

Power transfer equipment for rental applications

PowerCommand[®] PLTR



> **Specification sheet**
800-3000 A (line voltage)

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**Power
Generation**

Application

This device is ideally suited for use with a Cummins Power Rentsm generator set equipped with PowerCommand[®] paralleling control. It provides utility power switching, protective relaying and required control functions for automatic closed transition/soft load ramping or open transition transfers on a temporary basis. The switchboard can be located inside or outside a facility providing power when and where it is needed. The PLTR is equipped with control cables to plug-and-play with any comparably equipped Cummins Power Rent generator set.

Description

PowerCommand PLTR switchgear for rental applications is designed to coordinate with Cummins Power Rent generator sets to provide automatic transfer functions between a utility service and a rental generator set.

The PLTR equipment includes rugged enclosures designed for temporary use at project sites, easy connections and reliable service.

Major components of PLTR equipment include a power circuit breaker for connection of the utility service to customer loads, automatic voltage sensing and power transfer logic, and utility protective relaying. The Power Rent generator set provides other system functions including a power air breaker for connection of the generator set to the customer loads, generator set protection, automatic synchronizing, load sharing and power control functions.

The combination of the PLTR switchgear and Power Rent generator set is a complete automatic power system for use in emergency and/or peak shaving applications.

Features

- **PowerCommand power transfer control** - A fully-featured microprocessor-based control system designed to integrate with PowerCommand generator set controls. All features, settings and adjustments are software-enabled for ease of setup and operational accuracy. All logic inputs are optically isolated. AC power inputs use high isolation transformers.
- **Rugged, transportable enclosure** - The switchgear enclosure is designed for rental applications with overhead lifting, fork-lifting and dragging provisions.
- **Weatherproof construction** - Switchgear cabinet is NEMA 3 rated.
- **Easy, weather-protected cable connections** - Power connections to the cabinet are made to mechanical lugs from the rear of the enclosure. Provisions are included for service entrance applications. Control connections are made with weatherproof plug and jack connectors.
- **Lockable** - Control enclosure is lockable using a customer-supplied padlock.
- **Integrated utility protective relaying** - Standard equipment design includes a multi-function digital protective relay which provides over/under voltage, phase sequence and over/under frequency protection for the utility service.

PowerCommand power transfer control

The PowerCommand microprocessor-based control system includes the following features and functions:

Operation modes

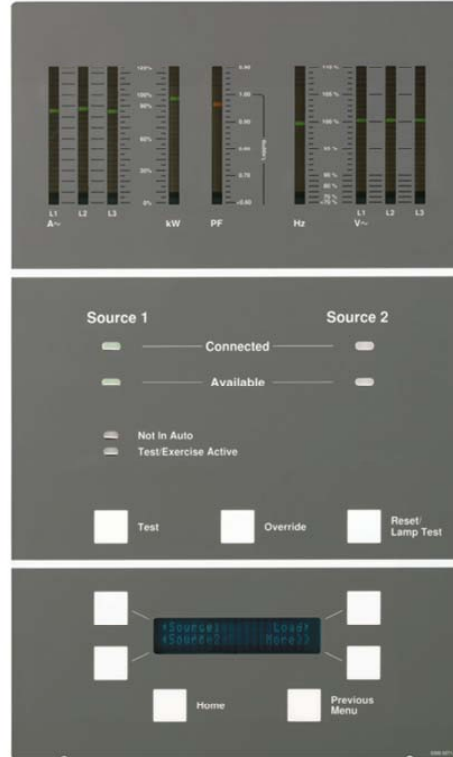
- Closed transition/soft loading - Control system operates to synchronize the generator set (source 2) to the utility service (source 1) and to ramp load on or off the generator set whenever the system is transferring between good sources. The operation of the control prevents disturbances that can occur when loads are transferred too quickly to the generator set or utility service. The control system is configurable to prevent closed transition transfer if it is not allowed at the site where the equipment is used.
- Utility paralleling - Control system operates to synchronize and parallel the generator set to the utility service. It then operates continuously in parallel at a controlled load level. The control system is configurable to prevent utility paralleling if it is not allowed at the site where the equipment is used.
- Open transition -The control continuously monitors the condition of the sources, and if the normal source fails, starts the generator set and automatically connects the generator set to the system loads. Operation sequence includes program transition function to control the speed of operation of the transfer system. Open transition operation mode is also present in closed transition and utility paralleling modes when the connected source fails.
- Test - Allows the operator to simulate a power failure in the utility service and verify proper system operation. System is configurable for open or closed transition operation in this mode.

Operator panel

The operator panel is composed of a series of LED indicating lamps, pushbutton switches and an alphanumeric display. The entire panel is composed of a single sealed membrane with embedded switches and lamps for environmental protection of internal controls. Functions provided in the operator panel include:

- Analog AC load metering panel, monitoring power supplied to the load. The analog metering panel provides a bargraph indication of 3-phase AC voltage and current, frequency, kW and power factor. The metering is color coded green for normal operating levels, amber for warning levels and red for dangerous operating levels.
- LED indicating lamps to provide information on source availability, which source is connected to the load and to indicate that the system is not in an automatic mode or is in test mode.
- Control switches to initiate test mode, override time delays and to test lamps or reset faults.

