SLICE PRO Sensor Interface

January 2020

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Last Revised: January 2020

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Topics
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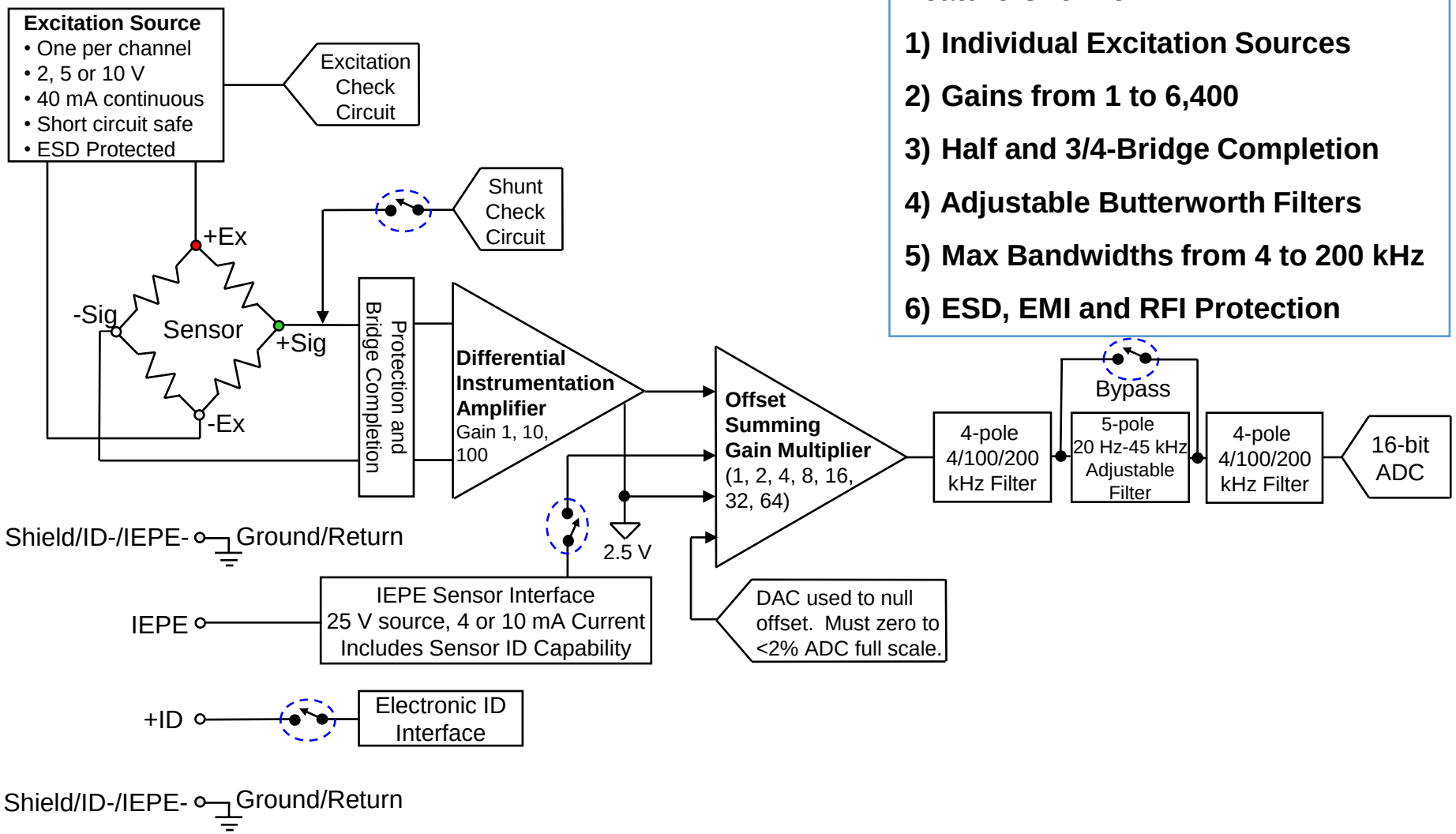
SLICE PRO DAS Channel Architecture

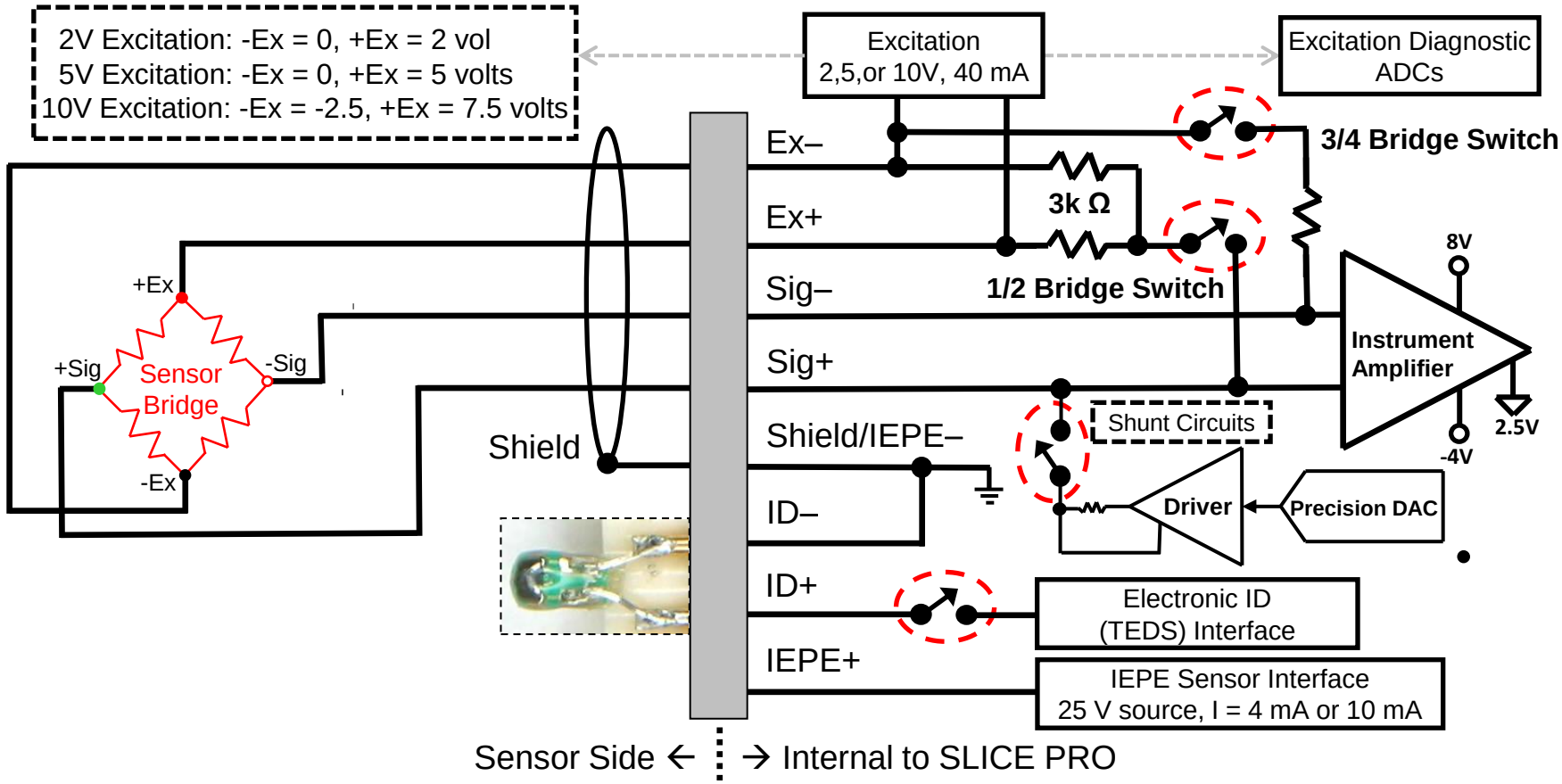


Feature Overview

1) **Individual Excitation Sources**
2) **Gains from 1 to 6,400**
3) **Half and 3/4-Bridge Completion**
4) **Adjustable Butterworth Filters**
5) **Max Bandwidths from 4 to 200 kHz**
6) **ESD, EMI and RFI Protection**

SLICE PRO Sensor Interface – Bridge Input

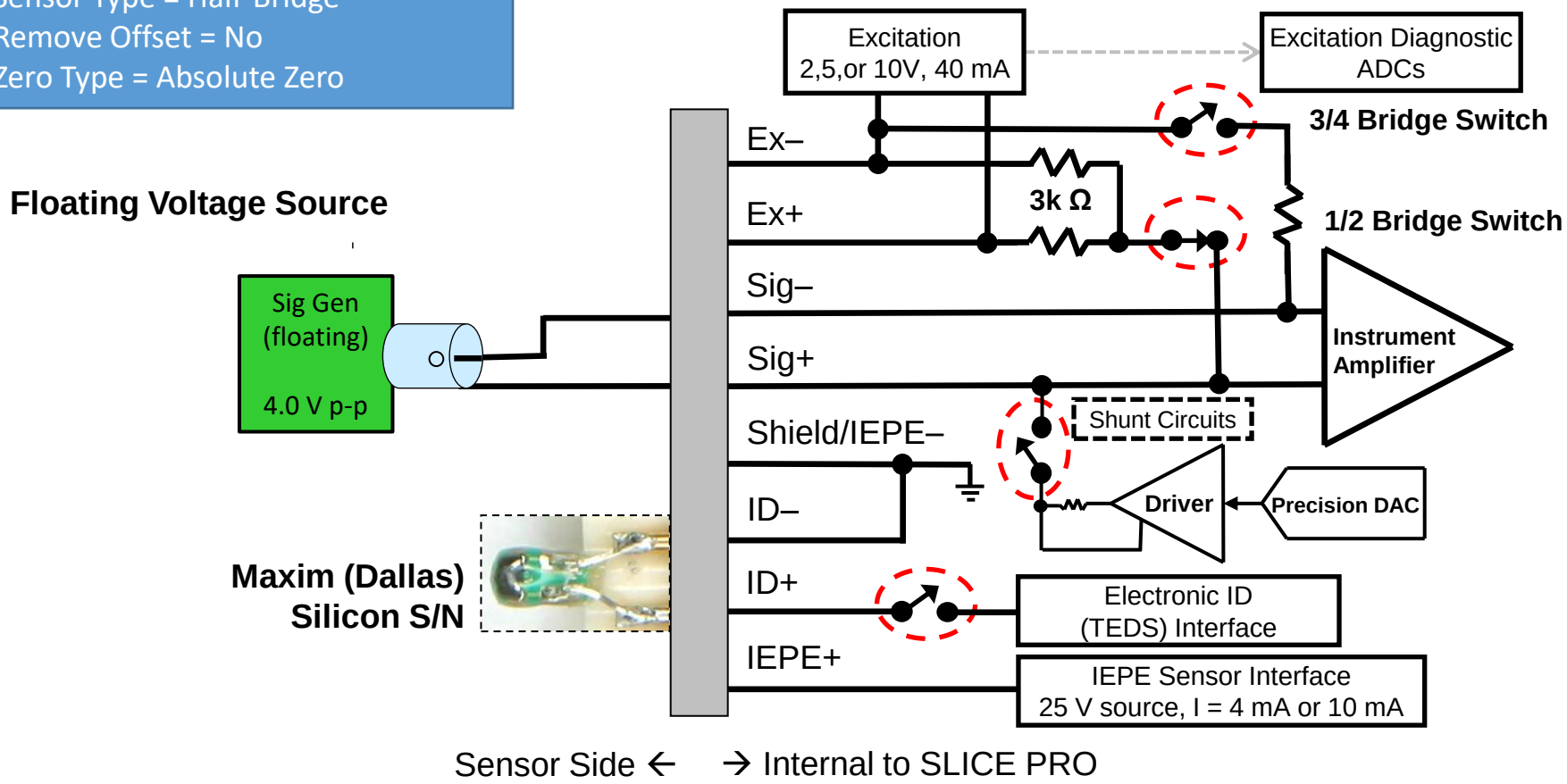
- +/- Signal connect to a true Differential Instrumentation Amplifier (IA).
- Common Mode Range of the IA is approximately -4 to +8 volts with respect to ground.
- Both +/- Signal must be connected either externally or using bridge completion.
- The maximum differential signal is ±2.5 volts (with a 2.5 volt center).
- The post front-end signal chain is 0-5 volts, and then compressed further to 0-3 volts WRT ground.



