GECO™ Lean Burn

Air/Fuel Ratio Control System

The Gas Engine Control (GECO) is designed to upgrade your gas engine to meet today's and tomorrow's emissions standards.

Applications

The GECO™ Lean Burn is a state-of-the-art air/fuel ratio control for lean burn natural gas engines. The GECO is an easy-to-install, low maintenance solution for lean burn natural gas engines. Woodward is the only manufacturer offering a system for the generator set market that does not require an oxygen sensor.

Reliable Performance

GECO complements existing engine controls to provide an air/fuel ratio management system. Closed-loop exhaust oxygen feedback or kilowatt feedback assures optimum efficiency and low emissions under all operating conditions.

With a sophisticated open loop operating mode, the GECO control can keep your engine on-line even when sensors fail.

Easy Installation

The system has a wide supply voltage range and flexible control interface options. The electronic control module accepts all control signals directly, so no additional signal interface modules or complicated wiring plans are needed. The rugged enclosure and system components provide conduit connections for clean, protected plant wiring. Plug-in terminal strip connectors allow ease of installation and make diagnostics quick and uncomplicated.

The control is also available without the enclosure, for installation in existing enclosures or cabinets.

- Closed-loop, adaptive air/fuel ratio control
- Manages wide engine speed and load variations
- Exhaust oxygen set point can be varied over load range of engine
- No oxygen sensor required on generator set applications
- Fast transient response for reliable generator set performance
- Open loop failsafe operation mode continuously learns best valve positions
- Comprehensive system diagnostics
- Data communications

Simple Operation Low Maintenance

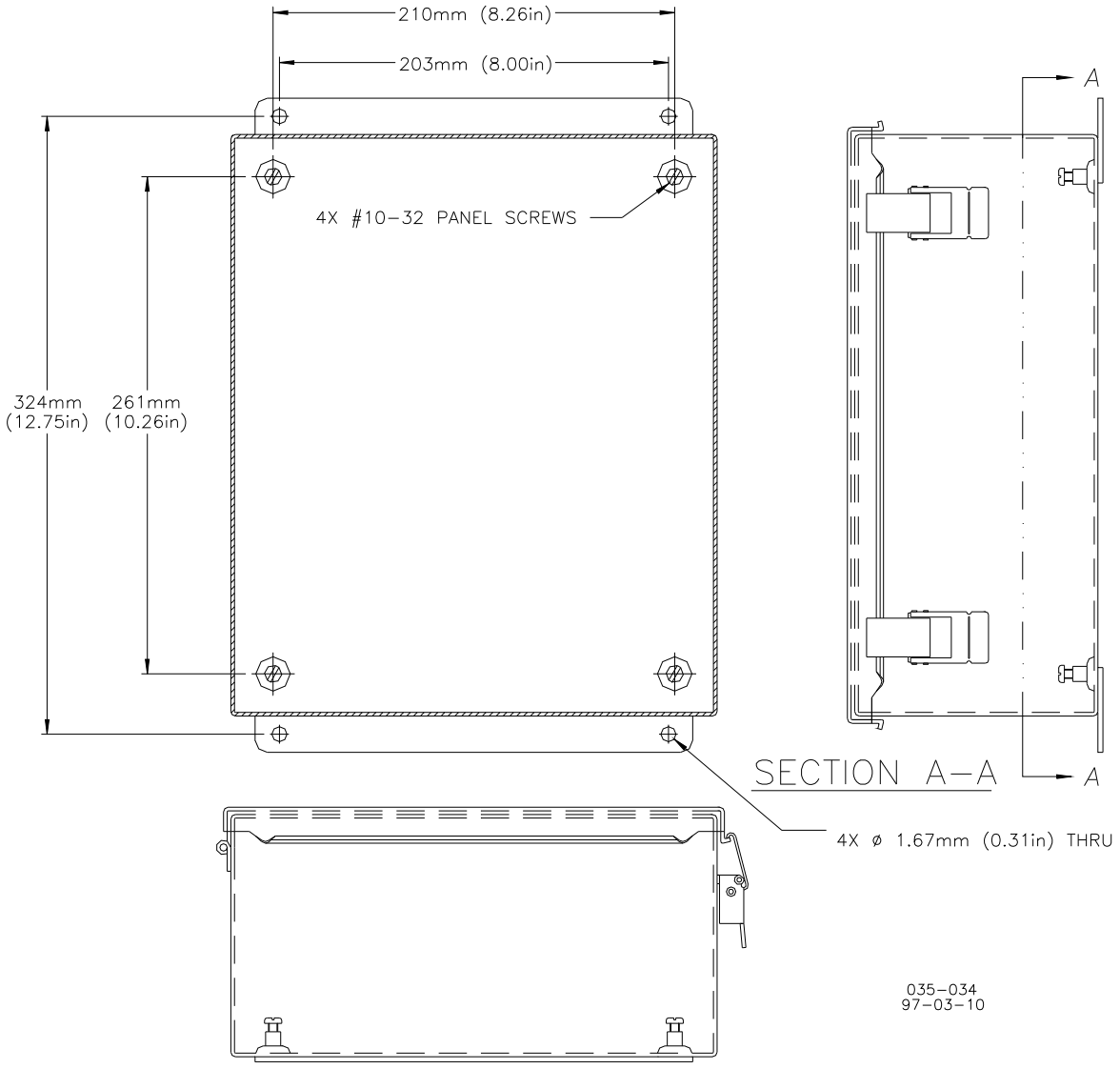
The GECO Lean Burn control can be equipped with a handheld terminal for data monitoring and for checking and clearing faults, alarms or shutdowns. The system includes PC software, which allows you to do diagnostics, monitoring and calibration. GECO's self-diagnostics pinpoint problems and provide the operator with alarm warnings and fault indications, reducing down-time for repairs.

