



TIS-910 Ignition Controller

DESCRIPTION

The TIS-910 is a state-of-the-art, High-Energy, capacitive-discharge, ignition system. The system consists of a 16-bit CPU and other CPU-related peripherals, sensor signal conditioning circuitry, 2 high-voltage power supplies, and 20 outputs. The system can be configured from 2 cylinders to 20 cylinders. The unit also has all required software to be configured for any type of industrial engine. There is *never* a requirement for factory reprogramming of software. All user programming/configuring is accomplished by the TIS-910 Service Tool software on a personal computer.

The TIS-910 uses information provided by three timing sensors (position of crankshaft and camshaft and speed of the engine) to precisely determine when and which cylinder should fire. The timing of the engine is controlled by operator inputs, such as two manual timing potentiometers, 4–20 mA signal, 0–5 Vdc signal, and a five-point speed curve. Additionally, timing can be controlled with the CAN bus.

While the TIS-910 is operating, the unit continuously monitors the status of the ignition system by verifying proper information from all timing sensors and proper operation of the primary ignition circuit. Depending on the severity of the fault, the unit will either shut down or warn the operator. In both cases, a message is transmitted via CAN and RS-232.

In addition to protecting the engine from ignition faults, the TIS-910 also has a user programmable overspeed set point shutdown.

FEATURES

Timing Control:

The TIS-910 has embedded in its operating program sophisticated, yet simple to use timing control features. The list of timing control features is the following:

- 4–20mA input allows timing to be automatically adjusted
- 0–5 Vdc input
- Timing vs. Five-point Speed curve
- Cylinder to cylinder timing control is provided to optimize each cylinder's performance

Energy Control:

The TIS-910 is capable of delivering up to 180 mJ of energy (600 μ s at 20 kV). To minimize spark plug erosion and avoid misfiring, the TIS-910 contains a unique patented feature called Auto E™ which automatically controls the energy delivered to each coil. As the requirement for energy changes due to spark plug erosion, engine load, or air-fuel mixture, the microcontroller adjusts energy delivered to the coil.

Engine Control and Safety:

In addition to protecting the engine from ignition faults, the TIS-910 also has a user-programmable overspeed set point shutdown:

- Overspeed Protection
- Permissive Start Output
- Auxiliary Shutdown Input
- Primary Misfire Detection
- Timing Sensor Fault Detection

The TIS-910 also has these programmable/adjustable features:

- Start-up Energy
- 2 Speed Switch Outputs (programmable for normally-open or normally-closed)

- Highest energy system on the market
- User programmable for any industrial gas engine
- RS-232 and CAN communications
- Patent pending Auto E™ feature
 - Individual cylinder PID control
 - Delivers correct amount of energy when needed
 - Maximizes spark plug life
- Advanced diagnostics to determine spark plug condition
- CE Compliant

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SPECIFICATIONS

Electrical Specification:

Parameter	Range
Power Consumption	12 V operation: 10–14 Vdc (5.1 A max) 24 V operation: 18–30 Vdc (3.6 A max)

Notes

1. Average current is dependent on the number of cylinders, input power, energy level, and engine speed.
2. Peak Current is dependent only on energy level, 100% energy = 25 A peak.

Environmental Specification:

Parameter	Range
Operating Temperature	–40 to +65 °C
Storage Temperature	–40 to +100 °C
Humidity	95% RH non-condensing
CSA	Class I, Division 2, Groups C and D
CE Compliant	Low Voltage Directive EMC Directive

Technical Manuals:

8408-701	26139
8408-702	26222

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