PRODUCT DATASHEET

SLICE MICRO & SLICE NANO

Miniature, Modular, Rugged Data Acquisition Systems

APPLICATIONS

- Aerospace analysis
- Amusement ride testing
- Automotive safety
- Biomechanics
- Blast dynamics
- Embedded monitoring
- Helicopter & aircraft
- Impact testing
- In-dummy
- Injury investigation
- Parachute deployment
- Package testing: truck, air, ship & rail
- Pedestrian head & leg form
- Ride & handling
- Sound measurement
- Sports & safety equipment
- Vibration testing

SLICE MICRO and SLICE NANO are standalone, user-configurable data acquisition systems designed for extreme test environments. SLICE MICRO and NANO support a variety of external sensors to measure acceleration, strain, voltage, temperature and more.

SLICE is a modular data acquisition system featuring unmatched flexibility and reliability for critical test applications. Available in two ultra-small form factors, both SLICE MICRO and SLICE NANO make it easy to build systems in 3-channel increments by stacking layers with different channel and sensor input configurations. The BASE+ SLICE is the foundation of the system with the microprocessor, memory and control circuits. A simple interface provides power, trigger and communication signals for chaining multiple SLICE stacks and connecting to a PC.

Shown in a 6-channel IEPE configuration, SLICE MICRO and NANO include full signal conditioning and data writes directly to non-volatile flash memory.

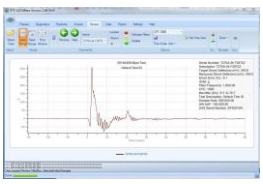
Features

- Ultra-small SLICE modules configure to create the exact features and channel count needed. Stack up to 24 channels per base and daisy-chain up to hundreds of channels per test.
- Intuitive, easy-to-use software
- Data writes to 16 GB flash memory
- Variable sampling rates:
  Minimum 10 sps per channel
  Up to 200k sps on ≤24 channels per stack
  Up to 500k sps on ≤3 channels per stack

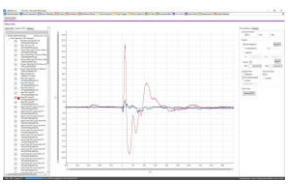
- Meets MIL-STD-810G for temperature, altitude and vibration
- Supports a variety of sensors, including full and half-bridge sensors, strain gauges, IEPE, voltage input, thermocouples
- SLICE MICRO offers built-in triaxial accelerometers, angular rate sensors, and external IEPE (piezo-electric) sensor inputs
- Complies with ISO 6487 and SAE J211 recommended practices, as well as NHTSA and FAA requirements

Software

DTS offers two powerful software options for SLICE MICRO and NANO. SLICEWare provides fast, easy tools for storing sensor information, performing data collection, viewing and exporting data. DataPRO is a fully-featured software with a comprehensive database and user interface for tracking sensor information, creating test objects and test setups, performing diagnostic routines, and conducting tests. Both software packages offer the most advanced self-diagnostics, plus support for EQX, ISO MME and many other data exchange file formats.



SLICEWare



DataPRO

DTS

Number of SLICEs Per Stack*	Total Channel Count	Maximum Sampling Rate SPS/Channel
1	3 ch	500000
2	6 ch	400000
3	9 ch	300000
4	12 ch	200000
5	15 ch	200000
6	18 ch	200000
7	21 ch	200000
8	24 ch	200000

*Not including the one required BASE+ SLICE per stack

CONTACT US

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Web: www.dtsweb.com

Specifications

ENVIRONMENTAL

Military Standard:	MIL-STD-810G
Operating Temp:	-40° to 60°C (-40° to 140°F) (Method 501, 502)
Altitude:	-40°C @ 15240 m (50000 ft) (Method 500)
Vibration (Random):	Exceeds 810-G vibration (Method 514)
Humidity:	95% RH non-condensing
Shock:	500 g, 4 ms half sine 5000 g option (SLICE NANO only)

BASE+ SLICE (NANO & MICRO)

One (1) required per stack – system microprocessor & memory

Size:	MICRO 42 x 42 x 9 mm (1.65 x 1.65 x 0.35") NANO 26 x 31 x 8 mm (1.02 x 1.22 x 0.32")
Mass:	MICRO 30 g (1.06 oz), NANO 15.6 g (0.55 oz)
Connectors:	Omnetics, circular locking, 12-pin MICRO integrated, NANO cable assembly
Compatibility:	BASE+ works will all legacy NANO & MICRO

DATA RECORDING

Modes:	Recorder, circular buffer, multiple event, arm on power-up, and other modes available
Memory:	16 GB non-volatile flash per SLICE stack
Sample Rate:	Minimum 10 sps per channel
<See Chart for Max:	Up to 200k sps on ≤24 channels per stack Up to 500k sps on ≤3 channels per stack

TRIGGERING

Hardware Trigger:	Contact closure & TTL logic-level (active low)
Level Trigger:	Positive and/or negative level on any active sensor channel (first level crossing of any programmed sensor triggers system)

POWER

Supply Voltage:	9-15 VDC; >11 VDC when using Battery SLICE (NANO)
Current (Maximum):	70 mA @ 12 V plus sensor input SLICEs
Power Control:	Remote power control input for on/off
Protection:	Reverse current, ESD

SOFTWARE

Control:	SLICEWare, DataPRO, API
Operating Systems:	Windows® 7/8/10 (32- and 64-bit)
Communication:	USB; Ethernet available via SLICE Distributor

BRIDGE SLICE (NANO & MICRO)

Three (3) inputs for external sensors

Size:	MICRO 42 x 42 x 7 mm (1.65 x 1.65 x 0.32") NANO 26 x 31 x 5.5 mm (1.02 x 1.22 x 0.22")
Mass:	MICRO 25 g (0.88 oz), NANO 13.8 g (0.49 oz)
Connectors:	Omnetics, circular locking; 3 single-channel 7-pin or 1 three-channel 16-pin

