SLICE6 AIR DAS
User's Manual
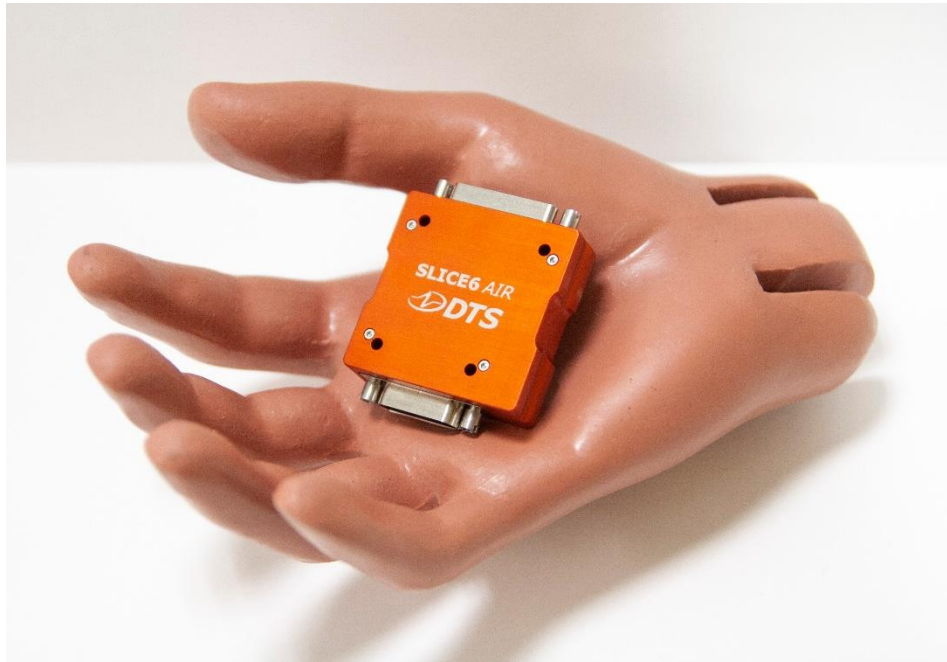
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DTS Support

SLICE systems are designed to be reliable and simple to operate. Should you need assistance, DTS has support engineers worldwide with extensive product knowledge and crash test experience to help via telephone, e-mail or on-site visits.

The best way to contact a DTS support engineer is to submit a request through the DTS Help Center web portal (support.dtsweb.com). You must be registered (support.dtsweb.com/registration) to submit a request (https://support.dtsweb.com/hc/en-us/requests/new). Registration also enables access to additional self-help resources and non-public support information.

This manual supports the following products:
    13006-90440: SLICE6 AIR DAS Module (Alpha)
    13006-90441: SLICE6 AIR DAS Module

Introducing the SLICE6 AIR DAS

SWaP optimized and IP65 rated, the SLICE6 AIR DAS is a complete data acquisition unit for measuring analog signals in extreme environments such as payload ejection/deployment; in-flight/on-board UAVs/drones, rockets, missiles and munitions; and biomechanics. PTPv2 Ethernet communications and real-time data streaming up to 20,000 sps per channel with on-board data storage to flash memory are supported. Each unit includes 6 sensor input channels and can be used standalone or interconnected/networked for high channel count systems.

- Sample rates up to 400,000 sps on 6 channels simultaneously via record in place.
- Shock rated to 500 g for dynamic testing environments.
- 6-channel analog sensor interface supports accelerometers, load cells, pressure sensors, strain gage and piezo-resistive bridges, IEPE and voltage inputs.
- Ethernet PTPv2 communications (IEEE1588) and sensor ID easily support test set-ups of hundreds of channels.
- Real-time data streaming up to 20,000 sps per channel
- Optional time source synchronization using IRIG-B122, GPS and 1 PPS standards.
- LED indicators for system and power status.

Connector information, pin assignments and mechanical specifications can be found in Appendix A. Common sensor wiring schematics are shown in Appendix C. Please see your packing list for your hardware's specifications.

Sensor interface connector

System connector

Sensor Interface

 The SLICE6 AIR DAS supports 6 sensor measurement channels via the 51-pin, micro-D sensor interface connector. See Appendix A for sensor connector pin assignments.

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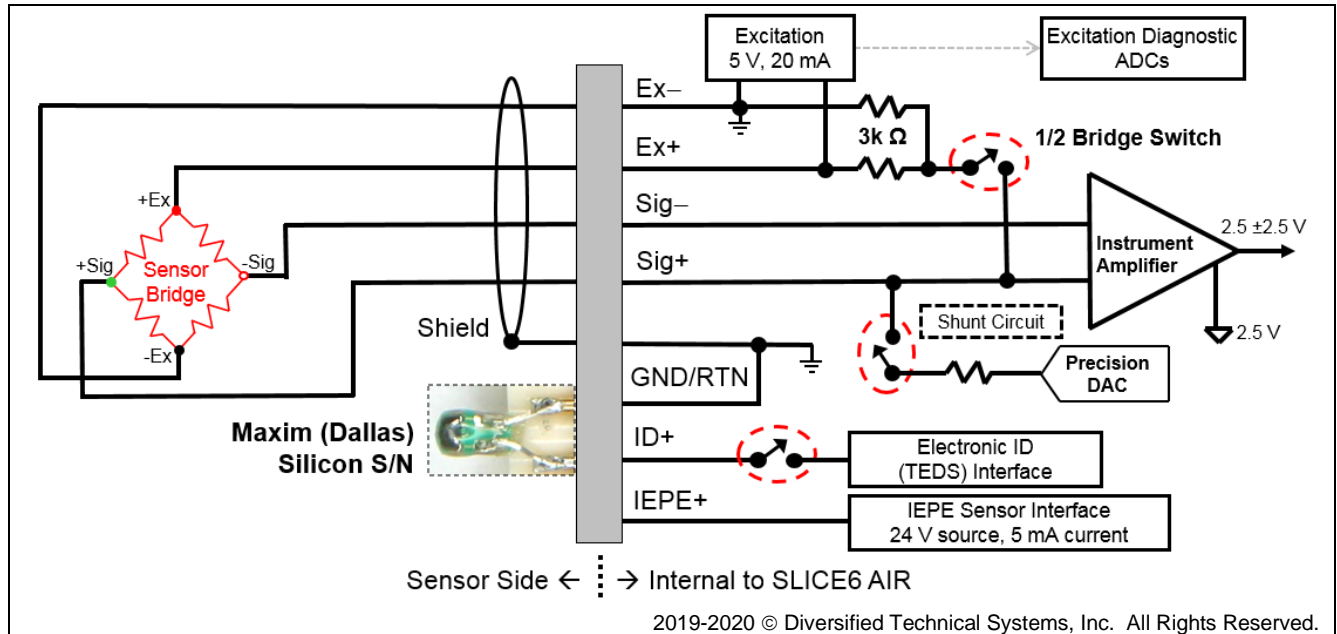
SLICE6 AIR DAS Sensor Interface

Supported Sensor Types

The SLICE6 AIR DAS supports many types of sensors including accelerometers, load cells and pressure sensors. The following general sensor types are supported:

- Full- bridge (4-wire) or half-bridge (3-wire) resistive and piezo-resistive sensors
- IEPE sensors
- Conditioned sensors with 5 V excitation and an output voltage of 0-5 V.

For additional questions regarding supported sensors, please contact DTS and provide the sensor manufacturer and model number, if available. For specific implementation schematics, see Appendix C.

Input Range

The nominal sensor input range for bridge and piezo-resistive sensors is 0-5 V[1] (2.5 V center with respect to -Ex) at a gain of 1. The sensor input range for IEPE sensors is 0.5-23.5 V. At higher gains, the maximum range decreases correspondingly. For example, at a gain of 10, the input range is ±240 mV. (The software will automatically calculate the gain based on the user-specified input range and other sensor parameters.)

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[1] Larger ranges supported with range expander cable. Contact DTS for more information.

Excitation Sources

Bridge excitation sources are fixed and independently current limited at 5 V, 20 mA. IEPE excitation is supported with a constant current of 5 mA with a source voltage of 24 V.

Excitation sources are not enabled until the software initializes the system during diagnostics.

Bridge Completion

Half-bridge emulation for any channel may be selected via software. Half-bridge transducers should be connected to ±Ex and -Sig.

Hardware Filters

Each measurement channel has a fixed-frequency, 50 kHz, 4-pole and an adjustable 5-pole Butterworth anti-aliasing filter supporting 1 Hz-40 kHz. Should you have any questions regarding the best filter option for your application, please contact DTS.

Offset Compensation

Each channel can compensate for a sensor offset of up to 100% of the full-range output of a sensor. The sensor offset is measured and the hardware compensation is adjusted during the diagnostic check. Please see the software manual for additional information.

Electronic Identification (EID)

Each measurement channel supports communication with silicon serial number devices manufactured by Dallas Semiconductor/Maxim Integrated Products (1-wire devices such as DS2401 and DS2431). When an ID chip is connected to the proper pins on the sensor connector, the software can automatically read these devices and correlate the serial number to channel set-up information stored in the sensor database.

Shunt Emulation

The SLICE6 AIR DAS contains a shunt emulation circuit, effectively eliminating the need for conventional shunt resistors to perform shunt checks. When "Emulation" is chosen as the shunt calibration method, the software injects a precisely-calculated current into the sensor to create an expected deflection of the sensor's output. Expected versus actual deflection are compared to validate that the channel is working properly. Please see the software manual for additional information.

System Connector
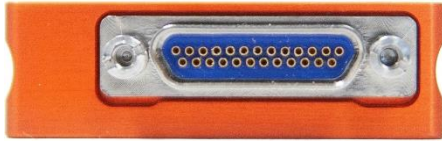
All communications, control signals and input power are provided via the 25-pin, micro-D system connector. Using a SLICE6 AIR Chain Module or other interface, multiple units can be interconnected (daisy-chained) for hundreds of test channels.

Ethernet signals must be connected in series with a maximum cable length of ~10 m. (Cable quality may affect maximum length and performance.) Control signals must be connected in parallel. See Appendix A for pin assignments.

Communication Method

The SLICE6 AIR DAS supports Ethernet PTPv2 communications (IEEE1588). PTP (Precision Timing Protocol) provides standards for precision clock synchronization for measurement and control systems via Ethernet network communications. Timing information is extracted from the network's master clock and used by the SLICE6 AIR DAS to adjust their internal (local) clock, providing precision timing for high channel-count systems with a sampling synchronization better than 10 µs. Communication is enabled after the initialization sequence has completed (~15 s after sufficient power and ON signal is applied). (Note network congestion may slow IP address acquisition.)