The Data Transmission feature allows for transmission of control measurements and status via Modbus® * communications to a data logging system or supervisory control.

*—Modbus is a trademark of Schneider Automation Inc.

Woodward Reliability & Support

Since GECO works with original air and fuel controls, the expense and complexity of emissions compliance is minimized. Years of field development combined with Woodward's stationary engine experience have resulted in this low cost and extremely reliable control. Improved engine operation ensure maximum efficiency and minimum operating costs. In addition to reduced operating costs, the value of your GECO investment is enhanced by the same strong commitment to training and service that Woodward has provided its customers for decades.



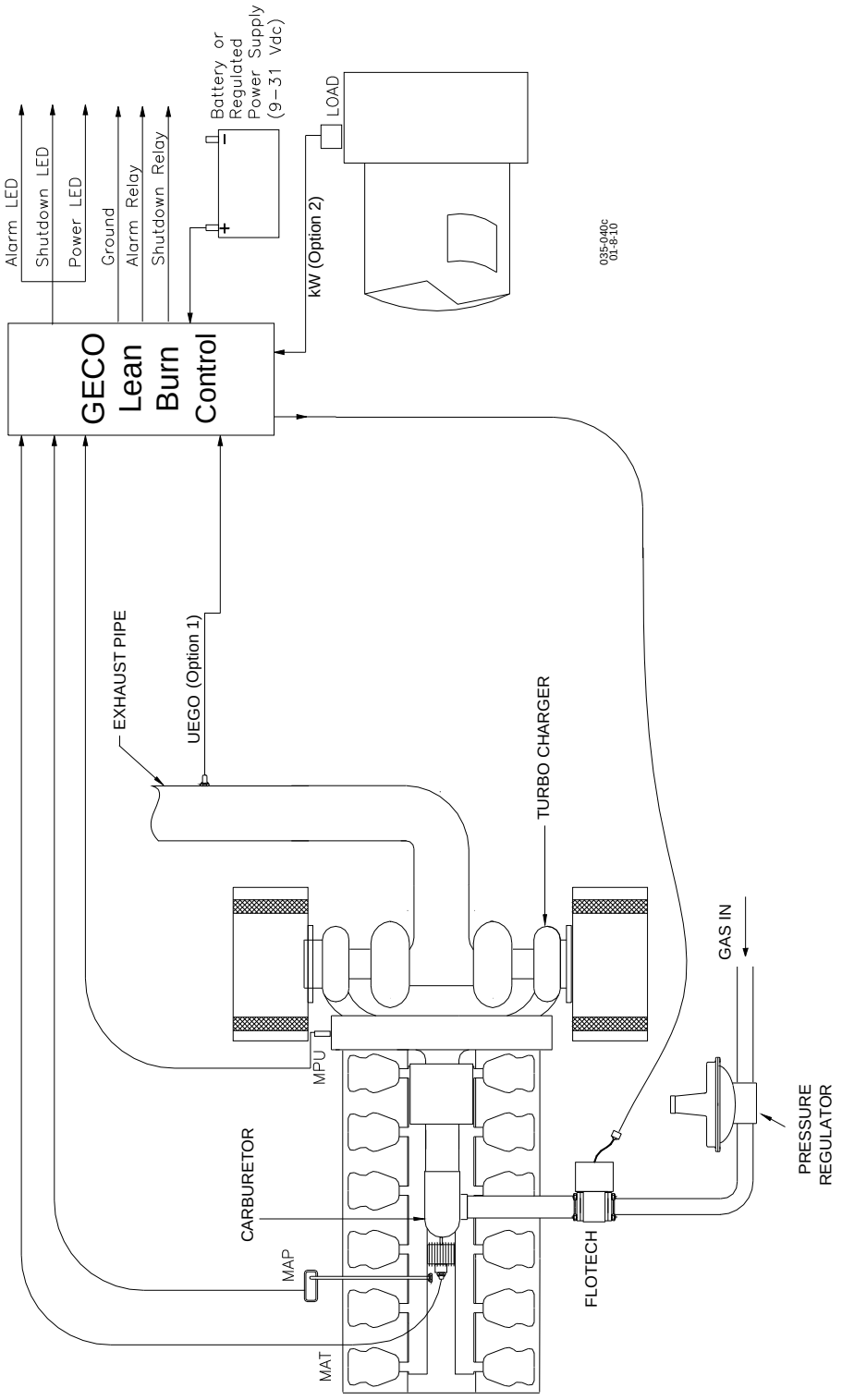
GECO Lean Burn Outline Drawing
(Do not use for construction)

Specifications

Power Supply	
Power Supply Voltage	9–30 Vdc (12 Vdc or 24 Vdc nominal)
Power Consumption	70 W maximum (application specific)
Inputs	2 wide range exhaust oxygen sensors p/n 6910-313 2 K-type thermocouples, p/n 1736-919 or equivalent (Optional) 1 intake manifold absolute pressure sensor (0–5 Vdc; 0–3 bar absolute), p/n 6910-314 1 intake manifold temperature sensor, p/n 6913-011 1 magnetic pickup, p/n 5430-929 or equivalent (0.20–100 Vrms; 8–10 000 Hz) 1 “G-lead” pulse from ignition system(±250 V max) 1 generator power transducer (4-20 mA)