SIGNAL CONDITIONING

Number of Channels:	3 differential, programmable
Input Range:	±2.4 V (2.5 V center)
Bandwidth Options:	DC to 35 kHz programmable; 100 kHz fixed
Gain Range:	1.0-1280, programmable
Auto Offset Range:	100% of effective input range
Bridge Support:	Software controlled half-bridge completion
Shunt Check:	Emulation method, automatically calculated
Sensor ID:	Maxim Integrated (Dallas) silicon serial number
Linearity (typical):	≤0.2% (gain 1 to 320), ≤0.5% (gain >320)
Accuracy:	0.5% including reference uncertainty

ANALOG-TO-DIGITAL CONVERSION

Type:	16-bit SAR (Successive Approximation Register) ADC, one per channel, simultaneous sample of all channels

EXCITATION

Method:	Independent regulator for each channel
Voltage:	5.0 V, up to 20 mA, short circuit safe
Power Management:	Shutdown when not armed or recording

POWER

Voltage:	Supplied via BASE+ SLICE
Current (Maximum):	110 mA with 350 ohm bridges all channels Power varies significantly with sensor load

ANTI-ALIAS FILTER

Fixed Low Pass:	4-pole Butterworth, standard knee frequency at 40 kHz
Adjustable Low Pass:	5-pole Butterworth set by software from 1 Hz to 35 kHz
Response:	Meets SAE J211/ISO6487 response corridors

IEPE SLICE (NANO & MICRO)

Three (3) inputs for external sensors

Size:	MICRO 42 x 42 x 7 mm (1.65 x 1.65 x 0.28") NANO 26 x 46 x 7 mm (1.02 x 1.81 x 0.28")
Mass:	MICRO 28 g (0.99 oz), NANO 23 g (0.81 oz)
Connectors:	10-32 coaxial (Microdot-compatible)

SIGNAL CONDITIONING

Number of Channels:	3
Input Range:	0.5-23.5 V (12 V center)
Bandwidth Options:	DC to 35 kHz programmable; 100 kHz fixed
Gain Options:	1 or 10, user programmable
Auto Offset Range:	100% of effective input range at gain of 1
Sensor ID:	Works with EID or "TEDS" equipped sensors

ANALOG-TO-DIGITAL CONVERSION

Type:	16-bit SAR (Successive Approximation Register) ADC, one per channel, simultaneous sample of all channels.

EXCITATION

Current/Voltage:	2.2 mA constant current with 25 V source. Contact DTS for other options if needed.
On/Off Control:	Shutdown when not armed or recording

POWER

Voltage:	Supplied via BASE+ SLICE
Current (Maximum):	85 mA with sensors connected to all channels

ANTI-ALIAS FILTER

Fixed Low Pass:	4-pole Butterworth, standard knee frequency at 40 kHz
Adjustable Low Pass:	5-pole Butterworth set by software from 1 Hz to 35 kHz
Response:	Meets SAE J211/ISO6487 response corridors

ARS SLICE (MICRO only)

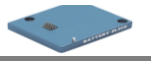
Built-in triaxial angular rate sensor

Size:	MICRO 42 x 42 x 9 mm (1.65 x 1.65 x 0.35")
Mass:	30 g (1.06 oz)
Number of Channels:	3 orthogonal axes
Range Options:	±300, ±1500, ±8k, ±18k deg/sec
Bandwidth:	0–2,000 Hz
Current (Maximum):	75 mA (power supplied via BASE+ SLICE)

ACCEL SLICE (MICRO only)

Built-in triaxial accelerometer

Size:	MICRO 42 x 42 x 9 mm (1.65 x 1.65 x 0.35")
Mass:	30 g (1.06 oz)
Number of Channels:	3 orthogonal axes
Range Options:	±25, ±100 g
Bandwidth:	0–400 Hz (±25, ±100 g), 0–5,000 Hz (±500 g)
Current (Maximum):	65 mA (power supplied via BASE+ SLICE)



BATTERY SLICE (NANO only)

Optional back-up battery

Size:	NANO 26 x 31 x 4 mm (1.65 x 1.65 x 0.16")
Mass:	7 g (0.25 oz)
Charge Status:	Backup battery charges when input voltage to BASE+ SLICE is >11 VDC
Charge Time:	~15 min. from complete discharge to full charge (100 mA at input connector on Base)
Discharge Rate:	~5 seconds with 18 channels (1 Base + 6 Bridges)

CALIBRATION

Calibration Supplied:	NIST traceable
ISO 17025:	ISO 17025 (A2LA Accredited)
Service Options:	Standard, On-site & Service Contracts available

ACCESSORIES

See website for full line of SLICE NANO & SLICE MICRO accessories

DTS

www.dtsweb.com

Specifications subject to change without notice.

SLICE HG

Miniature 3-Channel Data Recorder
High Sampling, Shock-Rated to 20,000 g

APPLICATIONS

- Blast testing
- Fuze validation
- Crash testing
- Gun launch
- Drop testing
- Missile/Ordnance
- Mining/VOD
- Parachute deployment

SLICE HG is a complete standalone, data acquisition system engineered to collect precision data in high shock environments. Shock rated to 20,000 g, SLICE HG samples up to 500 ksps/channel.

SLICE HG is a miniature, ultra-rugged data recorder designed to collect critical field and survivability data. The compact 3-channel DAQ module is engineered to be installed on or in the test article near the point of interest. Data direct-writes to non-volatile flash memory.

The system architecture is the Base+ SLICE (same as SLICE NANO & MICRO) which contains the microprocessor, memory and control circuits for managing the 3-channel Bridge SLICE. A simple interface provides power, trigger and communication signals for chaining multiple SLICE HG systems and connecting to a PC.