SLICE PRO Sensor Interface – Signal Generator

Recommended Sensor Settings
- Excitation = Any
- 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 WRT ground or alternate connection method must be used.

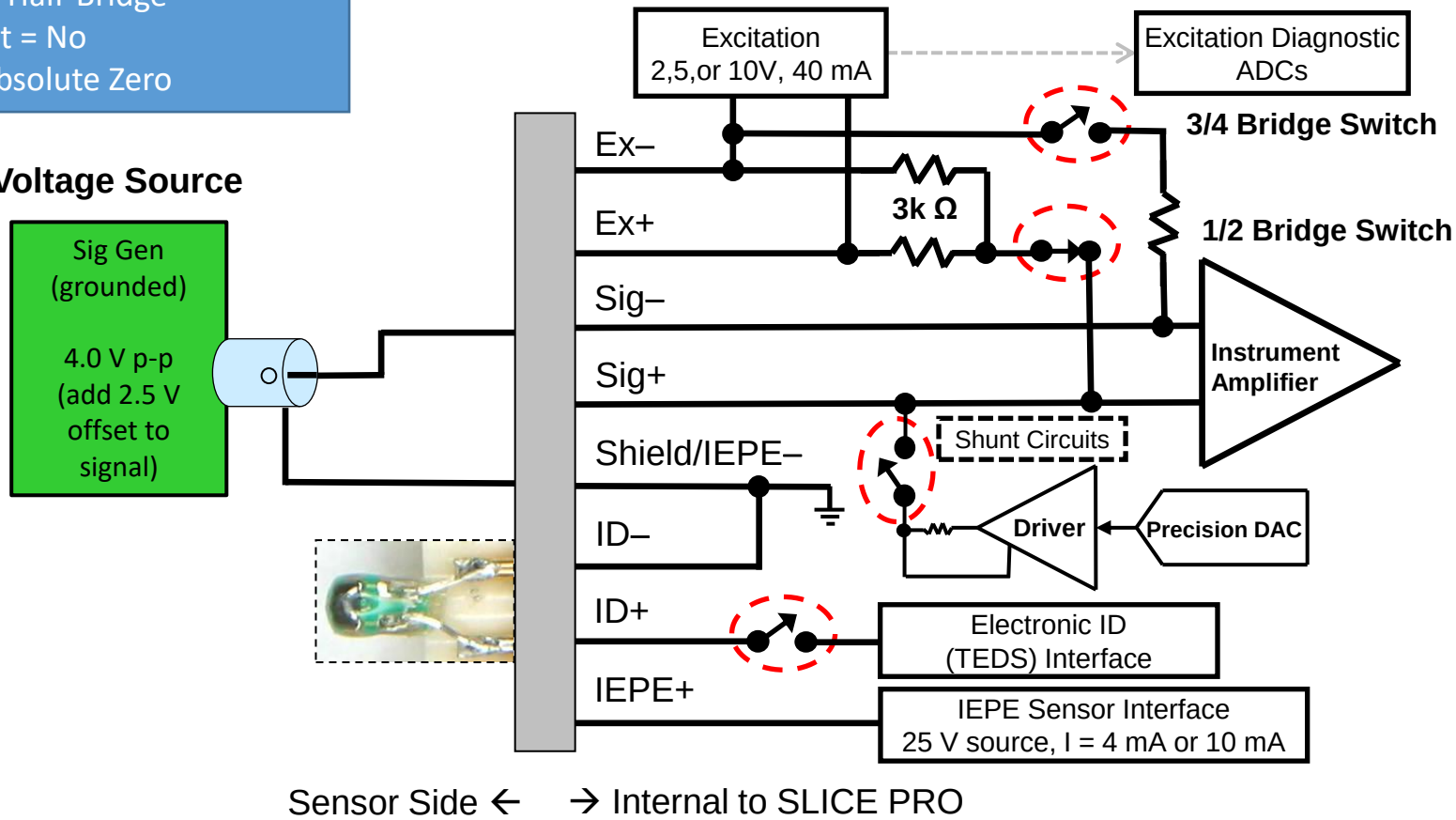


SLICE PRO Sensor Interface – Signal Generator

Recommended Sensor Settings
- Excitation = 5 volts
- 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 with grounded output.

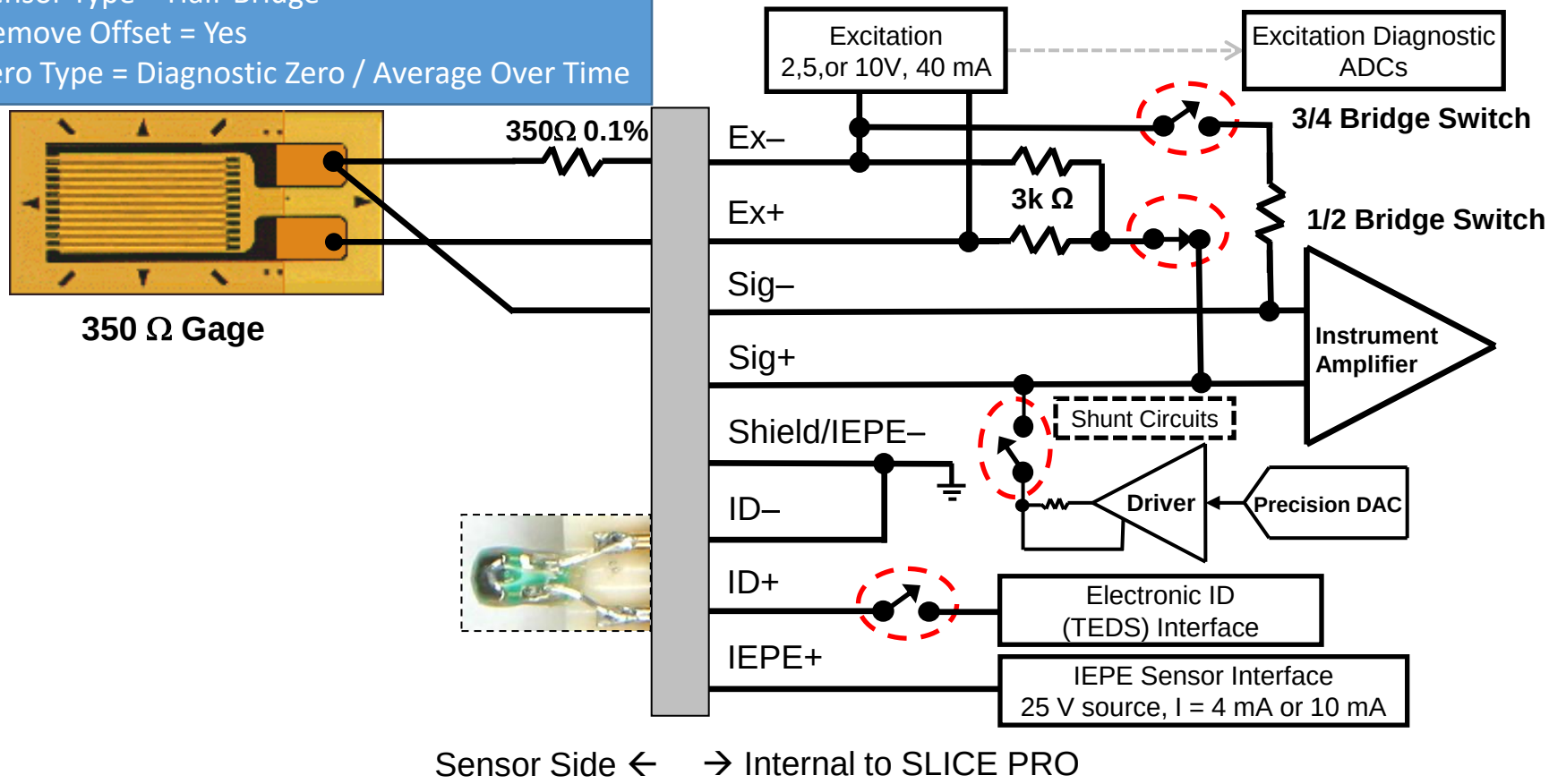
Grounded Voltage Source



SLICE PRO Sensor Interface – Strain Gauge (3-Wire)

Recommended Sensor Settings
- Excitation = 5 volts
- Proportional to Excitation = Yes
- Sensitivity = *per sensor specs (mV/V/EU)*
- Desired Range = *per user requirement*
- Units = µS
- Sensor Type = Half-Bridge
- Remove Offset = Yes
- Zero Type = Diagnostic Zero / Average Over Time

