



# TDAS PRO

## Sensor Input Module (SIM)

For the discriminating test professional, DTS offers the TDAS PRO Sensor Input Module (SIM). Each 8 channel TDAS PRO SIM is a completely independent data acquisition system that can be used stand-alone or assembled into large test set-ups by linking 4 module and 8 module rack systems. This modularity increases productivity and offers greater flexibility, reduced downtime for calibration or repair, and the opportunity to buy the channel count you need now while planning for expansion. No other system in the world offers these advantages. **Crash** → **Ready**

### Features and Benefits:

- 8 fully programmable sensor input channels with isolated excitation
- Stand-alone operation
- L.E.D. indicators for power and event status
- Ultra-low noise design
- Sensor ID
- Comprehensive fault detection and self diagnosis
- High speed, 16-bit A/D converter
- Intuitive, effortless TDAS Control Software
- Ethernet, RS-232 and wireless communication options
- Factory tested to 100+ Gs
- Easy mounting rack configurations include 4 module and 8 module racks
- Small size – each module is 13.7 x 12.2 x 3.4 cm
- Light weight – each module weighs 0.77 kg
- Built in battery with smart charge circuit in modules and racks
- Durable
- Reliable
- Cost-effective

### Available in Stationary Configurations:

**TDAS PRO LAB SIM**  
**TDAS PRO LAB RACK**

The TDAS PRO LAB SIM is designed for laboratory testing where simplicity and reliability cannot be compromised. With the same unsurpassed standard features as the TDAS PRO SIM, the TDAS PRO LAB SIM can be used stand-alone or easily positioned in a 19-inch rack assembly.

All TDAS products are certified to the NHTSA, FAA, ISO 6487 and SAE J211 data acquisition practices.



**TDAS PRO LAB SIM and TDAS PRO SIM**  
 8 fully programmable sensor input channels  
 designed for stand-alone operation



**TDAS PRO Racks**  
 Designed for 4 module and  
 8 module configurations



**TDAS PRO LAB Rack**  
 Designed for 6 module configurations



# TDAS PRO SIM SPECIFICATIONS

## ANALOG INPUTS

<b>Type:</b>	Differential, software programmed
<b>Common Mode Range:</b>	±6.25 volts
<b>Protection:</b>	±50 volts
<b>Impedance:</b>	50 MΩ typical
<b>Gain Range:</b>	0.8 to 2000
<b>Overall Bandwidth:</b>	D.C. to 25 KHz
<b>Noise Spectral Density:</b>	0.06 μV/√Hz RTI Typical, 0-4,000 Hz
<b>Signal to Noise Ratio:</b>	80 dB typical at gains from 1 to 128
<b>Crosstalk:</b>	<0.25% 10V pp sq wave signal connected to any channel with all other channels set to a gain of 128 with 350 Ω bridges connected.
<b>Accuracy:</b>	0.2% - automatically calibrated each use by internal 16-bit DAC
<b>Auto Offset Method:</b>	Dual 12-bit DACs per channel.
<b>Auto Offset Range:</b>	Gain 0.8 to 31: ±5.0 V, Gain ≥32: ±150 mV
<b>Auto Offset Accuracy:</b>	Typically <0.1% of A/D full scale
<b>Bridge Completion:</b>	Software selected per channel. 1 KΩ std

## ANTI-ALIAS FILTERS – TWO PER CHANNEL

<b>Fixed Low Pass:</b>	8-Pole Butterworth, 4.3 KHz standard (2.9 KHz and 3.0 KHz also available)
<b>Adjustable Low Pass:</b>	5-Pole Butterworth, set under software control from 50 to 3,000 Hz
<b>SAE J211:</b>	System response meets SAE J211 requirements

## EXCITATION

<b>Method:</b>	Individually galvanically/optically isolated and software controlled.
<b>Voltage Levels:</b>	Off, 5.0, 10.0 volts (2.0 & 10 Volt option)
<b>Accuracy:</b>	Each channel software compensated (typ .1%)
<b>Rated Current:</b>	50 mA per channel, continuous operation, individually current limited @ ≈ 65 mA.
<b>Short Circuit Recovery:</b>	<1 msec typical