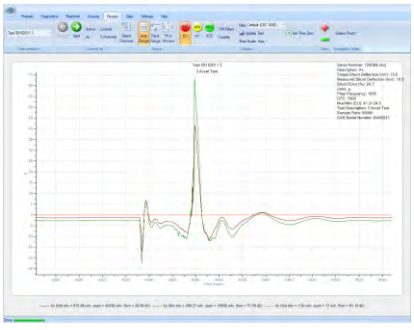
The ultra-small, 3-channel unit is designed to be embedded directly in or on the test article.

Features

- Compact enclosure, 31.75 mm DIA x 42.52 mm (1.250" DIA x 1.67")
- Rugged & reliable, 20,000 g shock rating
- Sampling rates up to 500 ksps/channel
- Supports a variety of external sensors interfaces including: 3- and 4-wire bridge, MEMS sensors, strain, load & voltage
- 16 GB flash memory, >4 hours of data storage time at max sampling rate
- Low power, 9-12 VDC, battery back-up
- Multiple sleep and trigger options
- Daisy-chain up to 12-channels of SLICE HG for higher channel count tests

Software

SLICEWare set-up and control software provides fast, 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 support successful testing and quality data every time.



PRODUCTS

Diversified Technical Systems designs and manufactures data acquisition systems and sensors for experienced test professionals.

Specifications

PHYSICAL	
Size:	31.75 mm DIA x 42.52 mm (1.250" DIA x 1.674")
Weight:	85 g (3.00 oz.)
Connectors:	
Comm/Power/Chain:	Omnetics, circular locking, 12-pin
Sensors:	Omnetics, circular locking; 3 single-channel 7-pin or 1 three-channel 16-pin

ENVIRONMENTAL	
Operating Temp.:	0 to 60°C (32 to 140°F) Call to discuss extended temperature ranges
Humidity:	95% RH non-condensing
Shock:	20,000 g

DATA RECORDING	
Modes:	Recorder or circular buffer modes available
Memory:	16 GB non-volatile flash
Sample Rate:	Up to 500 ksps/channel

TRIGGERING	
Hardware Trigger:	Isolated contact closure & logic-level input
Level Trigger:	Software programmable from any channel

POWER	
Supply Voltage:	9-12 VDC; >11 VDC when charging back-up super capacitor
Current (Maximum):	250 mA including excitation voltage for sensors
Power Control:	Remote power control input for on/off
Protection:	Reverse current, ESD

BACKUP SUPER CAPACITOR	
Charge Status:	Backup super-cap charges when input voltage to Base SLICE is 12 VDC
Charge Time:	~1 min.
Backup Power:	~200 msec after main power lost

SIGNAL CONDITIONING	
Number of Channels:	3 differential, programmable
Input Range:	±2.4 V (2.5 V center)
Bandwidth:	DC to 40 kHz, programmable
Gain Range:	1.0-1280, programmable
Auto Offset Range:	100% of effective input range
Bridge Support:	Software switchable completion
Shunt Check:	Emulation method

ANALOG-TO-DIGITAL CONVERSION	
Type:	16-bit SAR, one ADC per channel

EXCITATION	
Method:	One 20 mA current-limited source/channel
Voltage:	5.0 V
On/Off Control:	Shut down when not armed or recording Opt. pulsed excitation for low sampling rates

ANTI-ALIAS FILTER	
Fixed Low Pass:	4-pole Butterworth, standard knee frequency of 40 kHz
Adjustable Low Pass:	5-pole Butterworth set under software control, 50 Hz to 40 kHz
Overall Response:	Both filters may be used together to achieve 9-pole effective response
SAE J211:	System exceeds SAE J211 response

SOFTWARE	
Control:	SLICEWare, API
Operating Systems:	Windows® 7/8/10 (32- and 64-bit) Communication: USB; optional Ethernet interface

SLICE HG uses the system architecture developed by DTS for the original SLICE NANO and SLICE MICRO modular data acquisition systems.

SERVICES

24/7 Worldwide Tech Support
ISO 17025 (A2LA) Calibration
On-site Calibration & Training
Application Consulting
Software Integration
OEM/Embedded Applications

WORLDWIDE SUPPORT

HELP CENTER (24/7/365 Access)
DTS Technical Centers
Global Sales Partners

HEADQUARTERS

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Web: www.dtsweb.com

DTS
www.dtsweb.com

SLICE6 AIR

Miniature 6-Channel Networked Data Acquisition Unit with Real-Time Streaming & Onboard Recording

Overview

SLICE6 AIR is a complete data acquisition unit for measuring analog signals in extreme test environments. Optimized for size, weight, and power (SWaP), SLICE6 AIR is ideal for applications with tight size and mass constraints. Each module features a microprocessor, Ethernet switch, signal conditioning, and non-volatile memory. The versatile SLICE6 AIR can be used standalone, networked for high channel count tests, or integrated into existing Ethernet-based flight test instrumentation. Real-time streaming in IRIG formats and dual store-in-place recording enables both real-time monitoring and redundant back-up of data on a single device.

SLICE6 AIR Applications include: In-Flight Testing, Rotors, Air Drop, Munitions, UAS/Counter-UAS, Launch Vehicles

Features

- 6-channel module, ultra-small (42 x 42 x 13 mm), low mass (50 grams)
- Designed to be positioned near the sensors, significantly reduces installation time and cost
- Universal analog sensor signal conditioning: Bridge, IEPE, Thermocouple, RTD, Voltage, etc.
- UART for RS232/422/485 serial data capture (TX available upon request)
- Module can be configured to function as UDP Ethernet recorder
- Real-Time Streaming (CH10, IENA or TmNS) Onboard Recording (16 GB non-volatile memory)
- Time synchronization via IEEE 1588 PTPv2 with internal Real Time Clock
- Programmable sampling rates & anti-alias filters
  Streaming: Max 20k sps on all channels
  Onboard Recording: Max 400k sps

