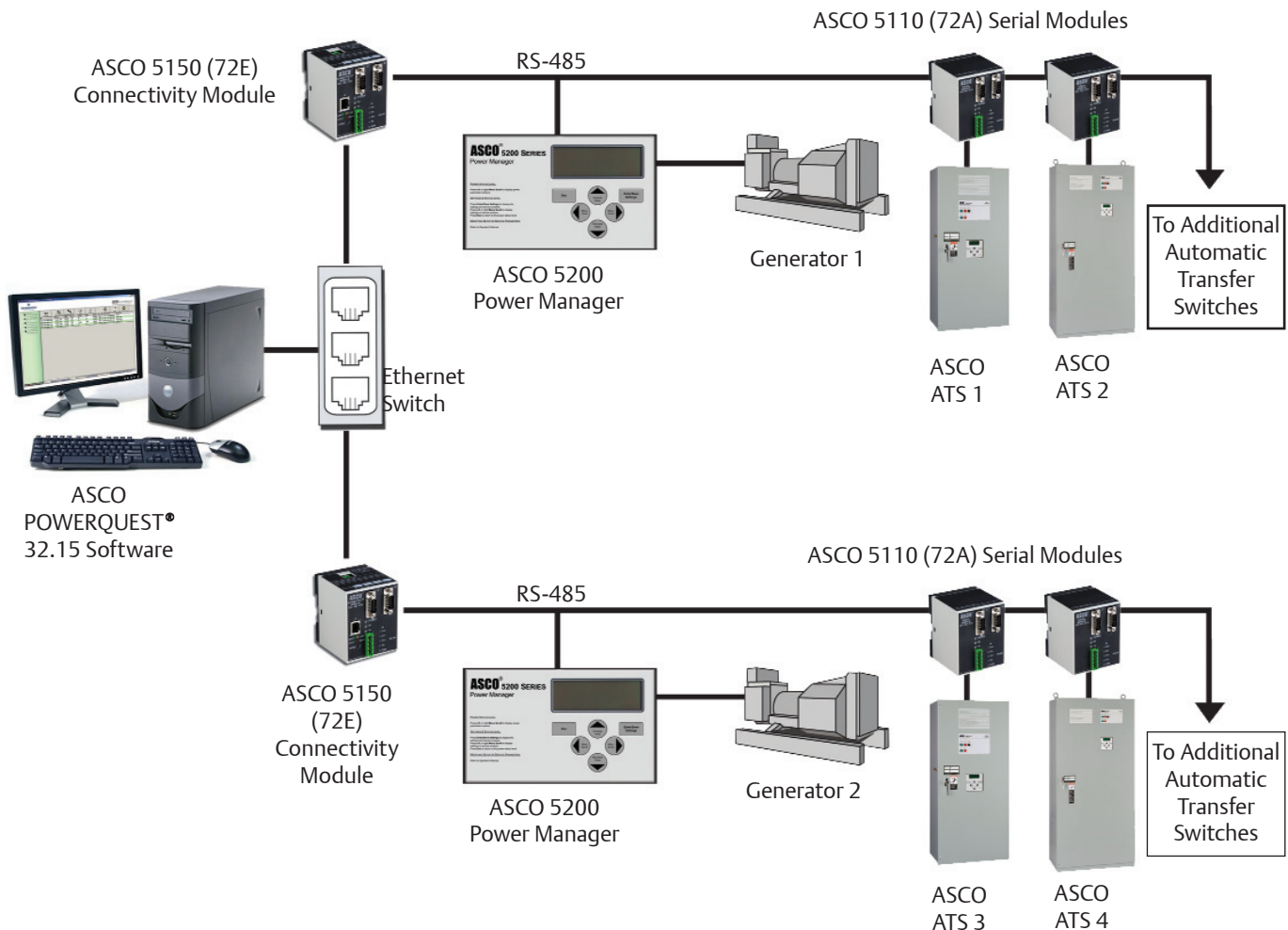




Fig. 20: Serial Module 72A

5110 Serial Module

The 5110 Serial Module is used to allow local or remote communications with ASCO POWERQUEST[®] communication products.

The module is used to connect the 7000 SERIES transfer switches to a serial network via an RS-485 interface. The module has two port connectors used for ATS & Power Manager connectivity.

The serial connection is accomplished from a 5-pin terminal header/socket block. RS-485 serial networks allow for up to 32 modules to be set up in a daisy chain configuration to connect to POWERQUEST[®] systems.



Fig. 21: Connectivity Module 72E

5150 Connectivity Module

The 5150 Connectivity Module is used to bring several different serial devices that communicate at different baud rates and with different protocols to a common Ethernet media.

The module is used to connect 7000 SERIES transfer switches, and ASCO Remote Annunciators to a standard Ethernet TCP/IP network with standard 10base T(RJ-45) connectors. The module has customized embedded JAVA[™] applets (program applications for an internet browser) for each monitored device that loads automatically to a standard Web Browser.

The module is designed to communicate with up to 8 clients such as Web applications (web pages), POWERQUEST[®], or third party Modbus[®] devices simultaneously over an Ethernet connection.

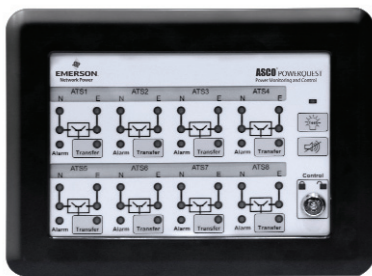


Fig. 22: ASCO Remote Annunciator

5350 Remote Annunciator

The ASCO Power Transfer Switch Remote Annunciator is a stand-alone, industrial grade interface device providing you with the most critical transfer switch status indication and transfer/retransfer control for up to eight switches. Ethernet technology is built in for faster and more reliable communications. LEDs indicate switch status and position, while separate push buttons individually initiate transfer switch operation and testing. Transfer switch annunciators can be set up in multiple locations to monitor various transfer switches, allowing redundant and distributed annunciation.



Fig. 23: ASCO Power Quality and Energy Meter

Accessory 113S

Accessory 113S is an advanced power quality and energy meter providing intelligent power analysis, energy measurement and event recording for critical and sensitive loads. It improves response to power quality-related issues by continuously monitoring and recording harmonics, sags/swells and disturbances.

Power uptime is captured, computed and displayed in a simple number of 9s format. A large built-in LCD display allows viewing of all parameters locally or remotely over Ethernet (Acc. 113SE).

On-board memory stores up to 500 events, 1.5-years of data, and 360 waveforms at a sampling rate of 1024 samples per cycle or 1 ms timestamp resolution.

ASCO® POWERQUEST Solutions

