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.

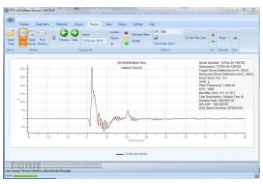
Features

- 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

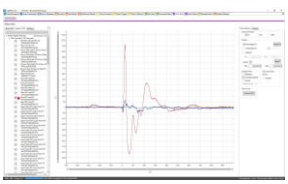
- Meets MIL-STD-810G for temperature, altitude and vibration
- Supports a variety of sensors, including full and half-bridge sensors, strain gauges, IEPE, voltage input, thermocouples
- SLICE MICRO offers built-in triaxial accelerometers, angular rate sensors, and external IEPE (piezo-electric) sensor 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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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

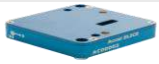
ANTI-ALIAS FILTER

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.