

TECHNICAL REFERENCE MANUAL

DSI ADAPTERS V25-3



2.3.1. Features of DSI adapters:

- **EXTEND ANALOG INPUTS:** DSI adapters are compatible with any Dewesoft amplifier with a DSUB-9 analog input, independent of the product family. They will fit SIRIUS DAQ system, KRYPTON DAQ modules, IOLITE DAQ and Control System, MINITAURS or DEWE-43 DAQ instrument.
- **PLUG-AND-PLAY WITH TEDS:** All DSI adapters have a TEDS chip built-in for automatic sensor detection and plug-and-play setup. Just connect the sensor to the DSI adapter and DSI adapter to one of our DSUB-9 analog inputs and everything from scaling, units, calibration data, etc. will be configured automatically.
- **COMPACT AND RUGGED:** All electronics are built into small and rugged DSUB-9 aluminum housing with screw connectors to firmly screw adapters to the analog input channel.



Hint

When isolation is required, you must use the DSI-adapters on isolated DewesoftX® devices: e.g. Sirius modules.

All DSI-adapters are the size of a DSUB-9 housing, which contains the electronics as well as the sensor connector. The miniature electronics of each DSI sensor also contain a TEDS chip in which the identification, calibration and configuration data of the DSI are stored. TEDS data are read automatically by the DewesoftX® software and are immediately applied to the channel setup.



Hint

When using DSI® adapters, DewesoftX® can read the TEDS information of the adapter and also the TEDS information of any sensors that are connected to the adapter (the old MSI adapters could not read the TEDS of the connected sensor).

*The Bridge Completion Adapters are available in a separate [technical reference manual](#).

2.4. DSI: General Specifications

Connectors	
DAQ interface connector	DB9 Male
Sensor connector	See individual adapter specification
Environmental	
Operating Temperature	-10 to 60 °C
Storage Temperature	-40 to 85 °C
Humidity	5 to 95 % RH non-condensing at 50 °C
IP rating	IP50
RFI susceptibility	±0.5 % span error at 400 MHz, 5 W, 3 m
Shock & Vibration	Vibration sweep sinus (EN 60068-2-6:2008) Vibration random (EN 60721-3-2: 1997 - Class 2M2) Shock (EN 60068-2-27:2009) MIL-STD-810D

2.4.1. Calibration

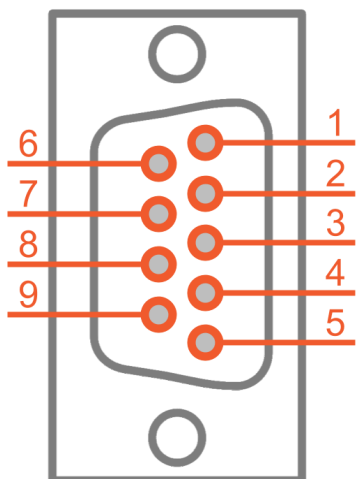
The DSI-adapters are calibrated at 23 °C ± 3 °C and meet their specifications when leaving the factory. The time interval for calibration depends on environmental conditions. A two year calibration interval is recommended.



Important

Total measurement accuracy depends on the adapter accuracy and host amplifier accuracy!

2.4.2. DSI: Pin-out



DSI connector: pin-out (DSUB-9 male)

Pin	Name	Description
1	Exc +	Excitation +
2	In+	Input +
3	Sns-	Sense -
4	GND	Ground
5	N.C.	Not connected
6	Sns+	Sense +
7	In-	Input -
8	Exc-	Excitation -
9	TEDS	TEDS

2.4.3. Environmental



Warning

All DSI® specifications within this manual are valid at 25 °C.
All DSI-adapters are produced according to ISO 9001 and ISO 14001.

2.4.4. DSI adapters / TEDS sensor support

Since there is an inbuilt TEDS device in the adapter itself and if ☒ DSI adapters/TEDS sensors under hardware setup are selected, adapter will be recognised and proper EXC. Voltage will be set automatically.

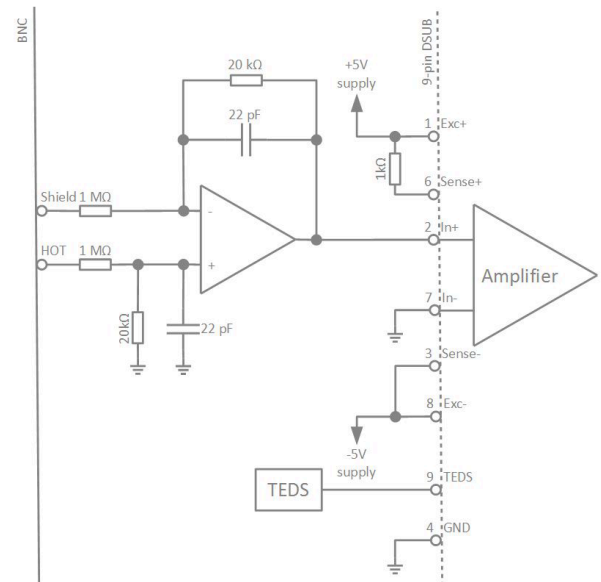
Please check if you are using the latest software where LVDT Adapter is supported.