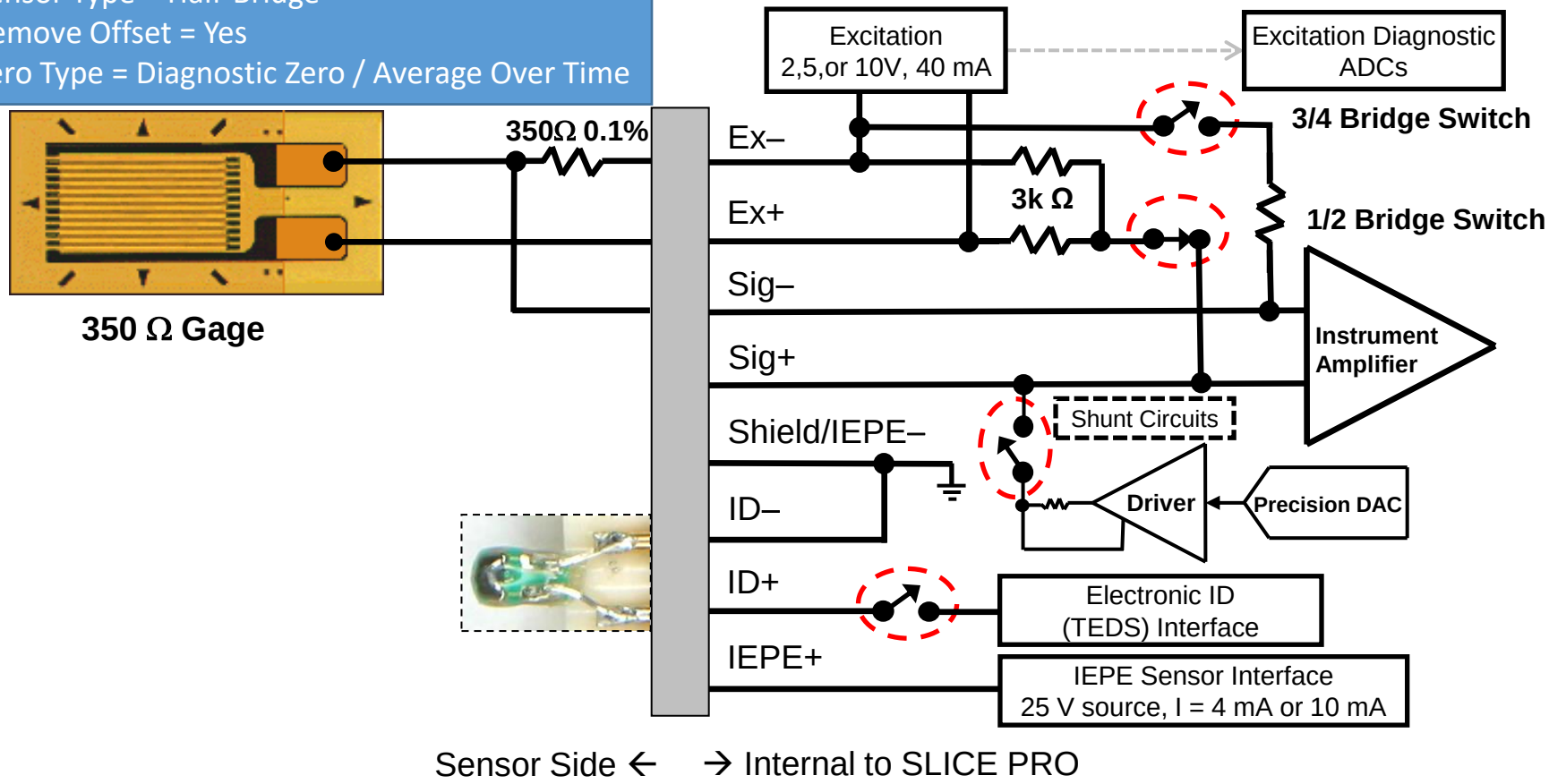
Notes:
- For cable runs longer than 6 meters, we recommend using bridge completion modules at the gauge installation location (per later example).



SLICE PRO Sensor Interface – Strain Gauge (2-Wire)

Recommended Sensor Settings
- Excitation
- Proportional to Excitation = Yes
- Sensitivity = *per sensor specs (mV/V/EU)*
- Desired Range = *per sensor specs*
- Units = µS
- Sensor Type = Half-Bridge
- Remove Offset = Yes
- Zero Type = Diagnostic Zero / Average Over Time

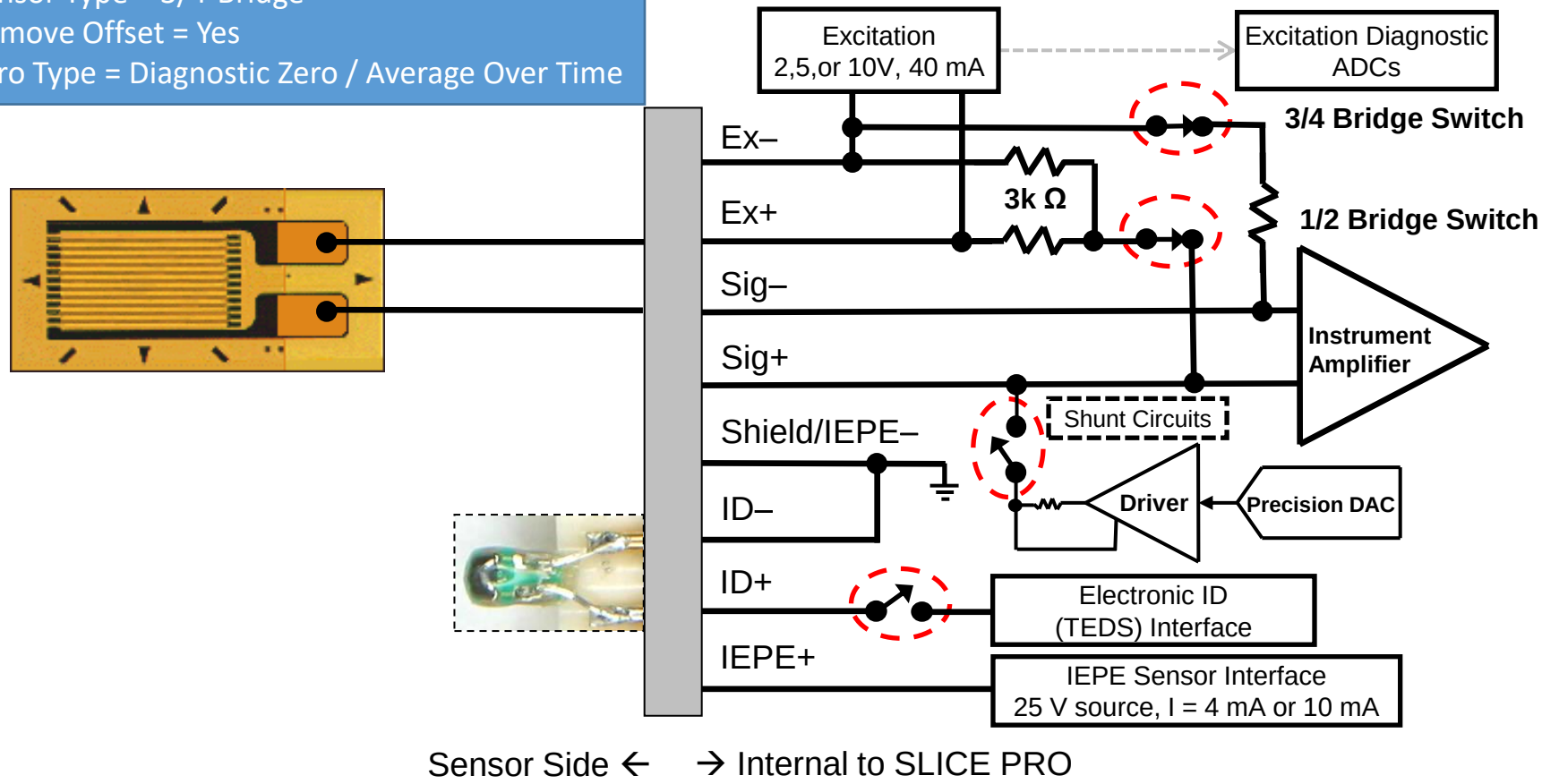
Notes:
- This configuration is NOT RECOMMENDED for cable lengths greater than 6 meters. For longer cable runs, we recommend using bridge completions modules at the gauge installation location (per later example).



SLICE PRO Sensor Interface – Strain Gauge (2-Wire)

Recommended Sensor Settings
- Excitation = 5 volts
- Proportional to Excitation = Yes
- Sensitivity = *per sensor specs (mV/V/EU)*
- Desired Range = *per user requirement*
- Units = µS
- Sensor Type = 3/4-Bridge
- Remove Offset = Yes
- Zero Type = Diagnostic Zero / Average Over Time

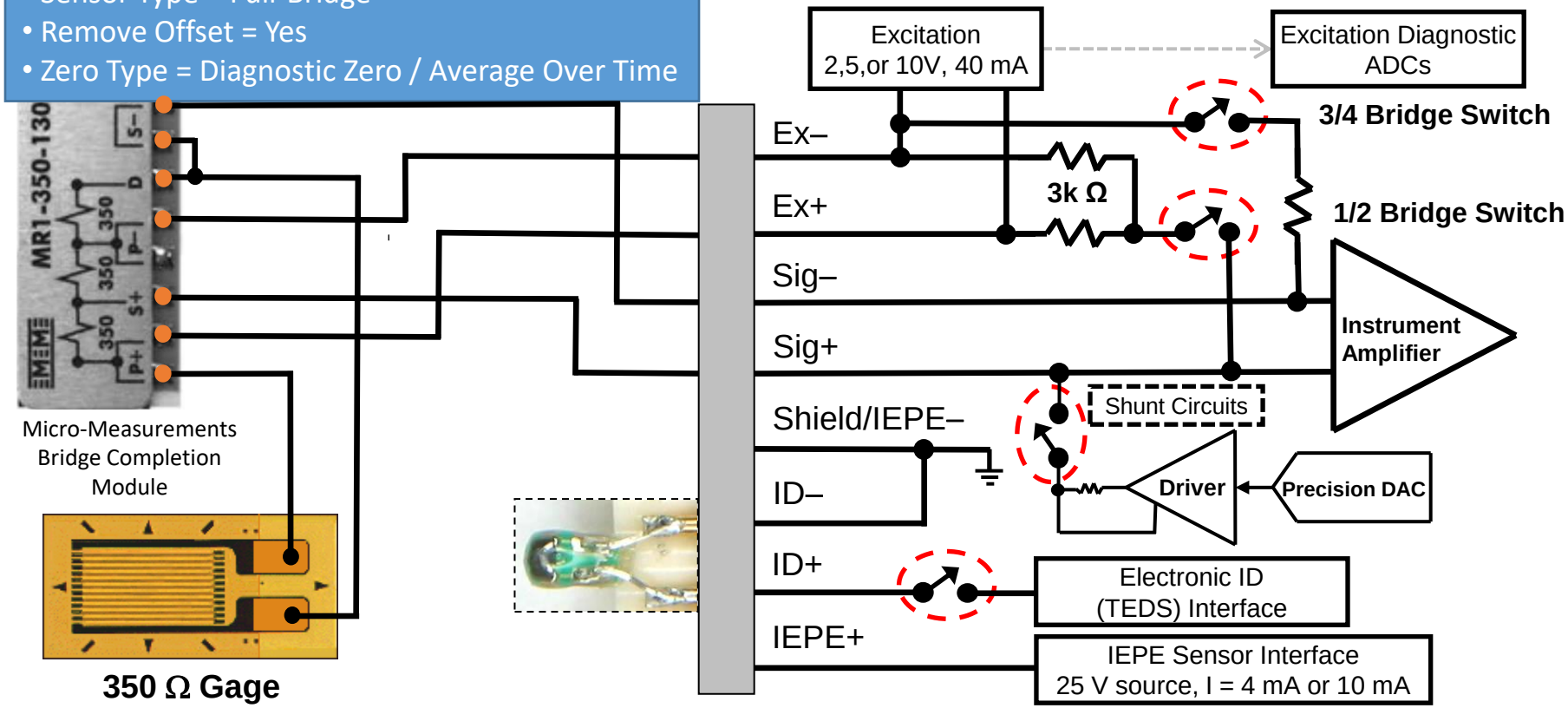
Notes:
- Allowable Strain Gauge resistance is specified at time of manufacture per SLICE PRO SIM Part Number. See the label on the SIM.
- Recommend only for cable runs up to 3 - 4 meters.



