EGCP-3 LS

Multi-unit Load Share Generator System Control Package

DESCRIPTION

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

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

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

The LS can be operated alone or networked together with other LS units or EGCP-3 MC units to provide a total system solution for most applications.

APPLICATIONS

Real kW Load Control

- True RMS power calculations
- Speed bias signal to engine speed control, configurable for ±3 Vdc, 0–5 Vdc, 500 Hz PWM, 4–20 mA, digital raise/lower
- Configurable load/unload ramp rates
- Isochronous load-sharing of up to 16 EGCP-3 LS units using percentage based load sharing
- Process control
- Externally adjustable load or process references (using Analog Inputs or Modbus)

Reactive kVAR Control

- Voltage bias signal to AVR configurable for digital raise/lower, 4–20 mA, ±1, ±3, or ±9 Vdc
- Configurable load/unload ramp rates
- PF sharing on isolated buses using percentage based reactive load sharing
- VAR/PF control using percentage based load sharing during process or baseload
- Externally adjustable VAR or PF references (using Analog Inputs or Modbus)
- Manual voltage control capability

Engine Control/Protection

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

Automatic Unit Sequencing

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

- Complete generator system control package
- Automatic load-demand sequencing of multiple units
- Synchronization of breakers or contactors
- Comprehensive system protection–engine, bus, and generator
- Revenue-grade power and energy metering
- Digital display of engine, bus, generator, and system data
- Real kW and reactive kVAR load sharing and control
- Advanced network communications with Echelon® and Modbus® networks
- DSLC™ compatible (not compatible with manually bound DSLC units)
- Built-in system diagnostics

Synchronizing

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

Communications

- Modbus® * RTU via RS-232/-422/-485 serial ports
- ServLink, Watch Window via RS-232/-422/-485 serial ports
- Echelon® ** TP/XF-1250 network (LON)

Diagnostic Features

- Breaker/Contactor synchronization timeout and re-close alarms
- Breaker/Contactor feedback and shunt trip alarms
- Phase rotation mismatch
- Network communication error alarms
- Speed/Frequency mismatch (loss of MPU)
- Analog input out-of-range alarms
- Configuration check

*—Modbus® is a trademark of Modicon, Inc.
**—Echelon® is a trademark of Echelon Corporation