Interface

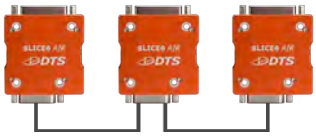
51-pin sensor input connector

25-pin system control connector

Configurations

Standalone

Networked



2-port 10/100Mbit Ethernet switch supports up to 10x modules (60ch) in daisy-chain configuration

Centralized


SLICE6 AIR DS-4 Rack

Specifications

PHYSICAL	
Size:	42 x 42 x 13 mm (1.65 x 1.65 x 0.51")
Mass:	50 g (1.8 oz)
Connectors (Micro-D):	51-pin with 6 universal sensor inputs 25-pin for power, Ethernet (2-ports), and Control

ENVIRONMENTAL	
Operating Temp:	-40° to 80°C (-40° to 176°F)
Humidity:	95% RH non-condensing
Shock:	500 g, 4 msec half sine
Vibration	12 grms, 3 to 2k Hz
IP Rating:	IP64
EMI/EMC:	Standard protection for EMI, RFI and ESD (8kV)
Military Standard:	MIL-STD-810G, MIL-STD-461G

DATA RECORDING	
Modes:	Recorder, Circular Buffer, Multiple Event
Memory:	16 GB non-volatile flash
Sampling Rate:	Programmable up to 400k sps on all channels
Recording Time:	>50 minutes at max sample rate
Pre-Trigger Data	Any part of memory can be used for pre or post trigger data.

DATA STREAMING	
Sampling Rate:	Programmable up to 20k sps
Format:	IRIG 106 Chapter 10, IENA or TmNS

BRIDGE AND IEPE SIGNAL CONDITIONING	
Bridge Input Range:	0 to 5 volts (2.5 V center)
IEPE Signal Range:	0.5 to 23.5V
Bandwidth:	DC to 50 kHz
Gain Range:	1 to 1,280, software programmable
Auto Offset Range:	100% of effective input range at gain > 2
Shunt Check:	Yes
Sensor ID:	Maxim Integrated (Dallas) silicon serial number
Linearity (typical):	0.1% (gain 1 to 320), ≤0.5% (gain ≥640)
Accuracy:	0.2% typical

POWER	
Supply Voltage:	9-30 VDC
Current (Maximum):	< 3W with full sensor load
Protection:	Reverse current, ESD

EXCITATION	
Type:	Independent regulator for each channel
Bridge Voltage:	5.0 V regulated, up to 20 mA per channel
IEPE Current:	5 mA per channel (24-volt source)
Recovery:	Short circuit safe, recovers in <1 msec

FILTERS	
Pre-ADC	
Fixed Low Pass:	4-pole Butterworth, standard knee at 50 kHz
Adjustable Low Pass:	5-pole Butterworth set by software from 1 Hz to 35 kHz (bypass-able for maximum bandwidth)
Factory Options:	Bessel configuration, custom bandwidths
Post-ADC	
Adjustable Low Pass:	Two Stage Digital: Stage 1: 45-tap FIR with adjustable parameters, Stage 2: either 65-tap FIR or 6-pole IIR Butterworth with adjustable parameters. Other options available on request.

ANALOG-TO-DIGITAL CONVERSION	
Type:	16-bit SAR (Successive Approximation Register) ADC, one per channel, simultaneous sampling of all channels in each module.
Synchronization:	< 10 µsec, via IEEE 1588 PTPv2 or PPS (channel-to-channel entire system)

TRIGGERING	
Hardware Trigger:	Contact closure & TTL logic-level (active low)
Level Trigger:	Positive and/or negative level on any active sensor channel (first level crossing of any programmed sensor triggers system)

SOFTWARE	
Control:	DataPRO, API, LabVIEW
Operating Systems:	Windows® 7/8/10/11 (32/64-bit), Linux
Communication:	100M bps Ethernet with built-in IEEE-1588 compliant switch

CALIBRATION	
Calibration Supplied:	NIST traceable
ISO 17025:	ISO 17025 (A2LA Accredited)
Service Options:	Standard, On-site & Service Contracts available

TIME SOURCE
IEEE 1588 PTPv2, IRIG-B122, and GPS RS232/422/485 & 1 PPS

ACCESSORIES
See website for full line of accessories

Software

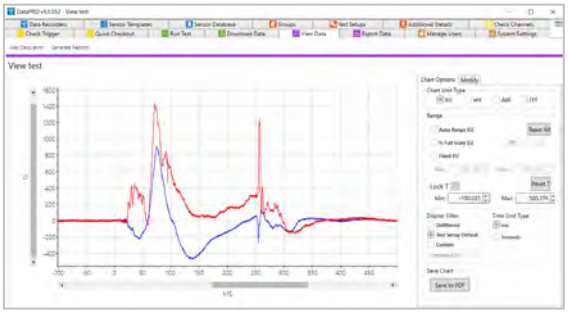
SLICE6 AIR configuration software options:

DTS DataPRO Software: Complete Windows application with sensor database, diagnostics, configuring streaming mode, arming, downloading, and data viewing

API: Application Programming Interface (API) for user-developed application support

LabVIEW (Display Only): NI LabVIEW driver for real-time data visualization

IRIG Chapter 10/IENA/TmNS Streaming: Requires 3rd party IRIG 106 compliant software for real-time data visualization



DataPRO Software

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www.dtsweb.com

PRODUCT DATASHEET

SLICE PRO

Modular, High-Speed, Rugged Data Acquisition System

APPLICATIONS

- Acoustic studies
- Aerospace analysis
- Automotive safety
- Biomechanics
- Blast dynamics
- Ballistics Research
- Helicopter & aircraft
- Parachute deployment
- Pyrotechnic shock
- Ride & handling
- Sound measurement
- Sports & safety equipment
- Vibration testing
- Wind Tunnel

PRODUCTS

Diversified Technical Systems designs and manufactures data acquisition systems and sensors for experienced test professionals.

