



Automatic transfer switches International

Reliable, flexible and dependable

Our energy working for you.™



**Power
Generation**

The Power of One™

Only Cummins Power Generation Inc. gives you PowerCommand® pre-integrated digital power systems—systems that are designed, built, tested and serviced by a single-source manufacturer.

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Orange County Convention Center
Orlando, Florida

A 6 MW standby power system in the Phase V expansion includes 72 automatic transfer switches. The transfer switches are used for load distribution and for switching between the utility source and four 1500 kW PowerCommand diesel generator sets.

As the only single-source manufacturer of engines, alternators, digital controls, transfer switches and digital paralleling systems, Cummins Power Generation leads the way in the seamless integration of power system technology. Our proven pre-integrated systems provide you with a superior power system, ease of installation, low operating cost and a single source for maintenance and support.

A system with no equal

Imagine it. One integrated system designed specifically to work as a whole. That's the Power of One™. Whether you rely on your power system for prime or standby power, or to parallel with your local utility, a PowerCommand digital system will deliver the reliability, flexibility and user-friendly interface you demand.

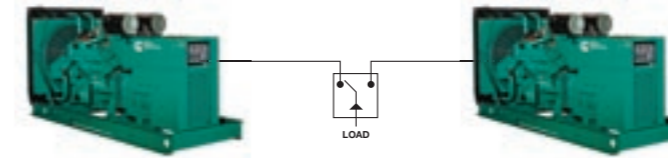
Pre-integrated systems are backed up by one of the largest sales, service and support organizations in the world. The Cummins Power Generation distribution channel is the single-source supplier of integrated systems—generators, paralleling switchgear, automatic transfer switches and local design-build support and service.

For over 30 years, Cummins Power Generation has been the industry leader in power system integrated designs. When you compare our pre-integrated digital technology with other offerings, you will understand that PowerCommand is the ONE.

Reliable, flexible, easy to use

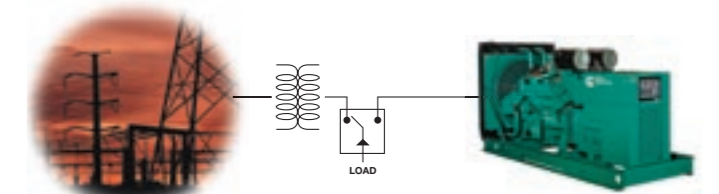
PowerCommand transfer switches provide safe, dependable power transfer between sources.

All PowerCommand transfer switches include unique features that provide flexibility for all types of applications. The microprocessor-based controls optimize performance while simplifying operation and service.



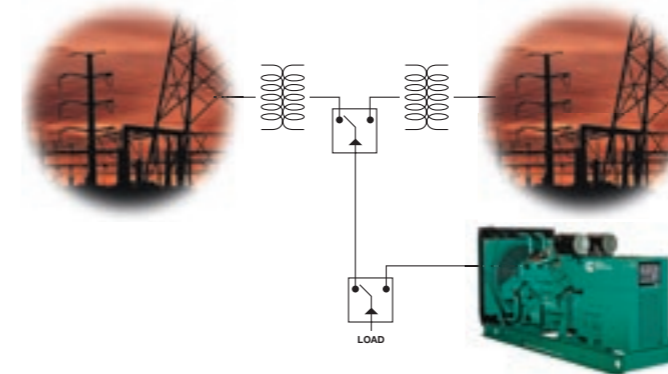
Generator to generator

For facilities with a prime power system using multiple on-site generators. If the primary generator fails, the transfer switch sends a start signal to the second generator and then transfers the load.



Utility to generator

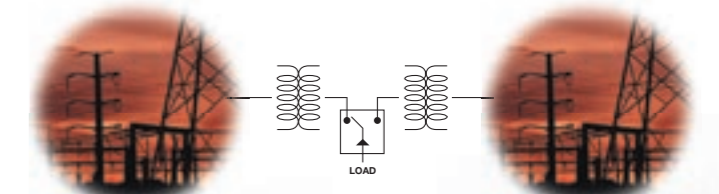
For facilities with a standby power system and a single utility feed. The transfer switch senses when utility power has been lost, sends a start signal to the standby generator and transfers the load.



