

TOUGH Series Autostart Controller

TG410

For engines or generators

The TOUGH series controllers are designed to provide complete control, protection and engine instrumentation for both standard and electronic CAN Bus engines, as well as 3-phase volts/amps metering for generator applications. The module is easily configured as either an engine controller or a generator controller 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 mobile and stationary engine equipment and generators.

Displays (meets NFPA-110 Level 1):

- Oil Pressure
- Engine Temperature
- Fuel Level
- Oil Level
- Hour Meter
- RPM
- Real time clock with time/date
- Battery Voltage
- J1939 DTC codes with custom text
- Two customer defined parameters (temperature, pressure, voltage, levels)
- DPF and DEF status icons
- 3-Phase AC Volts, Amps & Hz (for generators)

Features and Functions:

- Modbus port with galvanic isolation to connect remote annunciators and internet monitoring devices
- SAE J1939 CAN Bus Protocol
- RPM via J1939, Magnetic pick-up, or Generator
- Speed control offset adjustment for electronic engines
- Auto start on Low Battery and other sensors



Compact 4.17" x 6.5" x 1.38" Footprint



- Front panel trim feature for sensor adjustment
- Maintenance counter
- Exerciser Clock
- 150 Event Log
- Conformally coated for protection against moisture and contaminants
- Gasket for water ingress protection
- Free PC Configurator Software
- Fast and rugged installation clips
- Passcode protected
- Automatic shutdowns and warnings
- Manual and remote start
- Momentary start/stop inputs
- Pre-heat and many configurable timers
- Accepts common senders (VDO, Datcon, Murphy, and more)
- Custom senders configurable with PC software
- 5-Year Warranty



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.

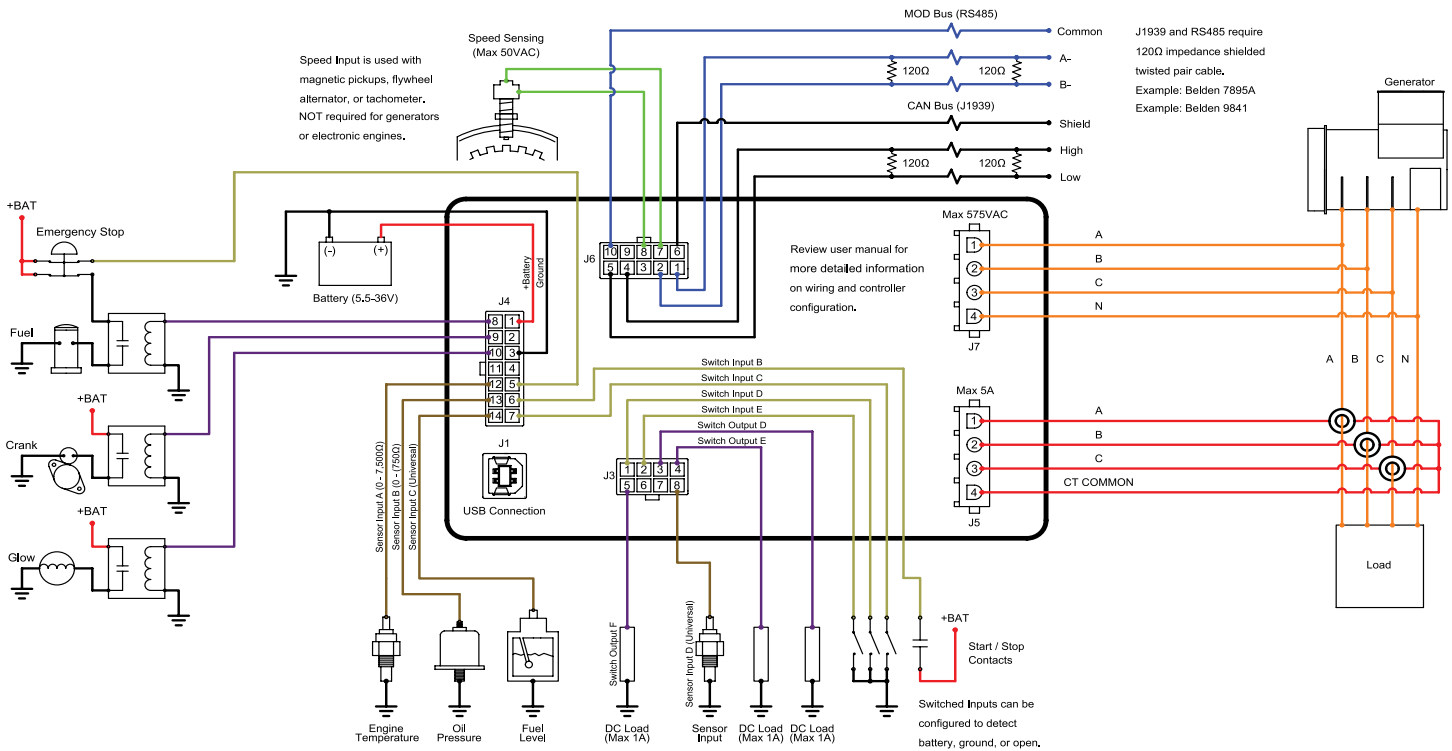


Snap-on RelayPak Option

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 40A (resistive) UL pilot duty rated relays

Typical Wiring Example



J1939 and RS485 require 120Ω impedance shielded twisted pair cable. Example: Belden 7895A Example: Belden 9841

Inputs & Outputs

	MODEL TG410
J1939 CAN Bus	✓
Magnetic Pick-up Input	✓
Modbus Port	✓
Generator Volts	3-Phase
Generator Amps	3-Phase
Configurable Switched Inputs	5
Resistive Sensor Inputs	2
Universal Sensor Inputs (Resistive, voltage, 4-20ma)	2
Configurable Switched Outputs (in addition to fuel & crank)	4

* 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 2, 3, 4i, and 4f engines
 - Address settings for both the controller and the engine ECM
- USB
 - PC Configurator Connection
 - High retention socket accepts standard USB cable
- Modbus
 - RTU slave mode
 - RS 485 port (9600, 19200, 38400, 57600 baud)
 - Galvanic isolation

SPECIFICATIONS

Operating Voltage

- 5.5 to 38VDC continuous. Cranking dropouts to 0VDC for 50ms, also meets SAE J1113-11
- Standby Current Draw: 60mA @ 12VDC, 38mA @ 24VDC
- Reverse battery protected
- Surge withstand & Load Dump: SAE J1113-11

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 Conducted Emissions

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, or Generator

Inputs

- AC Voltage Sensing (inputs for auto selection)
 - Single-phase 2 and 3-wire
 - Delta 3 and 4-wire
 - Wye 2, 3, and 4-wire
 - Max 600vac* (direct connection) true RMS, +/- 1% of full scale
- Current Sensing
 - Accepts 5A Secondary CTs
 - +/- 2% of full scale
- Fixed Sensor Inputs:
 - 0-7500Ω Engine Temperature sender
 - 0-750Ω Senders or switches**
- Universal Sensor Inputs (Pressure, Temperature, Level, Volts or Amps.):
 - 0-7500Ω Senders, 4-20ma, 0-5V or switch**
 - 0-750Ω Senders

*For 600vac systems use a step-down transformer or centre tap.

**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)
- Support for Volvo, John Deere, Cummins, GM PSI, Yanmar, ISUZU*