



# TITAN Mini-Recorder

## BSG16HR-73

16 Channel Data Acquisition Recorder  
with Multi-Sensor Support

### Key Features:

- Stand-alone recording to SD memory card (up to 16 channels) with onboard controls for recording and calibration operations
- High performance analog front-end with full Balance and Calibration loopback features
- GPS recording support
- Records directly to a PC via USB
- Compact size, light weight and low power consumption make the device suitable for in-vehicle applications
- Interfaces with other Titan products to provide up to 384 analog channels, plus digital channels



### Applications:

- Durability & Fatigue
- Noise & Vibration Analysis
- Vehicle Dynamics
- Ride Quality Assessment
- Acoustics
- Shock

### Specifications:

<i>Number of Channels</i>	16 fault-tolerant channels on industry standard Western Regional-wired Bendix connectors (type PT02A-10-6S)
<i>Sample Rate</i>	High Speed Operation: Up to 10,000 samples per second per channel Low Speed Operation: Up to 1200 samples per second per channel
<i>Programmable Gain</i>	From $\pm 1/16$ to $\pm 512$ ; $\pm 32V$ Full scale input voltage max.
<i>Programmable Filter</i>	10 pole Linear phase tracking filter (High Speed operation) 8 pole Butterworth filter (Low Speed operation)
<i>Calibration Modes</i>	Resistive (RCal): $\pm 100K$ Ohms per channel (shunt calibration) Voltage (VCal): Precision positive and negative calibration voltages provided
<i>Excitation Value / Current</i>	Precision per-channel programmable 2 to 11.5V @25mA with overload protection
<i>Analog Sensor Support</i>	Strain Gauge: Full/Half/Quarter Bridge 350 $\Omega$ resistive type; on-board bridge completion Voltage: Up to $\pm 32$ Volts Thermocouples: Types J, K, & T Tachometer / Totalizer (frequencies up to 7KHz)
<i>Digital Sensor Support (via Digital Pod)</i>	SAE J1939, ISO 15765 (ECU CAN), GPS (Garmin 18X-5Hz w/PPS or Mars Labs ACC10002 20Hz GPS), IMU (3DM-GX3 or Mars Labs ACC10003), and multiple WFT protocols including Kistler and Michigan Scientific
<i>GPS</i>	Optional onboard GPS support for Garmin 18X-5Hz w/PPS or Mars Labs ACC10002 20Hz GPS
<i>PC Operation</i>	Remote recording and control via USB
<i>Stand-alone Operation</i>	Via on-board switches or Titan Remote Control (Mars Labs CBL-RMT)
<i>Recording Media</i>	Secure Digital (SD) memory card, 2GB furnished, up to 16GB supported
<i>Expansion Slot (1)</i>	Support for optional Mini-Digital Pod (digital input) or Mini-DAC (analog output) expansion cards
<i>Power Requirements</i>	10 VDC (min), 11-32 VDC recommended: 3 Watts (base unit, sensors not driven)
<i>Dimensions / Weight</i>	17.6 cm x 10.6 cm x 4.6 cm (L x W x H) / Weight 570g



Expand the capabilities of the Titan Mini-Recorder  
with these optional Expansion Cards and Accessories:

## Mini-Digital Analog Converter

Analog Output Expansion Card

### Features/Specifications:

- Adds analog output capability to Titan Mini-Recorders for monitoring and control applications
- Full 16 channel operation with isolated outputs
- Input signals may be recorded when connected to a PC or Titan CPU, as well as monitored in real-time on the PC
- Output is automatically offset to include the balance value used for the sensor
- Output Sample Rate: 1200 samples per second
- Output Bandwidth: 150 Hz
- Output Voltage Range:  $\pm 10V$



The Mini-DAC expansion card adds a DB25 connector to the rear of the Mini-Recorder

## Mini-Digital Pod

Digital Input Expansion Card

### Features/Specifications:

- Adds digital input capability to Titan Mini-Recorders
- Provides dual CANbus inputs, plus GPS and Serial data inputs
- Each CANbus input supports SAE J1939, ISO 15765 (ECU CAN), and multiple WFT protocols, including Kistler and Michigan Scientific
- CANbus rates up to 1Mb
- Support for the 3DM-GX3 Inertial Measurement Unit [6 DOF channels and 3 Euler channels] or Mars Labs ACC10003 Inertial Measurement Unit
- GPS support for the Garmin LX18-5Hz [12 channels + PPS] or Mars Labs ACC10002 20Hz GPS



The Mini-Digital Pod expansion card adds a DB25 connector to the rear of the Mini-Recorder

## Titan Sensors

Sensor technology optimized for use with Titan Input Modules

### Garmin LX18-5Hz w/PPS

- Connects directly to Titan Input Module GPS Port or to Titan Digital Pod or Mini-Digital Pod with adapter.



### MicroStrain 3DM-GX3 IMU

- Connects directly to Titan Digital Pod or Mini-Digital Pod with adapter