2.11. DSI-V-200

This adapter consists of an active voltage divider (50:1), which allows an input range up to ± 200 V. The picture below shows the basic configuration of the amplifier circuit.



DSI-V-200



Basic circuit design of DSI-V-200



Important

In operation with the isolated SIRIUSi modules you will get a fully isolated amplifier. In operation with differential modules (SIRIUS®, Krypton®, DEWE-43, IOLITE) the input configuration is differential.

2.11.1. DSI-V-200 Specifications

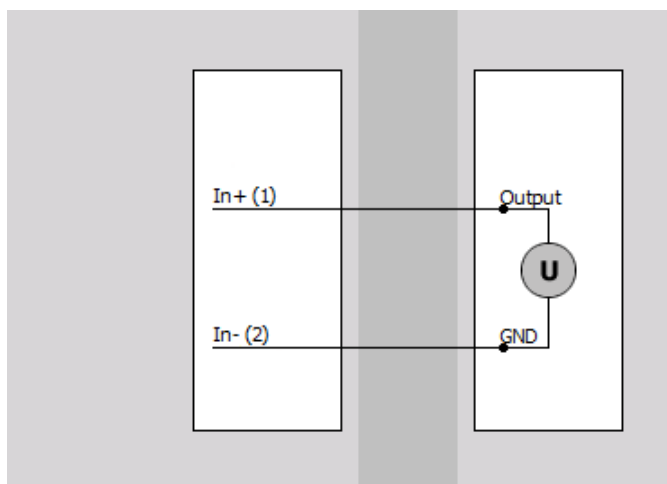
Inputs specifications	
Sensor connector	BNC
Ranges	± 200 V, ± 50 V, ± 5 V, ± 0.5 V (SIRIUS-HS series offers more ranges)
DC Accuracy	± 0.06 % of reading ± 0.02 % of range ± 5 mV
Bandwidth (-3 dB)	300 kHz (limited by bandwidth of host amplifier)
Low-pass filter	10 Hz to 100 kHz (depending on host amplifier)
Common mode voltage range	± 200 V
Input overvoltage protection	± 250 V
Input impedance In+	1 M Ω
Input impedance In-	1 M Ω
Gain drift	Typical 15 ppm/K (max. 30 ppm/K)
Input offset drift	Typical 10 μ V/K (max. 25 μ V/K)
Input attenuation	50 ± 0.5 % (uncalibrated)
Input configuration	Isolated (max. 350 VDC) when using with isolated SIRIUSi modules, else differential
Typical SNR @ 30 kHz BW	98 dB @ 200 V range 98 dB @ 40 V range 79 dB @ 4 V range
Host: Isolated amplifier	160 dB DC, 110 dB @ 1 kHz
Host: Differential amplifier	100 dB @ 100 Hz, 60 dB @ 10 kHz
Amplifier settings	Automatically selected by software - Measurement: Voltage - Range: ± 0.1 V to ± 10 V - Excitation: 10 V



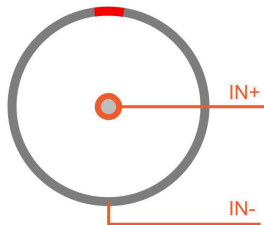
Warning

For safety reasons maximum 50 V may be applied to the BNC input-connectors! Refer to the regulation of maximum allowable touch potential.

2.11.2. DSI-V-200 Input Connection



2.11.3. DSI-V-200 connector pinout



DSI-V-200 connector: pin-out (BNC)

Pin	Description
1	In+
2	In-

2.12. DSI-20mA/DSIw-20mA

The DSI-20mA and DSIw-20mA adapters allow current measurement of up to 20mA. It uses a 50 Ω shunt resistor with 0.01 % accuracy and 0.2 ppm/K temperature drift (0.05 ppm/K in temperature range 0 °C to 60 °C). This is a product made for sensing current from industrial sensors with 4-20 mA output. DSIw-20mA is a waterproof adapter suited for mounting on a SIRIUSw or KRYPTON STG.



