

TOUGH Series

Digital Engine Control

Standard or Electronic Engines

The TOUGH series controllers are designed to provide complete control, protection and engine instrumentation for both standard and electronic engines. The module is easily configured using either the front panel buttons or our PC configurator software. TOUGH series controllers are ideally suited for severe duty applications where reliability is critical such as engine-powered pumps and industrial compressors.

Displays:

- Oil Pressure
- Engine Temperature
- Fuel Level
- Oil Level
- Hour Meter
- RPM
- Real time clock display with time/date
- Battery Voltage
- J1939 DTC codes with custom text
- Two customer defined parameters (temperature, pressure, voltage, levels)

Features and Functions:

- SAE J1939 CANbus Protocol
- Support for J1939 engine manufacturers (Volvo, John Deere, Cummins QSB5, GM PSI, Yanmar, ISUZU)
- Speed control offset adjustment electronic engines
- Automatic shutdowns and warnings
- Trim feature for sensors
- RPM via magnetic pickup or J1939
- Maintenance counter
- Exerciser Clock
- 100 Event Log
- Conformally coated for protection against moisture and contaminants
- Gasket for water ingress protection to IP65
- Autostart on Low Battery and other sensors
- Free PC Configurator Software
- Fast and rugged installation clips
- Passcode protected
- Manual and remote start
- Momentary start and momentary stop inputs suitable for float switch control in pumping applications and multiple start stop stations
- Pre-heat and many configurable timers
- Accepts common senders (VDO, Datcon, Murphy, and more)
- Custom senders configurable with PC software
- 5-Year Warranty



Compact 4.17" x 6.5" x 1.38" Footprint



Front Panel or PC Configurable

The TOUGH series can be programmed manually via front panel buttons or with our easy-to-use PC configurator software that provides customization of screen messages, sender selections, control settings, and much more. The PC configurator uses a standard USB cable with no special programmer required.



Snap-on RelayPak Option

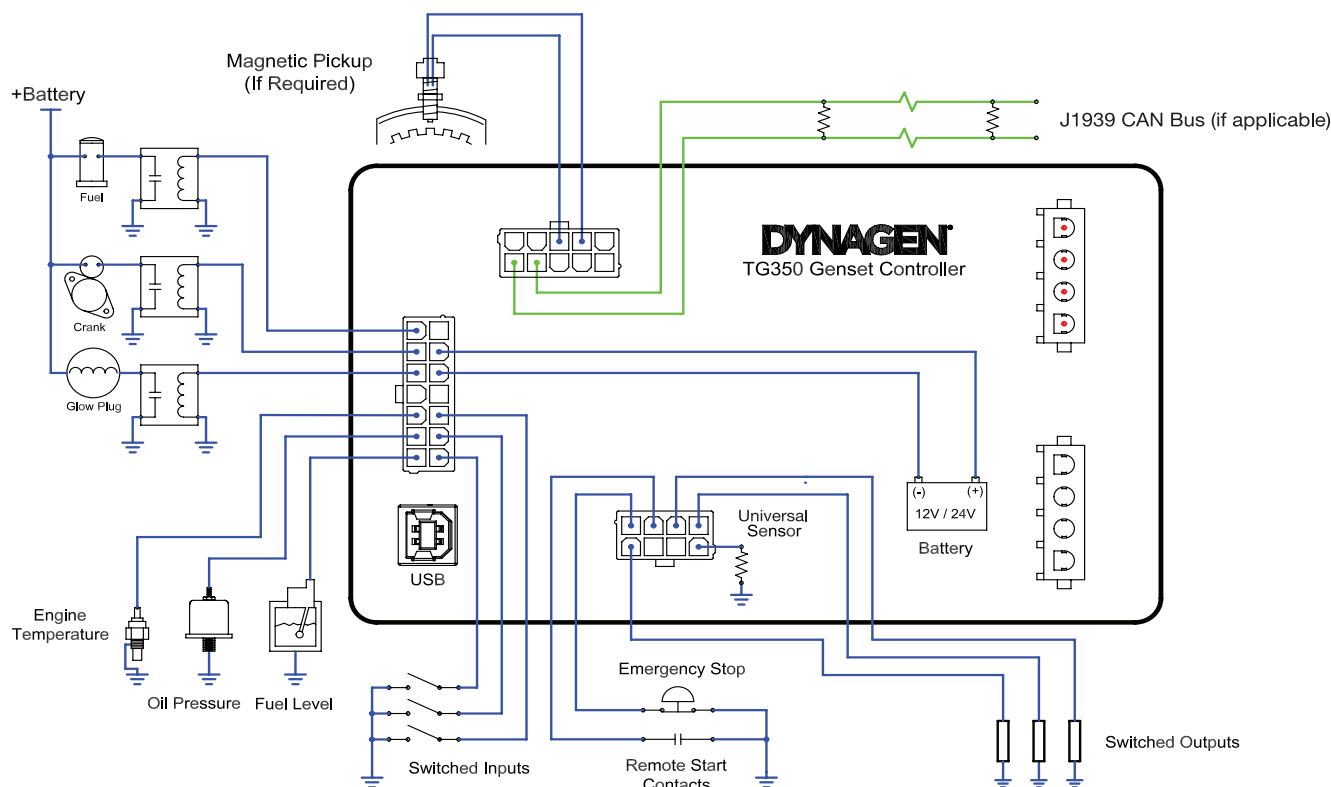
The RelayPak is socketed to accept four industry standard cube relays. When installed, the RelayPak (RP-100*) eliminates the need to mount and wire external slave relays for Fuel, Crank, and up to two other loads.