Timing Synchronization

System-wide, channel-to-channel, time source synchronization is supported using IRIG-B122, GPS and 1 PPS. Serial data (RS232 or RS422) from an external GPS source can be recorded, and 1 PPS may be used with or without GPS.

Power Management

A good power source is of paramount importance. SLICE6 AIR DAS should be powered from a high-quality power supply. Be sure to consider any power drop due to cable length.

Input Voltage	Power Consumption (on 1588 network)		
	Idle	IEPE off; Armed and Recording	IEPE on; Armed and Recording
9-30 VDC[2]	<1.5 W	<2.7 W	<3.3 W

The SLICE6 AIR DAS does not contain an internal battery and must be connected to external power at all times for operation. Without external power applied, the SLICE6 AIR DAS is in a power off state.

When the unit is on (sufficient power and ON signal applied), power consumption depends largely on the connected sensor load and whether the unit is armed.

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[2] Commercially-available 9 V batteries should not be used to power the SLICE6 AIR DAS.

Power-up and Power-down Procedures

When sufficient power is applied, the SLICE6 AIR DAS will power up (on, idle and communication enabled) if an ON signal is present. With power applied but the ON signal absent, the unit is off. Power up (On state) occurs in ~15 s, after which communication is enabled.

Power down of the DAS is immediate upon removal of either the ON signal or external power. Wait ~30 s before reinitializing the DAS.

LEDs

The SLICE6 AIR DAS has a two LED indicators that show system and power status.

Status (STS) LED

The status LED indicates communication and arm status and is red, green or blue. At system power up, the LED cycles from red to green to blue followed immediately by the power LED boot-up sequence.

Action	Result
Power up	🔴🟢🔵
Communicating with PC	🟢 (blinking)
Recording Data (Recorder Mode) -or- Armed (Circular Buffer) -or- Real-Time Streaming	🟢
Armed in Recorder Mode	🔵
Unit received Event	🔴
Idle	⚫

- When the unit is not armed, the status LED will blink green when handling a command from the PC.
- For Recorder Mode:
    - When the unit is first armed, the LED will go solid blue to indicate that it is waiting for the START RECORD signal but not taking data.
    - When it receives the START RECORD signal, the LED will turn green to indicate that it is actively recording data.
    - The LED will turn off when data collection has completed.
    - If an EVENT signal is received while the unit is recording data, the LED will turn red and then turn off when data collection has completed.
- For Circular Buffer Mode:
    - When the unit is armed, the LED will go solid green to indicate that it is collecting data and waiting for the EVENT signal.
    - When an EVENT signal is received the LED will turn red and then turn off when data collection has completed.

Power (PWR) LED

The power LED is red, green or blue.

Action	Result
Power up	🔴🟢🔵
Connected to host	🔵
Power up; not connected to host	🟢
Power fault (input power out of range)	🔴

- At power up, the LED cycles from red to green to blue immediately after the status LED has completed its boot-up sequence.
- When connected to host, the LED will turn blue.
- At power up but not connected to host, the LED will turn green.
- When input power is too high or too low, the LED will turn red.

Data Memory Size

With 15 GB of flash memory available for data storage, the SLICE6 AIR DAS can record ~52 minutes of data at the maximum sampling rate (6 channels at 400,000 sps). Since the recording capacity is very large, it is generally best to limit sampling rates and event durations to the minimum necessary to avoid large and cumbersome data files. Large files take longer to download and may also be time-consuming to post-process or difficult to share. Use of the Region of Interest (ROI) download can save a great deal of time if implemented properly.

Sampling Rates
User-selectable sampling rates are available from 50 sps to 400,000 sps.

# of Channels*	Maximum Sampling Rate (per channel)
6	400,000 samples per second (sps) via record in place
	20,000 sps via data streaming

* All channels are recorded even if they are not programmed.

With 15 GB available for data storage, there are 7,500 M samples available (1 sample = 2 bytes). To determine the maximum recording time, divide the number of samples by the product of the sampling rate and the number of channels.

$$\frac{7{,}500{,}000{,}000}{\text{Sampling rate (sps)} \ \ X \ \ \text{\# of channels}} = \text{\# of seconds}$$

Example: 6 channels of data at 400,000 sps

$$\frac{7{,}500{,}000{,}000}{400{,}000 \ \ X \ \ 6} = 3{,}125 \text{ sec (52 minutes)}$$

Circular Buffer Limitations
Due to the nature of flash memory, the system cannot be armed in *Circular Buffer* mode indefinitely. To determine the maximum time available, use the equation below:

$$0.8 \ * \ \text{recording time} \ = \ \text{maximum time available in } \textit{Circular Buffer} \text{ mode}$$

Example: $0.8 \ * \ 3{,}125 \text{ sec} = 2500 \text{ sec (41 minutes)}$

In this example, the test must occur within 41 minutes, after which time the unit stops recording data.

Basic Care and Handling

SLICE6 AIR systems are precision devices designed to operate reliably in dynamic testing environments. Though resistant to many environmental conditions, care should be taken not to subject the units to harsh chemicals, submerge it in water, or drop it onto any hard surface.

WARNING:

Electronic equipment dropped from desk height onto a solid floor may experience up to 10,000 g. Under these conditions, damage to the exterior and/or interior of the unit is likely.

Your SLICE6 AIR DAS module is supplied with calibration data from the factory. DTS recommends annual recalibration to ensure that the unit is performing within factory specifications. The SLICE6 AIR DAS is not user-serviceable and should be returned to the factory for service or repair.

Shock Rating
Each SLICE6 AIR DAS is rated for 500 g, 3 ms half-sine duration, in all axes.

Mounting Considerations
SLICE6 AIR equipment should be bolted securely to the test article or dynamic testing device to provide the best shock protection. Mounting methods and hardware selection should be carefully calculated to withstand expected shock loading and facilitate proper grounding. Check bolt tightness periodically to ensure that the unit is securely fastened to the testing platform.

DTS strongly recommends that all equipment be properly grounded to minimize any risk of data noise due to high-current transients. The test article or dynamic testing device should be connected to earth ground. SLICE6 AIR equipment should be grounded to each other and bolted to the test article. DTS recommends checking continuity between the enclosures of each unit to confirm resistance readings of <1 ohm.

Thermal Considerations
The SLICE6 AIR DAS is a low power device and it is unlikely that self-heating will be an issue in real-world testing if proper mounting methods are observed. Never mount the unit to a thermally non-conductive surface like wood or plastic. ALWAYS use SLICE6 AIR DAS with a heat sink if you are not mounting the system to a structure that will serve this purpose. Should you have any questions about using SLICE in your environment, please contact DTS.

Environmental Rating

The SLICE6 AIR DAS is IP65 rated:

　　　　　　6 (solid ingress) = totally protected against dust;
　　　　　　5 (liquid ingress) = protected against low pressure water jets from
　　　　　　　　　　　　　　　　　any direction.

Care should be taken to prevent prolonged exposure to any potentially harmful environment. Units should be cleaned, dried and inspected after exposure to any environment that could cause damage.

Software

DataPRO software is used with the SLICE6 AIR DAS. PC specifications are:

- Windows 7 and later (32- and 64-bit versions are supported)
- Microsoft .NET Runtime version 4.5.2
- MS Access ODBC drivers (usually included with Microsoft Office)
- i5 processor minimum; i7 processor recommended
- 8 GB RAM minimum; 16 GB RAM recommended (more RAM is important for high channel counts and longer/higher sample rates)
- 1 GB disk space for software plus additional storage for test data
- 1366 x 768 minimum screen resolution; 1920 x 1080 recommended

Additionally, DTS recommends a network that supports gigabit Ethernet (GbE).

Data Collection Concepts

The discussion below provides a general introduction to data collection. Please see the software manual for a detailed discussion and implementation specifics.

The SLICE6 AIR DAS is a standalone data logger. Once the system is armed, the PC can be disconnected if desired. After receiving a Start Record or Event signal, SLICE autonomously collects data, storing it to flash memory with no user interaction. After the test, the user reconnects the PC to download the data.

There is also a real-time mode in the control software that allows the user to check channel inputs on an oscilloscope-looking screen. (This data can be logged.)

Data Collection Modes

The SLICE6 AIR DAS supports 4 data collection modes: Circular Buffer, Recorder, Hybrid Recorder, and Continuous Recorder. (Note: The software cannot simultaneously display the data while the system is recording.)

Circular Buffer Mode

Using Circular Buffer mode, the user can program the SLICE6 AIR DAS to record pre- and post-Event data. Time Zero (T=0) is marked when the Event signal is received.

Due to the nature of flash memory, the system cannot be armed in Circular Buffer mode indefinitely. when using Circular Buffer mode.

Recorder Mode

Data collection begins when a Start Record signal is received and continues for the time specified in the test set-up. If an Event signal is received sometime after the Start Record signal, this is marked as T=0.

Hybrid Recorder Mode

Data collection begins when a Start Record signal is received and continues until the unit receives an Event signal. The unit then records for the post-Event time specified by the user. The Event signal marks the T=0 point and all data recorded is available for download.

Continuous Recorder Mode

Data collection begins when a Start Record signal is received and continues until the Start Record signal is released. The unit will then re-arm for another event. The LEDs on the unit will flash blue slowly then rapidly, and then the status LED will become solid blue, indicating the unit is fully armed. The unit will continue to record new events until it records the number of events specified by the user. If an Event signal is received after the unit has re-armed, the unit will disarm and no longer attempt to re-arm.

NOTE:

An event or trigger signal applied anywhere in the SLICE6 AIR DAS chain is distributed throughout the chain.

Data Streaming

Real-time data streaming up to 20,000 sps using IRIG Chapter 10 or TmNS is supported via DataPRO software. Please see the software manual for additional information, including how to create a test set-up.

Start Record and Event Initiation

The SLICE6 AIR DAS supports multiple methods of initiating Start Record and Event signals. Typically, Start Record and Event are initiated via an external hardware interface that provides a discrete contact closure (CC) signal to initiate recording (Recorder mode) or mark T=0 (Circular Buffer mode).

All SLICE6 AIR DAS data collection modes support multi-event arming. A unit armed in a multiple-event mode will re-arm when an event completes. The unit will stop re-arming when the number of events specified by the user has been recorded.