Outputs	2 PWM fuel metering valves, p/n 8235-160 1 alarm relay (250 Volts @ 75 mA max non-inductive load) 1 shutdown relay (250 Volts @ 75 mA max non-inductive load)
Diagnostics	Power Supply Voltage Oxygen Sensor Heater Circuits Manifold Pressure Sensor Manifold Temperature Sensor Closed-Loop Functions Control Failsafe Operating Modes Open loop valve positioning mode on failure of pre-catalyst exhaust oxygen sensor or watt transducer Valve default position on failure of manifold pressure sensor
Communications	RS-232 Handheld Interface 6-Pin RJ-12 RS-232 PC Interface DB9 RS-485/Modbus Data Transmission (optional)
Technical Manual	03616

Environmental Specifications

Temperature Ranges	
Ambient Operating Temperature	–40 to +70 °C (–40 to +158 °F)
Storage Temperature	–40 to +105 °C (–40 to +221 °F)
Regulatory Compliance	CSA, UL/cUL, Class 1, Division 2, Groups A, B, C, and D
Enclosure	305 x 254 X 127 mm (12 x 10 x 5 in) NEMA 12/13, Quick-Release Latches



GECO Lean Burn Schematic

WOODWARD

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Distributors & Service

Woodward has an international network of distributors and service facilities. For your nearest representative, call the Fort Collins plant or see the Worldwide Directory on our website.

For more information contact: