

TDAS PRO SIM

Sensor Input Standalone Data Recorder

APPLICATIONS

- Aerospace analysis
- Amusement ride testing
- Automotive safety
- Biomechanics
- Blast testing
- Embedded monitoring
- Helicopter & aircraft
- Impact testing
- Injury investigation
- Parachute deployment
- Pedestrian head & leg form
- Ride & handling
- Sound measurement
- Sports & safety equipment
- Vibration testing



TDAS PRO LAB SIM and TDAS PRO SIM (13.7 x 12.2 x 3.4 cm) are standalone data recorders with 8 fully-programmable sensor input channels that work with a variety of sensors.

Features

- Intuitive, easy-to-use software
- 8 fully-programmable sensor input channels with isolated excitation
- Ultra-low noise, sensor ID, high speed 16-bit ADC
- Lightweight, small size, cost-effective
- Durable, reliable, crashworthy unit tested to 100 g
- Comprehensive fault detection and self diagnosis
- LED indicators for power and event status
- Ethernet, RS-232 and wireless communication options
- Built-in back-up battery with smart charge circuit in modules & racks
- Certified to NHTSA, FAA, ISO 6487 and SAE J211 data acquisition practices

PRODUCTS


DTS offers a full line of data acquisition recorders and sensors for dynamic, high shock testing.

The TDAS PRO Sensor Input Module (SIM) from DTS is a completely independent data acquisition system that can be used standalone or assembled into large test configurations by linking with DTS rack systems. The inherent 8-channel modularity increases productivity, offers greater flexibility and reduces downtime for calibration services. No other system offers these advantages.

Available in 2 models:

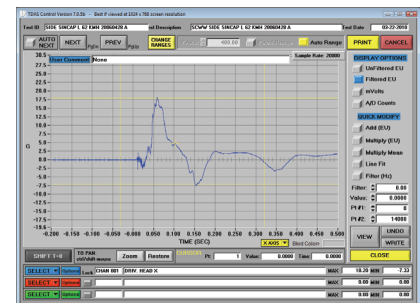
TDAS PRO crashworthy, TDAS PRO LAB stationary

 Fits in TDAS PRO 4- or 8-module rugged rack.

 Fits in TDAS PRO LAB stationary rack.

Software

TDAS Control software provides easy-to-use tools for storing sensor information and performing data collection. Advanced features such as automatic sensor assignment, detailed channel diagnostics, and real-time data display supports successful testing and quality data every time.



SERVICES

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HEADQUARTERS

Seal Beach, California USA

CONTACT US

Phone: +1 562 493 0158
Email: sales@dtsweb.com
Web: www.dtsweb.com

Specifications

PHYSICAL

Size:	13.7 x 12.2 x 3.4 cm (5.4 x 4.8 x 1.35") 71 cm ³ per channel
Module Weight:	0.77 kg (1.7 lb), 96 g per channel
Compatibility:	Fits standard TDAS PRO Racks
4 Module Rack Size:	14.7 x 19.6 x 12.7 cm (5.8 x 7.7 x 5.0")
4 Module Rack Weight:	~9 kg (~19 lb) – includes modules
8 Module Rack Size:	14.7 x 33.8 x 12.7 cm (5.8 x 13.3 x 5.0")
8 Module Rack Weight:	~12 kg (~25 lb) – includes modules

ENVIRONMENTAL

Operating Temp:	0-50°C (32-122°F)
Shock:	100 g peak, 12 msec half sine
Vibration:	6 g rms, 55-1000 Hz, 30 minutes

ANALOG INPUTS

Type:	Differential, software programmed
Common Mode Range:	±6.25 V
Protection:	±50 V
Impedance:	50 megaohm typical
Gain Range:	0.8 to 2000
Overall Bandwidth:	D.C. to 25 kHz
Noise Spectral Density:	0.06 µV/√Hz RTI typical, 0-4000 Hz
Signal to Noise Ratio:	80 dB typical at gains from 1-128
Crosstalk:	<0.25% 10 V pp sq wave signal connected to any channel with all other channels set to a gain of 128 with 350 ohm bridges connected
Accuracy:	0.2%, automatically calibrated each use by internal 16-bit DAC
Auto Offset Method:	Dual 12-bit DACs per channel
Auto Offset Range:	Gain 0.8-31: ±5.0 V, Gain ≥32: ±150 mV
Auto Offset Accuracy:	Typically <0.1% of A/D full scale
Bridge Completion:	Software selected per channel, 1000 ohm std