The SLICE6 AIR DAS can be placed in an auto-arm mode that will cause the unit to arm automatically when the power is cycled. This available with any available data collection mode.

Additionally, Circular Buffer mode supports level triggering. This method continuously samples the incoming data and begins data collection if the data is above or below predefined levels. For example, it might be useful to begin data collection when a certain accelerometer experiences a force above 200 g. Using level trigger and Circular Buffer mode, SLICE6 AIR DAS can support this or any level-trigger signal on any channel.

> **CAUTION:**
>
> **Level trigger is NOT recommended when SLICE6 AIR DAS is used for destructive testing.**

Finally, if the SLICE6 AIR DAS remains connected to the PC during data collection, the control software can be used to initiate data collection.

The table below summarizes the data collection modes and event/triggering options.

	Supports T=0 Start Record	**T=0 methods supported**	**Data record window**
Circular Buffer	Yes	Hardware (CC), software (PC) or level trigger	User-defined pre- and post- T=0 durations
Recorder	Yes	Hardware (CC), software (PC) or level trigger	User-defined duration after T=0
Hybrid Recorder	Yes	Hardware (CC), software (PC) or level trigger	User-defined post-Event duration
Continuous Recorder	Yes	Hardware (CC), software (PC), or level trigger	User-defined duration after T=0, with recording multiple events possible

| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

RoHS
Manufacture/fabricate to meet the EU RoHS Directive 2011/65/EU and RoHS Annex II phthalates

REV	ZONE	DESCRIPTION	DATE	BY

SENSOR CONNECTOR PIN ASSIGNMENTS

PIN	SIGNAL
1	-SIG_CH1
2	+SIG_CH1
3	GND/SHIELD
4	-SIG_CH2
5	+SIG_CH2
6	GND/SHIELD
7	-SIG_CH3
8	+SIG_CH3
9	-ID/-IEPE_CH3
10	-ID/-IEPE_CH4
11	+SIG_CH4
12	-SIG_CH4
13	GND/SHIELD
14	+SIG_CH5
15	-SIG_CH5
16	GND/SHIELD
17	+SIG_CH6
18	-SIG_CH6
19	-EX_CH1
20	+IEPE_CH1
21	GND/SHIELD
22	-EX_CH2
23	+IEPE_CH2
24	GND/SHIELD
25	-EX_CH3
26	+IEPE_CH3
27	GND/SHIELD
28	+IEPE_CH4
29	-EX_CH4
30	GND/SHIELD
31	+IEPE_CH5
32	-EX_CH5
33	GND/SHIELD
34	+IEPE_CH6
35	-EX_CH6
36	+EX_CH1
37	+ID_CH1
38	-ID/-IEPE_CH1
39	+EX_CH2
40	+ID_CH2
41	-ID/-IEPE_CH2
42	+EX_CH3
43	+ID_CH3
44	+ID_CH4
45	+EX_CH4
46	-ID/-IEPE_CH5
47	+ID_CH5
48	+EX_CH5
49	-ID/-IEPE_CH6
50	+ID_CH6
51	+EX_CH6

SYSTEM CONNECTOR PIN ASSIGNMENTS

PIN	SIGNAL
1	+PWR
2	+PWR
3	+PWR
4	GND
5	GND
6	TX_2_P
7	TX_2_N
8	RX_2_P
9	RX_2_N
10	TX_1_P
11	TX_1_N
12	RX_1_P
13	RX_1_N
14	#ON
15	#START
16	#EVENT
17	STATUS
18	UART_RX_P
19	UART_RX_N
20	UART_TX_P
21	UART_TX_N
22	GND
23	GND
24	IRIGB
25	PPS

SENSOR CONNECTOR 51-PIN 3-ROW MICRO-D

2X R0,50 [0.020]
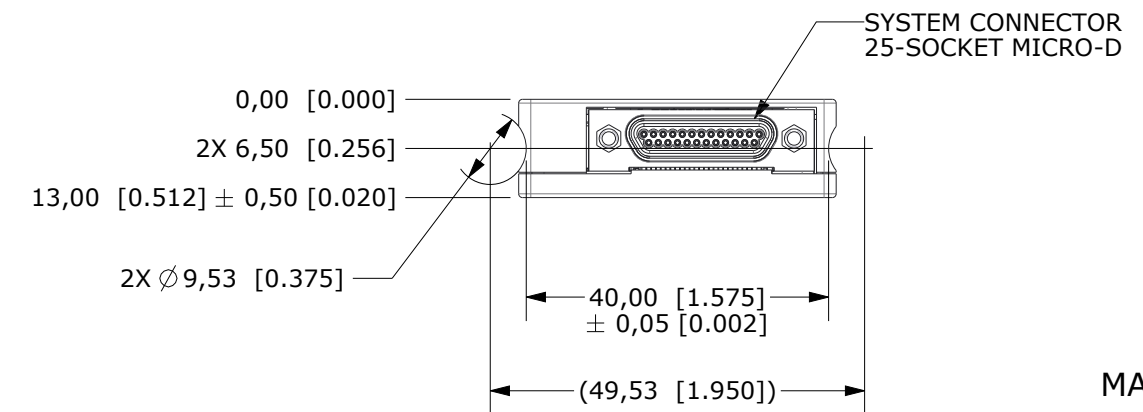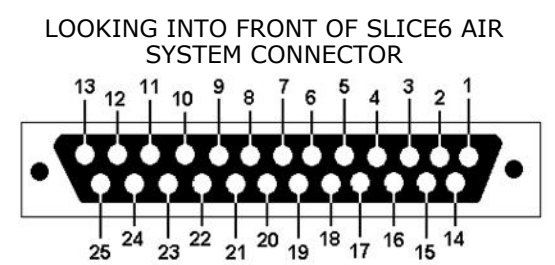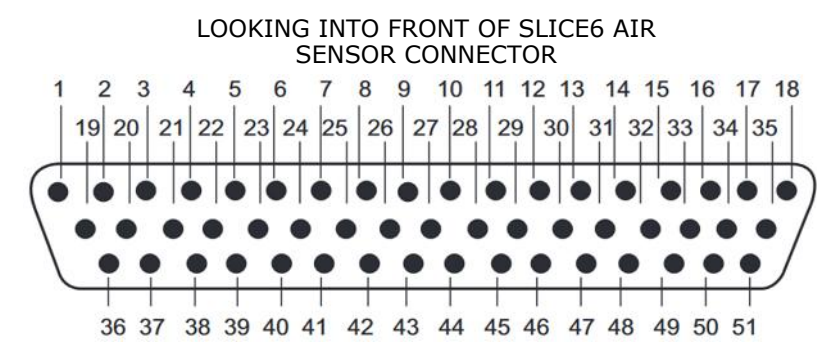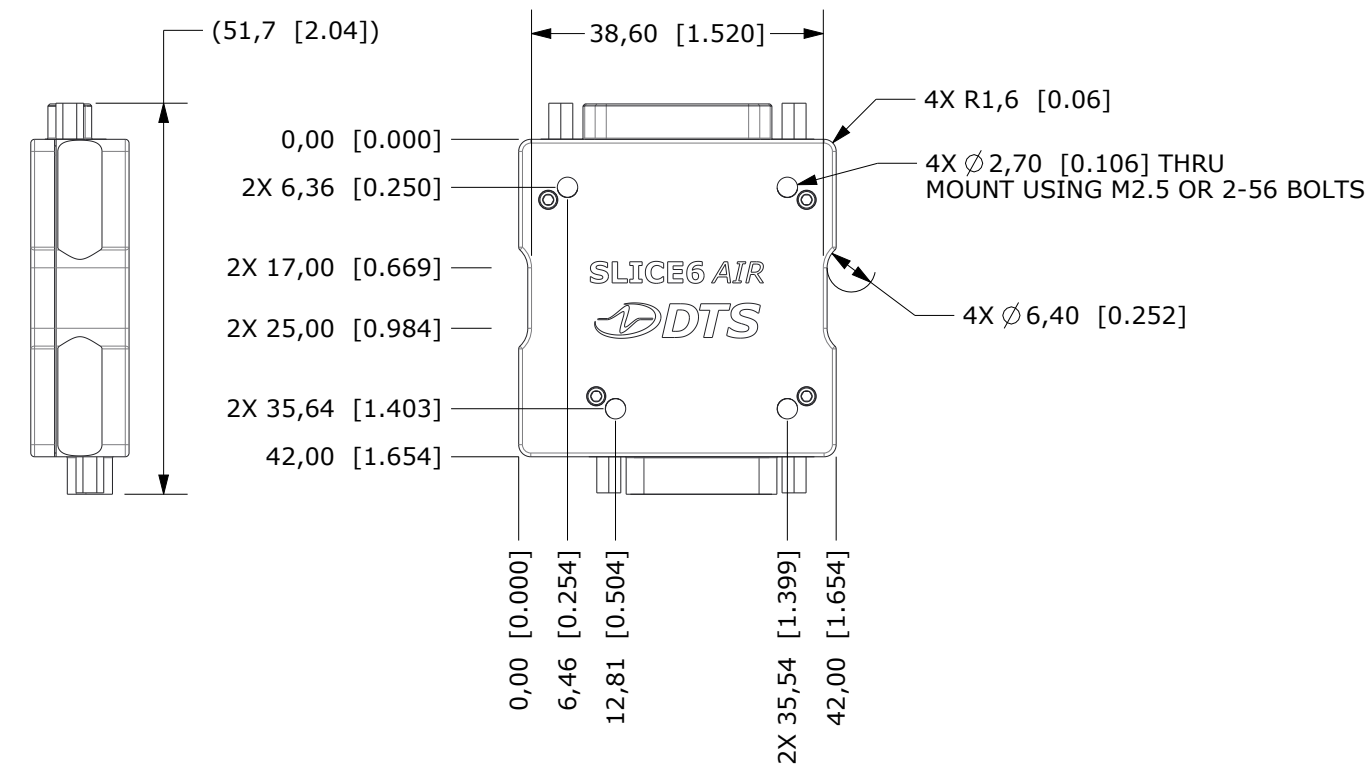
SERIAL NUMBER