DSI-20mA

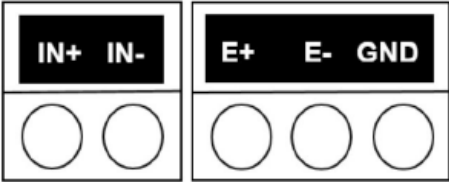


DSIw-20mA

2.12.1. DSI-20mA/DSIw-20mA Specifications

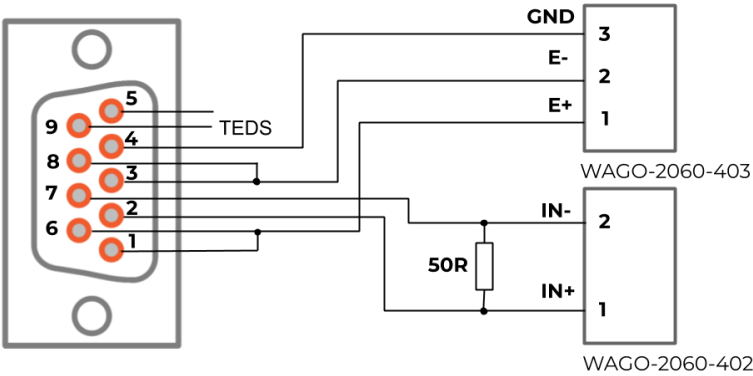
Inputs specifications	DSI-20mA	DSIw-20mA
Input connector type	SMD terminal block with push-buttons (Direct wire: 0.2 ... 0.75 mm ² / 24 ... 18 AWG)	Waterproof DSUB9 female connector
Input range	20 mA	
Shunt Resistor	50 Ω , Metal Foil	
Input accuracy	Calibrated to ± 0.01 %, calibration in TEDS (uncalibrated ± 0.05 %)	
Temperature Coefficient	± 0.05 ppm/°C typical (0 °C to +60 °C) ± 0.2 ppm/°C typical (-55 °C to +125 °C)	
Power Rating	250 mW (do NOT exceed maximum rating!)	
TEDS	1024-bit, 1-Wire EEPROM	
Environmental rating	IP20	IP67

2.12.2. DSI-20mA Output connector pinout



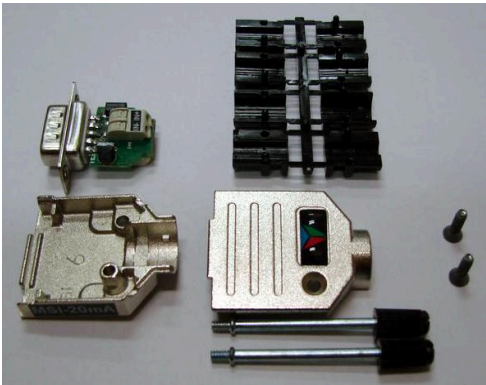
Surface Mount Terminal Strips with Push-Buttons

Pin	Description
E+	Excitation +
E-	Excitation -
GND	AGND
IN+	IN+
IN-	IN-

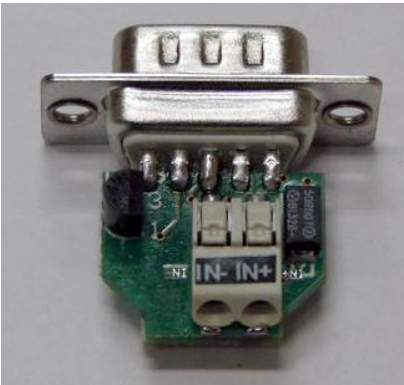


DSI-20mA Input Connection

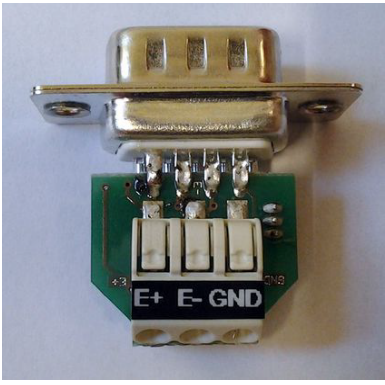
2.12.3. DSI-20mA Assembly



Bundle content

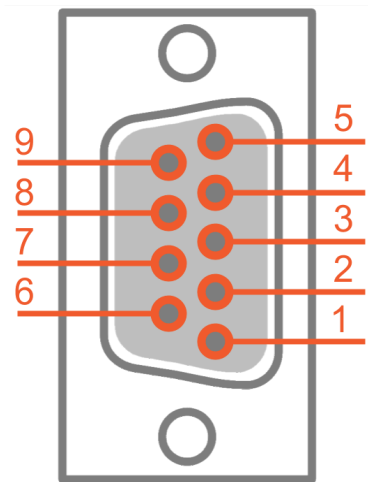


Top



Bottom

2.12.4. DSIw-20mA Output connector pinout

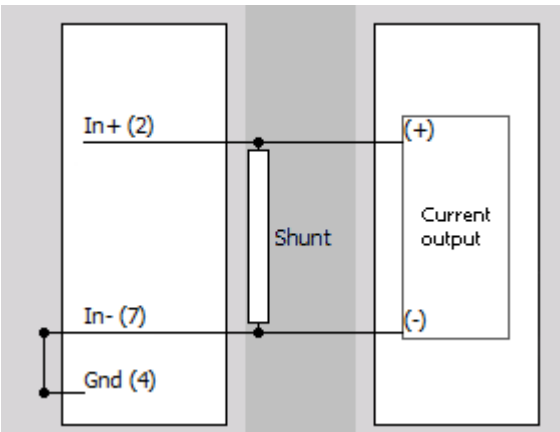


STG connector: pin-out (DSUB-9 female)

