



EGCP-3

Generator System Control Package

APPLICATIONS

EGCP-3 is a powerful microprocessor-based generator system control and management package designed for the most demanding power generation applications.

EGCP-3 combines engine, generator, power system, switchgear, and utility monitoring, protection, and control functions in a single, compact, and cost-effective package.

Perfect for medium- and large-sized generation systems, the EGCP-3 is designed for use in stand-alone, peaking, or utility paralleled systems.

Up to 16 EGCP-3 controls can be networked together to provide total system control, including multiple utility and inter-bus tie breakers.

DESCRIPTION

EGCP-3 is available in standard configurations including:

DR—Distributed Resource:

- Single unit isolated
- Single unit parallel to mains
- Single unit ATS

LS—Load Share:

- Multiple unit isolated
- Multiple unit parallel to mains

MC—Master Controller:

- Mains tie breaker control
- Inter-bus tie breaker control

Custom OEM Configurations

Among the many EGCP-3 control functions are:

Engine Control/Protection

- Configurable start sequencing
- kVA-controlled cool-down timer
- Oil pressure monitoring (idle/rated)
- Coolant temperature monitoring
- Battery voltage monitoring
- Speed monitoring with overspeed protection

Real kW Load Control

- True RMS power calculations
- Load bias signal to engine speed control, configurable for ± 3 Vdc, 0–5 Vdc, 500 Hz PWM, 4–20 mA, discrete raise/lower
- Configurable load/unload ramp rates
- Isochronous load-sharing of up to 16 EGCP-3 units using percentage based load sharing
- Built-in import/export control
- Soft utility transfer function
- Externally adjustable load or process references

Reactive kVAR Control

- VAR (PF) sharing on isolated busses using percentage based reactive load sharing
- Voltage bias signal to AVR configurable for discrete raise/lower, 4–20 mA, ± 1 , ± 3 , or ± 9 Vdc
- Power factor or VAR control when base loaded
- Externally adjustable VAR or PF setpoint levels
- Manual voltage control capability
- Configurable load/unload ramp rates

- Complete generator system control package
- Automatic load-demand sequencing of multiple units
- Three-phase synchronization
- Comprehensive system protection –engine, utility, and generator
- Revenue-grade power and energy metering
- Digital display of engine, generator, and system data
- Real kW and reactive kVAR load sharing and control
- Additional on-board and distributed I/O available
- Easily adapts to exact application needs with GAP™ programming tools
- Advanced network communications
- DSLC™ compatible
- Built-in diagnostics

Synchronizing

- Phase match or slip frequency synchronization with voltage matching
- Full three-phase sensing on both busses
- Manual synchronization capability
- Adjustable phase window, voltage window, reclose attempts, reclose timing
- Safe dead bus closing logic internal to the control
- Synch check (25)
- Breakers or contactors

Automatic Unit Sequencing

- Automatically starts and stops gen-sets based on plant bus demand
- Automatic generator set loading and unloading for bumpless transfer
- Configurable plant bus demand start/stop levels and timers
- Configurable generator priority sequencing

Communications

- Modbus® RTU or DDE communications via RS-232 (1 each) and RS-232/422/485 (2 each) serial ports
- Echelon® TP/XF-1250 network
- CAN 2.0b Network (OEM option only)

