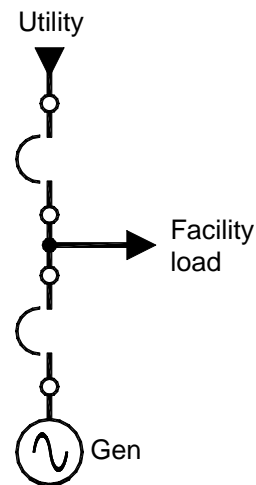
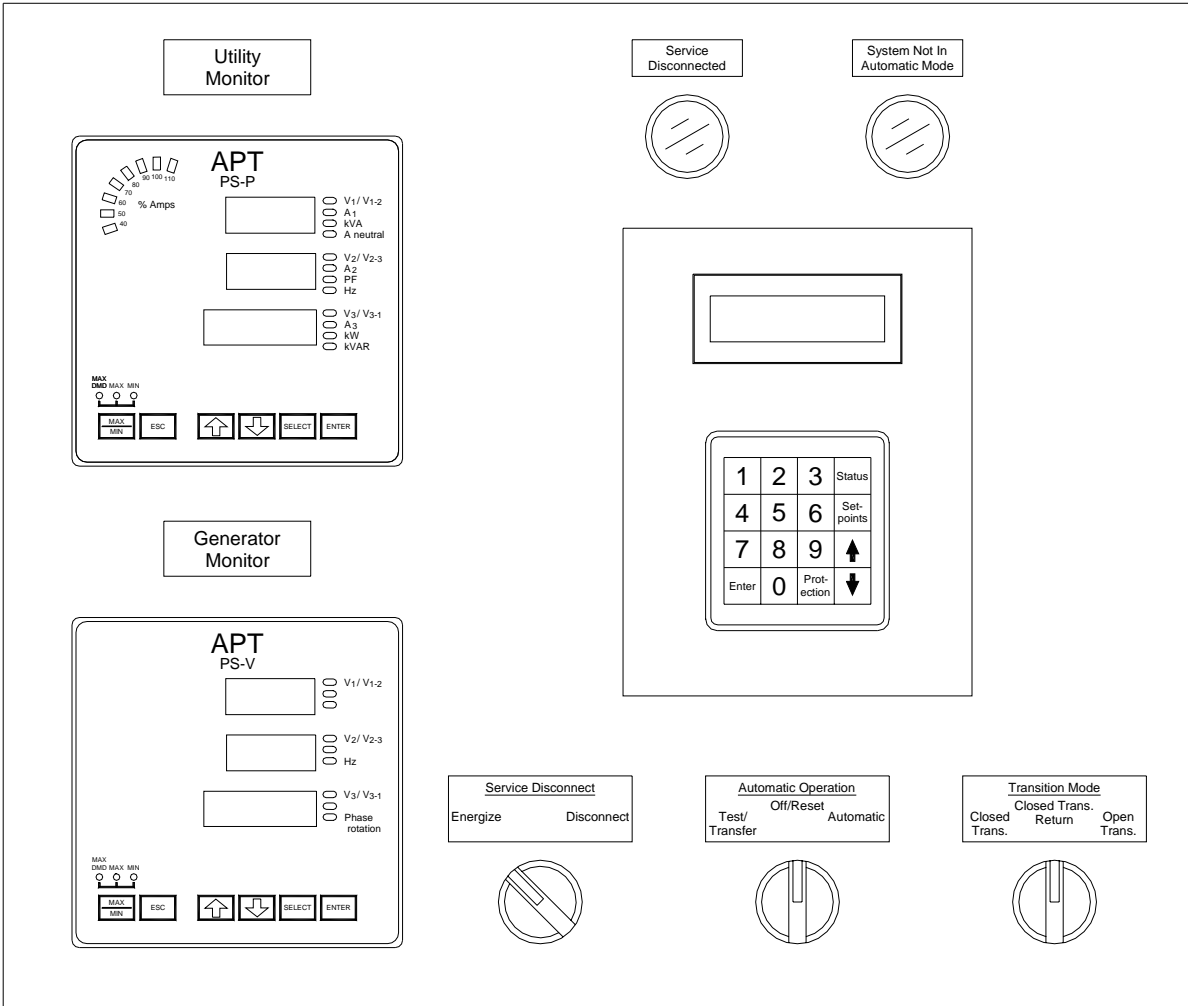


Featured Product:

Automatic Transfer Switchboard



- Low or medium voltage
- Low voltage switchgear available as UL 891 listed
- Provides all necessary overcurrent protection – no additional generator or utility circuit breakers required
- Available as service entrance as required by NEC
- Includes active synchronizing
- Utility RTU compatible
- Available as closed or open transition – closed transition eliminates power outage during transfer – open transition prevents connection of generator to utility
- Available in NEMA 3R for outdoor use (as shown)
- Feeder circuit breakers for a total facility switchgear solution are available
- High accuracy electrical metering
- Standard silver plated copper bus