SLICE PRO is a complete modular data acquisition system that supports sensor inputs, airbag squib fire, trigger distribution, digital inputs & more. Designed for extreme test environments, data writes directly to flash memory.

SLICE PRO is a shock-hardened, mega-sample data acquisition system with unmatched flexibility, accuracy and reliability. Modular and configurable, SLICE PRO makes it easy to build test set-ups with different channel counts and features. SLICE PRO is a complete standalone system with signal conditioning, filtering and multiple bandwidth options. SLICE PRO writes data directly to non-volatile flash memory, making it ideal for a variety of critical applications including automotive safety and blast testing.

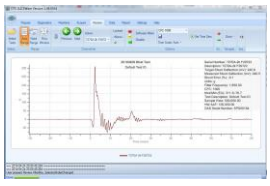
The SLICE PRO SIM is available with either 9 or 18 (as shown) fully-programmable sensor input channels that provide power and signal conditioning to support a variety of external sensors.

Features

- Modular solution, easily configures to create the exact features and channel count needed. Daisy-chain up to hundreds of channels per test.
- Easy and intuitive software, users enter sensor and sampling parameters and the software automatically sets-up the hardware.
- User-selectable sampling rates up to 1M sps/channel
- Data writes directly to 16 GB non-volatile flash memory
- High bandwidth options up to 200 kHz
- Supports a variety of external sensors, including full and half-bridge sensors, strain gages, IEPE, voltage input, thermocouples, etc.
- Compatible with TDAS G5 and TDAS PRO hardware
- Complies with ISO 6487 and SAE J211 recommended practices, as well as NHTSA and FAA requirements

Software

DTS offers two powerful software options for SLICE PRO. SLICEWare provides fast, easy tools for storing sensor information, performing data collection, viewing and exporting data. DataPRO is a fully-featured software package with a comprehensive database and user interface for tracking sensor information, creating test objects and test setups, performing diagnostic routines, and conducting tests. Both software packages offer the most advanced self-diagnostics, plus support for EQX, ISO MME and many other data exchange file formats.



DTS

www.dtsweb.com

COMPATABILITY

Using DataPRO Software, SLICE PRO is compatible with both TDAS PRO and TDAS G5 hardware, making it easy to expand system features and channel counts.

SERVICES

24/7 Worldwide Tech Support
ISO 17025 (A2LA) Calibration
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Application Consulting
Software Integration
OEM/Embedded Applications

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HEADQUARTERS

Seal Beach, California USA

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Web: www.dtsweb.com

Specifications

SLICE PRO SIM (Sensor Input Module)

Description:	Data acquisition module 9 or 18 channels
Size:	52 x 90 x 80 mm
Mass:	726 g (26 oz)
Sensor Connectors:	LEMO 1B or Tajimi rectangular Insertion and removal tool available

SLICE PRO Ethernet Controller

Description:	Interface for start, status, event, power and 10/100 Ethernet communication signals
System Capability:	Each Controller supports up to 72 channels and provides interconnection compatibility with additional SLICE PRO systems, TDAS PRO & TDAS G5 systems. Hundreds of channels can be combined in one setup.
Start/Trigger Input:	Start: 5 V active high Trigger: Fully isolated contact closure with nominal 20 V open circuit voltage
Size:	26 x 90 x 80 mm
Mass:	305 g (15 oz)
Connectors:	COM: LEMO 2B 19-pin, Power: LEMO 2B 4-pin Note: Ethernet Controller "COM" ports are compatible with TDAS PRO and G5 COM ports

SLICE PRO USB Controller

Description:	Simple connections for start, status, event, power and USB 2.0 communication signals.
System Capability:	Supports up to 72 channels
Start/Trigger Input:	Contact closure, also compatible with 5-volt logic signals, active low.
Size:	52 x 90 x 80 mm
Mass:	454 g (16 oz)
Connectors:	COM: USB B-Type, Power: LEMO 2B 4-pin

INTERNAL BATTERES (ALL MODULES)

Type:	Lithium Polymer with built-in charger.
Run Time:	One hour fully armed, all channels in use with 5 V excitation (40 min. with 10 V excitation)
Recharge Time:	3-4 hours

POWER

Supply Voltage (SIM):	9-15 VDC; Note: 12-15 VDC required for charging internal battery
Power (Maximum):	15 W per 18-channel unit with 350 ohm loads and battery charging
Power Control:	Push button, not impact critical
Protection:	Reverse current, ESD

START & TRIGGER OPTIONS

Level Trigger:	Positive or negative level on any active sensor channel (first level crossing of any programmed sensor triggers system)
Software Trigger:	Data collection may be started or triggered via software

ENVIRONMENTAL

Operating Temp:	0 to 60°C (32 to 140°F) Contact DTS re: extended temperature ranges
Humidity:	95% RH non-condensing
Shock:	100 g, 12 msec half sine

BRIDGE or VOLTAGE SENSOR INTERFACE

Type:	Differential Instrumentation Amplifier
Common Mode Range:	-2.5 to +6.0 volts
Differential Input Range:	±2.45 volts
Bandwidth:	DC to 200 kHz (see options in AAF section)
Gain Range:	1 to 12,000
Noise (SNR typical):	75-80 dB (100 kHz BW, typical gain)
Gain Check:	Automatic voltage Insertion
Linearity (typical):	0.1% (gain 1 to 400), ≤0.5% (gain ≥640)
Accuracy:	0.2% including reference uncertainty
Auto Offset Range:	2X effective input range at gain ≥2 (typical)
Excitation Voltage:	Off, 2.0, 5.0, 7.5 and 10.0 V selected in software
Excitation Current:	40 mA via independent current-limited source
Bridge Support:	3k ohm half-bridge completion. 120 or 350 ohm 3/4 bridge completion for strain gages, etc.
Shunt Check:	Emulation method, automatically calculated
Sensor ID:	Maxim Integrated (Dallas) "1-wire" silicon serial number