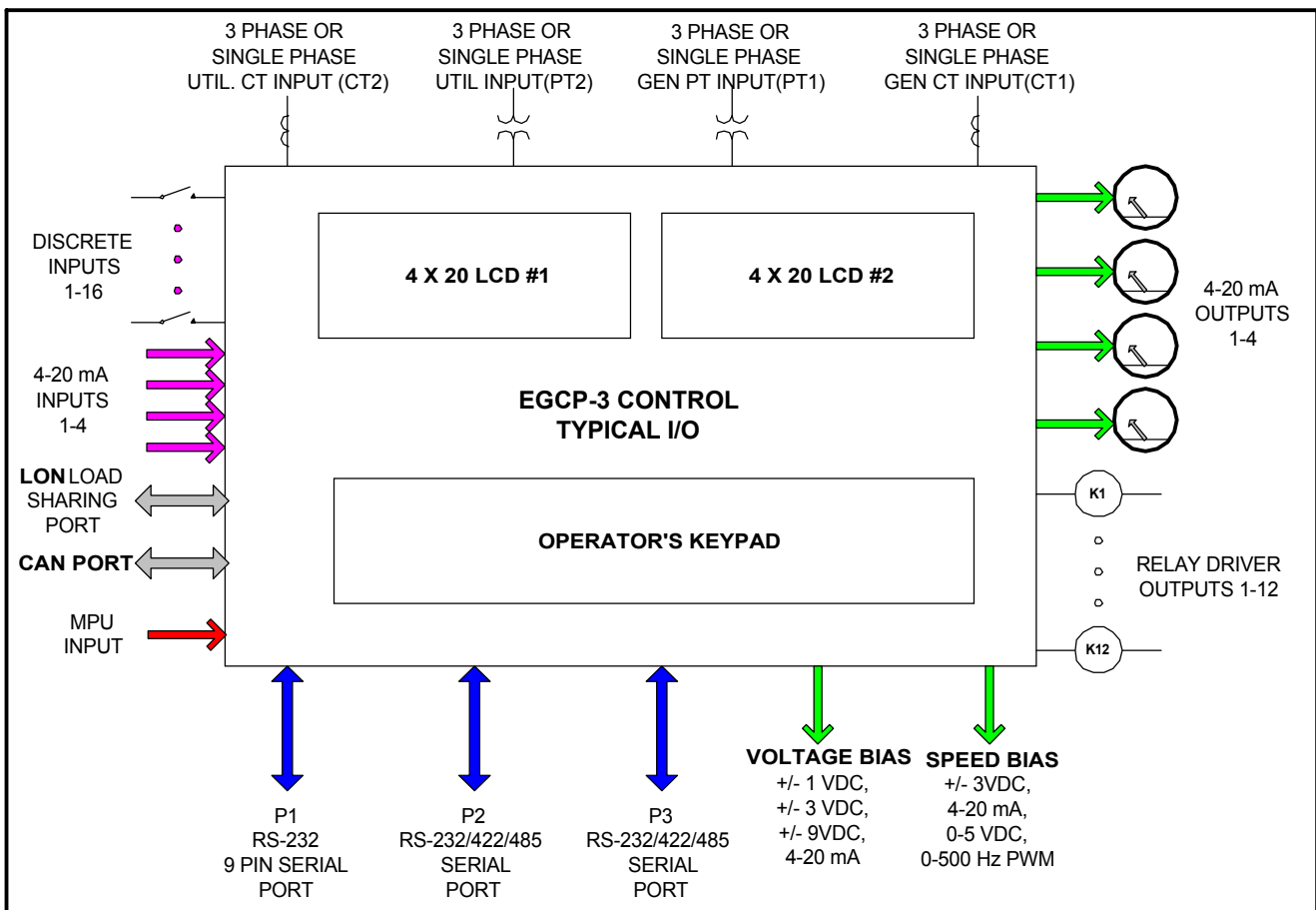
Generator Protective Features

- Over/Under Voltage (27,59)
- Over/Under Frequency (810,81U)
- Directional (Forward/Reverse) Power (32)*
- Negative Phase Sequence Overcurrent (46)
- Negative Phase Sequence Overvoltage (47)
- Phase Overcurrent (51)*
- Directional VAR
- Phase Current Differential Imbalance (87)*
- Speed/Frequency Mismatch
- Load Surge

Utility Protective Features

- Over/Under Voltage (27,59)
- Over/Under Frequency (810,81U)
- Directional (Forward/Reverse) Power (32)*
- Negative Phase Sequence Overcurrent (46)
- Negative Phase Sequence Overvoltage (47)
- Phase Overcurrent (51)*
- Voltage Restrained Phase Overcurrent (51V)*
- Directional VAR
- Phase Current Differential Imbalance (87)*
- Loss of Mains/Loss of Mains with Alarm