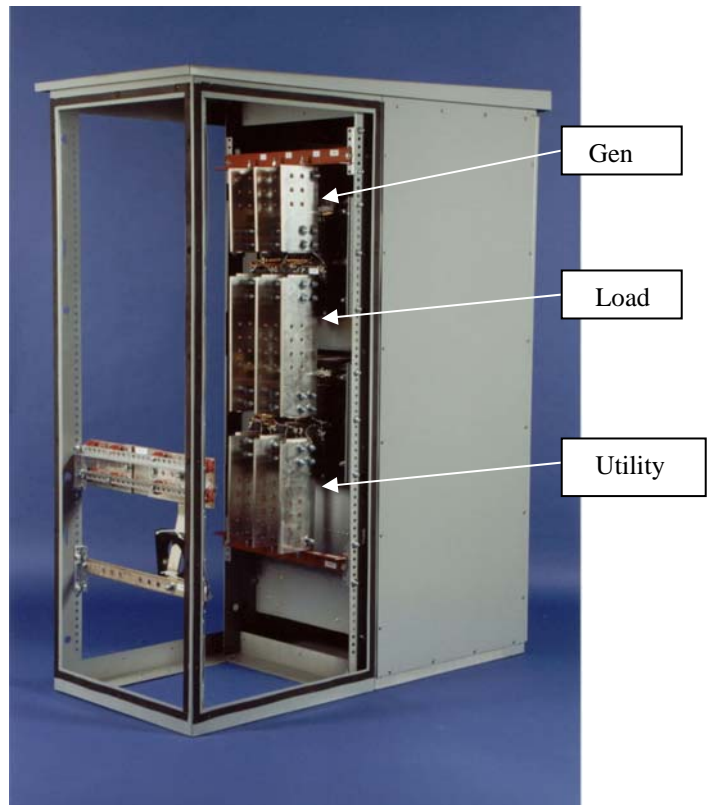
Control Panel Layout
(closed transition, service entrance configuration shown)

Switchboard Specifications

Voltage:	208 – 600V, 3 phase, 3 or 4 wire (low voltage) 2400 – 15kV, 3 phase, 3 wire (medium voltage)
Current:	Up to 4000A (low voltage) Up to 3000A (medium voltage)
Enclosure:	NEMA 1 for indoor use NEMA 3R for outdoor use (optional)
Dimensions:	Std. low voltage – 28"W x 80"H x 46" or 54" or 62"D
Metering accuracy:	0.3% - voltage and current 0.6% - power and energy

Switchboard Specifications (con't.)

Metering options:	3 varieties of APT true RMS Power Sensors available: PS-V – voltage and frequency sensing PS-P – power sensing (A, kW, PF, kVAR, etc.) PS-E – energy sensing (kW-hrs., kVAR-hrs.)
Generator protection:	Overcurrent (50/51), undervoltage, overvoltage, underfrequency, overfrequency
Options:	SCADA-ready Modbus communications port



Overview of Operation

A. Automatic Mode

APT automatic transfer switchgear provides automatic back-up power when utility power fails. This is accomplished in several operational steps:

1. The switchgear continuously monitors the “health” of the utility.
2. Upon utility failure, a signal is issued to start the back-up generator.
3. The switchgear then disconnects the utility and connects the generator to the load.
4. When the utility returns and is diagnosed to be stable, the switchgear then re-transfers power back from generator to utility.
 - a. *Closed transition type** -- actively synchronizes the generator to the utility source, momentarily (for less than 100 mSec.) parallels the two sources together, and then disconnects the generator.
 - b. *Open transition type* – first opens the generator circuit breaker and second closes the utility breaker.
5. The start signal is automatically removed from the back-up generator. It cools down and shuts off.

* Closed transition type switchgear minimizes the power disturbances to sensitive loads by never disconnecting power upon the transfer back to utility power.

B. Test/Transfer Mode

Test/Transfer mode provides provisions for periodic testing of the back-up system. When set to Test/Transfer, the switchgear functions as though there was an actual utility failure and initiates back-up operation accordingly. Test/transfer can be activated using various sub-modes that provide expanded capabilities:

1. Open Transition** – this setting transfers power to the generator in a “break-before-make” fashion. When test/transfer mode is turned off, power transfer from generator back to utility is also “break-before-make.” This operation produces two brief power outages – one outage per transfer.
2. Closed Transition Return*** – this setting closely simulates a normal automatic back-up sequence. First power is transferred from utility to generator in a “break-before-make” fashion, thereby producing a brief power outage. Then when test/transfer mode is turned off, power transfer from generator back to utility is accomplished “make-before-break.” No power outage is produced upon the return.
3. Closed Transition*** – this mode provides a method of testing the back-up system without ever producing a power outage. Power is transferred from utility to generator in a “make-before-break” fashion by utilizing active generator synchronizing. When test/transfer mode is turned off, power is transferred back from generator to utility again using “make-before-break.” This mode can also be used as an effective means of “peakshaving” facility loads to reduce utility bills. This mode can be also initiated remotely by a utility RTU of facility energy control system.

** available with both closed and open transition type switchboards

*** available only with closed transition type switchboards