Three-source system

For facilities with a standby power system and two utility feeds. The utility transfer switch controls the feeds from the two utilities based on a pre-established priority. If both utility feeds fail, the generator transfer switch sends a start signal to the standby generator and transfers the load.

Another three source system uses a standby generator in place of the second utility (dual standby). If the utility fails, the first transfer switch sends a start signal to the primary standby generator and transfers the load. If the primary standby generator fails, the transfer switch sends a start signal to the second generator set and transfers the load.



Utility to utility

For use in facilities with redundant utility feeds but no standby generator. If one utility feed fails, the transfer switch automatically connects the load to the second utility feed.

Dependable power transfer

PowerCommand® transfer switches optimize system reliability and performance, reduce maintenance costs and enhance your entire system with unique capabilities.

OPEN, CLOSED OR PROGRAMMED-TRANSITION TRANSFER

GTEC

- > Open or programmed transition
- > 40-2000 amps
- > 2-, 3- and 4-pole
- > IEC and CE-labeled

OTEC

- > Open (in-phase) or programmed transition
- > 40-10000 amps
- > 3- and 4-pole
- > UL-labeled

CHPC

- > Closed transition
- > 125-800 amps
- > 2-, 3- and 4-pole
- > UL-labeled

OTPC

- > Open, closed or programmed transition
- > 40-4000 amps
- > 3- and 4-pole
- > UL-labeled

OHPC

- > Open or programmed transition
- > 125-800 amps
- > 2-, 3- and 4-pole
- > UL-labeled

BYPASS ISOLATION LOAD TRANSFER

BTPC

- > Open, closed or programmed transition
- > 150-4000 amps
- > 3- and 4-pole
- > UL-labeled

Cummins Power Generation transfer switches give you a range of controls for safe, dependable and easy-to-use power transfers for these modes:

Open-transition transfer

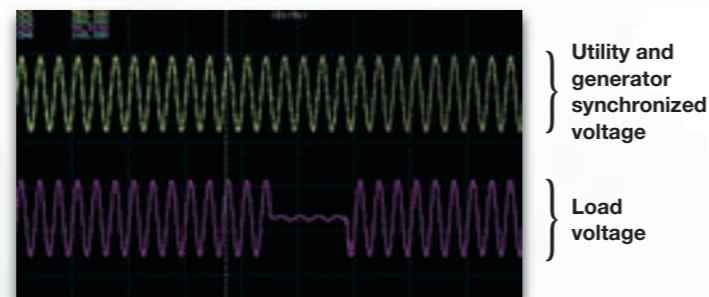
Break-before-make switching action. The most basic type of transfer; the connection to one source is opened before the connection to the second source is closed. The sync-check feature included in the open-transition transfer control monitors both sources and initiates the transfer—avoiding out-of-phase closing.

Applications: Emergency, code-required and optional standby systems; resistive loads; small motor loads

Programmed-transition transfer

Similar to open-transition transfer. The switch opens the connection to one source, pauses for an adjustable delay time, then closes the connection to the second source. The adjustable time between sources allows the decay of residual voltage before connecting to the second source.

Applications: Inductive (motor) loads; recommended by some manufacturers of UPS and VFD equipment



Break-before-make switching action opens the connection to one source before closing the connection to the second source. Shown: open transition with sync check.

Safe, reliable performance

Closed-transition transfer

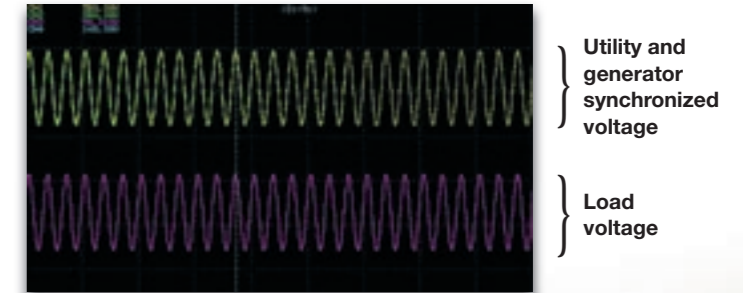
Make-before-break switching action for uninterrupted power transfer. The transfer switch provides a seamless transfer of the load from one source to another by momentarily paralleling both sources (<100 milliseconds) during the transfer period.

Applications: Critical power requirements, including hospitals and data centers

Bypass isolation transfer

Allows maintenance to the main ATS without disconnecting the load. By having two transfer switches connected in parallel, the bypass transfer switch adds redundancy to the system.

Applications: Critical power and maintenance requirements, including healthcare and data centers



Make-before-break switching action provides uninterrupted power transfer. The switch closes the connection to the second source before opening the connection to the first source.

Compare PowerCommand transfer switches to conventional switches

Conventional switches	PowerCommand switches
In many cases, programmed transition is an expensive option.	A single standard controller provides both industry-preferred programmed-transition capability and in-phase transfer control. All settings in the system are made via the operator panel or optional easy-to-use PC-based software.
Passive control operation waits for the generator set to drift into synchronization with the utility. If the generator set doesn't synchronize, open transition with power interruption occurs.	Active control of generator set during in-phase transfer and closed-transition modes enables reliable operation. Active synchronizing is accomplished over the PowerCommand network to minimize installation cost.
As the transfer switch ages, changes in the mechanical operation speed of the transfer switch make in-phase and closed-transition transfer less accurate, putting loads and the generator at risk.	The control system continuously monitors operating time of the transfer switch mechanism and automatically adjusts in-phase transfer and closed-transition set points to maintain accurate synchronizing over the life of the transfer switch.
Conventional switches are not designed to record power source-related or transfer switch state-related events that are often required for maintenance purposes and for effective troubleshooting.	Data logging capabilities: The PowerCommand controller keeps a log of faults and events. The PowerCommand iWatch® web servers can be used with this control for more sophisticated data logging requirements.
Basic AC metering (voltage and frequency) can sometimes be viewed on an alphanumeric display. When full data is necessary, separate metering equipment is added to the controls; this equipment is not integrated with the ATS control.	Optional analog AC load metering display allows the user to quickly view the status of power to loads. Data include 3-phase AC volts and amps, frequency, kW and power factor. AC metering is integrated into the controller.
Conventional switches do not have the capability to communicate with SCADA systems and are limited to information collected through auxiliary contact closure. They are limited by proprietary protocols not designed to communicate with devices from other manufacturers.	The PowerCommand network interface enables data-sharing between all system components and many interfaces to the outside world. External interfaces are available for other manufacturers' generator sets and transfer switches in nearly any protocol.

GTEC

automatic transfer switches

GTEC 40-2000 amp series automatic transfer switch

The GTEC automatic transfer switch combines reliability and flexibility in a small, economical package for normal and generator set source monitoring, generator set starting and load transfer functions. GTEC automatic transfer switches are ideal for emergency, standby and optional standby applications.



Cummins Power generation switches are built to withstand thousands of switching cycles, ensuring reliable operation.

> Microprocessor control

Fully-featured microprocessor control is standard with all settings and adjustments designed for easy operator use via the front display panel

> Operating modes

Open transition with programmed transition (adjustable 0-10 seconds); open transition with sync-check monitor and programmed-transition backup; exercise mode; and test mode.

> Manual operation handle (standard)

Allows manual operation of the switch after proper disconnection of power sources

> Easy service/access

Door-mounted controls, ample access space and compatible terminal markings allow for easy access

> Positive interlocking

Mechanical interlocking prevents source-to-source connection through the power contacts

> Solenoid

A powerful and economical solenoid power GTEC transfer switches

> Advanced transfer switch mechanism

True transfer switch mechanism with break-before-make action

> Continuously rated

Can be used in applications up to their nameplate rating

> Main contacts

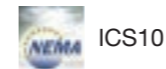
Long-life, high-pressure silver alloy contacts withstand thousands of switching cycles without burning, pitting or welding and provide 100% continuous current ratings

OTPC/OTEC

automatic transfer switches

OTPC 40-4000 amp series OTEC 40-1000 amp series PowerCommand® automatic transfer switches

The OTEC series transfer switch provides the basic features you need for primary source and generator set monitoring, generator set starting and load transfer functions for emergency standby power applications. The OTPC series provides advanced features.



PowerCommand automatic transfer switches feature microprocessor-based control technology for easy operation and robust, high-contact-force design.

> PowerCommand® control (OTPC)

Microprocessor-based controls are developed specifically for automatic transfer switch operation.

> Robust control system design (OTPC)

Optically-isolated logic inputs and high-isolation transformers for AC power inputs provide high-voltage surge protection

> Communications capability (OTPC)

Transfer switch communicates via a SCADA network

> Easy service/access

Plug connections, door-mounted controls, ample access space, compatible terminal markings simplify access

> Microprocessor control (OTEC)

Fully-featured microprocessor control is standard, with all features, settings and adjustments software-enabled for ease of setup and accuracy

> Manual operation (OTEC)

Manual operating handles, shielded termination and over-center type contact mechanisms allow effective, manual operation under de-energized conditions

> Positive interlocking (OTEC)

Mechanical and electrical interlocking prevent source-to-source connection through the power or control wiring

> Advanced transfer switch mechanism

Bi-directional linear motor actuator provides virtually friction-free, constant-force, straight-line transfer switch action with no complex gears or linkages

> Break-before-make action

Independent break-before-make action is used for both 3-pole and 4-pole/switched neutral switches

> Mechanical interlock

Prevents simultaneous closing of normal and emergency contacts

> Main contacts

Heavy-duty silver alloy contacts with separate arcing surfaces and multi-leaf arc chutes are rated for total system transfer including overload interruption

CHPC/OHPC automatic transfer switches

CHPC closed-transition 125-800 amp series PowerCommand® automatic transfer switches

Designed specifically for uninterrupted, closed-transition operation, the revolutionary design incorporates proven PowerCommand micro-processor control with an innovative High-Endurance Mechanism (HEM) for uncompromising reliability.



OHPC open-transition 125-800 amp series PowerCommand automatic transfer switches

For open-transition operation, OHPC transfer switches also incorporate PowerCommand microprocessor control and a reliable High-Endurance Mechanism. The OHPC is ideal for utility-to-utility, utility-to-genset and genset-to-genset applications.

> PowerCommand® microprocessor control

Fully-featured, field-programmable microprocessor control; easy setup and accuracy

> Surge protection

Optically-isolated logic inputs and high isolation transformers for AC power inputs provide high-voltage surge protection

> Selectable transfer method (OHPC)

The switch automatically transfers the load back either by using the fast transfer or delayed-transition mode of operation

> Manual operation

Manual operating handles and stored-energy transfer mechanism allow effective manual operation

> Easy service/access

Plug connections, door-mounted controls, ample access space and compatible terminal markings simplify access

> Main contacts

Heavy-duty silver alloy contacts and multi-leaf arc chutes are rated for total system transfer

> Stored-energy mechanism

Allows the mechanism to be switched between sources even when no source is available

> Permanently attached manual operator handles

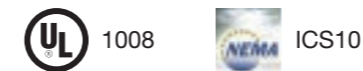
Allows for manual operation and easy servicing



Bypass-isolation automatic transfer switches

BTPC 150-4000 amp series PowerCommand bypass-isolation automatic transfer switches

BTPC series transfer switches combine the features of our advanced automatic transfer switch with a closed-door drawout isolation mechanism, a two-source bypass switch and exclusive microprocessor-based controls. The switches allow maintenance, service and testing of the automatic transfer switch without disrupting power to critical loads. The resulting power transfer redundancy helps ensure constant, reliable power for critical applications.



PowerCommand bypass-isolation transfer switches are ideal for critical-need applications where any disruption of supply power, even for routine maintenance, is unacceptable.

> Bypass to any source at any time

Allows for normal or emergency power, whichever is required

> PowerCommand microprocessor control

Allows user-friendly adjustments and network communications with other systems

> Mechanical flags

Indicate bypass position

> Permanently mounted instructions

Allows easy step-by-step operation

> Easy manual operation

Allows manual transfer to any available source at any time

> Drawout positions

Are connected, tested and isolated with door closed for safety

> Automatic safety shutters

Drop into place once the bypass is engaged, covering the primary disconnects as the transfer switch is withdrawn