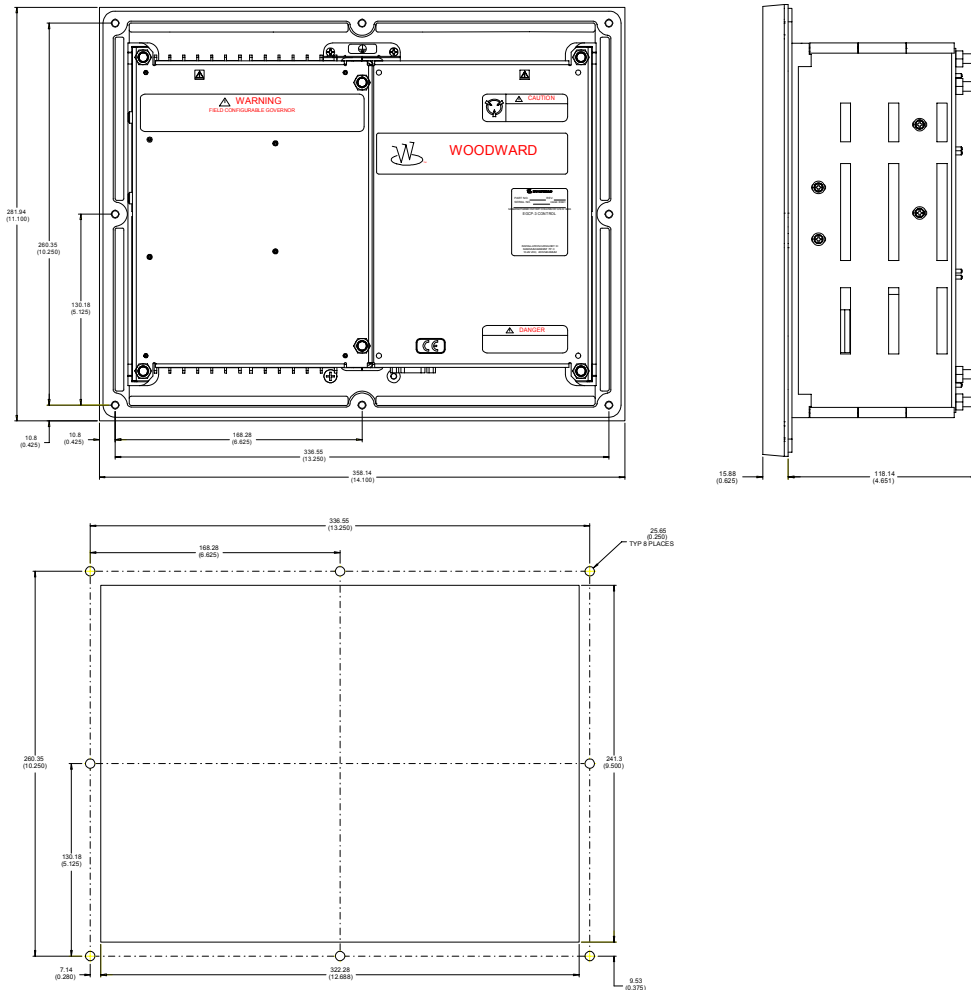
*—Inverse Time Protections implemented are according to IEEE C37.112 “Very Inverse” curves



EGCP-3 Interactions

HARDWARE SPECIFICATIONS

- Size: 281.8mm (11.1") High x 358.1mm (14.1") Wide x 134.0mm (5.275") Deep
 Operator Interface Panel: 8 (20 Character) lines plus membrane keypad
 Power Supply Voltage: 24 Vdc system (18–32 Vdc nominal; 9–40 Vdc maximum)
 Control Part Numbers: DR: 8406-103
 LS: 8406-113
 MC: 8406-114
- Connectors: Terminal blocks are screwless CageClamp style blocks. PT and CT inputs are fixed screw terminals.
- Voltage Measuring Input Range: 70–300 Vac
 Current Measuring Inputs: 5 Aac RMS nominal, 7 Aac RMS maximum
 Temperature Range: –20 to +70 °C operating; –30 to +80 °C storage
 Humidity: 95% at +60 °C non-condensing
 Enclosure Rating: Meets IP56 (IEC) and Type 4 (NEMA) requirements from the front panel and properly installed in an equivalent enclosure
 Vibration: Suitable for engine skid or control cabinet
 Random Test: 10–2000 Hz at 0.04 G²/Hz and 8.2 Grms PSD
- Mechanical Shock: 30 g peak, 11 ms duration, non-operating
- Regulatory Compliance (pending): UL508; CSA Hazardous Locations Class I, Division 2, Groups A–D
 IEC Zone 2 European Group IIC
 EEC EMC Directive; EEC Low-Voltage Directive
 Marine LR
 RINA, ABS, and GL classifications



