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

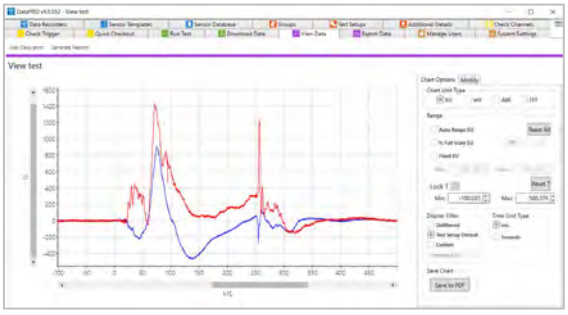
SLICE6 AIR configuration software options:

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

DTS
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www.dtsweb.com

SLICE6 AIR-BR

Networked Data Acquisition Unit
Real-Time Streaming & Onboard Recording

Overview

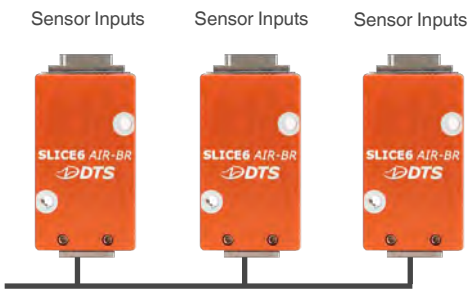
SLICE6 AIR-BR is a complete data acquisition unit for measuring analog signals in extreme test environments. Optimized for size, weight and power (SWaP), SLICE6 AIR-BR is ideal for applications with size and mass constraints. Each module features a microprocessor, Ethernet switch, signal conditioning and memory. SLICE6 AIR-BR 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 backup of data on a single device.

SLICE6 AIR-BR applications include: In-Flight Testing, Ejection Seats, Helicopter Rotors, Parachute Deployment, UAV/Drones, Munitions, Launch Vehicles, Space Capsules and more

Features

- 6-channel module, standalone or networked
- Ultra-small (24 x 42 x 12.5 mm), low mass (25 grams)
- Designed to be positioned near the sensors, significantly reduces installation time and cost
- Supports a variety of sensors, including full and half-bridge sensors, strain gauges, voltage input, thermocouples
- Real-Time Streaming (CH10, IENA or TmNS)
  Onboard Recording (16 GB non-volatile memory)
- Programmable sampling rates & anti-alias filters:
  Streaming: Max 20k sps on all channels
  Onboard Recording: Max 400k sps
- Time synchronization via IEEE 1588 PTPv2 with internal Real Time Clock

Configurations & Interface



Ethernet Networking and 1588 Sync

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

Specifications

PHYSICAL	
Size:	24 x 42 x 12.5 mm
Mass:	25 g
Connectors (Nano-D):	37-pin for sensor inputs 21-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

SIGNAL CONDITIONING	
Bridge Input Range:	0 to 5 volts (2.5 V center)
Bandwidth:	DC to 50 kHz
Gain Range:	1.0 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
Level:	5.0 V regulated, up to 20 mA per channel
Recovery:	Short circuit safe, recovers in <1 msec

PRE-A/D ANTI-ALIAS FILTERS	
Fixed Low Pass:	6-pole Butterworth, standard knee at 1.28 kHz (other filter options available, contact DTS for more information)
Post ADC 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

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 (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

ACCESSORIES
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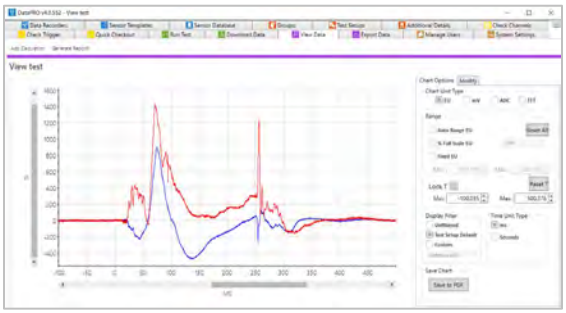
Software

SLICE6 AIR-BR 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

IRIG Chapter 10/IENA/TmNS Streaming: Requires 3rd party IRIG106 compliant software for real-time data visualization



DataPRO Software

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