SLICE PRO Sensor Interface – Strain Gauge (Bridge Completion Module)

Recommended Sensor Settings
- Excitation = 5 volts
- Proportional to Excitation = Yes
- Sensitivity = *per sensor specs (mV/V/EU)*
- Desired Range = *per user requirements*
- Units = µS
- Sensor Type = Full-Bridge
- Remove Offset = Yes
- Zero Type = Diagnostic Zero / Average Over Time

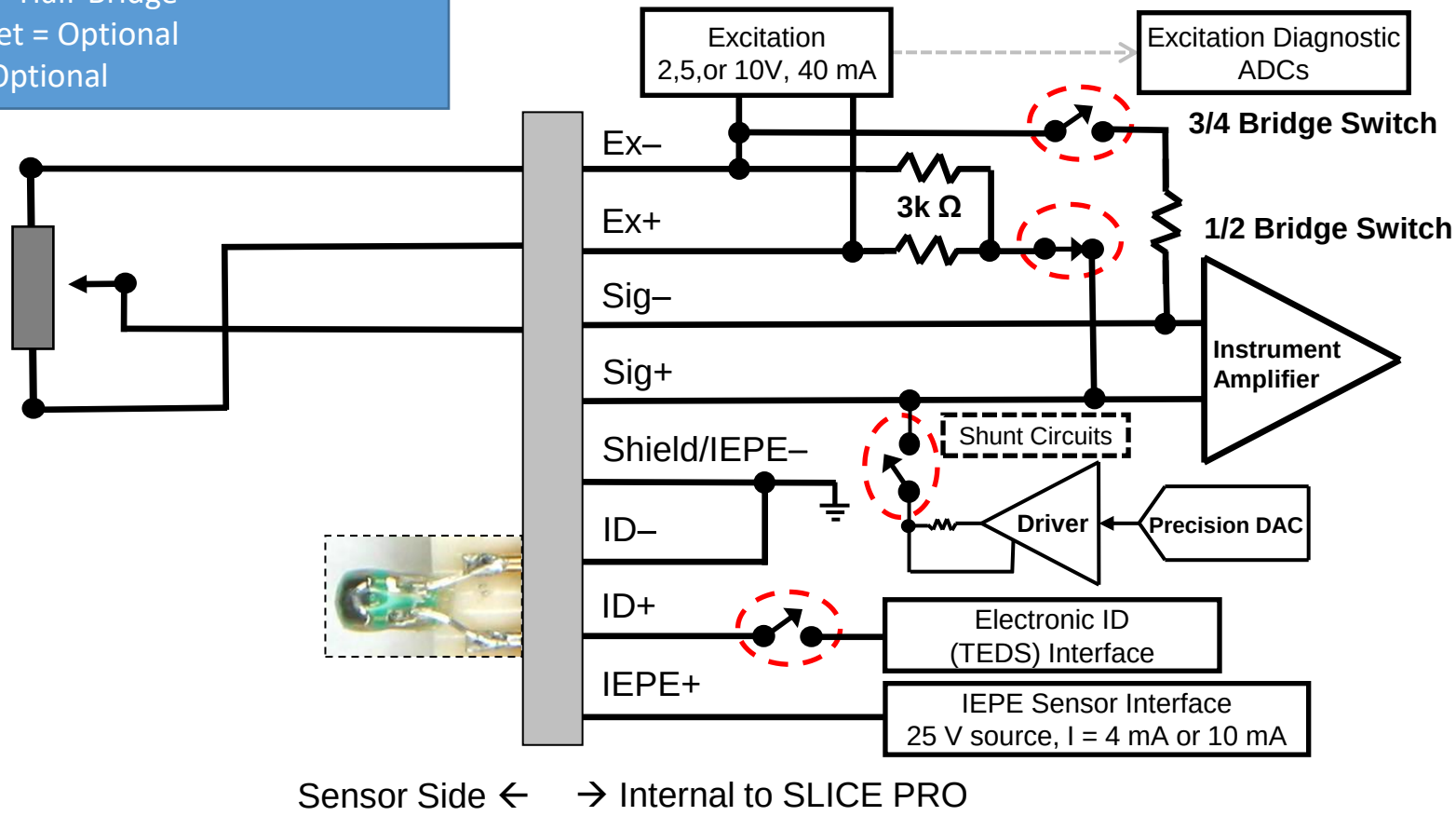
Connection Notes:
• This configuration is RECOMMENDED when cable run lengths exceed 6 meters. Bridge Completion Module connections should be made as close to gauge location as possible.



SLICE PRO Sensor Interface – 3-Wire Potentiometer

Recommended Sensor Settings
- Excitation = 2 volts
- Proportional to Excitation = Yes
- Sensitivity = *per sensor specs (mV/V/EU)*
- Desired Range = *per sensor specs*
- Units = *per sensor specs*
- Sensor Type = Half-Bridge
- Remove Offset = Optional
- Zero Type = Optional

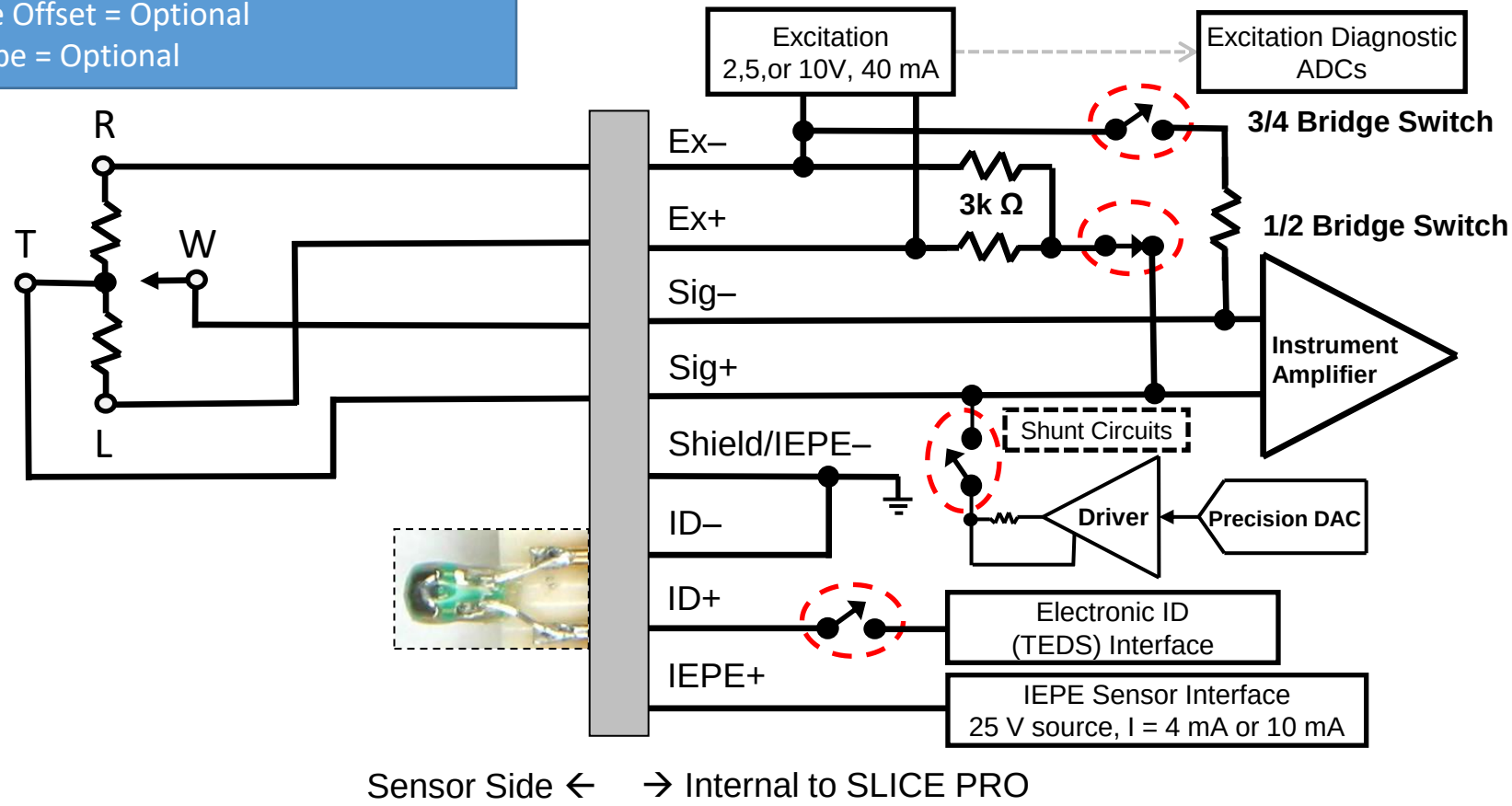
Zero Type Notes:
- There may be initial engineering units (EU) that need to be taken into account for zeroing. This affects zeroing type. See manual for descriptions of Zero Type.