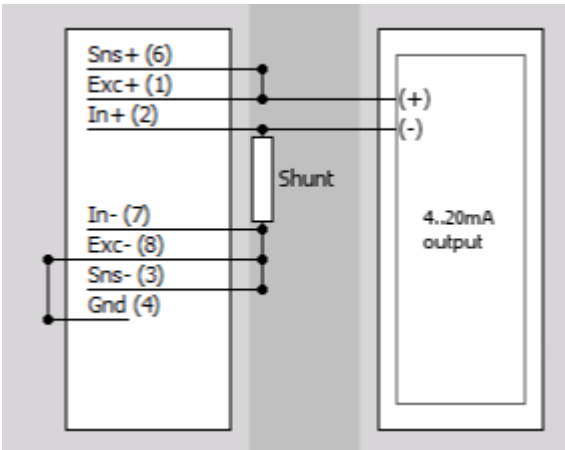
Pin	Name	Description
1	Exc +	Excitation +
2	In+	Input +
3	Sns-	Sense -
4	GND	Ground
5	N.C.	Not connected
6	Sns+	Sense +
7	In-	Input -
8	Exc-	Excitation -
9	TEDS	TEDS

2.12.5. DSI-20mA Connection diagrams

External direct shunt

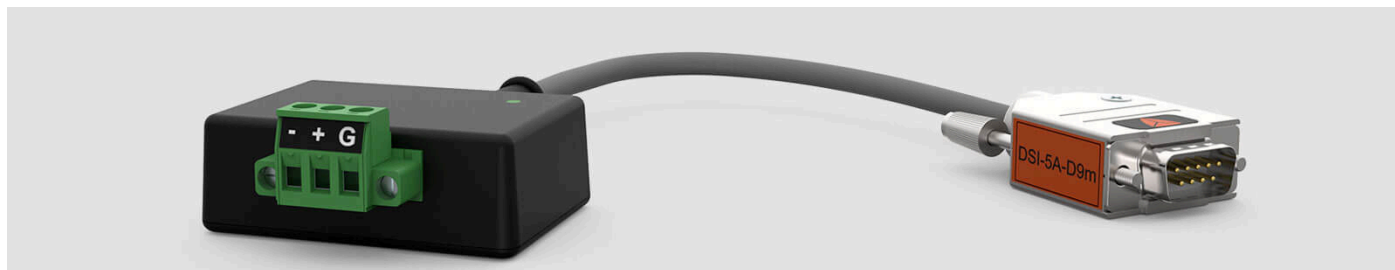


External loop powered shunt



2.13. DSI-5A

The DSI-5A allows current measurement of up to 5A.



DSI-5A-D9m

2.13.1. DSI-5A v2 specifications

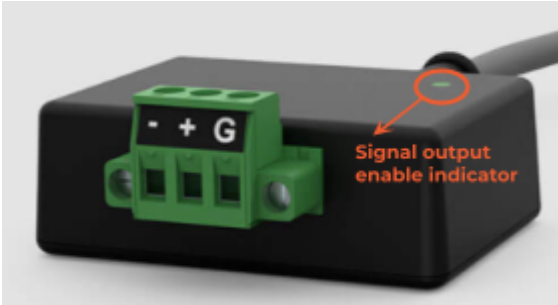
Inputs specifications		DSI-5A v2
Input connector type	MSTB 2,5/ 3-STF-5,08	Phoenix Contact, mates with MSTB 2,5/ 3-GF-5,08
Connector info	2.5 mm ² Nominal cross section	
Nominal current	5 A (DC or AC RMS continuous)	
Pulse load	1 s @ 15 A, 5 s @ 0 A	
Shunt Resistor	10 mΩ	
Input accuracy	Calibrated to ±0.1 %, calibration in TEDS	
Temperature Coefficient	±15 ppm/°C max (-55 °C to +125 °C)	
Voltage rating	300 V DC or AC RMS	
TEDS	1024-bit, 1-Wire EEPROM	
Physical		
Dimensions	57 x 39 x 20 mm	
Cable	200 mm	
Weight	100 g	



Important

Isolated voltage input amplifiers are recommended for connecting shunt resistor adapters.

2.13.2. DSI-5A input connection



DSI-5A input connector

Pin	Name	Description
1	-	Current Input -
2	+	Current Input +
3	G	Analog Ground

2.13.3. DSI-5A output connector

