

IGTM

Ignition Timing Meter



The ATI Ignition Timing Meter is a precision timing measurement instrument designed for engine development and testing where ignition timing and CAM timing measurement accuracy (steady-state and transient) is important. The IGTM-2000 provides an easy means for data acquisition systems to collect real-time measured ignition timing on spark ignited engines.

Features

- Accurate Timing Measurement (+/- 0.05 degree) (Ignition, Camshaft and Injector Timing)
- Data Acquisition System Interface (Analog and RS-232)
- Microprocessor Controlled Intelligent Signal Conditioning
- Compatible and Adaptable with all Engine Ignition Systems
- Compact Enclosure for Mounting in Test Cell or Vehicle



IGTM has a black aluminum enclosure that is water and oil resistant



Engine Signal Interface

Ignition firing is detected by using an inductive spark plug wire sensor, connection to the ignition coil primary or connection to the ignition module coil trigger logic signal. Crankshaft reference position can be provided by a number of methods including user-installed and production engine position sensors. For most applications, installation may be simplified by connecting the IGTM-2000 in parallel to existing position sensors used by the production Engine Control Module (ECM). ATI recommends use of VISION™ calibration and data acquisition software to seamlessly accommodate time stamps and data synchronization. However, ASAM XCP communication protocol support, available for both USB and Ethernet variants, ensures compatibility of the A8 irrespective of software tool selection.

Intelligent Signal Conditioning

Microprocessor controlled Intelligent Signal Conditioning dynamically adjust threshold and hysteresis levels when using VRS style magnetic sensors, to minimize interference under all operating conditions. Alternatively, all signal conditioning parameters may be manually preset by the operator. All parameter settings are retained in non-volatile memory.

Timing Patterns

Compatible with “patterned” (i.e. missing or extra tooth) crankshaft position signals. Popular automotive patterns are pre-programmed and additional custom patterns can be easily programmed by the operator. Maximum achievable transient timing measurement accuracy is always obtained for any given reference pattern.

| Typical Sources for Input Signals | |
|-----------------------------------|--|
| Reference | Existing patterned crankshaft position sensor, one pulse-per-rev sensor (requires Angle input), TDC signal from OEM Ignition Module (GM-REF, Ford-PIP) or an optical shaft encoder index signal. |
| Angle | Optical shaft encoder angle signal or magnetic sensor detecting ring-gear teeth (requires a one pulse-per-rev or TDC signal). |
| Trigger | Low voltage event signal - OEM ignition module trigger signal (GM-EST, Ford-SPOUT, SAW) |
| Spark | High voltage event signal - Inductive plug wire sensor or ignition coil negative terminal |

IGTM Specifications

| Signal Inputs | |
|-----------------------------|---|
| Crankshaft Reference REF | Provides absolute timing reference Input voltage range +/-75 V Intelligent signal conditioning BNC connection |
| Crankshaft Angle ANG | Optional signal 36 to 3600 Pulse per rev signal Input voltage range +/-75 V Maximum frequency 500 kHz Intelligent signal conditioning BNC connection |
| Spark Event Trigger TRG | Low-level spark event signal Input voltage range +/-75 V Intelligent signal conditioning BNC connection |
| Spark Event Pulse SPK | High-level spark or injection event signal Inductive pickup or coil primary Programmable signal conditioning BNC connection |
| Signal Outputs | |
| Analog Ignition Timing ANO | Maximum output range -10.2 V to +10.2 V Programmable scaling, offset and range 12-bit D/A resolution (+/-0.005 V accuracy) BNC connection |
| Other Inputs/Outputs | |
| Power Supply | Requires 10 to 30 VDC @ 15 W maximum Internal regulated power supply Plug-in terminal strip connection |
| Communication Port | RS-232, 75 to 9600 Baud DB-9F (Industry Standard 9-pin) connection |
| Expansion Port | Out of range warning outputs (5 V logic) Sensor input monitor signals (5 V logic) Interface for Analog RPM Adapter accessory HDB-15F connection |
| General | |
| Display | (2) 4-digit, 0.56 in (14.2 mm) display indicators (4) Sensor input status LEDs (3) Operating mode LEDs (4) Pushbutton switches |
| Enclosure | Black aluminum, water and oil resistant Approximate dimensions: 180 x 105 x 43 mm/ 7.1 x 4.1 x 1.7 in Weight: 1.2 kg / 2.6 lbs |

IGTM Order Information

| Product | | |
|-------------|-------------|--|
| Part Number | Description | |
| 100-0001 | IGTM-2000 | |

| Accessories | | |
|-------------|-------------|---|
| Part Number | Description | |
| Accessory | | |
| 100-0003 | | Analog RPM Adapter; produces an analog voltage output for RPM when connected to the IGTM-2000 Expansion port |
| 100-0004 | | Differential Input Module; ensures that all production ECU sensor outputs will be "true Zero cross" |
| 101-0002 | 1.8m/6ft | Cable Analog RPM Adapter; Connects the Analog RPM Adapter to the Ignition Timing Meter; length: 6ft |
| 100-0014 | 4.8m/15.8ft | Inductive Spark Plug Wire Sensor: measures spark event (or engine speed) when clamped around a Secondary Ignition cable |

| Power | | |
|----------|--|-------------------------------------|
| 102-0006 | | DC Power Plug, 2-pin open connector |

IGTM 2000 Connections