## CALIBRATION

<b>Method:</b>	Software controlled precision voltage insertion with multiple shunt check options
<b>Voltage Insertion Type:</b>	16-bit DAC
<b>Accuracy:</b>	Better than 0.1% 100 ppm/°C, NIST traceable and software compensated

### Shunt Checks Using Resistors

<b>Number:</b>	7 internal and 1 external
<b>Values:</b>	10K to 649K standard values, 0.1% 25 ppm
<b>Switching Resistance:</b>	<2 Ω, connected between +ex and +signal

### Shunt Checks Using Emulation Method

<b>Description:</b>	Precision current applied to + signal. Allows virtually unlimited shunt check resolution
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## ANALOG TO DIGITAL CONVERSION

<b>Resolution/Method:</b>	Standard 16-bit successive approximation with simultaneous sampling of all channels (up to 25K samples per second per channel)
<b>Maximum Sampling Rate:</b>	304 K samples/sec/module (38K on each of 8 channels, 100K on each of 3 channels, etc.)
<b>Relative Accuracy:</b>	± 4 LSB (0.006%)
<b>Storage Technique:</b>	Circular memory buffer. Any portion of the memory may be allocated to pre-trigger data.
<b>Memory Capacity/Type:</b>	Battery backed SRAM, retention > 7 days, 1M samples/channel

## DIGITAL INPUTS

<b>Method:</b>	Sensor inputs may be used as event marker channels with filters bypassed
<b>Propagation Delay:</b>	0.02 msec

## TRIGGERING SYSTEMS

<b>Each Module:</b>	Conditioned contact closure input with T=0 received L.E.D. indicator
<b>Rack System:</b>	Standard contact closure input, galvanically and optically isolated to 1 KV. 5-12 volt optically coupled inputs available.
<b>Level Triggering:</b>	Available from any channel within each module

## SENSOR ID

<b>Method:</b>	Serial data read from a digital I/O line in each sensor connector
<b>Types Supported:</b>	Maxim/Dallas

## PC INTERFACE

<b>Module (stand-alone):</b>	RS-232 @ 115.2 KHz (USB adapter available)
<b>Rack System, Standard:</b>	Ethernet 10BaseT and RS-232 @ 115.2 KHz
<b>Options:</b>	Wireless Ethernet and USB adapter available

## POWER REQUIREMENTS AND FEATURES

<b>External Voltage:</b>	12-15 volts
<b>Maximum Power:</b>	Depends largely upon connected sensors. Up to 900 mA per 8 channel module with 350Ω bridges and 10 volt excitation on all channels. (≈ 8.0A maximum for 64 channels)
<b>Protection:</b>	Self-resetting fuses plus reverse current and transient over-voltage protection.
<b>Post-test Power Reduction:</b>	Drops to ≈ 350 mA per 8 channel module
<b>Backup Power Sources:</b>	Each rack and each module contains a rechargeable battery.
<b>Backup Duration:</b>	>10 minutes at full power

## ENVIRONMENTAL

<b>Operating Temperature:</b>	0-50°C
<b>Shock:</b>	100 G peak, 12 msec half sine
<b>Vibration:</b>	6 G rms, 55-1,000Hz, 30 minutes

## PHYSICAL

<b>Module Size:</b>	13.7 x 12.2 x 3.4 cm (5.4 x 4.8 x 1.35", 71 cm <sup>3</sup> per channel)
<b>Module Weight:</b>	0.77 kg (1.7 lb, 96 g per channel)
<b>4 Module Rack Size:</b>	14.7 x 19.6 x 12.7 cm (5.8 x 7.7 x 5.0")
<b>4 Module Rack Weight:</b>	4.7 kg (10.3 lb) – includes modules
<b>8 Module Rack Size:</b>	14.7 x 33.8 x 12.7 cm (5.8 x 13.3 x 5.0")
<b>8 Module Rack Weight:</b>	7.8 kg (17.1 lb) – includes modules

## CONTROL SOFTWARE

<b>Compatibility:</b>	Standard TDAS Control Software compatible with other TDAS PRO and TDAS G5 hardware
<b>Operating Systems:</b>	Windows® NT, 2000, XP, Vista

Specifications may be revised without notice.



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