ANTI-ALIAS FILTER –TWO PER CHANNEL

Fixed Low Pass:	8-pole Butterworth, 4.3 kHz standard (2.9 kHz and 3.0 kHz also available)
Adjustable Low Pass:	5-pole Butterworth, set under software control from 50-3000 Hz
SAE J211:	System response meets SAE J211 requirements

EXCITATION

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

DIGITAL INPUTS

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

CALIBRATION

Method:	Software controlled precision voltage insertion with multiple shunt check options
Voltage Insertion Type:	16-bit DAC
Accuracy:	Better than 0.1% 100 ppm/°C, NIST traceable and software compensated
Shunt Checks Using Resistors	
Number:	7 internal and 1 external
Values:	10k to 649k standard values, 0.1% 25 ppm
Switching Resistance:	<2 ohm, connected between +Ex and +Signal
Shunt Checks Using Emulation Method	
Description:	Precision current applied to +Signal. Allows virtually unlimited shunt check resolution.

ANALOG-TO-DIGITAL CONVERSION

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

TRIGGERING SYSTEMS

Each Module:	Conditioned contact closure input with T=0 received LED indicator
Rack System:	Standard contact closure input, galvanically and optically isolated to 1 kV. 5-12 V optically coupled inputs available.
Level Triggering:	Available from any channel in each module

SENSOR ID

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

POWER

External Voltage:	12-15 V
Maximum Power:	Depends largely upon connected sensors. Up to 900 mA per 8 channel module with 350 ohm bridges and 10 V excitation on all channels (≈8.0 A maximum for 64 channels)
Protection:	Self-resetting fuses plus reverse current and transient over-voltage protection.
Post-test Power Reduction:	Drops to ≈350 mA per 8 channel module
Back-up Power:	Rack & module contain rechargeable batteries
Back-up Duration:	>10 minutes at full power

PC INTERFACE

Module (standalone):	RS-232 @ 115.2 kHz (USB adapter available)
Rack System (standard):	Ethernet 10BaseT and RS-232 @ 115.2 kHz
Options:	Wireless Ethernet and USB adapter available

CONTROL SOFTWARE

Compatibility:	Standard TDAS Control Software
Operating Systems:	Windows® XP, Vista, 7

Authorized DTS Representative:



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TDAS PRO TOM

Squib Fire with Standalone Data Recorder

APPLICATIONS

- Aerospace analysis
- Automotive safety
- Biomechanics
- Blast testing
- Helicopter & aircraft
- Impact testing
- Injury investigation
- Parachute deployment
- Ride & handling
- Sports & safety equipment



TDAS PRO LAB TOM and TDAS PRO TOM are standalone data recorders that independently fire up to 4 squib channels.

The TDAS PRO Timed Output Module (TOM) from DTS generates precise, high-energy firing signals for a wide variety of squibs used in air bag and pretensioner testing. The system also generates isolated digital outputs often needed to initiate or synchronize other events in the test lab. The TDAS PRO TOM includes 16-bit analog recording of squib voltage and current waveforms.

Available in 2 models:
TDAS PRO crashworthy, TDAS PRO LAB stationary



Fits in TDAS PRO
4- or 8-module rugged rack.

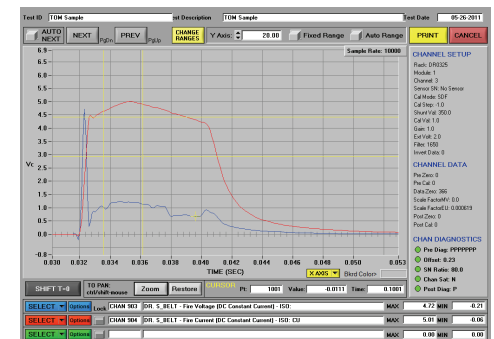
Fits in TDAS PRO LAB
6-module stationary rack.