STATUS LED

POWER LED
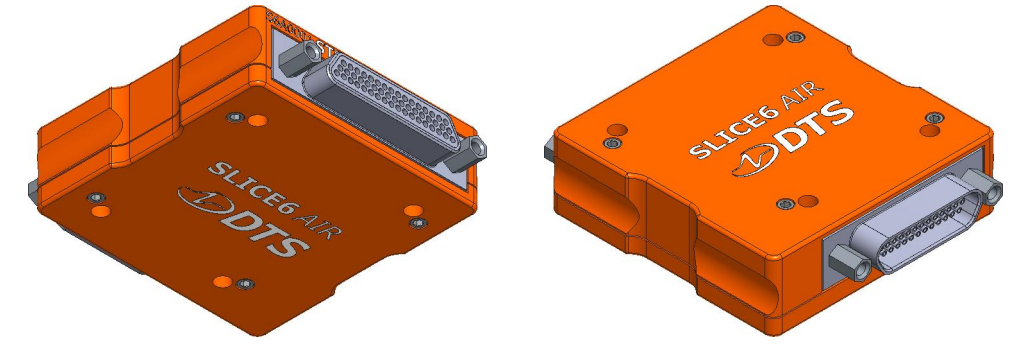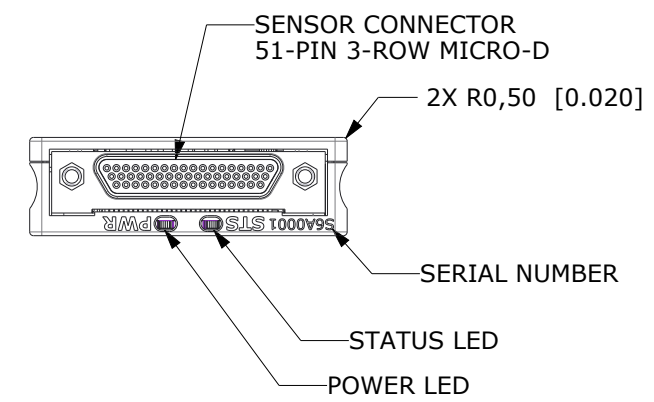
--- CONNECTOR MATE RECOMMENDATIONS ---

51-Socket Sensor Connector:
Omnetics MMDS-513-N-02-SS (Solder Cup)
Omnetics MMDS-513-N-02-WD** (Discrete Wire)

25-Pin System Connector:
Omnetics MMDP-025-N-02-SS (Solder Cup)
Omnetics MMDP-025-N-02-WD** (Discrete Wire)

** See ordering options on manufacturer website for wire gage, type, color, and length options

(51,7 [2.04])

38,60 [1.520]

4X R1,6 [0.06]

0,00 [0.000]
2X 6,36 [0.250]

4X ∅2,70 [0.106] THRU
MOUNT USING M2.5 OR 2-56 BOLTS

2X 17,00 [0.669]

SLICE6 AIR
DTS

2X 25,00 [0.984]

4X ∅6,40 [0.252]

2X 35,64 [1.403]

42,00 [1.654]

0,00 [0.000]
6,46 [0.254]
12,81 [0.504]
2X 35,54 [1.399]
42,00 [1.654]

LOOKING INTO FRONT OF SLICE6 AIR SENSOR CONNECTOR

LOOKING INTO FRONT OF SLICE6 AIR SYSTEM CONNECTOR

SYSTEM CONNECTOR 25-SOCKET MICRO-D

0,00 [0.000]
2X 6,50 [0.256]
13,00 [0.512] ± 0,50 [0.020]

2X ∅9,53 [0.375]

40,00 [1.575] ± 0,05 [0.002]

(49,53 [1.950])

MASS = 50 ± 5 GRAMS

DTS
SEAL BEACH, CA 90740
562-493-0158
www.dtsweb.com

DESCRIPTION:
SLICE6 AIR,
MOUNTING DRAWING

MATERIAL:
6061-T6 ALUMINUM W/
INTERNATIONAL ORANGE ANODIZE

DTS P/N:

REV: 0

UNLESS OTHERWISE SPECIFIED:

DRAWN: G NEWTON

UNITS = MM [INCH]
DIMENSIONAL TOLERANCES ±.254 [0.010"]
INTERPRET PER ASME Y14.5. DO NOT SCALE.

| DATE: 2019-02-01 | SIZE: B | SCALE: 1:1 | SHEET: 1 OF 1 |

MDL:
DTS_SLICE6_AIR

Ethernet Chaining

To share Ethernet communications, chain SLICE6 AIR DAS modules together using the methodology in the table below.

SLICE6 AIR DAS #1		SLICE6 AIR DAS #2		SLICE6 AIR DAS #3	
Function	**Pin**	**Function**	**Pin**	**Function**	**Pin**
		TX_2_P	6	RX_1_P	12
		TX_2_N	7	RX_1_N	13
		RX_2_P	8	TX_1_P	10
		RX_2_N	9	TX_1_N	11
TX_2_P	6	RX_1_P	12		
TX_2_N	7	RX_1_N	13		
RX_2_P	8	TX_1_P	10		
RX_2_N	9	TX_1_N	11		

Accessories/Support Equipment

10400-00060: Power supply; 15 VDC, 4 A (90-240 VAC in, LEMO termination) (PS-05)
13006-90450: SLICE6 AIR Bridge Plug
13006-90460: SLICE6 AIR Chain Module[3]
13006-9047x: Cable, SLICE6 AIR DAS extension (26-pin to 26-socket)
13006-90480: SLICE6 AIR Interface Device
13006-90510: SLICE6 AIR Ethernet Return Plug[4]
13006-90520: SLICE6 AIR Interface Device and Cable Kit
99000-00418-R: Nut driver, precision, 3/16" hex; 6-1/8"L

(x = multiple lengths available)

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[3] To connect individual chain modules (P/N 13006-90460) to each other, the standoffs on the socket side must be removed. Retain the screws for future use. (They are required to use/secure a return plug P/N 13006-90510.)

Appendix B: Hardware Configuration Specifications

SLICE6 AIR DAS are typically delivered with a default IP address as follows:

IP address	192.168.4.**xx** where **xx** is based on the last two digits of the S/N; for example: S/N S6A00**47** = 192.168.4.**47** S/N S6A02**33** = 192.168.4.**33**
Netmask	255.255.248.0

The calibration data for your equipment identifies the IP address as shipped from the factory. If the calibration data is not available, try using the default address described in the table above.

If you need information on the specifics of your equipment, please submit a request through the DTS Help Center web portal (support.dtsweb.com) and include the serial number(s) of the equipment and parameters you are asking about.

Using the *SLICE Network Configuration Utility*

The *SLICE Network Configuration Utility* (available from the DTS Help Center) can be used to view or change the unit's IP address.

Use of the utility requires a network that supports multicast and the workstation running the utility must also allow it. Confirm that:

- The PC's Ethernet properties are not using anything that can block multicast; e.g., *DNE LightWeight Filter*.
- The Windows Firewall will allow multicast traffic.
- Any third-party anti-virus software will allow multicast traffic.

1. Open the *SLICE Network Configuration Utility*.

2. The software will immediately look for all attached devices and list them in the table. (You may also click [Discover] to refresh the list.)
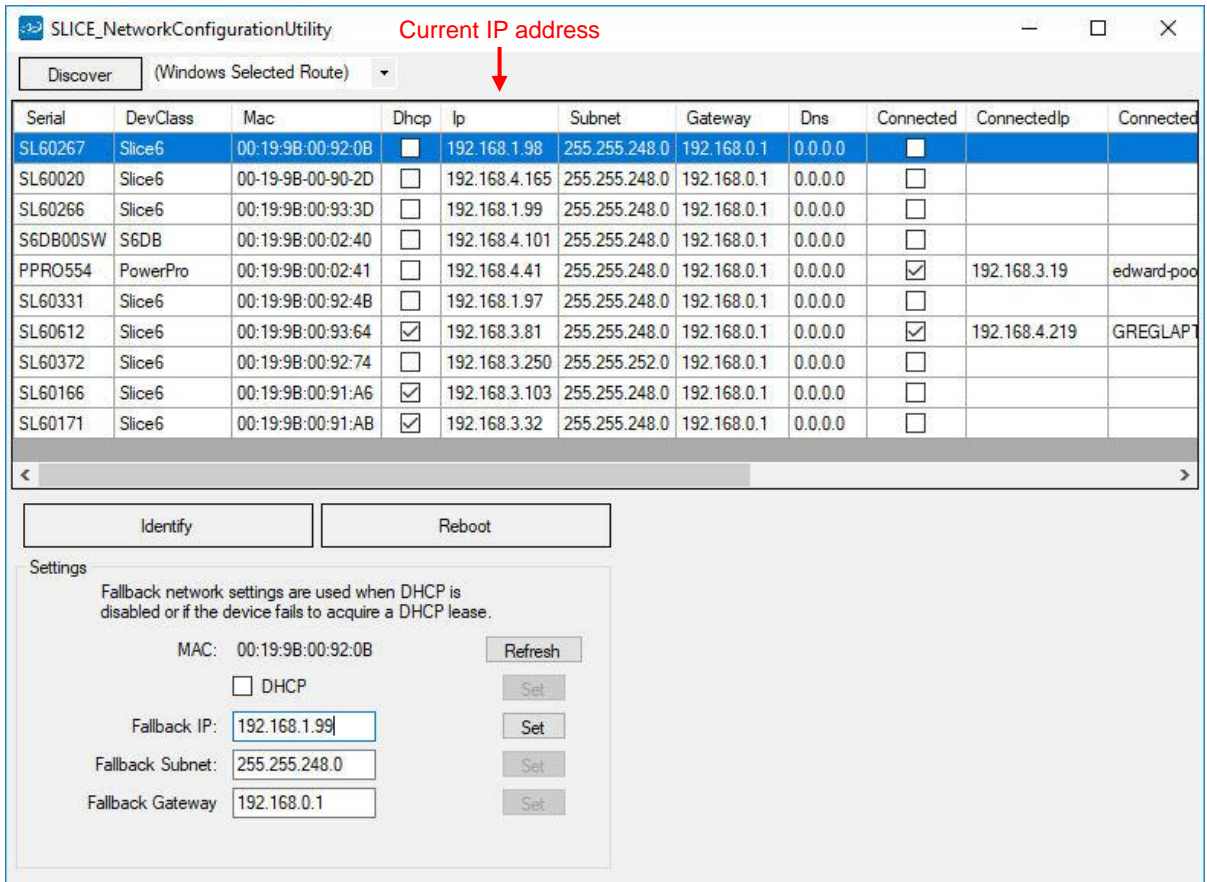
Note: Clicking on [Identify] for any selected device will cause the unit's LED to flash.