*RP-100 includes mounting pack and 3 x 40 amp relays.

Inputs & Outputs

TG350	
Configurable Switched Inputs	5
Resistive Sensor Inputs	3
Universal Sensor Inputs (Resistive, voltage, 4-20ma)	1
Configurable Switched Outputs (in addition to fuel & crank)	4

Typical Wiring Example



This drawing is for display purposes only. Please refer to user manual for detailed wiring instructions.

SPECIFICATIONS

Operating Voltage

- 5.5 to 38VDC continuous. Cranking dropouts to 0VDC for 50mS, also meets SAE J1113-II
- Standby Current Draw: 50mA
- Reverse battery protected
- Surge withstand & Load Dump: SAE J1113-II

Operating Temperature

- Controller Function: -40 to +70 °C
- Display Screen Viewing: -20 to +70 °C

Vibration & Shock

- Meets or exceeds SAE J1455

Electromagnetic Compatibility

- Meets or exceeds MIL-STD-461E

Physical

- Dimensions: 4.17"H x 6.5"W x 1.38"D
- Weight: 0.83 lb

Speed Sensing

- Via J1939 bus, Magnetic pick-up

Inputs

- Highly configurable analog sensor inputs with autostart and fault shutdown capability
- Fixed Sensor Inputs:
 - 0-7500Ω Engine Temperature sender
 - 0-750Ω Senders or switches*

Universal Sensor Inputs:

- 0-7500Ω Senders, 4-20ma, 0-5V or switch*
- 0-750Ω Senders

*Failure inputs must close to ground. All failure inputs are ignored for an adjustable bypass period.

- Configurable Switched Inputs with programmable text
 - Auto detect close to +Bat or Gnd

Electronic Engine Support:

- Standard J1939 Engines (Tier II, III & IV)
- Supports Volvo, John Deere, Cummins, Yanmar, Detroit Diesel and more*

* Consult factory for updates.

Outputs (includes fuel/crank)

- Switched Outputs - 1A Max UL pilot duty:
 - Switched to +Battery
 - Short circuit & overload protected

Communications

- SAE J1939
 - Tier II, III, & IV engines
 - Address settings for both the controller and the engine ECM
- USB
 - PC Configurator Connection
 - High retention socket accepts standard USB cable