

PowerCommand™

Keyswitch/Autostart Generator Set Control



Description

The PowerCommand™ (0300) control is a microprocessor-based generator set monitoring and control system. The control provides a simple operator interface to the generator set, manual and remote start/stop control, shutdown fault indication, and an LCD hour counter. The integration of all functions into a single control system provides enhanced reliability and performance compared to conventional generator set control systems.

The PowerCommand 0300 generator set control is suitable for use on a wide range of generator sets in non-paralleling applications.

The PowerCommand control is compatible with alternators up to 305 VAC line to neutral, and can be configured for 50 Hz or 60 Hz operation.

The PowerCommand 0300 is designed for mounting on the generator set.

Power for the control is derived from the generator set starting batteries. The control functions over a voltage range from 8 VDC to 35 VDC.

Features

- **8 VDC – 35 VDC Operation**
- **Engine Starting** - Includes steady state output to start the engine, fuel shut off (FSO), and glow plugs. Start disconnect is achieved by monitoring main alternator frequency.
- **Remote Start Capability** – Interface to transfer switch
- **Engine Protection** – Overspeed, Low Oil Pressure, and High Engine Temperature.
- **Environmental Protections** - The control system is designed for reliable operation in many environments.
- **Certification** - UL - Type 1.

Control System

The standard control system includes all the functions necessary to locally or remotely start and stop and protect the generator set.

Key switch – OFF and MANUAL/AUTO - In the OFF mode, the generator set is immediately shut down (if running) and cannot be started. It also resets any faults. In this mode, all power is removed from the control and its outputs. In MANUAL/AUTO mode, the control is powered. The manual start pushbutton and remote start input become enabled.

Manual Start Button – This button will initiate a genset start sequence when the control is in MANUAL/AUTO mode. This button is locked out when the engine is running.

LED Indicating Lamps – The control includes LED lamp indication for the following functions:

- Fail to Start
- Overspeed, Underspeed/Sensor Fail
- Low Oil Pressure
- High Engine Temperature
- Battery Charging Alternator Fail
- Preheat (Glow plugs)

LCD Engine Hour Counter – The control includes an LCD engine hour counter. The counter will increment whenever the engine is running.

Operator Adjustments – The operator may select 50 Hz or 60 Hz nominal frequency operation via the frequency select switch on the back of the control.

Internal Control Functions

Engine Control

Remote Start – When in MANUAL/AUTO mode the control accepts a ground signal from remote devices to automatically start the generator set.

Engine Starting – The control system supports automatic engine starting, which includes solid state outputs for engine preheat, starter control, and fuel solenoid control. The start disconnect is achieved by monitoring main alternator output frequency.

Starting Sequence – In the MANUAL/AUTO mode, after the Manual Start button is pressed, there is a 1 second delay followed by the preheat output becoming active for 10 seconds. After the 10 second preheat, the fueling output becomes active and preheat shuts off. The cranking cycle starts 1 second after fueling output goes active. This continues for up to 10 seconds, followed by a rest period of 10 seconds. During this rest period, the fueling output is inactive and the preheat output is active. The crank cycle is repeated up to 3 times, if starting is still unsuccessful a Fail to Start fault is generated. If the engine starts, the crank cycle is terminated at a crank

disconnect frequency of 20Hz. A hold-off timer enables most faults 12 seconds after start disconnect.

Except for start and stop time delays, the starting sequence functions the same way if a Remote Start signal is received when in MANUAL/AUTO mode. The remote start delay is 5 seconds; the remote stop delay is 30 seconds.

Protective Functions

The control will indicate a fault by activating the corresponding LED and shutting off the preheat, start and fuel outputs. Each fault has its own LED, and once activated, no further fault condition can occur. The fault output and relevant LED will remain active until the control is reset by turning the switch to the OFF position

Engine Protection

- **Overspeed Shutdown** – If nominal frequency is 50 Hz: Shutdown will occur at 57 Hz during normal operation and at 63 Hz during the hold-off delay. If nominal frequency is 60 Hz: Shutdown will occur at 68 Hz during normal operation and 74 Hz during the hold-off delay.
- **Low Oil Pressure Shutdown** - The Low Oil Pressure Sensor is normally closed and opens with pressure.
- **High Engine Temperature Shutdown** - The High Engine Temperature Sensor is normally open and closes with temperature.
- **Underspeed/Sensor Fail Shutdown** - This fault is active when the AC frequency goes below 20 Hz, after the hold-off delay. The Overspeed LED will blink and not be solid.
- **Fail to Start** - This fault is active if the genset does not start before the completion of 3 start cycles.
- **Battery Charging Alternator Fail Warning** - This fault is active when the voltage on the charging alternator drops below 4 V. The fault will remain active until this voltage rises about 8.5 V.

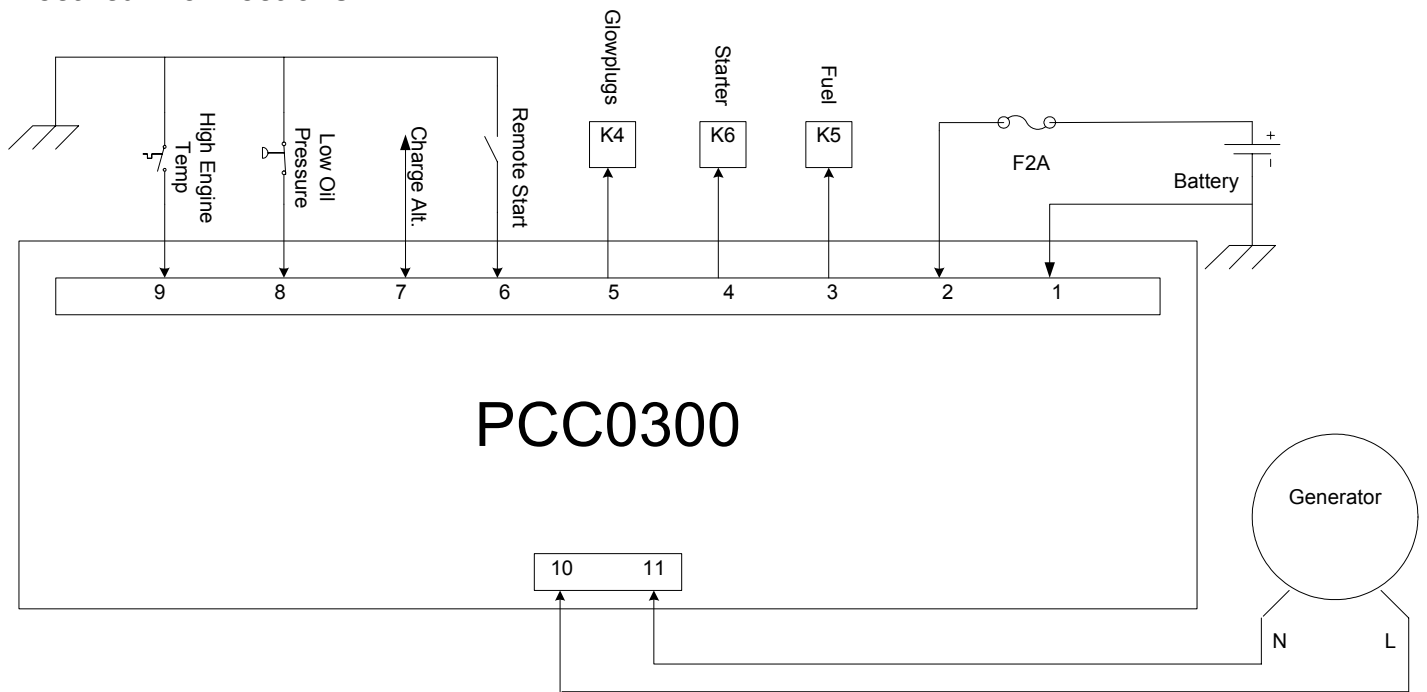
Environment

The control is designed for proper operation without recalibration in ambient temperatures from -25° C to +50° C. The control will operate at 90% relative humidity non-condensing at +40° C.

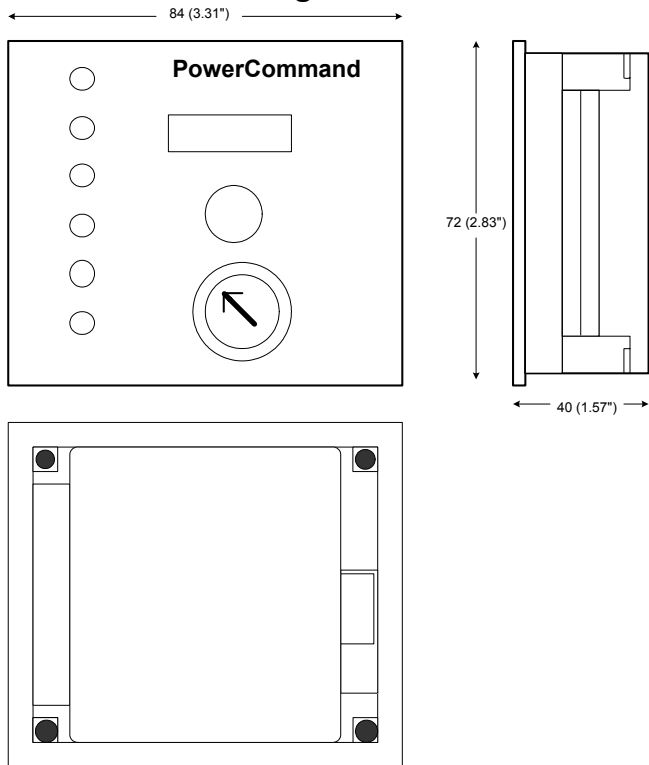
Compliance with Standards

- **Low Voltage Directive** - The control is designed to comply with European directive 72/23/EEC by complying with harmonized European safety standard BS EN 60950.
- **EMC Directive** - The control is designed to comply with European directive 89/336/EEC by complying with harmonized European Standards BS EN 50081-2 and BS EN 50082-2.
- **UL Approval** - Type 1 approved.

Electrical Connections



Mechanical Drawings



Dimensions in mm (inches)

See your distributor for more information



Cummins Power Generation
1400 73rd Avenue N.E.
Minneapolis, MN 55432
763.574.5000
Fax: 763.574.5298
www.cumminspower.com

Cummins Power Generation is a subsidiary of Cummins Inc.
PowerCommand is a registered trademark of Cummins Inc.
Echelon and LONWORKS are registered trademarks of Echelon.

⚠ WARNING *For Professional Use Only. Must be installed by a qualified service technician. Improper nstallation presents hazards of electrical shock and improper operation, resulting in severe personal injury and/or property damage.*