> Convenient drawout rails

Allow automatic transfer switch to be quickly rolled out and replaced

> Clear Lexan® barriers

Allow viewing of contact position

> Control disconnect plugs for faster and safer service



PowerCommand® controls

S—standard features O—optional features NA—not available

	GTEC/OTEC control	Level-1 (OTPC/OHPC control)	Level-2 (OTPC/OHPC/CHPC/BTPC control)
Sensing			
3-Phase voltage-sensing utility	S	S	S
3-Phase voltage-sensing generator	N/A, single phase	N/A, single phase	S
Electrical isolation from AC mains	S; high impedance	S; transformer	S; transformer
Voltage-sensing accuracy	+/-2%	+/-1%	+/-1%
O/U voltage-sensing utility	U/V only	S	S
O/U voltage-sensing generator	U/V only	S	S
O/U frequency-sensing utility	N/A	S	S
O/U frequency-sensing generator	U/F only	S	S
Voltage imbalance	N/A	N/A	S
Phase rotation	N/A	N/A	S
Loss of phase	S	S	S
General features/serviceability			
Door-mounted	S	S	S
Controls isolated from switch during service	S	S	S
Single control package for sensing/timing	S	S	S
Voltage surge immunity	S	S	S
Optically isolated customer I/O	N/A	S	S
Method(s) for sensor/timer adjustments	LED configuration	Front panel, service software	Front panel, service software
Number of time/date-stamped events	N/A	50	50
Real-time clock (RTC)	N/A	S	S
On-board diagnostics/fault detection	S	S	S
Field-upgradeable software, PC diagnostics	N/A	S	S
Fully adjustable timers, sensors and control parameters	adjustable in steps	S	S
Mode control keyswitch interface with control	N/A	O	O
Supported voltages			
120V; 200-240V; 380-480V or (220-277V L-N); 600V	S	S	S
Transition modes			
Programmed transition	S	S	S
Open transition with sync-check sensor	N/A	S	S
In-phase monitor	S	N/A	N/A
Closed transition (momentary)	N/A	N/A	S
Closed transition (soft loading/paralleling)	N/A	N/A	N/A
Display/metering/user interface			
Display offered/type	N/A	O, VFD	S, VFD
Front-panel LED status lamps	6-fixed (8 for config.)	6 fixed	6 fixed
Front-panel test	S	S	S
Front-panel TD override	S	S	S
Front-panel lamp test/fault reset	N/A	S	S
Front-panel set exerciser	S	w/display	w/display
Color-coded bar graph meters for voltage, current, frequency, kW and power factor	N/A	N/A	O
Engine-exerciser clock			
Calendar-based exerciser with real-time clock	N/A	S	S
Once/week exerciser	S	N/A	N/A
Exerciser via external clock module	O	N/A	N/A
Number of exercise programs	1	1	8
Power output for external timer	N/A	N/A	N/A
Exercise exceptions	N/A	S, 1	S, 8

PowerCommand controls optimize the reliability and performance of the power generation system while keeping costs competitive and providing unique capabilities for the entire system.

GTEC/OTEC control

Level-1 (OTPC/OHPC control)

Level-2 (OTPC/OHPC/CHPC/BTPC control)

	GTEC/OTEC control	Level-1 (OTPC/OHPC control)	Level-2 (OTPC/OHPC/CHPC/BTPC control)
Time delays			
Displays timer delay countdown	N/A	O	S
Field-adjustable time delays	S	S	S
Time-delay engine start	S	S	S
Time-delay transfer (normal to emerg)	S	S	S
Time-delay retransfer (emerg to norm)	S	S	S
Time-delay engine cooldown	S	S	S
Time-delay elevator pre-transfer	S	S	S
Time-delay programmed transition (delayed neutral)	S	S	S
Time-delay override/bypass feature	S	S	S
Automatic generator-generator changeover timer	N/A	N/A	S
Customer inputs/outputs			
Remote test with load/transfer to generator	S	S	S
Remote engine start	S	S	S
Transfer inhibit	S	S	S
Re-transfer inhibit	S	O	O
Generator (source-2) common alarm	N/A	S	S
Utility (source-1) common alarm	N/A	S	S
Panel security lock	N/A	S	S
Load shed input	N/A	O	O
Generator battery charger status input	N/A	S	S
Remote time delay override/bypass	S	N/A	N/A
Remote lamp test/fault reset	N/A	N/A	N/A
Synchronizer enable	N/A	S	S
Bypass switch position contacts	N/A	N/A	S
Generator interface			
Generator (1) start contact (relay)	S	S	S
Generator (2) start contact	N/A	N/A	S
3-wire generator start compatible (use LT for this feature)	N/A	N/A	N/A
Relay outputs			
Source-1 connected	O	O	O
Source-2 connected	O	O	O
Source-1 available	N/A	O	O
Source-2 available	N/A	O	O
ATS not in auto	N/A	O	O
Test/exercise active	N/A	O	O
Pre-transfer/load disconnect	S, relay drives	O	O
Load shed active	N/A	O	O
Failure to disconnect	N/A	N/A	O
Failure to close/open	N/A	O	O
Failure to sync	N/A	O	O
Remote communications			
Remote communications module	N/A	O	O
Remote communications description	N/A	LonWorks, NCM	LonWorks, NCM
Remote fault dial-out/paging	N/A	O	O
Remote dial-in access	N/A	O	O
Event login	N/A	50	50
ATS load sequencing control	N/A	O	O
Peer-peer system status data	N/A	O	O
Internet-accessible sites	N/A	N/A	N/A
Current / load monitoring	N/A	N/A	O
Agency approvals, code/standards			
UL1008	N/A, S	S	S
IEC	S, N/A	N/A	N/A
CSA, NFPA, IEEE	N/A, S	S	S
IBC	N/A, S	S	S
NEMA ICS 10	N/A, S	S	S