SLICE PRO Sensor Interface – 4-Wire Potentiometer

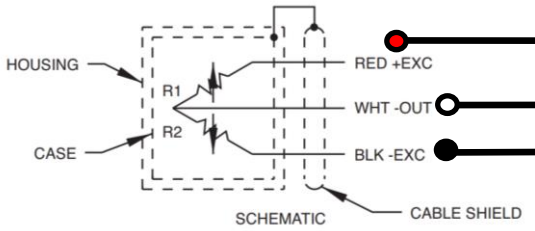
Recommended Sensor Settings
- Excitation = 2 volts
- Proportional to Excitation = Yes
- Sensitivity = *per sensor specs (mV/V/EU)*
- Desired Range = *per sensor specs*
- Units = *per sensor specs*
- Sensor Type = Half-Bridge
- Remove Offset = Optional
- Zero Type = Optional

Zero Type Notes:
- There may be initial engineering units (EU) that need to be taken into account for zeroing. This affects zeroing type. See manual for descriptions of Zero Type.

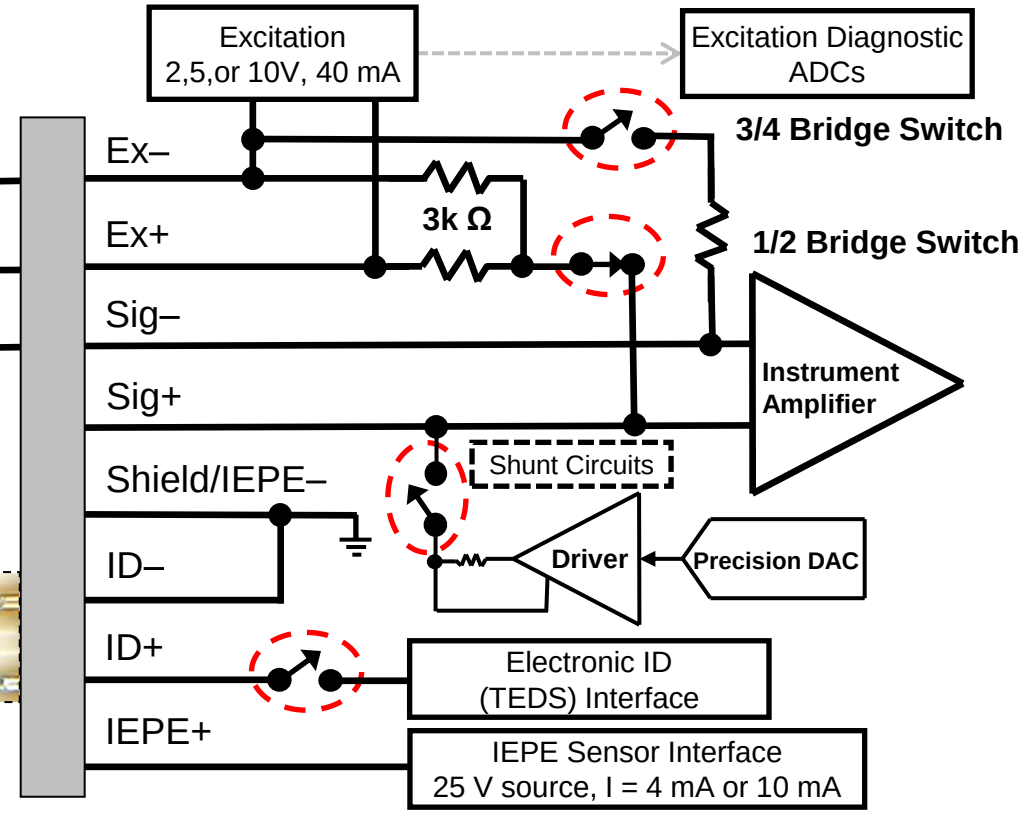


SLICE PRO Sensor Interface – Accelerometer (3-Wire)

Recommended Sensor Settings
- Excitation = 5 or 10 volts (same as cal voltage)
- Proportional to Excitation = Yes
- Sensitivity = *0.25mV/V/EU **
- Desired Range = *2000**
- Units = g
- Sensor Type = Half-Bridge
- Remove Offset = Yes
- Zero Type = Average Over Time / Diagnostics



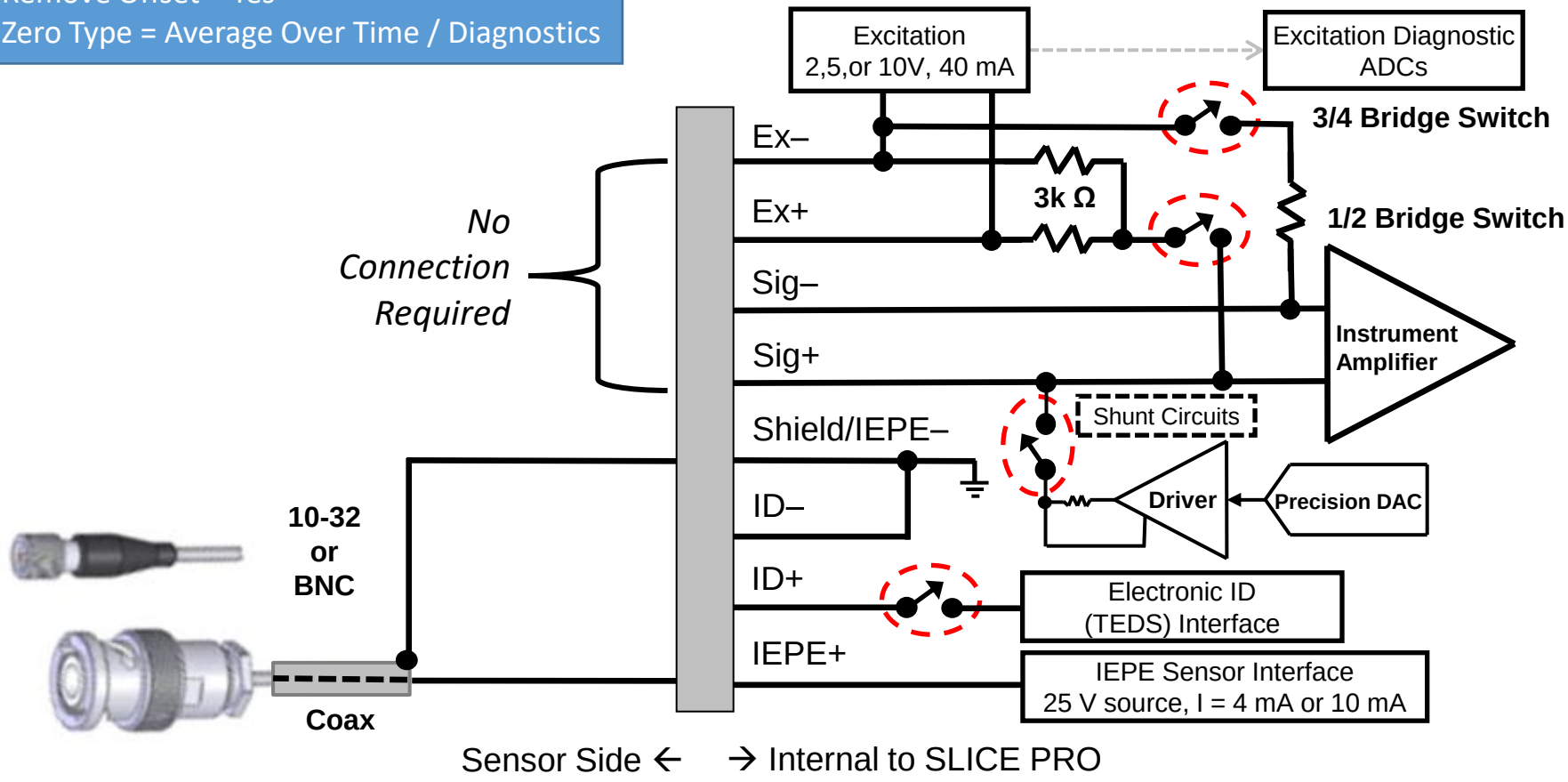
**Endevco 7264*
(or similar)



Sensor Side ← → Internal to SLICE PRO

SLICE PRO Sensor Interface – IEPE Accelerometer

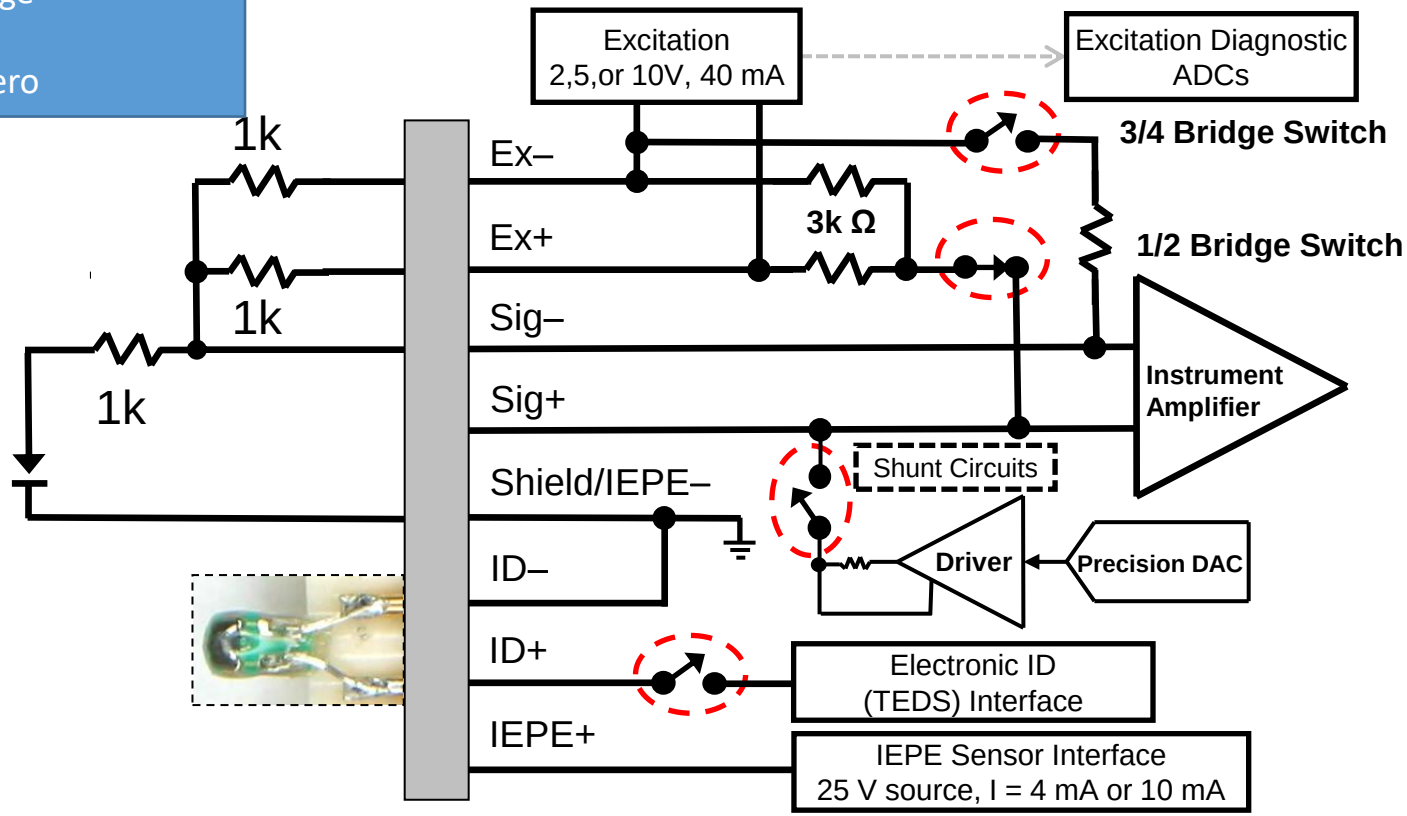
Sensor Settings
- Sensitivity = *per sensor specs (mV/EU)*
- Desired Range = *per sensor specs*
- Units = mV
- Sensor Type = IEPE
- Coupling = *per sensor specs*
- Remove Offset = Yes
- Zero Type = Average Over Time / Diagnostics