3. Select the SLICE6 device from the list. (A SLICE6 DAS is selected in the image above.) The device Settings are shown at the bottom of the window. The current IP address may or may not match the fallback IP address, depending on whether DHCP is selected.
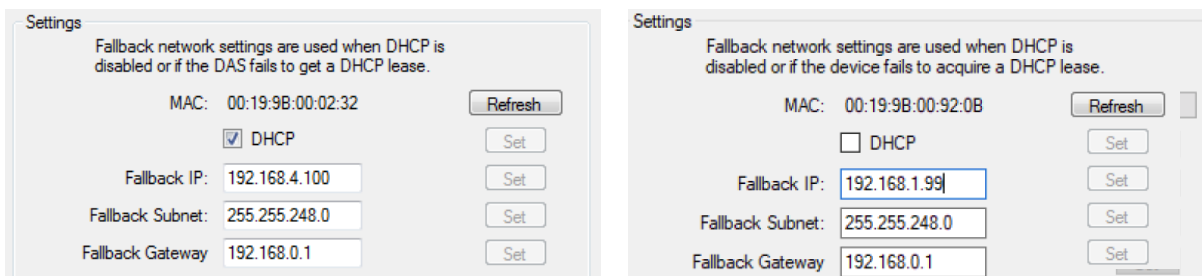
4. To enable DHCP, select the check box then select [Set]. Proceed to step 7.

Settings
Fallback network settings are used when DHCP is
disabled or if the device fails to acquire a DHCP lease.
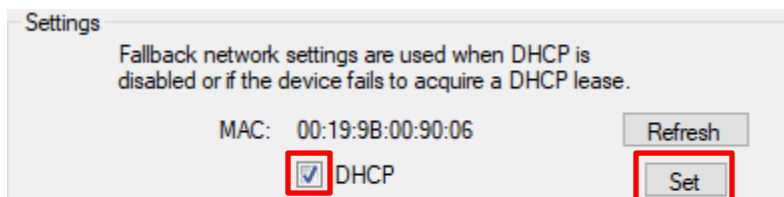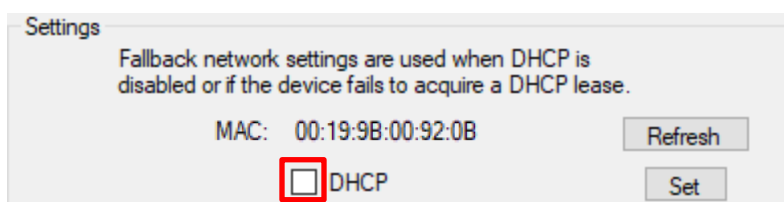
MAC: 00:19:9B:00:90:06   Refresh
☑ DHCP   Set

5. To disable DHCP and manually enter IP address and other information, unselect the check box.

Settings
Fallback network settings are used when DHCP is
disabled or if the device fails to acquire a DHCP lease.

MAC: 00:19:9B:00:92:0B   Refresh
☐ DHCP   Set

6. Enter the new parameters and select [Set] for each item updated. (Note: The MAC address is not user configurable.)

Settings
Fallback network settings are used when DHCP is
disabled or if the device fails to acquire a DHCP lease.
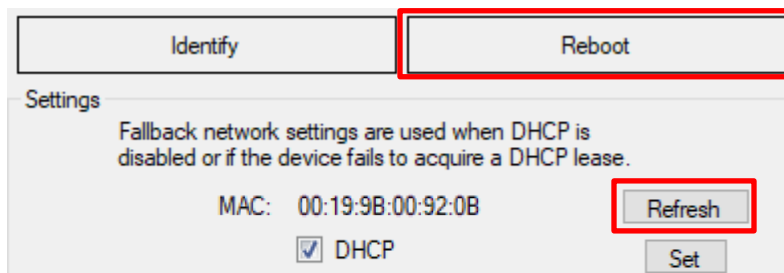
MAC: 00:19:9B:00:92:0B   Refresh
☐ DHCP   Set

Fallback IP: 192.168.6.102   Set
Fallback Subnet: 255.255.255.0   Set
Fallback Gateway   192.168.0.254   Set

7. Select [Refresh] to view the settings (optional), then [Reboot] the device.

Identify   Reboot

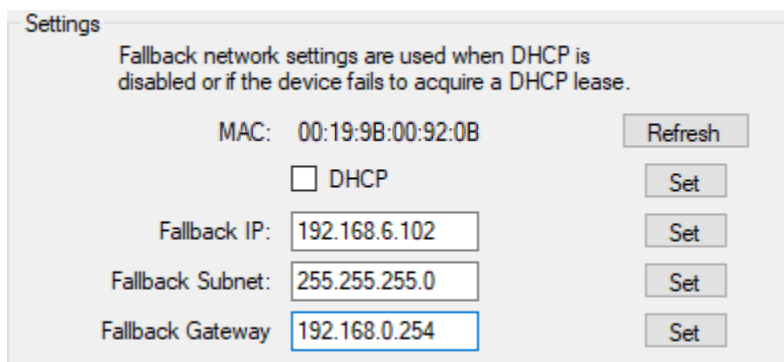Settings
Fallback network settings are used when DHCP is
disabled or if the device fails to acquire a DHCP lease.

MAC: 00:19:9B:00:92:0B   Refresh
☑ DHCP   Set

Appendix C: Sensor Interface Wiring Diagrams

Feature Overview

1) **Individual Excitation Sources**
2) **Gains from 1 to 1,280**
3) **Adjustable Butterworth Filters**
4) **Half-Bridge Completion**
5) **ESD, EMI and RFI Protection**
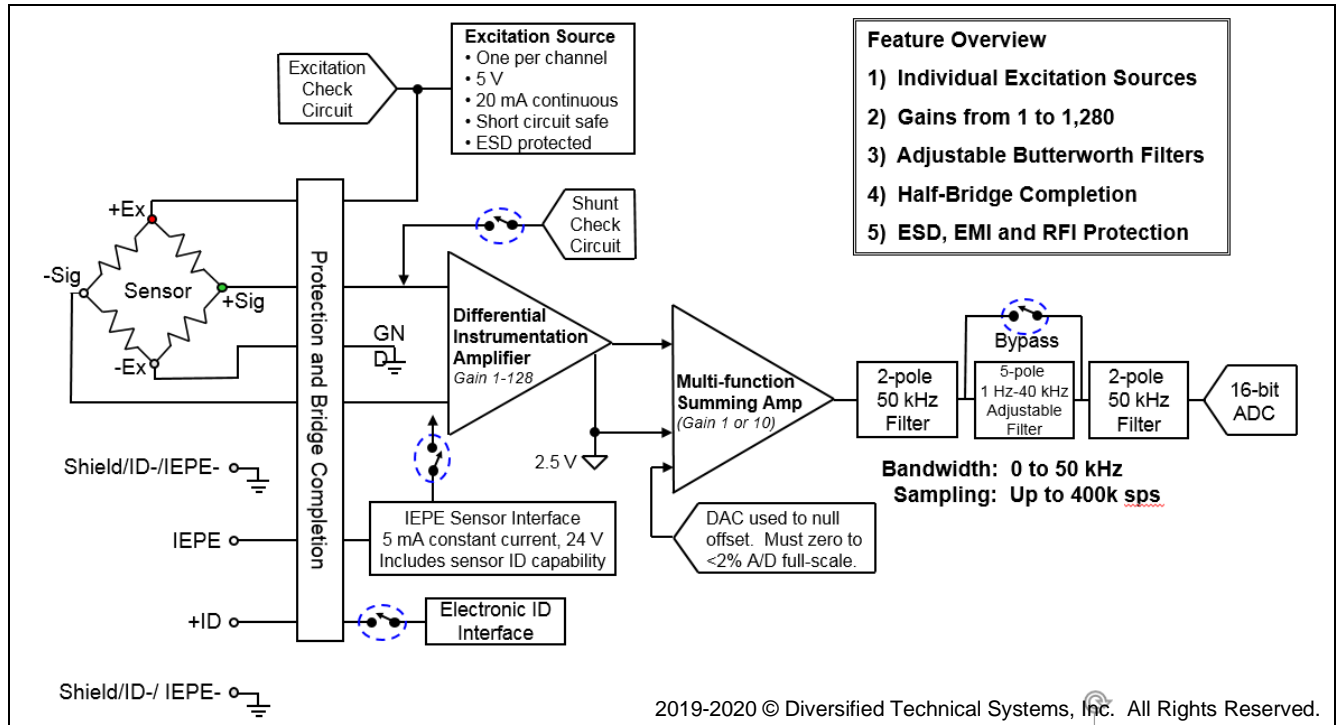
SLICE6 AIR Sensor Channel Architecture

Sensor Settings
- Proportional to Excitation = No
- Sensitivity = 1.000 mV/EU
- Desired Range = 2000
- Units = mV
- Sensor Type = Full Bridge
- Remove Offset = No
- Zero Type = Absolute Zero

Bridge Input

Signal Generator (floating)

Sensor Settings
- Proportional to Excitation = No
- Sensitivity = 1.000 mV/EU
- Desired Range = 2000
- Units = mV
- Sensor Type = Half-Bridge
- Remove Offset = No
- Zero Type = Absolute Zero

Analog notes:
- Signal generator must float with respect to ground or alternate connection method must be used.

Excitation 5 V, 20 mA → Excitation Diagnostic ADCs

Ex−
Ex+   3k Ω   **1/2 Bridge Switch**
Sig−
Sig+   **Instrument Amplifier** 2.5 ±2.5 V
                        2.5 V
Shunt Circuit
GND/RTN   **Precision DAC**
ID+   Electronic ID (TEDS) Interface
IEPE+   IEPE Sensor Interface 24 V source, 5 mA Current

Sig Gen (floating) 4.0 V p-p

Maxim (Dallas) Silicon S/N

Sensor Side ← → Internal to SLICE6 AIR

Signal Generator (grounded)

Sensor Settings
- Proportional to Excitation = No
- Sensitivity = 1.000 mV/EU
- Desired Range = 2000
- Units = mV
- Sensor Type = Half-Bridge
- Remove Offset = No
- Zero Type = Absolute Zero

Analog notes:
- Signal generator must be grounded.
- Add 2.5 V offset the signal generator output.