Features

- Intuitive, easy-to-use software
- 8 separate digital outputs for controlling other systems requiring timed outputs
- Squib fire and digital outputs have 0.1 msec resolution
- Lightweight, small size, cost-effective
- Durable, reliable, crashworthy unit tested to 100 g
- Inherent safety features integrated in system design
- LED indicators for channel and module status
- RS-232 communication standard; Ethernet and wireless options also available
- Built-in back-up battery in crashworthy module
- Meets NHTSA, FAA, ISO 6487 and SAE J211 data acquisition practices

Software

TDAS Control software provides easy-to-use tools for configuring output timing for your test. Advanced features such as squib resistance checks and firing to internal loads supports successful testing every time.



PRODUCTS

Diversified Technical Systems designs and manufactures data acquisition systems and sensors for the experienced test professional

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HEADQUARTERS

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CONTACT US

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Specifications

PHYSICAL

TDAS PRO TOM
Size: 13.7 x 3.4 x 12.2 cm (5.4 x 1.35 x 4.8")
Module Weight: 0.82 kg (1.80 lb)

TDAS PRO LAB TOM
Size: 16.5 x 5.2 x 13.3 cm (6.50 x 2.05 x 5.22")
Module Weight: 0.73 kg (1.60 lb)

Compatibility: Fits standard TDAS PRO & LAB Racks

ENVIRONMENTAL

Operating Temp: 0-50°C (32-122°F)
Shock: 100 g peak, 12 msec half sine
Vibration: 6 g rms, 55-1000 Hz, 30 minutes

SQUIB FIRE CHANNELS

Number: 4 per module
Energy Delivery: Capacitive discharge, constant current, AC
Source Voltage: 15 V
Output Current Range: 1.0-4.0 A software adjustable in 0.1 A increments. Typically better than 1%
Energy Storage: >300 mJ per channel
Rise Time: <50 µsec
Output Connector: One 6-pin LEMO 2B connector per channel (+output, -output, +sense, -sense, +ID, -ID)

TIMING CONTROL

Method: Delay for each output channel can be independently programmed via software
Delay Range: 0-99 seconds after trigger input
Squib Duration: 0.2-25.5 msec or continuous
Digital Output Duration: 0.2-1.6 seconds or continuous
Resolution: 0.1 msec

EVENT INPUT

Each Module: Standard contact closure input, galvanically and optically isolated to 1 kV
False Trigger: EMI, RFI, and ESD protection
Multiple Modules: Event input may be connected in parallel across several modules

SAFETY FEATURES

General: Three-layer safety protocol. 1) Software key 2) Software arm signal 3) Hardware arming signal (switch)
Warning Signals: 1) LEDs indicate when the system is armed 2) 5 V, 20 mA output may be used to drive facility warning devices
Output Interlock: Outputs cannot be armed without physically toggling a locking switch or supplying a remote arming signal
Automatic Disable: Unless requested to perform a test, energy storage devices are automatically drained

TEST ARTICLE AUTOMATIC ID

Method: Serial data read from digital I/O line in output connector
Type Supported: Dallas

SQUIB RESISTANCE TESTS

Method: 1 mA applied current, 2- or 4-wire method
Resistance Check: Software programmed pass/fail tolerance window, measured values recorded
Measurement Range: 0-10 ohms
Resolution: 12-bit

OUTPUT PULSE WAVEFORM

General: Two measurements/ch (8 total per module):
1) current waveform
2) initiation signal/voltage waveform
Method: 16-bit successive approximation A/D with simultaneous sampling on all channels
Max. Sampling Rate: 304 kspcs/module (38k on all channels, 75k on 2 channels, etc.)
Anti-Alias Filters: Fixed 8-pole Butterworth and 5-pole adjustable Butterworth, may be bypassed
Overall Accuracy: 1.0%
Storage Technique: Flexible memory allocation. Any portion of the memory may be allocated to pre-trigger data.
Memory Capacity: Up to 100 seconds at 10 k samples/second
Memory Type: Battery backed SRAM, retention >7 days