SLICE PRO Sensor Interface – Switch Closure

Recommended Sensor Settings
- Excitation = 5 volts
- Proportional to Excitation = No
- Sensitivity = 83.3 *mV/EU*
- Desired Range = 10 EU
- Units = Switch Closure
- Sensor Type = Half-Bridge
- Remove Offset = No
- Zero Type = Absolute Zero

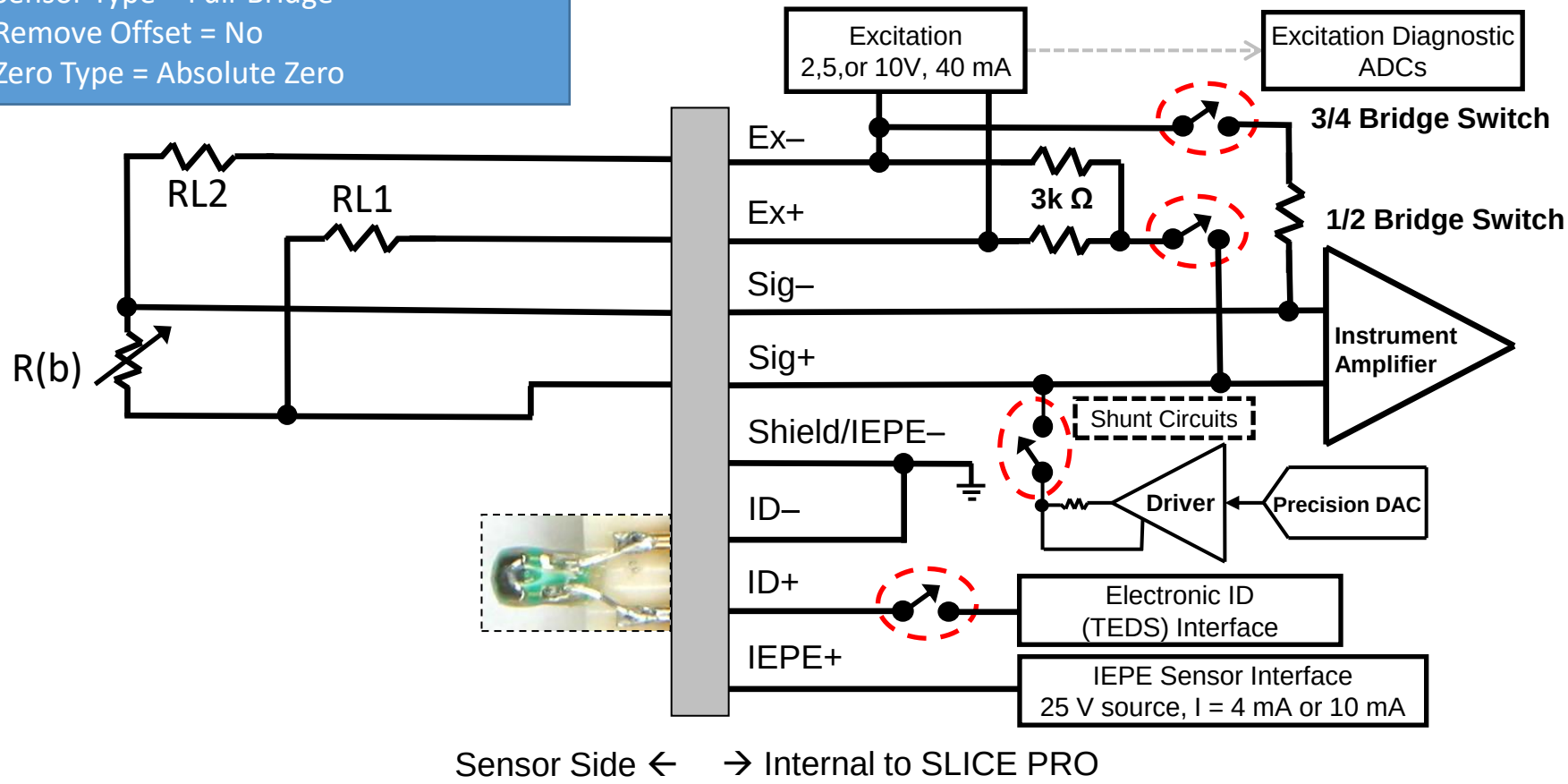
Notes:
- Resistor network and connections protect DAS from potential harmful exposures (ESD, EMI, etc.).
- As shown, sensor settings will result in a 0 to 10 unit step upon switch closure.



SLICE PRO Sensor Interface – RTD (4-Wire)

Recommended Sensor Settings
- Excitation = 5 volts
- Proportional to Excitation = No
- Sensitivity = *per sensor specs (mV/EU)*
- Desired Range = *per user requirements*
- Units = *per sensor specs*
- Sensor Type = Full-Bridge
- Remove Offset = No
- Zero Type = Absolute Zero

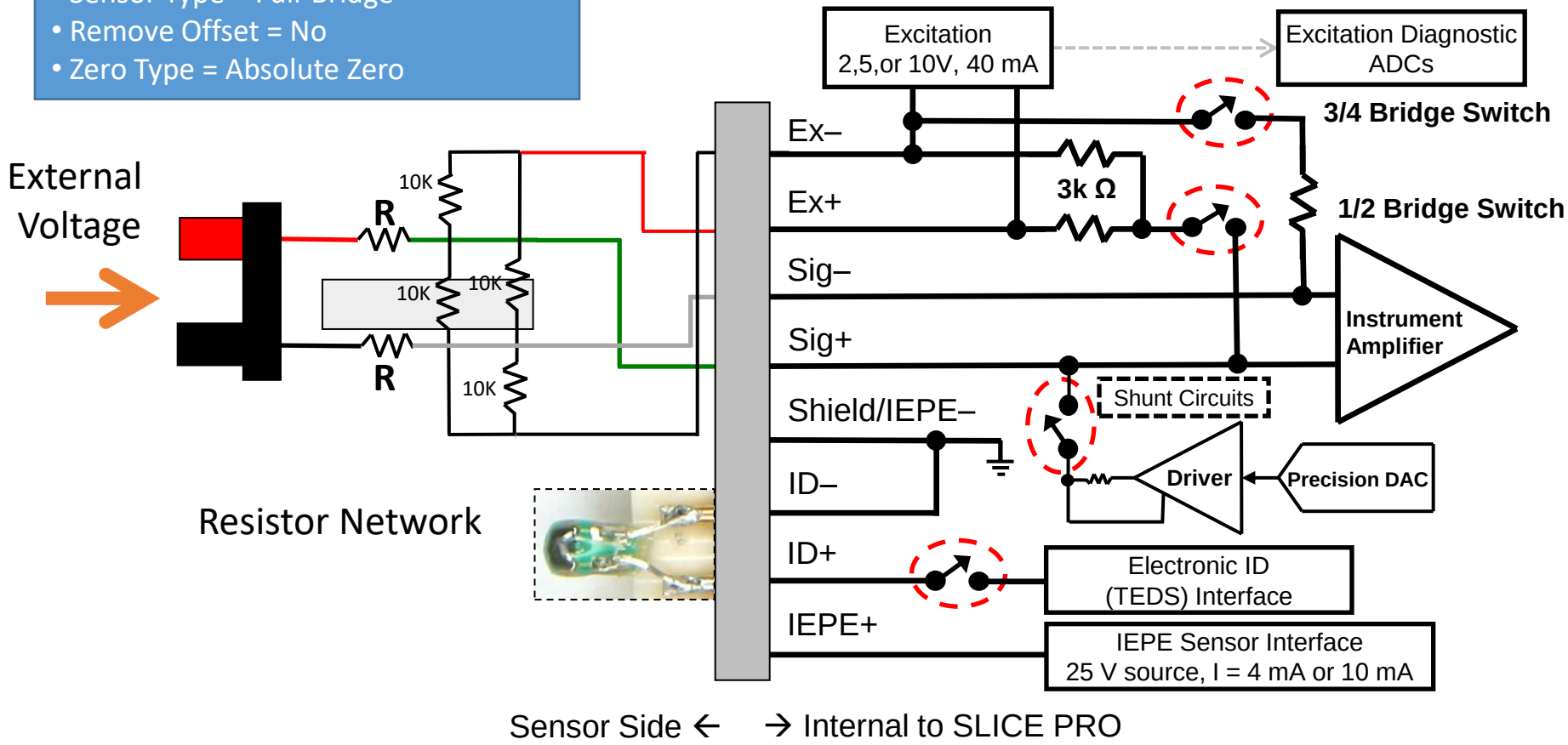
For more information on RTDs, see this Help Center article:
- Resistance Temperature Detectors (RTDs): Recommended Connection Diagram and Sensitivity Calculations