- Alphanumeric digital display and navigation keys. This digital display provides a convenient way to monitor the condition of sources and system load, adjust transfer switch operating parameters, monitor network status or review transfer system events. Password protection limits access to adjustments to authorized personnel.



Software adjustable time delays

- Generator set starting: 0-15 seconds. Prevents nuisance generator set starts in the event of a normal power failure.
- Transfer normal service to generator set: 0-120 seconds. Allows generator set to stabilize before application of load.
- Retransfer generator set to normal service: 0-30 minutes. Allows utility service to stabilize before retransfer of loads. Prevents needless power interruption if the return of the normal service is momentary. Allows staggered retransfer of loads in multiple transfer switch applications.
- Generator set stop: 0-30 minutes. Maintains generator set availability for immediate reconnection in the event that the normal source fails after retransfer. Allows generator set cooldown by running unloaded.

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Source availability sensing

Over/under voltage, monitoring 3-phases on both normal service and generator set.

- Under voltage pickup: 85% to 98% of nominal voltage.
- Under voltage dropout: 75% to 98% of nominal voltage.
- Under voltage dropout time delay: 0.5 seconds, fixed.
- Over voltage dropout: 105% to 135% of nominal voltage.
- Over voltage pickup: 95% to 99% of dropout setting.
- Dropout time delay: 0.5 to 120 seconds.
- Over and under frequency, monitoring both sources. Sensor operation $\pm 5\%$ to 20% from nominal frequency setting.
- Adjustable time delay of 1 to 15 seconds.
- Voltage imbalance sensing, monitoring both sources.
- Drop-out settings are adjustable between 2% and 10%, in 1% increments.
- Pick-up settings are fixed at 10% of the drop-out value. Time delay is adjustable from 2 to 20 seconds.

Phase rotation sensing prevents automatic connection of a generator set to loads unless the phase relationship of the normal and generator set source are the same.

Loss of a single phase, monitoring both sources.

Other features

- Service diagnostic LED indicators - The circuit boards of the PowerCommand control include a series of LED indicator lamps that are used for diagnosis of service problems.
- Real time clock - The control system includes a real time clock which is used for timing of exercise functions, date and time stamping events and fault conditions in the controller.
- Fault condition monitoring - The control system monitors for breaker operation failures and failure of the system to disconnect from the utility service. It also monitors the microprocessor for proper operation and failure of the generator set to synchronize to the utility service.
- Neutral current monitoring - The controller monitors neutral current flow for overcurrent conditions. The controller issues a warning to the digital display whenever the neutral current exceeds an adjustable limit (100% to 150% of rated current) for a time period of 10 to 60 sec.

Environment

The control system is designed to operate over a temperature range of -40 to $+70$ °C.

Protective Relaying

Utility protection is provided by a Basler GPR relay which provides the following functions:

- Over and under voltage (27/59)
- Over and under frequency (81 o/u)
- Reverse power (32)
- Phase balance voltage (47)

All relay settings are adjustable. Individual protective functions can be enabled and disabled via the relay operating panel.

Note: Utility permission is required for all utility paralleling applications. Most utilities have specific protective relaying requirements when paralleling with their grid. Obtain written permission and provide acceptable relaying prior to operation of a generator set in parallel with a utility service.

Enclosures

The transfer switch and PowerCommand control are mounted in a single-door NEMA 3R enclosure on an 8 inch channel base with provisions for forklift.

- Key-locking door
- Lexan[®] window for viewing interface panel
- Wire bend space complies with 1999 NEC

Applicable drawings:

Description	Drawing number
Outline drawing	0310-1345
Interconnect drawing	0630-2027
Schematics	0625-3989 (door-mounted controls) 0625-3940 (480 VAC specific) 0625-4990 (208 VAC specific)

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Available products and services

A wide range of products and services is available to match your power generation system requirements. Cummins products and services include:

- Diesel and spark-ignited generator sets
- Transfer switches
- Bypass switches
- Parallel load transfer equipment
- Digital paralleling switchgear
- PowerCommand network and software
- Distributor application support
- Planned maintenance agreements

Warranty

All components and subsystems are covered by an express limited 1-year warranty. Other optional and extended factory warranties and local distributor maintenance agreements are available.

Other available warranties include: 2-year prime power, 2-year standby, 5-year basic power, 5-year comprehensive power and 10-year major component. The 2-year prime power and the 10-year major component warranties are available in North America only.

Certifications



ISO9001 - This generator set was designed and manufactured in facilities certified to ISO9001.



CSA - This generator set is CSA certified to product class 4215-01.



NFPA - The prototype test support (PTS) program verifies the performance integrity of the generator set design. Cummins Power Generation products bearing the PTS symbol meet the prototype test requirements of NFPA 110 for Level 1 systems. A complete representative prototype generator set has been subjected to a number of demanding tests to verify the design integrity and performance under both normal and abnormal operating conditions per the requirements of NFPA 110 for Level 1 systems. Tests include short circuit, endurance, temperature rise, torsional vibration and transient response, including full load pickup in one step.



UL - The PowerCommand control is listed UL 508 - Category NITW7 for U.S. and Canadian usage.

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Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect generator sets to any building electrical system except through an approved device or after building main switch is open.

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