TDAS PRO TOM
Squib Fire with Standalone Data Recorder

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

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

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.
## 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 kps/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  
**Measurement Self-test:** used to verify channel gains and channels 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