Comprehensive server and networking solutions

PowerCommand® software is a powerful tool that lets you easily manage on-site and off-site power systems from one location.

Whether you're using a desktop computer, a laptop or a cell phone—with PowerCommand iWatch™ or PowerCommand Pulse™, you can reduce power system set-up time, operation and maintenance costs.

PowerCommand iWatch for reliable Web-based monitoring

PowerCommand iWatch lets you monitor generator set and transfer switch functions via the Internet. Using an Internet browser rather than dedicated software eliminates the need for monitoring software on your PC. It also allows any authorized user to monitor the equipment.



PowerCommand iWatch features let you:

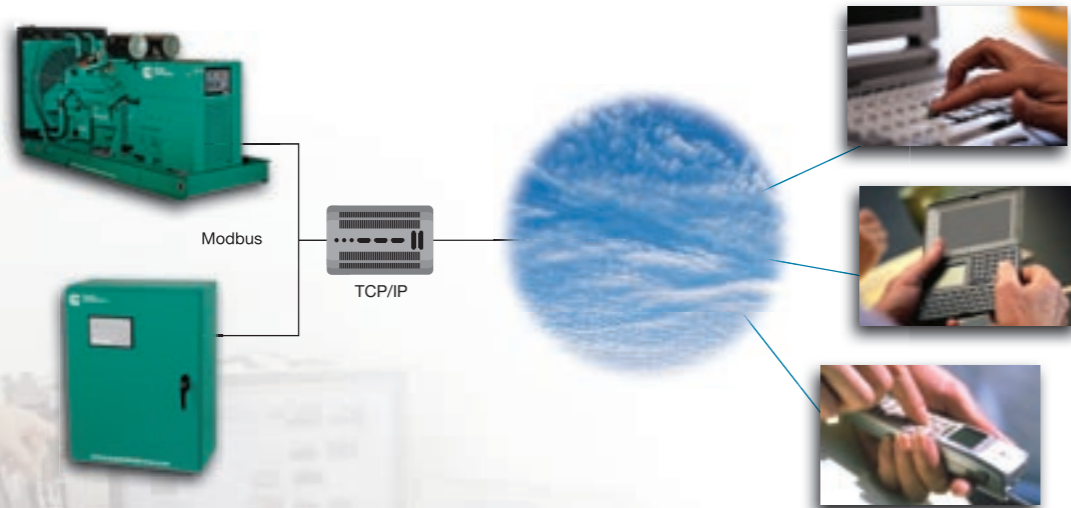
- > Communicate via an Ethernet connection or phone line
- > Connect via an Internet browser on a remote PC
- > Send alarms to cell phones, pagers or e-mail addresses
- > Display voltage and frequency of each source

PowerCommand iWatch 100

- > Monitor one or two generator sets and up to four transfer switches
- > Customize your configuration (up to ten monitored devices) through RFQ

PowerCommand iWatch 200

- > Monitor up to 30 generator sets/transfer switches
- > Customize your configuration