IEPE SENSOR INTERFACE (if so equipped)

Input Range:	0.5 to 23.5 V
Excitation:	10.0 mA constant current with 25 V source. Contact DTS for other options if needed.
Sensor ID:	Works with EID or "TEDS" equipped sensors

ANTI-ALIAS FILTERS (AAF)

Fixed Low Pass:	8-pole fixed Butterworth with factory configured maximum bandwidth. Options: 4.0 kHz, 100 kHz, 200 kHz
Adjustable Low Pass:	5-pole Butterworth set under software control: 50 to 35 kHz (bypassed for maximum bandwidth)
Custom Options:	Contact DTS for any special requirements
Overall Response:	System response complies with SAE J211/ ISO 6487 recommended practices

ANALOG-TO-DIGITAL CONVERSION

Type:	16-bit SAR (Successive Approximation Register) ADC, one per channel, simultaneous sample of all channels
Acquisition Time:	80 ns (min)
Conversion Time:	420 ns (max)

DATA RECORDING

Modes:	Recorder, circular buffer and multiple test modes available
Memory:	16 GB non-volatile flash per module
Sample Rate:	User-programmable from 100 sps to 1M sps Maximum 1M sps/ch with 9 channels used or 500k sps/ch with18 channels used per SIM

CALIBRATION

Calibration Supplied:	NIST traceable
ISO 17025:	ISO 17025 (A2LA Accredited) available
Service Options:	Standard, On-site & Service Contracts available

SOFTWARE

Control:	SLICEWare, DataPRO, API NOTE: Timed Output Module (TOM) requires DataPRO software
Operating Systems:	Windows® 7/8/10 (32- and 64-bit)
Communication:	USB and Ethernet 10/100M

ACCESSORIES

See website for full line of SLICE PRO accessories, including:

SLICE PRO Base Plate
Aluminum mounting plate, available in multiple sizes to support a variety of configurations

Additional SLICE PRO modules also available – see website for details.

SLICE PRO TOM
Timed Output Module

SLICE PRO TDM
Trigger Distributor Module

SLICE PRO DIM
Digital Input Module

SLICE PRO LAB
Non-Rugged System

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PRODUCT DATASHEET

NEW!

ARS3 PRO

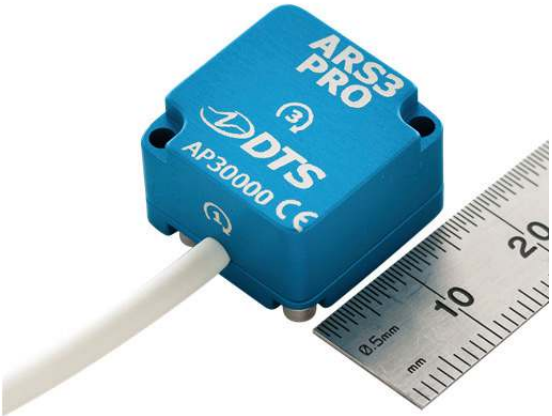
High Performance, Triaxial Angular Rate Sensor

APPLICATIONS

- Aerospace analysis
- Amusement ride testing
- Automotive safety
- Biomechanics
- Blast testing
- Embedded monitoring
- Helicopter & aircraft
- Impact testing
- In-dummy
- Injury investigation
- Parachute deployment
- Package testing: truck, air, ship & rail
- Pedestrian head & leg form
- PMHS (cadaver) testing
- Ride & handling
- Sports & safety equipment
- Vibration testing

PRODUCTS

Diversified Technical Systems designs and manufactures data acquisition systems and sensors for experienced test professionals.



Low mass and lightweight, the 3-axis ARS3 PRO is the highest shock and vibration tolerant angular rate sensor available for dynamic testing.

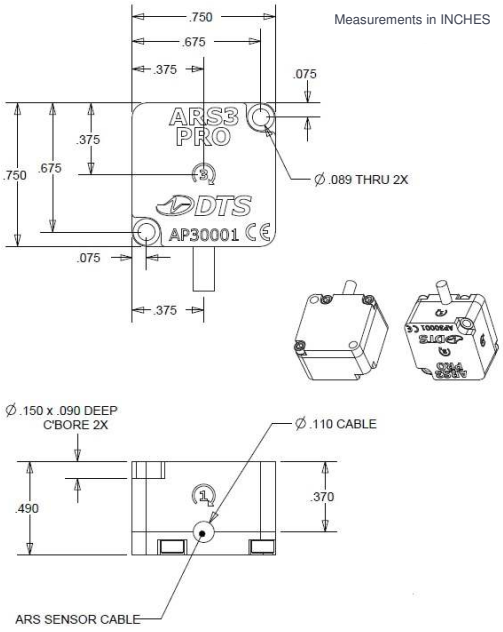
Package size:
0.75 x 0.75 x 0.49"
(19 x 19 x 12.5 mm)

Features

- Ultra-small, low mass 3-axis package
- Reliable; accurate in high shock and vibration environments
- Standard range options: ±300, 1500, 8k, 18k, 50k deg/sec
  Multiple bandwidth options available; DC response
- 5.0–14.0 VDC excitation
- Shunt check; 3000 Ω equivalent bridge resistance
- Dallas ID standard, user-specified connector options
- IP67 rated for dust protection and immersion in water.
  The sealed enclosure is also ideal for PMHS work.
- Factory repair of channels available
- ISO 17025 (A2LA Accredited) calibration services available, NIST traceable
- Meets latest US Government dynamic performance requirements

The ARS3 PRO is an ultra-small, triaxial gyroscope designed to accurately measure high rates of angular velocity even in excessive shock and vibration environments. Packaged in a rugged aluminum enclosure, the ARS3 PRO is the smallest, high-rate angular rate sensor available with 3 separate sensing elements oriented in the X, Y and Z planes for full pitch, roll and yaw measurements.