SELF-TEST FEATURES

General: Auto checks critical voltages & displays status
Output Verification: Built-in 2.0 ohm dummy loads are used to test output waveforms during pretest checks
Self-test used to verify channel gains and function
Measurement Channels: Self-test used to verify channel gains and function
LED Status Indicators: 1) Power (3 color)
4) Squib Channel Status (2 color)
1) Trigger Status (red)

DIGITAL OUTPUT CHANNELS

General: 8 outputs available on a separate connector
Output Type: Compatible with devices requiring isolated contact closure and/or CMOS/TTL-compatible levels (0-5 V). Logic polarity is software programmable.
Drive Capability: 20 mA per channel
Connector: 19-pin LEMO 2B

POWER

External Voltage: 11-15 V
Maximum Power: 800 mA (per 4-channel module)
Protection: Self-resetting fuses plus reverse current and transient over-voltage protection
Back-up Power: Each module contains a back-up battery
Back-up Duration: >5 minutes at full power

PC INTERFACE

Module (standalone): RS-232 @ 115.2 kHz (USB adapter available)
Rack System (standard): Ethernet 10BaseT and RS-232 @ 115.2 kHz
Options: Wireless Ethernet

CONTROL SOFTWARE

Compatibility: Standard TDAS Control Software
Operating Systems: Windows® XP/Vista/7

Authorized DTS Representative:



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TDAS PRO LAB SYSTEMS

Stationary, Laboratory Data Recorders

APPLICATIONS

- Aerospace
- Automotive safety
- Biomechanics
- Component testing
- Dummy calibration
- Static bench top testing
- Vibration testing



TDAS PRO LAB SIM (left) is a modular, standalone data recorder with 8 fully-programmable sensor input channels.

TDAS PRO LAB TOM (right) is a modular, standalone airbag timer with 4 independent squib fire channels and 8 digital timer outputs.

Features

- Intuitive, easy-to-use software
- TDAS PRO LAB SIM includes 8 fully-programmable sensor input channels with isolated excitation
- TDAS PRO LAB TOM includes 4 isolated squib fire channels and 8 separate digital outputs for controlling other systems requiring timed outputs—0.1 msec resolution
- Supports a variety of sensors and sensor ID function
- Ultra-low noise, high-speed 16-bit ADC, built-in integral microprocessor control, adaptive signal conditioning and A/D circuitry
- Comprehensive fault detection and self diagnosis. LED indicators for power and event status
- Ethernet and RS-232 communication options
- Certified to NHTSA, FAA, ISO 6487 and SAE J211 data acquisition practices

The TDAS PRO LAB modules from DTS feature the same electronics and flexibility as the crash-hardened TDAS PRO modules, but in laboratory enclosures. Ideal for a variety of static tests, these DAS modules can be used standalone or in TDAS PRO LAB Racks that hold up to 6 modules. Racks can be daisy-chained into large test configurations.

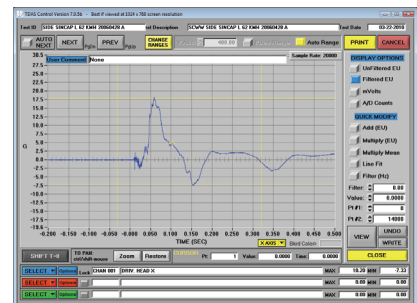


The TDAS PRO LAB Rack is a standard 19-inch size and holds up to 6 modules. The racks can be daisy-chained to support high channel count tests.



Software

TDAS Control software provides easy-to-use tools for storing sensor information and performing data collection. Advanced features such as automatic sensor assignment, detailed channel diagnostics, and real-time data display supports successful testing and quality data every time.



PRODUCTS

DTS offers a full line of dynamic data acquisition systems and smart sensors for high shock testing.