EGCP-3 Outline Drawing and Panel Layout Template

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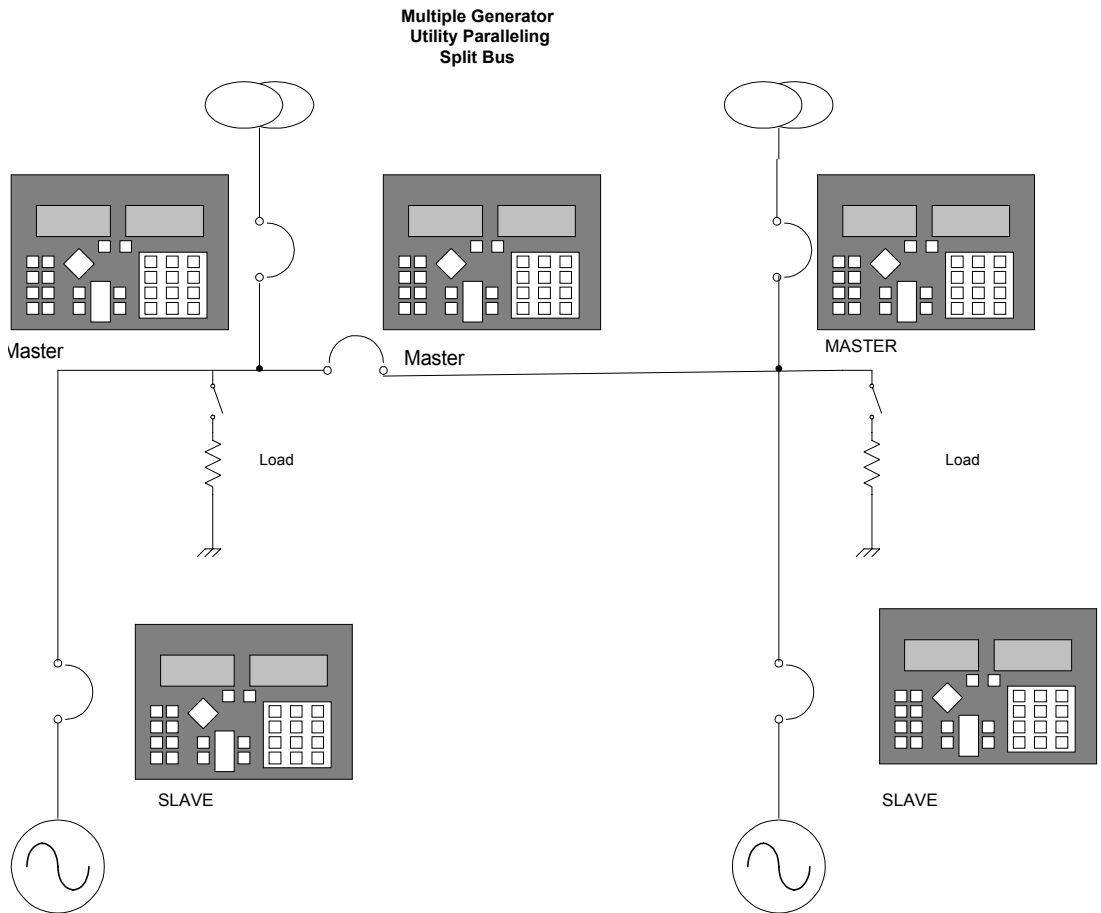
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EGCP-3 Applications

- Single Unit—No Utility Parallel
- Single Unit—Utility Parallel
- Multiple Unit—No Utility Parallel
- Multiple Unit—Utility Parallel
- Multiple Unit—Multiple Utility Feeds Parallel



Typical Multiple Unit Parallel Application

For a complete set of EGCP-3 Installation/Operation or Application manuals, connect to the Woodward Industrial Controls Internet website and download the desired manual(s):
<http://www.woodward.com/ic>

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