Excitation 5 V, 20 mA → Excitation Diagnostic ADCs

Ex−
Ex+   3k Ω   **1/2 Bridge Switch**
Sig−
Sig+   **Instrument Amplifier** 2.5 ±2.5 V
                        2.5 V
Shunt Circuit
GND/RTN   **Precision DAC**
ID+   Electronic ID (TEDS) Interface
IEPE+   IEPE Sensor Interface 24 V source, 5 mA Current

Sig Gen (grounded) 4.0 V p-p (add 2.5 V offset to signal)

Maxim (Dallas) Silicon S/N

Sensor Side ← → Internal to SLICE6 AIR

Strain Gage (2-wire)

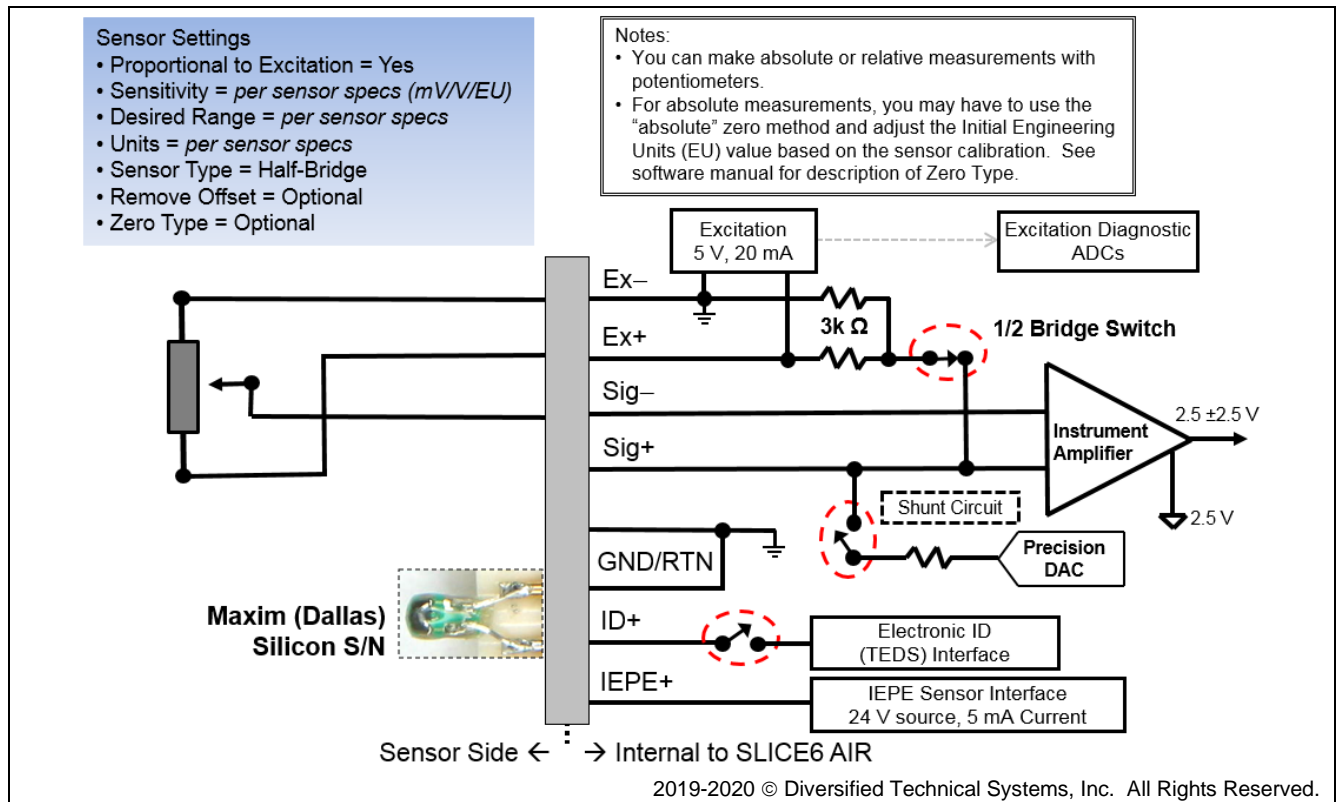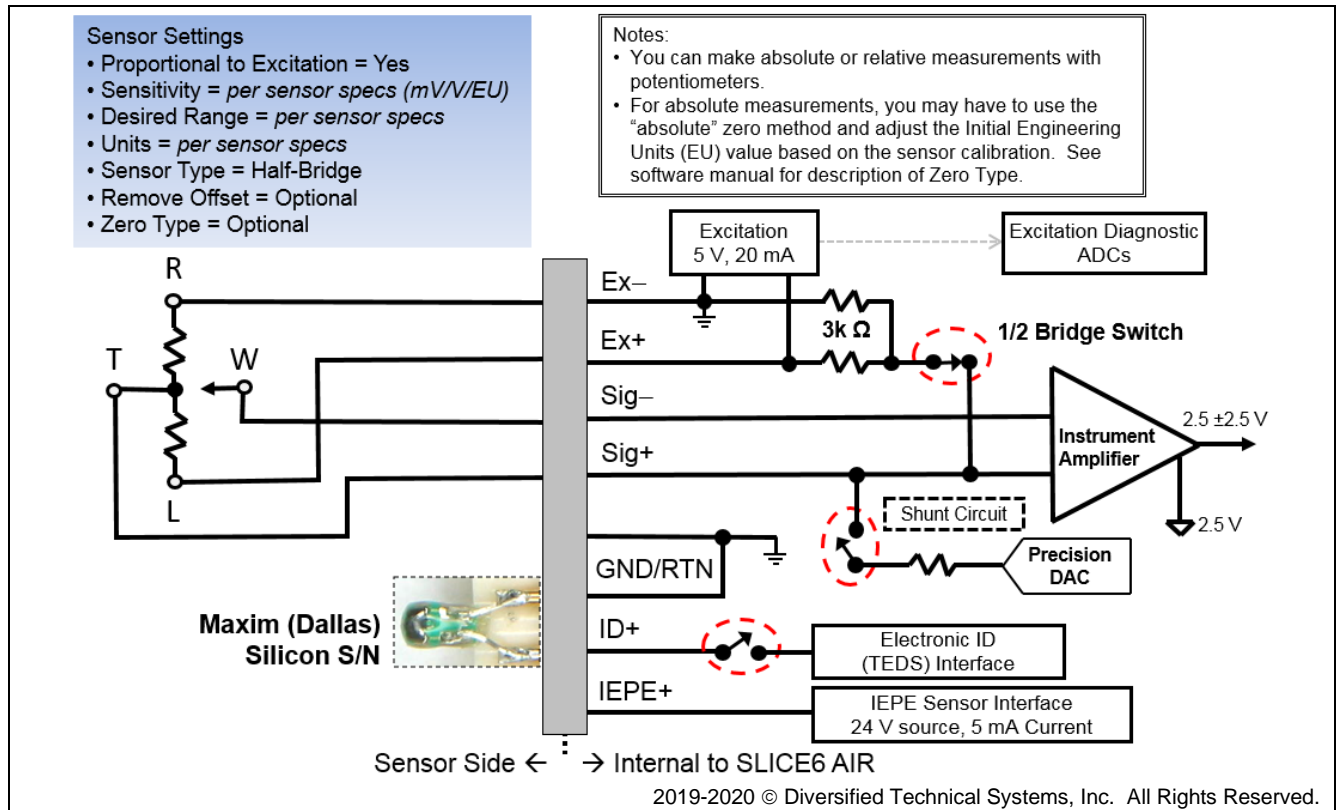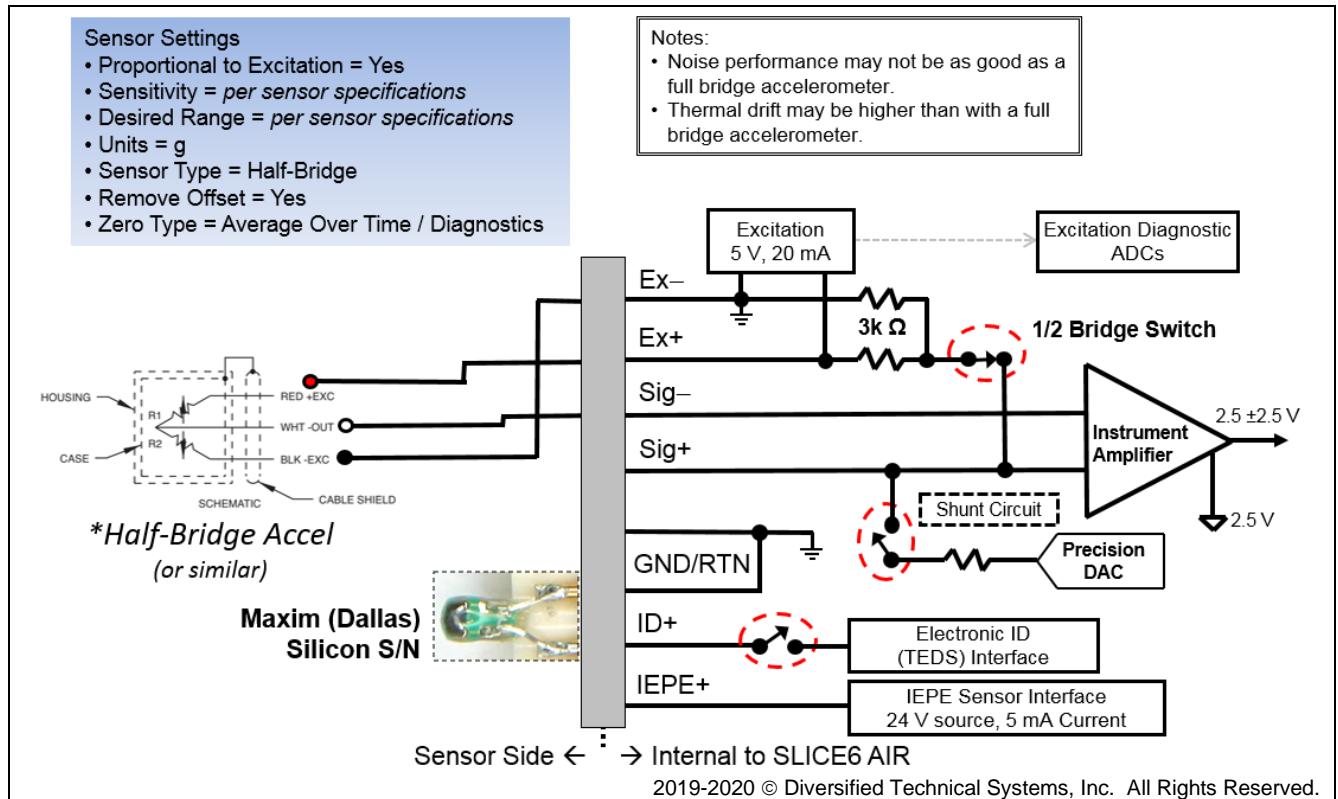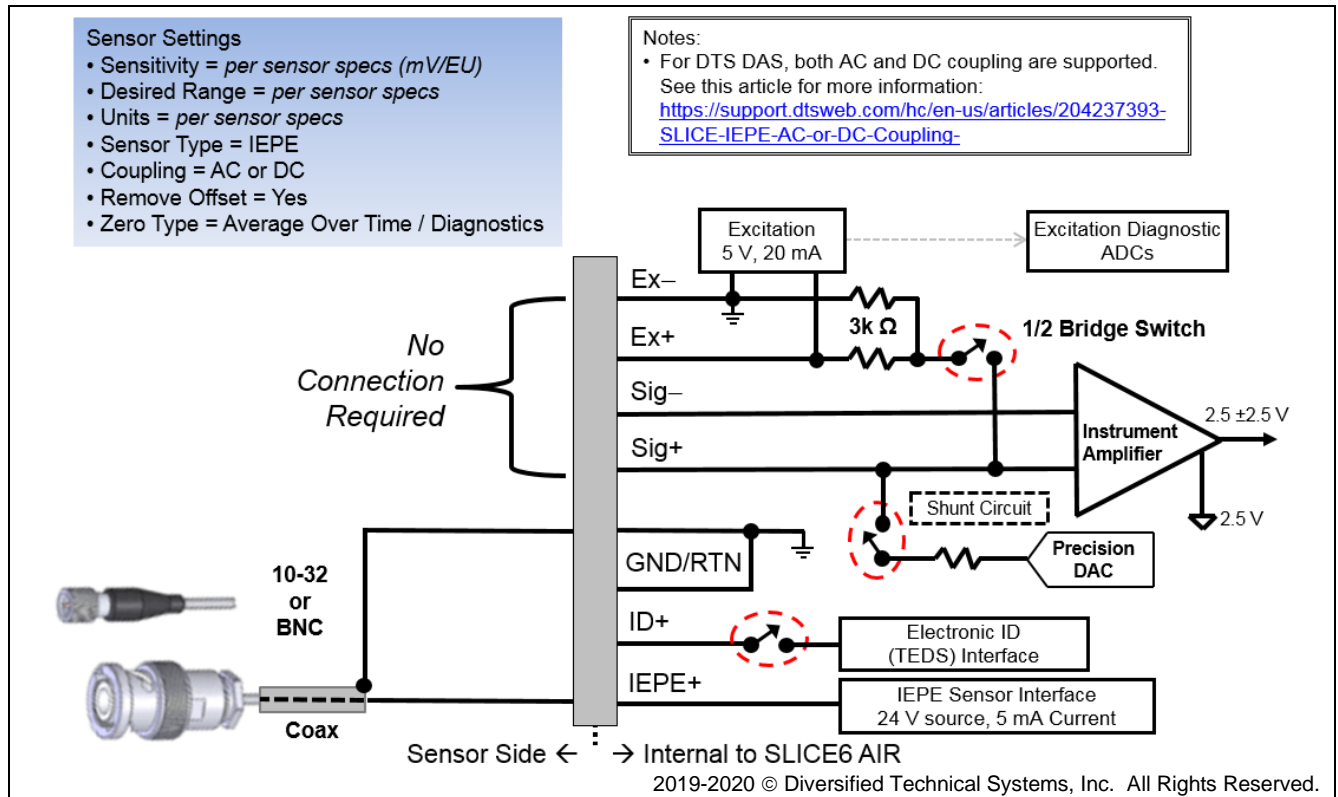**Strain Gage (3-wire)**
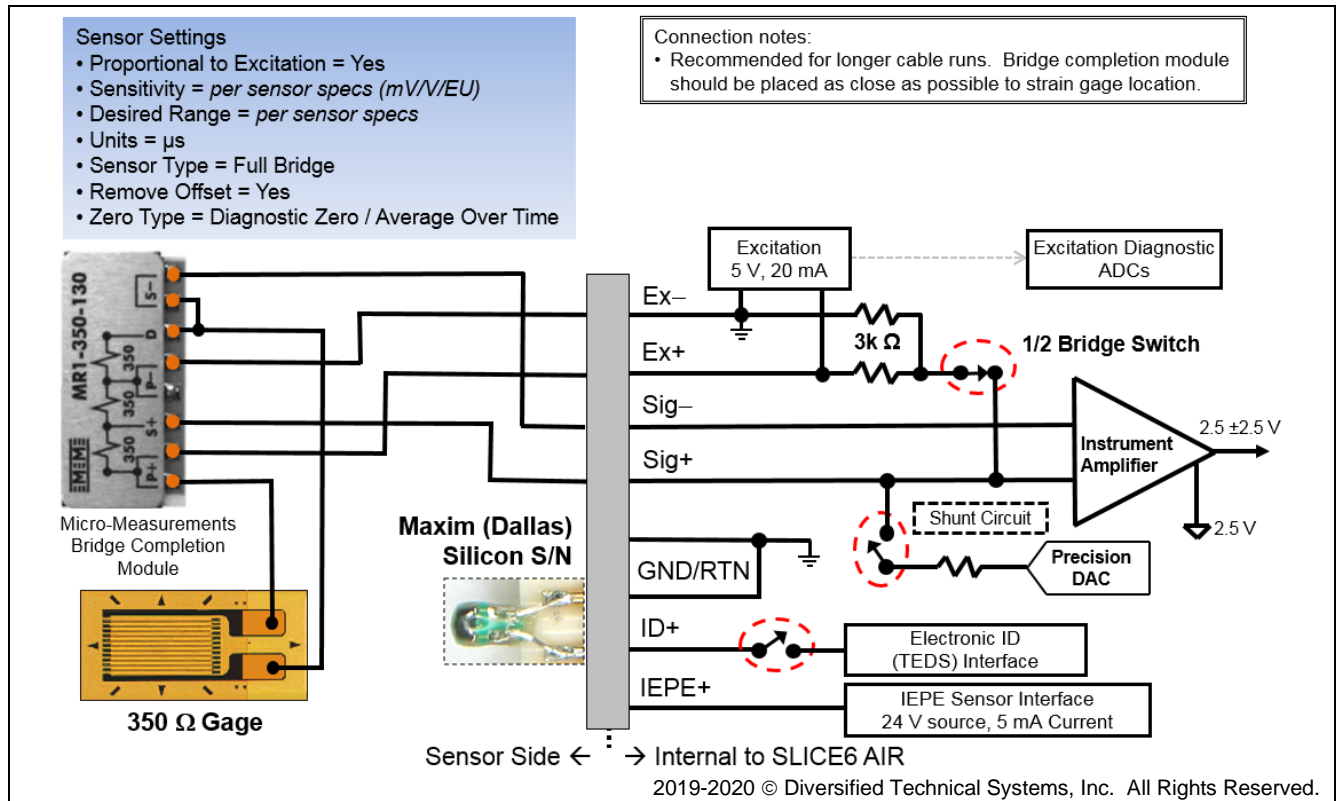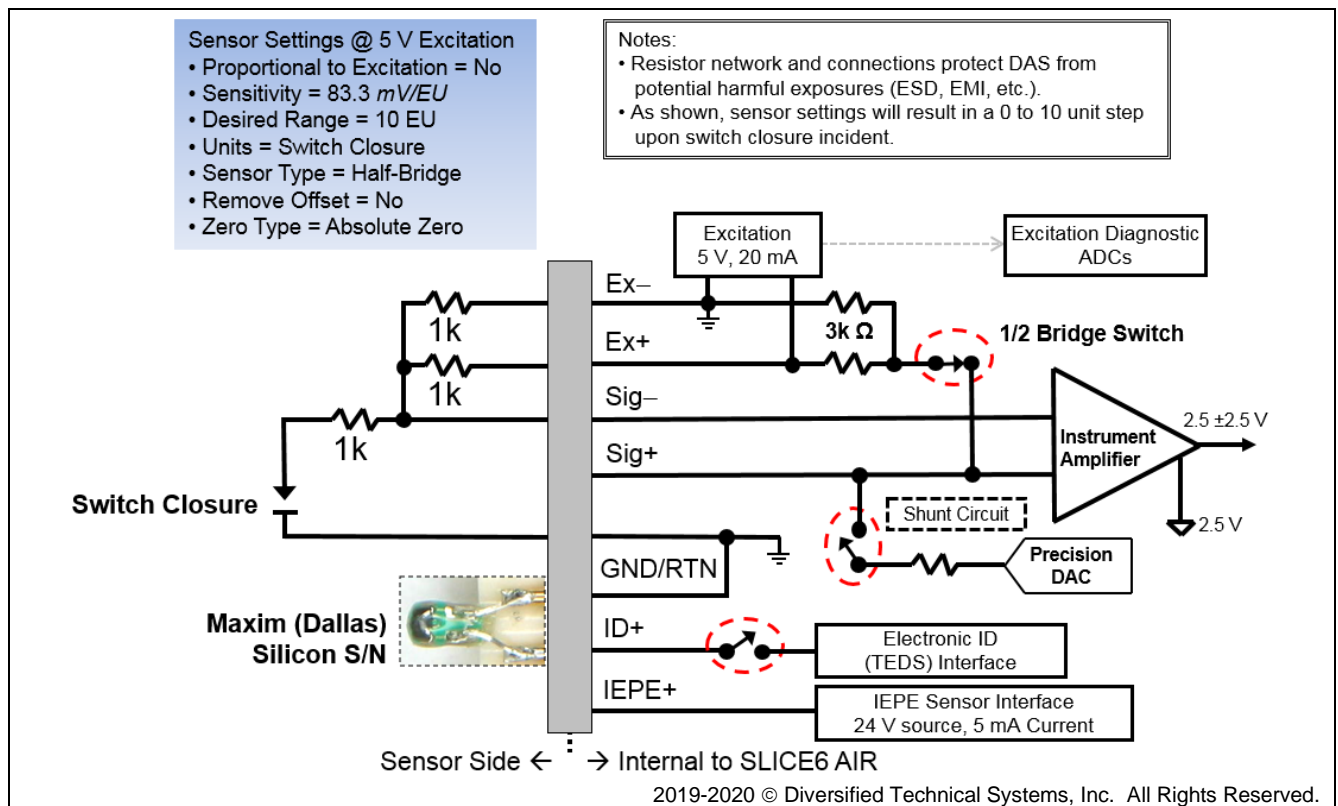
Strain Gage (full bridge)
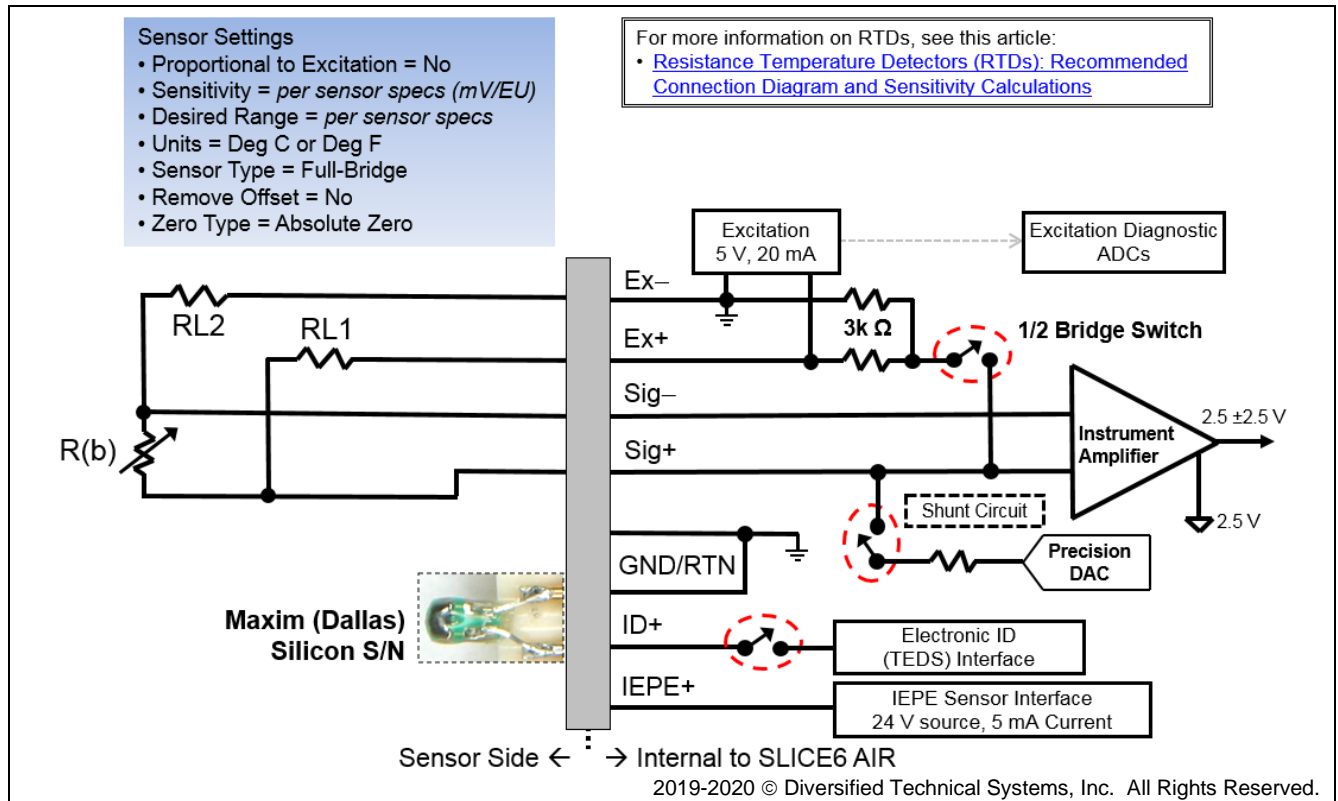