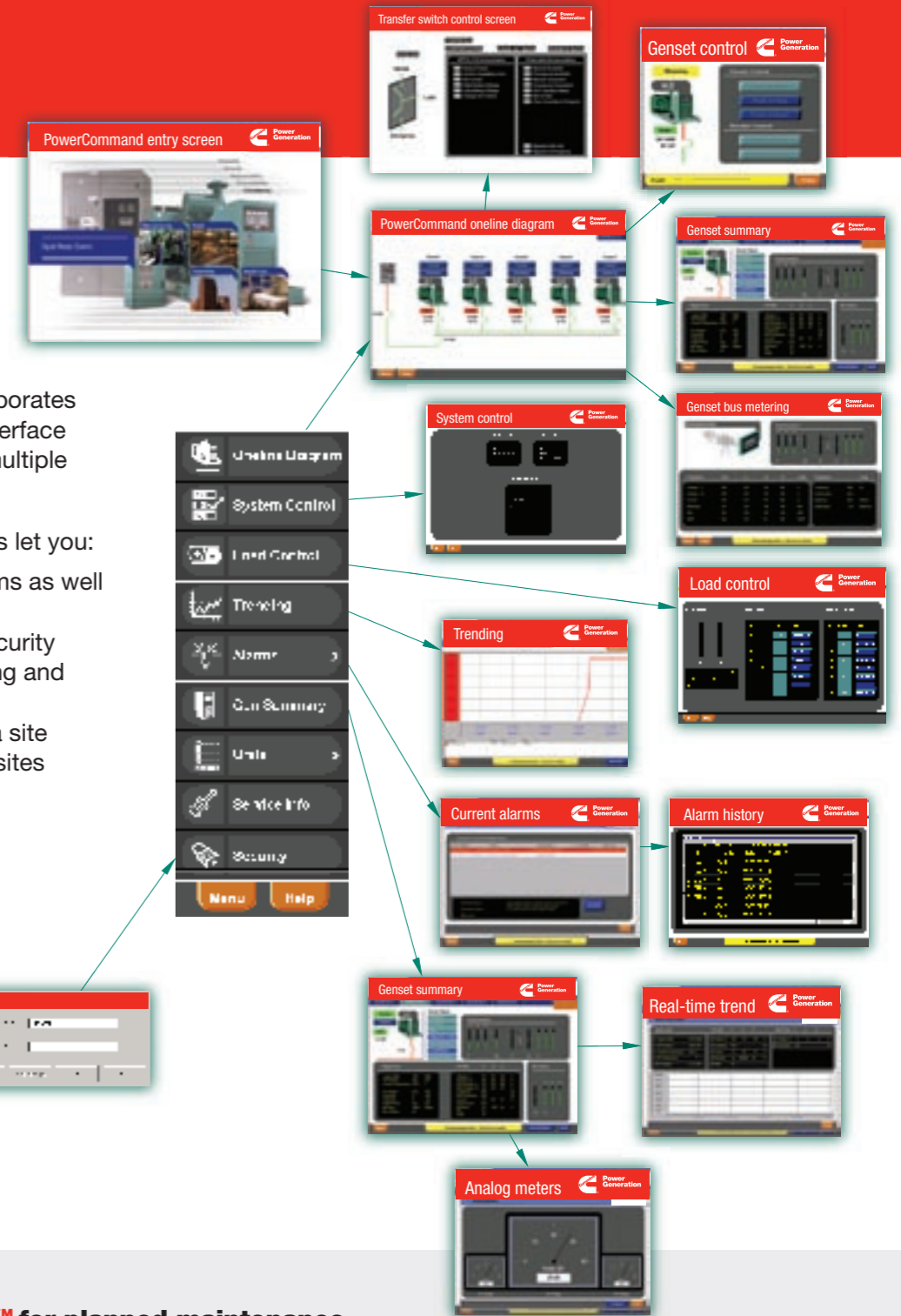


PowerCommand Pulse for multiple power systems

PowerCommand Pulse is a full SCADA package that incorporates an enhanced graphical user interface to quickly and easily monitor multiple power systems.