SLICE PRO Sensor Interface – Range Expander

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

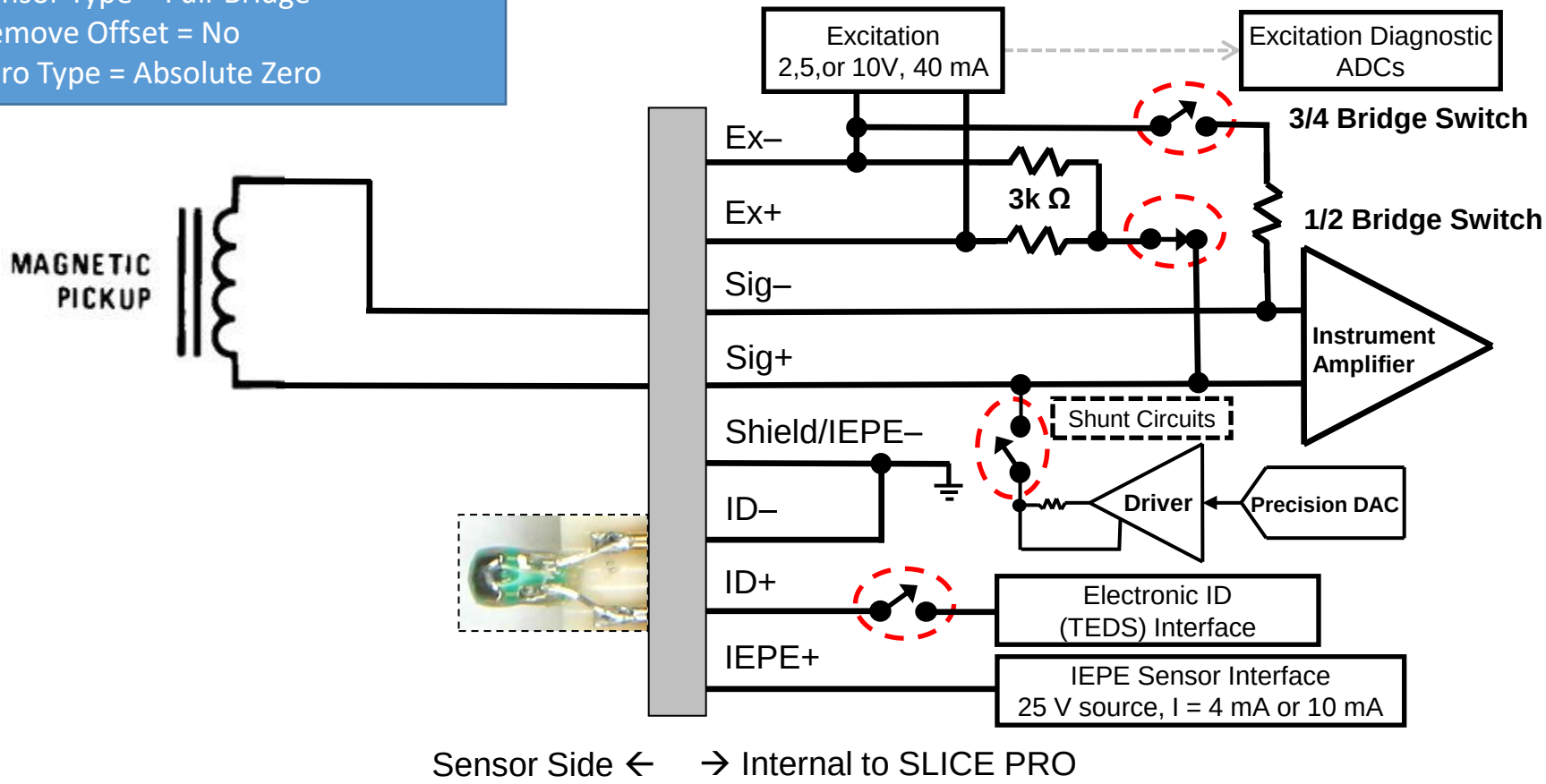
For more information on range expanders, see this Help Center article:
- Voltage Range Expander: Measuring High Voltages from 5V to 800V



SLICE PRO Sensor Interface – Magnetic Pickup

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

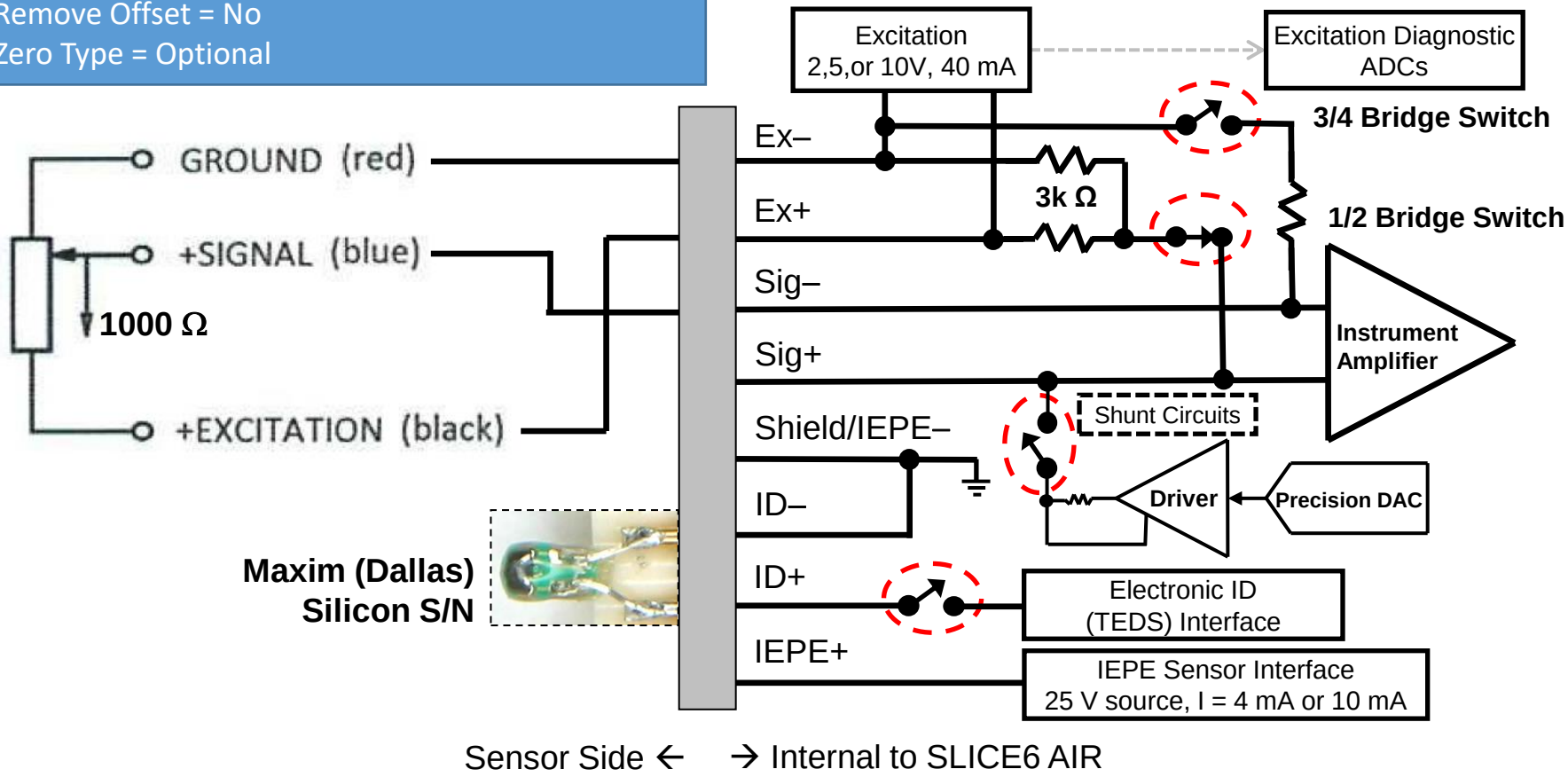
• Use Half Bridge mode to properly reference a floating magnetic pickup.



SLICE PRO Sensor Interface – S-Track, opt 1

Recommended Sensor Settings
- Excitation = 2 or 5 volts
- Proportional to Excitation = Yes
- Sensitivity = *per sensor specs (mV/V/EU)*
- Desired Range = *per sensor specs*
- Units = mm or *per sensor specs*
- Sensor Type = Half-Bridge
- Remove Offset = No
- Zero Type = Optional

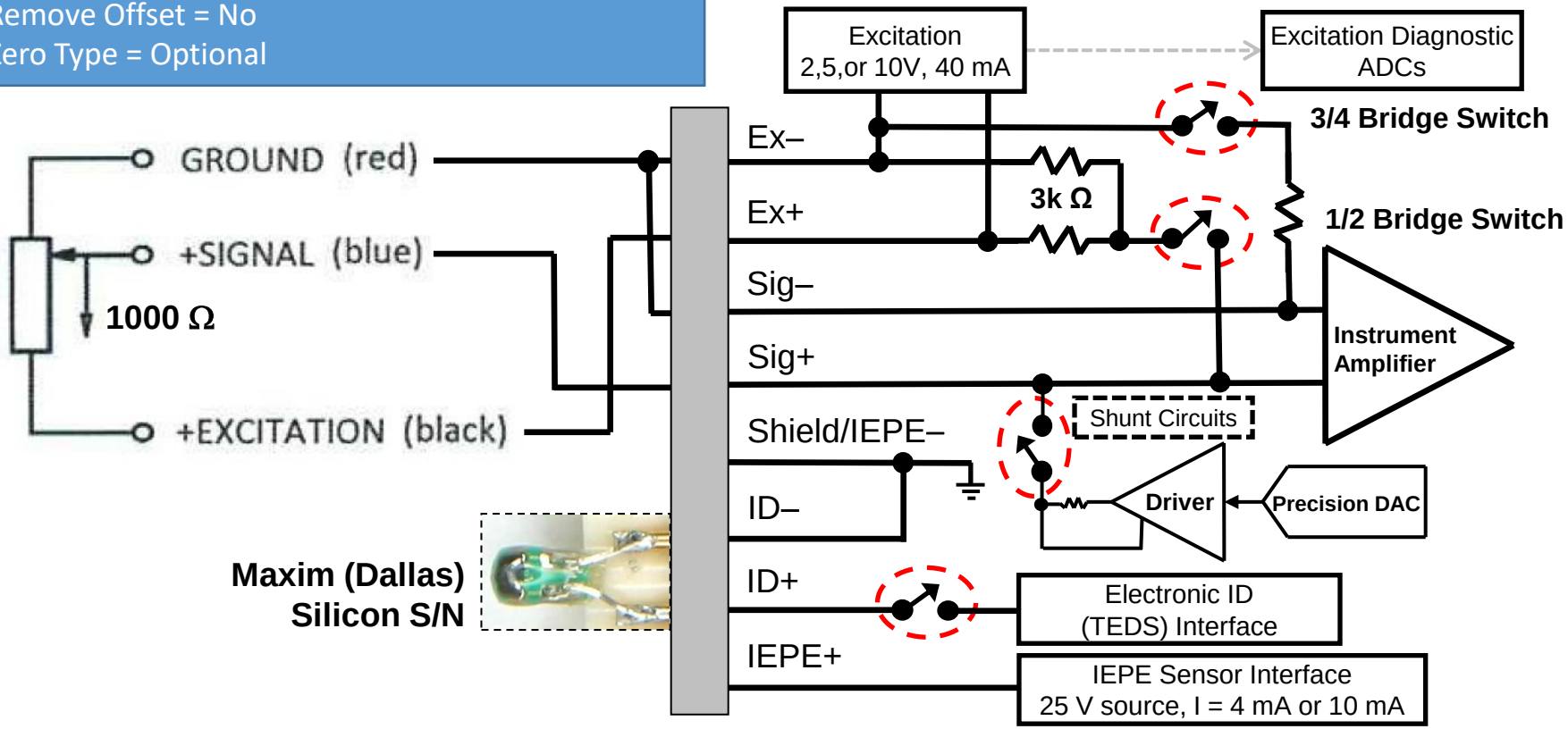
Zero Type Notes:
- There may be initial engineering units (EU) that need to be taken into account for zeroing. This affects zeroing type. See manual for descriptions of Zero Type.