3-Wire Potentiometer
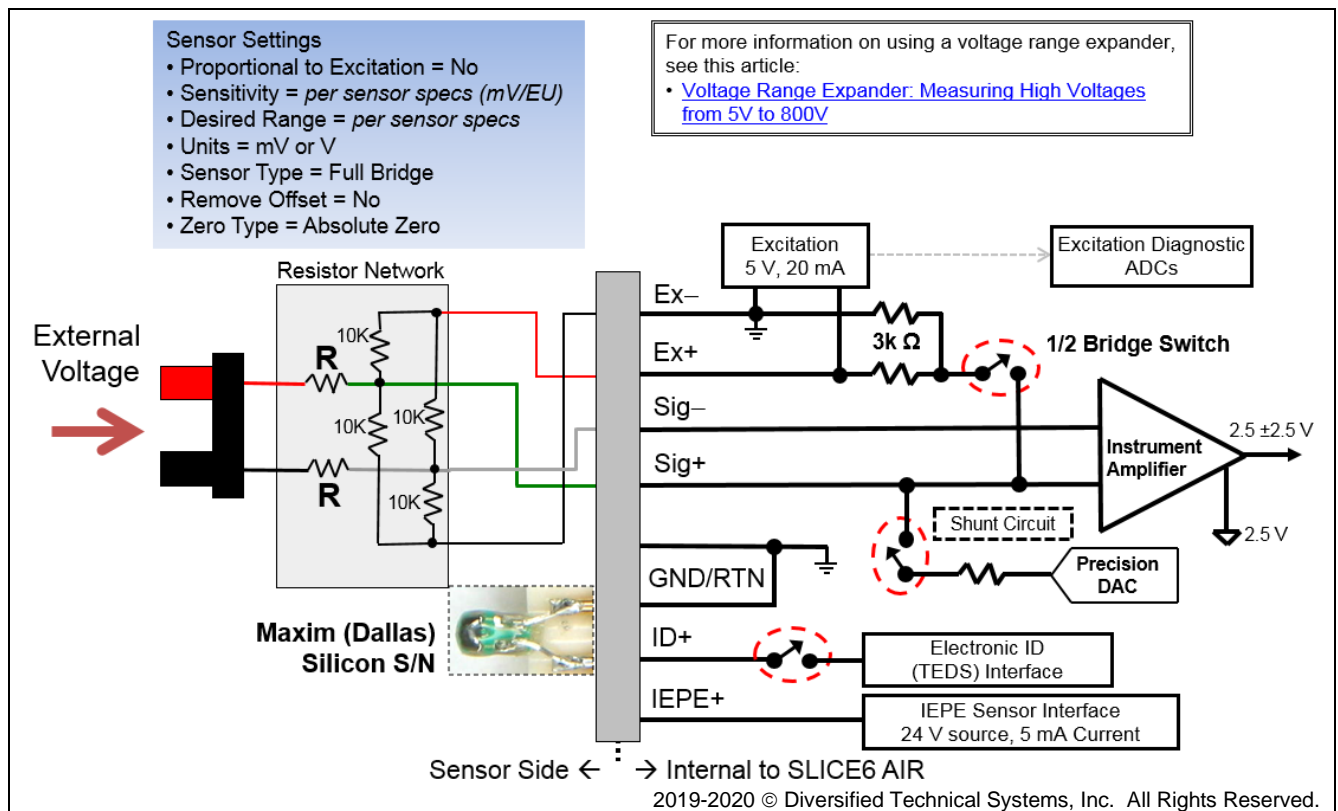
4-Wire Potentiometer

Accelerometer (3-wire)

IEPE Accelerometer

Switch Closure

Sensor Settings
- Proportional to Excitation = No
- Sensitivity = *per sensor specs (mV/EU)*
- Desired Range = *per sensor specs*
- Units = Deg C or Deg F
- Sensor Type = Full-Bridge
- Remove Offset = No
- Zero Type = Absolute Zero

For more information on RTDs, see this article:
- Resistance Temperature Detectors (RTDs): Recommended Connection Diagram and Sensitivity Calculations

Excitation 5 V, 20 mA → Excitation Diagnostic ADCs

Ex−
Ex+
3k Ω — 1/2 Bridge Switch
Sig−
Sig+
Instrument Amplifier — 2.5 ±2.5 V
2.5 V
Shunt Circuit
GND/RTN
Precision DAC
ID+ — Electronic ID (TEDS) Interface
IEPE+ — IEPE Sensor Interface 24 V source, 5 mA Current

RL2   RL1
R(b)
Maxim (Dallas) Silicon S/N

Sensor Side ← : → Internal to SLICE6 AIR

RTD (4-wire)

Sensor Settings
- Proportional to Excitation = No
- Sensitivity = *per sensor specs (mV/EU)*
- Desired Range = *per sensor specs*
- Units = mV or V
- Sensor Type = Full Bridge
- Remove Offset = No
- Zero Type = Absolute Zero

For more information on using a voltage range expander, see this article:
- Voltage Range Expander: Measuring High Voltages from 5V to 800V

External Voltage

Resistor Network
R 10K
10K 10K
R 10K

Excitation 5 V, 20 mA → Excitation Diagnostic ADCs

Ex−
Ex+
3k Ω — 1/2 Bridge Switch
Sig−
Sig+
Instrument Amplifier — 2.5 ±2.5 V
2.5 V
Shunt Circuit
GND/RTN
Precision DAC
ID+ — Electronic ID (TEDS) Interface
IEPE+ — IEPE Sensor Interface 24 V source, 5 mA Current

Maxim (Dallas) Silicon S/N

Sensor Side ← : → Internal to SLICE6 AIR

Range Expander

Sensor Settings
- Proportional to Excitation = No
- Sensitivity = *per sensor specs (mV/EU)*
- Desired Range = *per sensor specs*
- Units = mV or per sensor specs
- Sensor Type = Half-Bridge
- Remove Offset = No
- Zero Type = Absolute Zero

Magnetic Pickup

DECLARATION OF CE CONFORMITY

Description	Model
Data Acquisition Module	SLICE6 AIR DAS Module

The undersigned hereby declares that the products listed above, manufactured by Diversified Technical Systems, Inc., Seal Beach, California, USA, conform to the following directive and standards:

Applicable Council Directive: **89/336/EEC – Electromagnetic Compatibility**

Applicable Harmonized Standards: **EN 55022:1998, EN 55024:1998**

_____

Stephen Pruitt, President
Diversified Technical Systems, Inc.

_____July 9, 2019_____
Date

Revision History

Rev	Date	By	Description
1	6 Feb 2020	EK	Changed max input voltage from 36 to 30 VDC and updated consumption data. Replaced PPS with 1 PPS. Added 50 kHz spec to fixed hardware filter. Updated STS green LED to include data streaming.
0	31 Jan 2020	EK	Initial release.