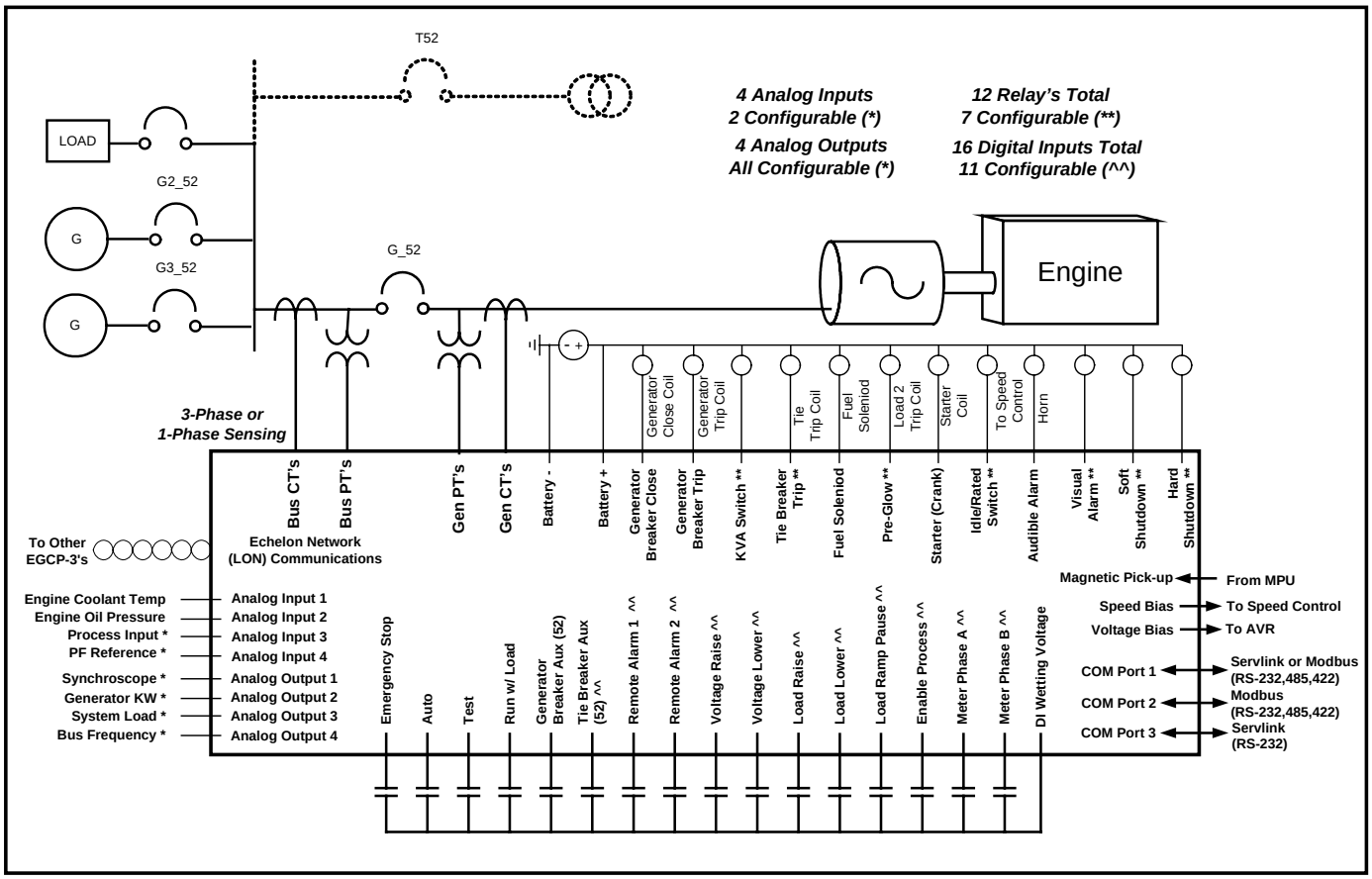
Bus Protective Features

- Over/Under Voltage (59, 27)
- Over/Under Frequency (81O, 81U)
- Directional (Forward/Reverse) Power (32) *
- Negative Sequence Phase Overcurrent (46)
- Negative Sequence Phase Overvoltage (47)
- Phase Overcurrent (51) *
- Voltage Restrained Phase Overcurrent (51V) *
- Directional VAR
- Phase Current Imbalance (46) *

Generator Protective Features

- Over/Under Voltage (59, 27)
- Over/Under Frequency (81O, 81U)
- Directional (Import/Export) Power (32) *
- Negative Sequence Phase Overcurrent (46)
- Negative Sequence Phase Overvoltage (47)
- Phase Overcurrent (51) *
- Directional VAR
- Phase Current Imbalance (46) *
- Speed/Frequency Mismatch
- Overspeed (12)

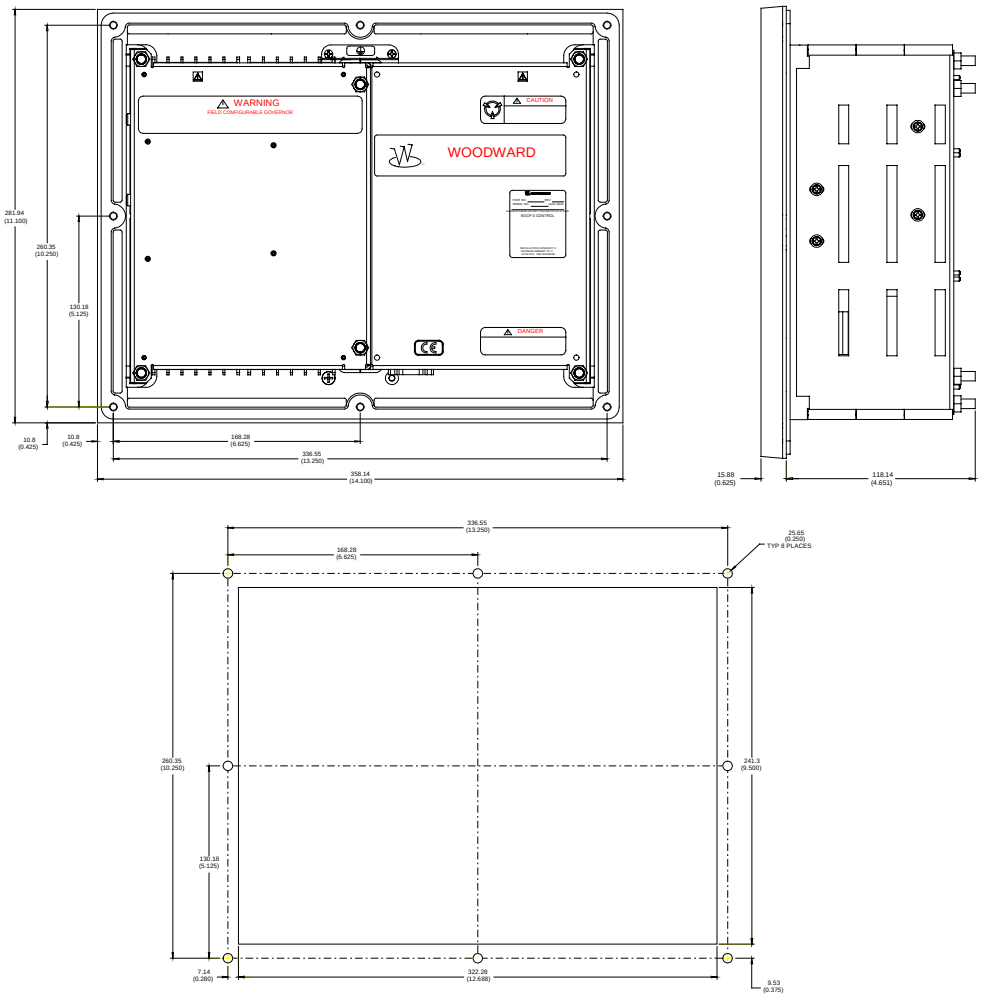
*—Inverse Time Protections implemented are according to IEEE C37.112 “Very Inverse” curves