Unparalleled performance and reliability make the ARS3 PRO the sensor of choice worldwide for automotive safety crash testing, aerospace, in-dummy instrumentation, biomechanics and blast testing.



DTS
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Only need a single axis?
Check out the DTS ARS PRO

Need 6 degrees of freedom?
DTS 6DX PRO is the smallest, most reliable sensor available for high shock environments

SERVICES

24/7 Worldwide Tech Support
ISO 17025 (A2LA) Calibration
On-site Calibration & Training
Application Support
Software Integration
OEM/Embedded Applications

WORLDWIDE SUPPORT

HELP CENTER (24/7/365 Access)
DTS Technical Centers
Global Sales Partners

HEADQUARTERS

Seal Beach, California USA

CONTACT US

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

Specifications

MODEL	RANGE	BANDWIDTH	NOISE	APPLICATION NOTES
ARS3 PRO-300	±300 deg/sec range 5.2 rad/sec	0-300 Hz	<0.6% of full scale over rated bandwidth	• Lower rate dynamic measurements • Vehicle handling, NVH • SAE J211/ISO 6487 CFC 180 measurements
		0-2000 Hz		• Low rate measurements requiring higher bandwidth
ARS3 PRO-1500	±1500 deg/sec range 26.2 rad/sec	0-2000 Hz	<0.15% of full scale over rated bandwidth	• Medium range dynamic measurements • NHTSA-specified for FMVSS 202a rear impact test • SAE J211/ISO 6487 CFC 1000 measurements
ARS3 PRO-8K	±8000 deg/sec range 139.6 rad/sec	0-300 Hz	<0.15% of full scale over rated bandwidth	• High rate dynamic studies • Whole body motion during impact • Vehicle crash, sled testing • SAE J211/ISO 6487 CFC 180 measurements
	±8000 deg/sec range 139.6 rad/sec	0-600 Hz	<0.20% of full scale over rated bandwidth	• High rate measurements requiring higher bandwidth
	±8000 deg/sec range 139.6 rad/sec	0-2000 Hz	<0.30% of full scale over rated bandwidth	• High range measurements and highest bandwidth • Test dummies, headform impacts • SAE J211/ISO 6487 CFC 1000 measurements
ARS3 PRO-18K	±18000 deg/sec range 314.2 rad/sec	0-2000 Hz	<0.35% of full scale over rated bandwidth	• High rate dynamic measurements • Biomechanics tests requiring high rate measurements • SAE J211/ISO 6487 CFC 1000 measurements
MODEL	**RANGE**	**BANDWIDTH***	**NOISE**	**APPLICATION NOTES**
ARS3 PRO-50k	±50000 deg/sec range 872.7 rad/sec	0-2000 Hz	<0.15% of full scale over rated bandwidth	• Extreme environments, heavy-duty mounting • SAE J211/ISO 6487 CFC 1000 measurements

CFC = Channel Frequency Class

PHYSICAL	
Dimensions:	19 x 19 x 12.5 mm (0.75 x 0.75 x 0.49")
Enclosure:	Anodized aluminum
Weight:	10 g (0.35 oz)
ENVIRONMENTAL	
Operating Temp.:	-40 to +85°C (-40 to +185°F)
Acceleration:	10000 g, 0.5 ms (survival only)
IP Rating:	IP67, short-term immersion OK
ELECTRICAL	
Excitation:	5.0-14.0 VDC Output not proportional to excitation
Current:	4 mA nominal per axis
Signal Voltages:	Centered 2.4 V above –Excitation
Zero Output:	±200 mV
Full Scale Output:	±2 V nominal
Shunt Check:	3000 Ω equivalent bridge resistance
PERFORMANCE	
Cross Axis Sensitivity:	<1.0%
Non-Linearity:	<0.5% full scale
Influence of Linear Acceleration:	<0.1 deg/sec/g typical
Thermal Drift:	-40 to +85C
Zero:	±1 deg/sec (±5 deg/sec for 18k & 50k)
Sensitivity:	±2% (±5% for 1500 & 8k)
CALIBRATION	
Calibration Supplied:	NIST traceable
ISO 17025:	ISO 17025 (A2LA Accredited) available
Service Options:	Factory or on-site, Service Contracts available
CONNECTORS	
Type:	Standard: one triax 16-pin Omnetics connector with Dallas ID (23 ft). Optional: Adapter cable with pigtails or connectors of choice (2 ft).
OPTIONAL ACCESSORIES	
Adaptor Cables:	A triaxial cable assembly with a variety of connector options is available to connect the ARS3 PRO to DTS and other DAS solutions

WIRE COLOR & PIN ASSIGNMENTS

AXIS	FUNCTION	COLOR	PIN
1	+EXCITATION	RED	6
	-EXCITATION	BLACK (1)	7
	+SIGNAL	GREEN	1
	-SIGNAL	WHITE	5
	+ID		2
2	+EXCITATION	BROWN	8
	-EXCITATION	BLACK (2)	13
	+SIGNAL	BLUE	4
	-SIGNAL	YELLOW	3
	+ID		9
3	+EXCITATION	ORANGE	11
	-EXCITATION	BLACK (3)	12
	+SIGNAL	GRAY	10
	-SIGNAL	PURPLE	14
	+ID		15
ALL	-ID / SHIELD	SHIELD	16

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DTS 6DX PRO-A

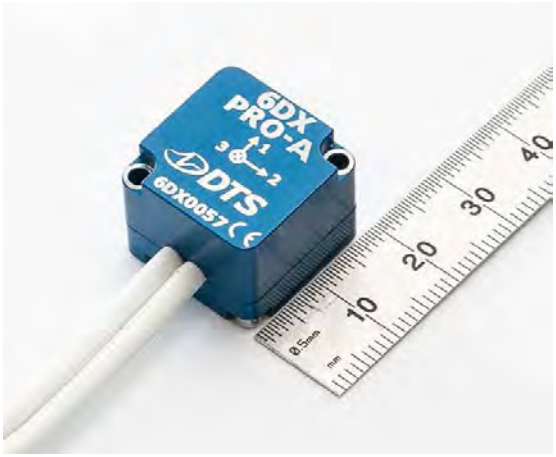
Ultra-Small, Rugged Six Degrees of Freedom (6DOF) Sensor Package