Specifications

PHYSICAL	
Size:	16.5 x 5.2 x 13.3 cm (6.50 x 2.05 x 5.22")
Module Weight:	LAB SIM 0.73 kg (1.60 lb) LAB TOM 0.73 kg (1.60 lb)
Compatibility:	Fits in standard TDAS PRO LAB Racks
6 Module Rack Size:	48.3 x 22.9 cm x 3U high (19" x 9" x 3U)
6 Module Rack Weight:	~9.57kg (~21 lb) – includes modules
ENVIRONMENTAL	
Operating Temp:	0-50°C (32-122°F)
ANALOG INPUTS	
Type:	Differential, software programmed
Common Mode Range:	±6.25 V
Protection:	±50 V
Impedance:	50 megaohm typical
Gain Range:	0.8 to 2000, adaptive
Overall Bandwidth:	D.C. to 25 kHz
Noise Spectral Density:	0.06 µV/√Hz RTI typical, 0-4000 Hz
Signal to Noise Ratio:	80 dB typical at gains from 1-128
Crosstalk:	<0.25% 10 V pp sq wave signal connected to any channel with all other channels set to a gain of 128 with 350 ohm bridges connected
Accuracy:	0.2%, automatically calibrated each use by internal 16-bit DAC
Auto Offset Method:	Dual 12-bit DACs per channel
Auto Offset Range:	Gain 0.8-31: ±5.0 V, Gain ≥32: ±150 mV
Auto Offset Accuracy:	Typically <0.1% of A/D full scale
Bridge Completion:	Software selected per channel, 1000 ohm std
ANTI-ALIAS FILTER –TWO PER CHANNEL	
Fixed Low Pass:	8-pole Butterworth, 4.3 kHz standard (2.9 kHz and 3.0 kHz also available)
Adjustable Low Pass:	5-pole Butterworth, set under software control from 50-3000 Hz
Filter Off:	Turned off per channel ≈25 kHz roll-off (filter by-pass)
SAE J211:	System response meets SAE J211 requirements
EXCITATION	
Method:	Individually galvanically/optically isolated and software controlled
Voltage Levels:	5 V/10 V or 2 V/10 V options
Accuracy:	Each ch software compensated (typ .1%)
Rated Current:	50 mA per channel, continuous operation, individually current limited at ≈ 65 mA
Short Circuit Recovery:	<1 msec typical
DIGITAL INPUTS	
Method:	Sensor inputs may be used as event marker channels with filters bypassed
Propagation Delay:	0.02 msec

CALIBRATION	
Method:	Software controlled precision voltage insertion with multiple shunt check options
Voltage Insertion Type:	16-bit DAC
Accuracy:	Better than 0.1% 100 ppm/°C, NIST traceable and software compensated
Shunt Checks Using Resistors	
Number:	7 internal and 1 external
Values:	10k to 649k standard values, 0.1% 25 ppm
Switching Resistance:	<2 ohm, connected between +Ex and +Signal
Shunt Checks Using Emulation Method	
Description:	Precision current applied to +Signal. Allows virtually unlimited shunt check resolution.

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

TRIGGERING SYSTEMS	
Each Module:	Conditioned contact closure input with T=0 received LED indicator
Rack System:	Standard contact closure input, galvanically and optically isolated to 1 kV. 5-12 V optically coupled inputs available.
Level Triggering:	Available from any channel in each module

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

POWER	
External Voltage:	12-15 V
Maximum Power:	Depends largely upon connected sensors. Up to 900 mA per 8 channel module with 350 ohm bridges and 10 V excitation on all channels (≈8.0 A maximum for 64 channels)
Protection:	Self-resetting fuses plus reverse current and transient over-voltage protection.
Idle Power:	≈350 mA per 8 channel module

PC INTERFACE	
Module (standalone):	RS-232 @ 115.2 kHz (USB adapter available)
Rack System (standard):	Ethernet 10BaseT and RS-232 @ 115.2 kHz
Options:	Wireless Ethernet and USB adapter available

CONTROL SOFTWARE	
Compatibility:	Standard TDAS Control Software
Operating Systems:	Windows® XP, Vista, 7

SERVICES

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