EGCP-3 LS Interactions

HARDWARE SPECIFICATIONS

Size:	282 mm (11.1”) high x 358 mm (14.1”) wide x 134 mm (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:	LS: 8406-113 Installation Manual: 26122 Operation Manual: 26194
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 (–4 to +158 °F) operating –30 to +80 °C (–22 to +176 °F) storage
Humidity:	95% at 60 °C non-condensing
Enclosure Rating:	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:	Class I, Division 2, Groups A, B, C, D for North America Zone 2, Group IIC for Europe Declared to the EMC; Low-Voltage, and ATEX Directives Type Approval by ABS, DNV, and LR for marine applications



EGCP-3 Outline Drawing and Panel Layout Template
(Do not use for construction)

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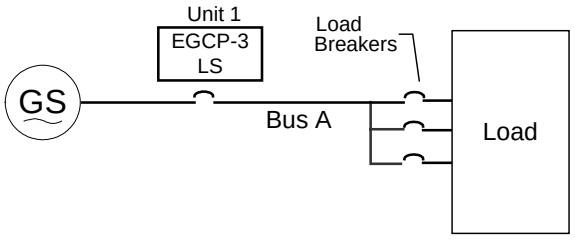
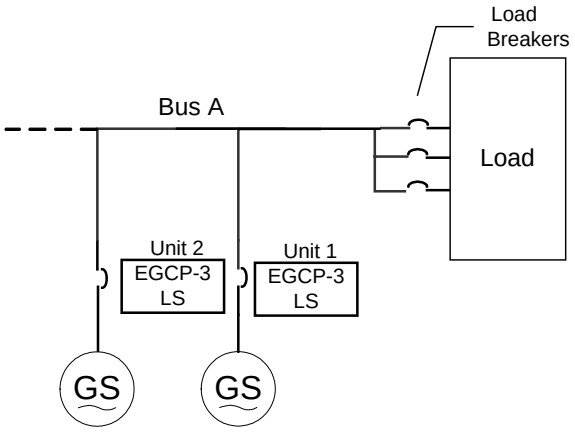
EGCP-3 LS Applications/Configurations

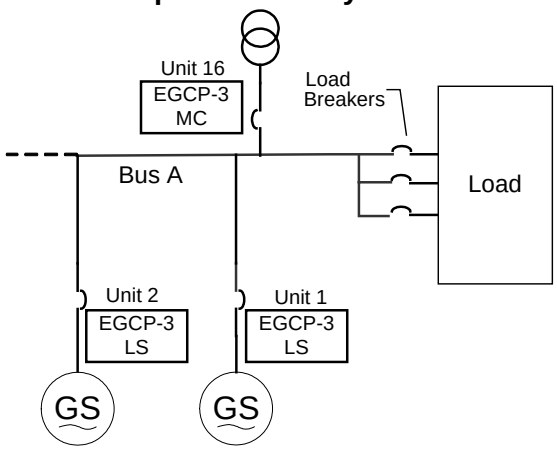
Single Unit–No Parallel



Multiple Unit–No Parallel



Multiple Unit–Utility Parallel



Other Configurations

- Single Utility–Multiple Bus
- Multiple Utility–Single/Multiple Bus

For a complete set of EGCP-3 Installation/Operation manuals or Application Notes on the above configurations, download from the Woodward Industrial Controls website at:

www.woodward.com/ic

For more information contact:

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