APPLICATIONS

- Aerospace analysis
- Amusement ride testing
- Automotive safety
- Biomechanics
- Blast testing
- PMHS (cadaveric) testing
- Embedded monitoring
- Helicopter & aircraft
- Impact testing
- In-dummy
- Injury investigation
- Parachute deployment
- Package testing: truck, air, ship & rail
- Pedestrian head & leg form
- Ride & handling
- Sports & safety equipment
- Vibration testing

PRODUCTS

Diversified Technical Systems designs and manufactures data acquisition systems and sensors for experienced test professionals.



Designed for applications measuring high rates of acceleration and angular velocity, the 6DX PRO-A packages three accelerometers and three angular rate sensors in a compact 19 x 19 x 17.4 mm package.

The DTS 6DX PRO-A features three linear accelerometers and three angular rate sensors conveniently packaged in a compact, high-shock enclosure.

Designed to meet the rigorous demands of dynamic test environments, the 6DX PRO-A is available in several range options. The 6DX PRO-A is ideal for in-manikin, PMHS, structural and blast testing applications.

Each sensor cable is 7 meters (23 feet) long and terminates to a single triaxial connector. Pigtail or adapter cables are available to support a variety of termination options.

Features

- Ultra-compact and lightweight
- Ideal for high acceleration and high angular rate measurements
- Available in several range options:

6DX PRO	ACCELEROMETER RANGES	ANGULAR RATE RANGES
500-300	±500 g, triaxial	±300 deg/sec, triaxial
500-1500	±500 g, triaxial	±1500 deg/sec, triaxial
500-8K	±500 g, triaxial	±8000 deg/sec, triaxial
500-18K	±500 g, triaxial	±18000 deg/sec, triaxial
500-50K	±500 g, triaxial	±50000 deg/sec, triaxial

- IP67 Rated for dust protection and water immersion
  Sealed enclosure is also ideal for PMHS work
- Factory repair of sensor channels available
- DTS re-calibration services available, NIST traceable
- Complies with NHTSA, FAA, ISO 6487 and SAE J211 recommended practices

DTS

www.dtsweb.com

Specifications

PHYSICAL	
Size:	19 x 19 x 17.4 mm (0.75 x 0.75 x 0.68")
Mass:	14 g (0.49 oz.) without cables
Enclosure:	Anodized aluminum
Mounting Holes:	Thru-holes for two 2-56 or M2 bolts

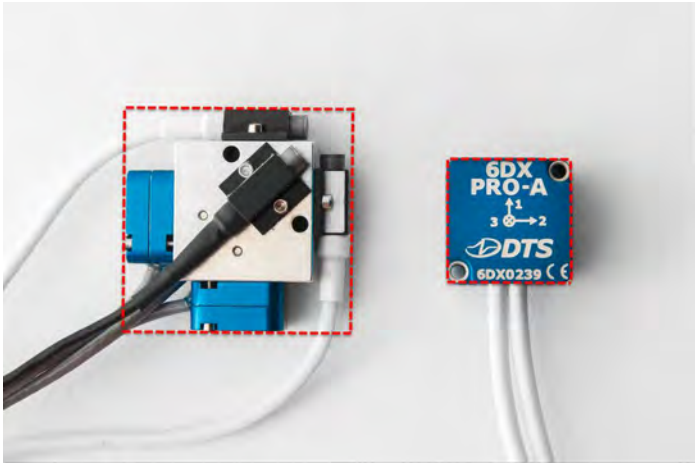
ENVIRONMENTAL	
Operating Temp.:	-40 to +85°C (-40 to +185°F)
Humidity:	99%, non-condensing, sealed
Shock:	10000 g, any direction
IP Rating:	IP67

SENSORS: ACCELEROMETER	
Range:	±500 g
Bandwidth:	0-5000 Hz, DC response
Linearity - % FS:	< 1%
Transverse Sensitivity:	3% (max), 2% (typical)
Damping Ratio:	0.7 nominal
Noise Density:	125 µg/√Hz
Nominal Sensitivity:	3.75 mV/g
Zero Output:	±3% FS (max)
Thermal Zero Shift:	±0.01% FS/°C (-40 to +85°C)
Thermal Sens. Shift:	±0.1 %/°C typ (-40 to +85°C)
Shunt Check:	3000 Ω equivalent bridge resistance
Excitation Voltage:	4.9-14 V, not proportional to excitation
Current:	2 mA nominal per axis

CONNECTORS	
Type:	Standard: two triax 16-pin Omnetics connectors with Dallas ID (23 ft). Optional: Adapter cable with pigtails or connectors of choice (2 ft).

CALIBRATION	
Acceleration:	NIST traceable shock, half-sine
Angular Rate:	NIST traceable rate table with stepper motor and encoder
Calibration:	Re-calibration services available

SENSORS: ANGULAR RATE	
Range Options:	Triaxial, ±300, 1500, 8K, 18K or 50K deg/sec
Bandwidth:	0-2000 Hz, DC response
Excitation Voltage:	4.9-14 V, not proportional to excitation
Linearity:	<1%
Transverse Sensitivity:	±5% (max)
Current:	4 mA nominal per axis
Full Scale Output:	±2 V nominal
Zero Output:	±200 mV



The 6DX PRO-A is 70% SMALLER and 50% LIGHTER than a triaxial block with six individual sensors.

SERVICES

24/7 Worldwide Tech Support
ISO 17025 (A2LA) Calibration
On-site Calibration & Training
Application Support
Software Integration
OEM/Embedded Applications

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