SLICE PRO Sensor Interface – S-Track, opt 2

Recommended Sensor Settings
- Excitation = 2 volts ONLY
- Proportional to Excitation = Yes
- Sensitivity = *per sensor specs (mV/V/EU)*
- Desired Range = *per sensor specs*
- Units = mm or *per sensor specs*
- Sensor Type = Full-Bridge
- Remove Offset = No
- Zero Type = Optional

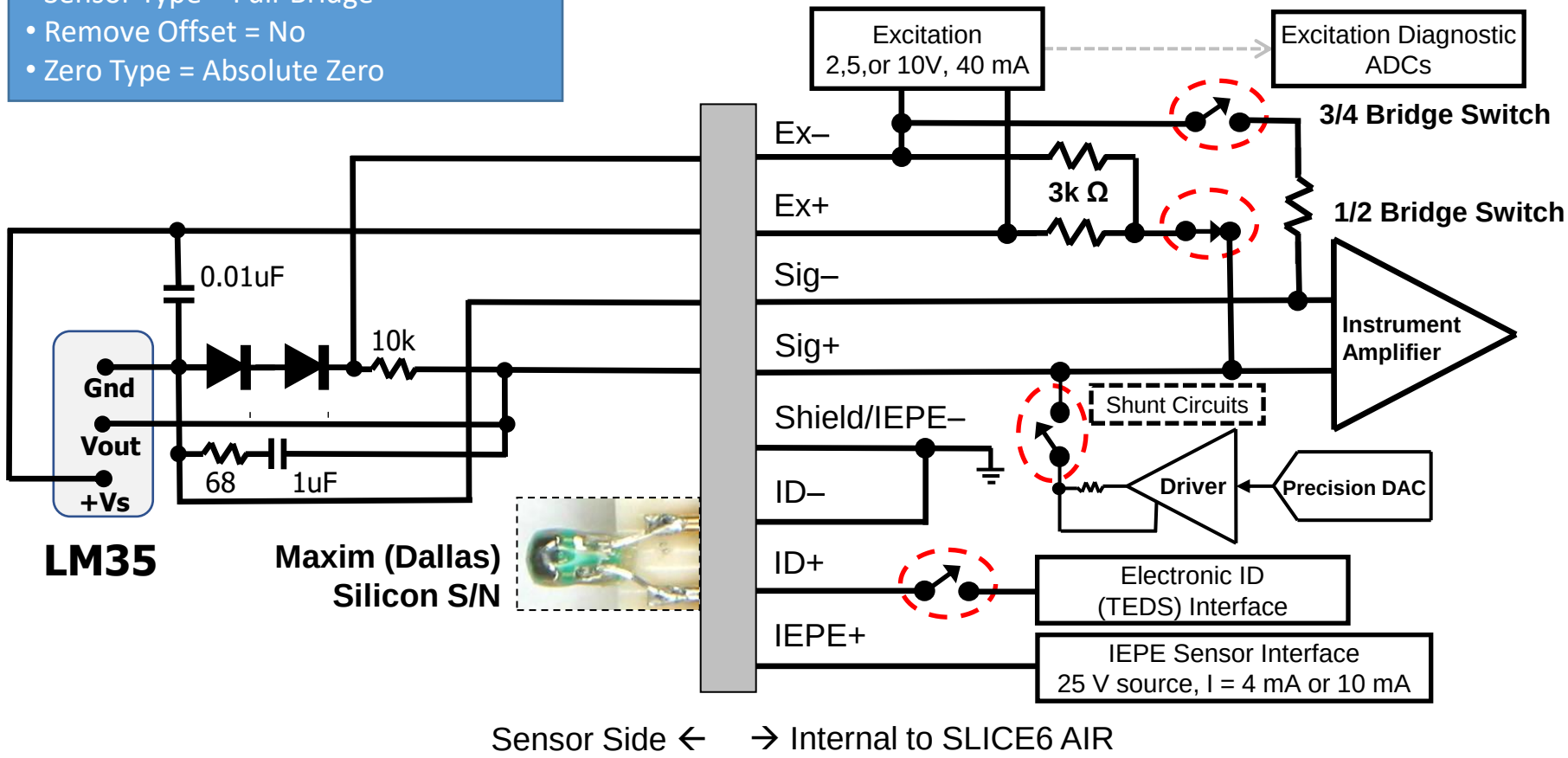
Zero Type Notes:
- There may be initial engineering units (EU) that need to be taken into account for zeroing. This affects zeroing type. See manual for descriptions of Zero Type.



SLICE PRO Sensor Interface – Temperature Sensor

Recommended Sensor Settings
- Excitation = 5 volts
- Proportional to Excitation = No
- Sensitivity = *10 (mV/C)**
- Desired Range = *150**
- Units = deg C
- Sensor Type = Full-Bridge
- Remove Offset = No
- Zero Type = Absolute Zero

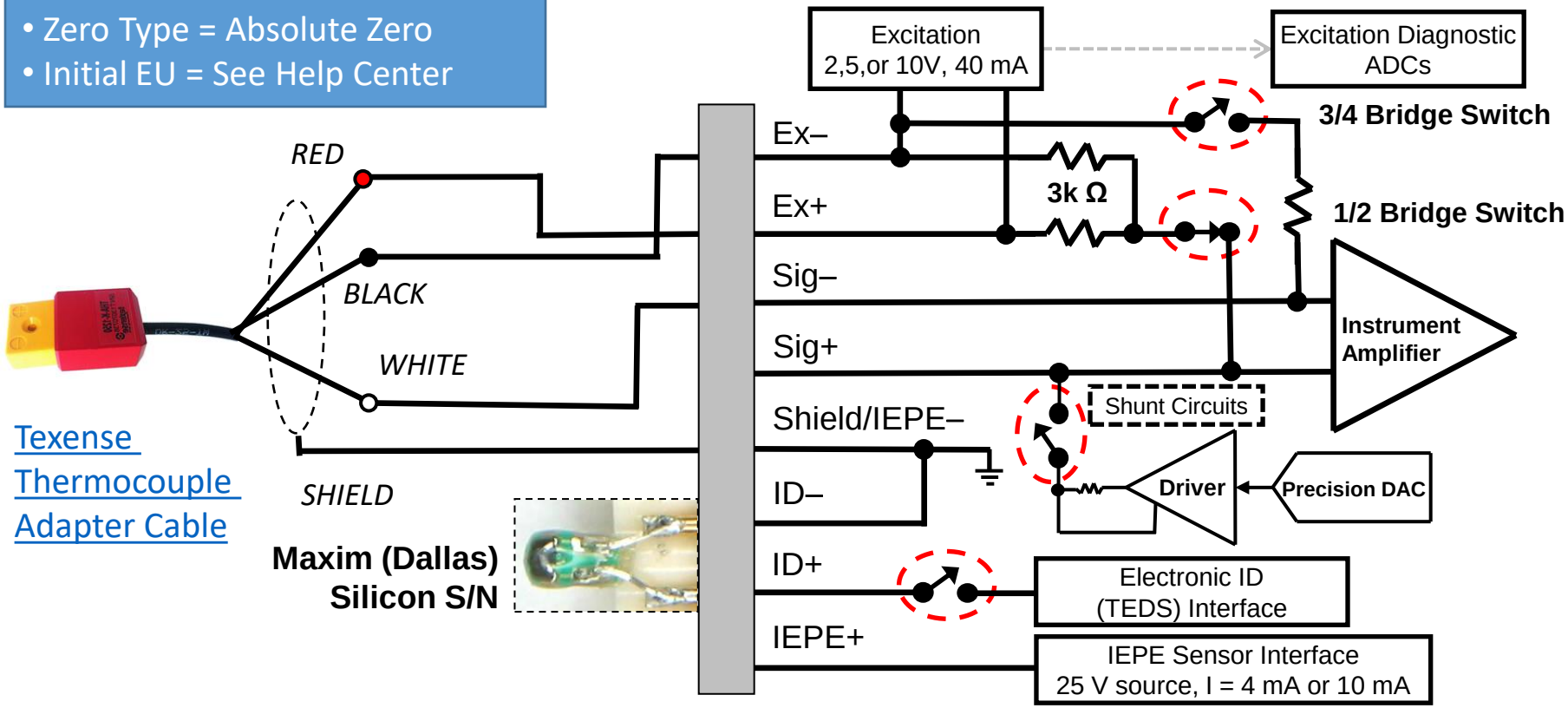
Initial EU Notes:
- When using temperature sensors, some units will output a non-zero value at 0 deg-C. These sensors will need to have an initial EU value entered into the Sensor Settings.



SLICE PRO Sensor Interface – Thermocouple (J & K)

Recommended Sensor Settings
- Excitation = 5 volts
- Proportional to Excitation = No
- Invert = Yes
- Sensor Type = Full-Bridge
- Remove Offset = No
- Zero Type = Absolute Zero
- Initial EU = See Help Center

For more information on the Texsense Thermocouple Adapter Cable, see this Help Center article:
- Sensor Setup - DTS (Texense) Thermocouple Adapter



Need More Help?

- We have support engineers in multiple time zones with various backgrounds who can assist. Registering creates a profile for your setup and keeps your records/requests organized going forward. You don't need to be registered to submit a Help Ticket, but it keeps all your info in one place.
- Here's how to get started. The buttons below will take you directly to the specific web pages.

1. Head to our Help Center main page for support resources.
2. Register as a new user.
3. Submit a Help Ticket. You can CC members of your organization, attach files, and add any helpful links.
4. Feel free at any time to check out our Knowledge Base. It has articles, videos, and breakdowns of our hardware and software, as well as general information and best practices. We're frequently updating this library to keep users informed.
5. Our Video Library has Webinar Recordings, Product Overviews, and Training. If you'd like to join a future webinar, let us know!

THANK YOU