

Model 248 Piezo Injector Driver



Engine IPT Suite

Overview

The Model 248 Piezo Injector Driver provides a smooth, precise current profile for the testing of Piezo injector stacks used in direct injection gasoline and diesel engines. This current profile can be tailored to match the specific injector characteristics, with settings adjusted either via digital I/O or using the front panel DIP switches. The Model 248 comes in a compact industrial package that can be DIN rail mounted or wall mounted.

The Model 248 combines with Sciometric's Model 247 and 247A modules to create a complete multichannel Piezo Injector Driver system. The high power IGBT outputs on the Model 247A work as a multiplexer and control which injector is selected for actuation. The 247A digital outputs can be used to configure the current profile settings and control the Enable and Trigger inputs on the Model 248.

Benefits

- Current pulse features smooth transitions to minimize injector voltage spikes, ensuring that the physical opening of the Piezo jet is controlled, with no sudden movements that could damage the device
- Integrated analog outputs simplify test setup by providing accurate monitoring of injector voltage and current outputs
- Cost-effective solution for testing multiple injectors with a single driver unit
- Unique combination of features, flexibility, and performance make the Model 248 ideal for lab or production environments
- Universal application with wide range of settings

Features

- Internal generation of current profile for both the charge and discharge pulses
- Isolated high-bandwidth low voltage analog outputs provide accurately scaled versions of the injector current and voltage for precise output monitoring
- Configurable discharge scaling minimizes distortion of the injector voltage profile due to losses in the Piezo injector by reducing the peak in the discharge current
- Peak Current, Pulse Duration, and Discharge Scaling parameters configurable via digital I/O or front panel DIP switches
- Indicator LEDs and digital output for OK, Open, or Short Circuit status of injector output
- Status LEDs indicate when power is connected, High Voltage status, and injector status
- Single input triggers charge and discharge profiles
- Works with Sciometric's Model 247A for multiple injector functionality testing in engine cold test applications
- Internal generation of High Voltage from +12 V supply input



TECHNICAL SPECIFICATIONS

Power

- **Supply voltage:** 12 V DC (11.5 – 15 V DC)
- **Power consumption:** 38 W typical, 96 W peak

General

- **Dimensions:** 8" x 4.5" x 8" (H x W x D)
- **Weight:** 1.9 kg (4.3 lb.)
- **Mounting options:** DIN rail, Wall mount, Desktop
- **Operating temperature:** 0 – 50°C
- **Operating humidity:** 8% – 90%
- **Environmental:** IP30 (against penetration of particles 0.098")
- **Paint finish:** Black baked powder

Injector Output

- **Number of channels:** 1
(can be multiplexed for more)
- **Output profile:** versine wave
- **Output hold value:** 0.5 A at the end of every discharge cycle
- **Output voltage:** 0 – 200 V
- **Peak current:** 5 – 25 A, in 16 steps
- **Pulse duration:** 50 – 200 μ s (\pm 5 μ s), in 16 steps
- **Current discharge scaling:** 70 – 100 %, in 2% increments
- **Accuracy:** 5 %
- **Waveform update rate:** 500 kHz
- **Output bandwidth:** 20 kHz
- **Firing event repetition frequency range:** 1 Hz – 1 kHz
- **Connector:** High voltage safe; finger touch safe

Analog Monitor Output

- **Number of channels:** 2 (galvanically isolated)
- **Isolation voltage:** > 100 V
- **Accuracy:** 1%
- **Resolution:** 12 bit
- **Calibration:** factory
- **Bandwidth:** 100 kHz
- **Noise:** < 0.5%
- Short-circuit protected
- **Output impedance:** < 100 Ω
- Output stable with long cable (10 μ F max)
- **Voltage output:** \pm 5 V
- **Current scale:** 1/5
- **Voltage scale:** 1/40
- **Connector:** 2 x BNC

Digital Inputs

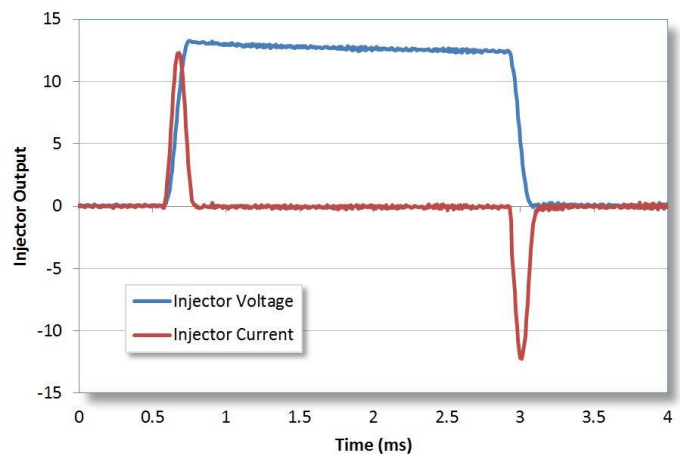
- **Number of inputs:** 14 with common return line
- Optically isolated from the outputs and power common
- 12 inputs control peak current, pulse duration, and current discharge scaling (4 per type)
- 2 inputs control Enable and Trigger line

Digital Inputs (cont.)

- **Isolation voltage:** > 100 V
- **Input protection:** 15 – 24 V DC without damage
- **Wire length between Model 248 and Model 247:** \leq 5 m
- **Connector:** 6-pin mini
- **Pin-out:** 4 x Input, Common, Shield

Digital Outputs

- **Number of outputs:** 3
- Optically isolated from the digital inputs and power common
- Isolated as a group with a common ground for outputs
- **Isolation voltage:** > 100 V
- Short-circuit protection
- **Output current:** 24 mA
- **Voltage level:** TTL
- **Rise time:** < 1 μ s
- **Connector:** 5-pin mini connector
- **Pin-out:** Injector status, Device ready, Spare, Common, Shield



ABOUT SCIEMETRIC INSTRUMENTS

Since 1981, Sciometric's process monitoring and quality management systems and software have enabled some of the world's leading automotive, medical and industrial manufacturers to gain visibility into and control over their manufacturing processes. On the production floor, Process Signature Verification (PSV™) technology provides the most accurate determination of process health and part quality while collecting all data. Manufacturing managers use Sciometric's analytic tools to transform the data into actionable information to reduce costs, manage quality, and maximize yield while providing proof of process compliance and complete line-wide traceability.

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