PowerCommand Pulse features let you:

- > View displays of current alarms as well as alarm logs
- > Set three levels of system security
- > Fully customize the monitoring and control system
- > Monitor up to 60 devices at a site
- > Remotely monitor up to 200 sites
- > Real-time data collection
- > Data logging
- > Report generation

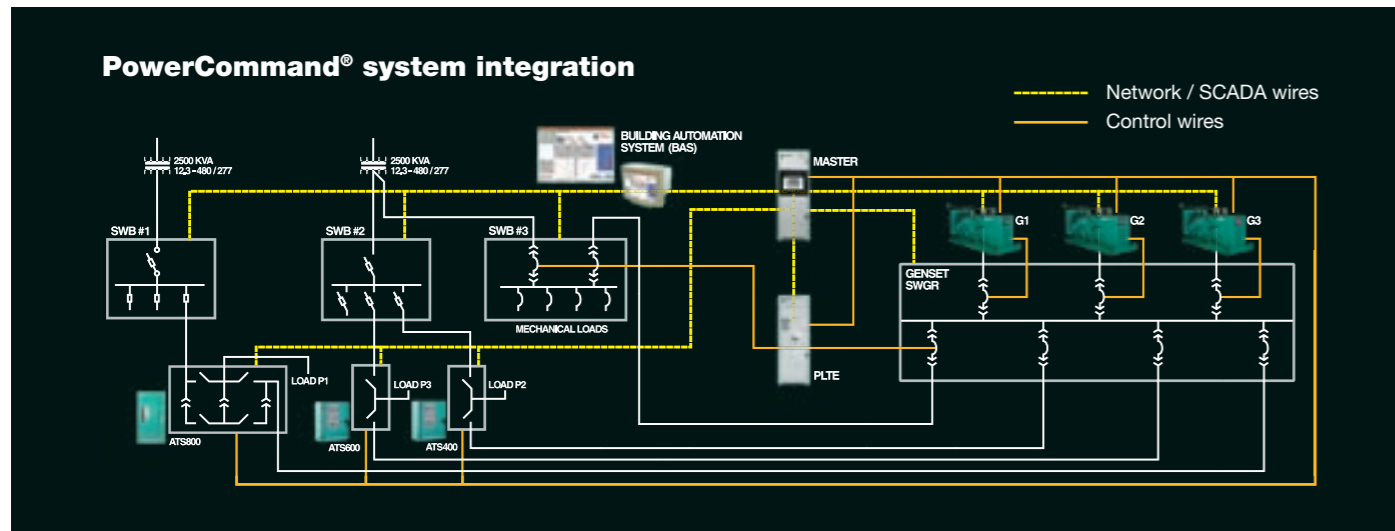


PowerCommand InPower™ for planned maintenance

PowerCommand InPower for service and planned maintenance provides both local and remote set-up and diagnostics. The PC-based software allows a technician to “talk to” a remote PowerCommand system, determine its status and make adjustments.

A Windows Explorer interface provides easy access to PowerCommand InPower's useful functions:

- > *Strip charts*—Obtain real-time recordings of changing conditions and performance
- > *Adjustments*—Change system operating parameters
- > *Monitoring functions*—Use real-time monitoring and data recording to simplify testing and diagnostics
- > *Report generation*—Automatically record test data and formats for quick test reporting
- > *Fault simulations*—Simulate warning or shutdown conditions



Benefit from the PowerCommand system

PowerCommand transfer switches feature a network interface for smooth, simple integration into a local power system monitoring network or building automation system (BAS). External interfaces to other manufacturers' generator sets and transfer switches are available via nearly any protocol or media, including the industry standard, Modbus®. This flexibility allows easy interfaces with remote SCADA systems.

All PowerCommand systems can be integrated with popular BAS products from Intellution®, Johnson Controls, Siemens (Landis and Staefa Division), Square D®, WonderWare®, and others.

By sharing our technological expertise with these companies, we have increased the reliability, flexibility, comprehensiveness and interoperability of the PowerCommand system.

Together as a system, PowerCommand transfer switches, digital paralleling systems, generator sets and digital master controls provide you with peace of mind unmatched by others in the industry.

Couple that with the knowledge that your system has been designed, built and integrated by a single manufacturer, and you can be assured you have selected a state-of-the-art power system.

Cummins Power Generation also provides single-source warranty, planned maintenance and emergency service 24 hours a day, seven days a week, including back-up rental power through our network of 170 distributors in over 130 countries around the world.

The pre-integrated digital PowerCommand system offers the technology, value and support you deserve.



Our global operations:

- 26 Factories
- 16 Technical centers
- 15 Parts distribution centers
- 550 Distributors
- 5,587 Sales and service
- 160 Countries
- 33,500 Employees



Our energy working for you.™

For more information on transfer switches, visit www.cumminspower.com Or contact your local Cummins Power Generation distributor.



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