ACCESSORIES & SENSORS

▲ **DEWE**Soft®

TECHNICAL REFERENCE MANUAL

ACCESSORIES & SENSORS V21-3

Metromatics

1. Table of contents

2. About this document

This is the Technical Reference Manual for Accessories & sensors.

The items in this documentation may be usable with SIRIUS, KRYPTON, IOLITE or DEWE-43 devices.

The manual is divided into several chapters. You will find:
- Overview of available accessories
- Overview of available sensors
- Technical specifications

2.1. Legend

The following symbols and formats will be used throughout the document.

Important
Gives you important information about a subject.
Please read carefully!

Hint
Gives you a Hint or provides additional information about a subject.

Example
Gives you an example to a specific subject.

Safety symbols in the manual:

Warning
Calls attention to a procedure, practice, or condition that could cause bodily injury or death

Caution
Calls attention to a procedure, practice, or condition that could possibly cause damage to equipment or permanent loss of data.

2.2. Online versions

2.2.1. Accessories & sensors Technical Reference Manual

The most recent version of this manual can be downloaded from our homepage:
https://download.dewesoft.com/list/manuals-brochures/hardware-manuals
In the Hardware Manuals section click the download link for the Accessories & sensors technical reference manual.

2.2.2. DewesoftX® User Manual

The DewesoftX® User Manual document provides basics and additional information and examples for working with DewesoftX® and certain parts of the program.
The latest version of the DewesoftX® tutorials can be found here:
https://download.dewesoft.com/list/manuals-brochures/software-manuals
In the Software Manuals section click the download link of the DEWESoft X3 User Manual entry.

Important
Read safety instructions first in chapter Safety instructions.

3. DSI® Adapters

DSI adapters are TEDS IEEE 1451.4 equipped sensor adapters that turn any of our DSUB9 universal analog input amplifiers into direct IEPE, charge, thermocouple, shunt, voltage, LVDT or RTD input...

IEPE — IEPE

Charge

Voltage

Current

LVDT — LVDT

Thermocouple

PT100 — RTD

TEDS — TEDS compatible

3.1. DSI Overview

3.1.1. 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. Siriusi 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).

3.2. 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

3.2.1. Calibration

The DSI-adapters are calibrated at 25 °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!

3.2.2. DSI: Pin-out
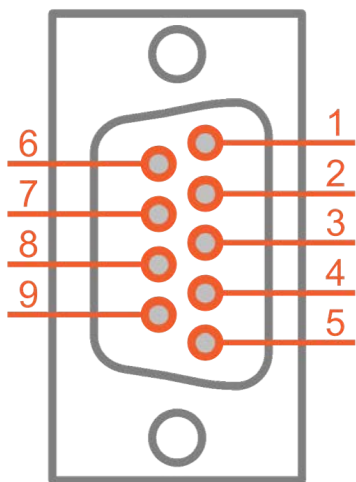
DSI connector: pin-out (DSUB-9 male)

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

3.2.3. 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.

3.3. DSI-TH-x

DSI-TH-K
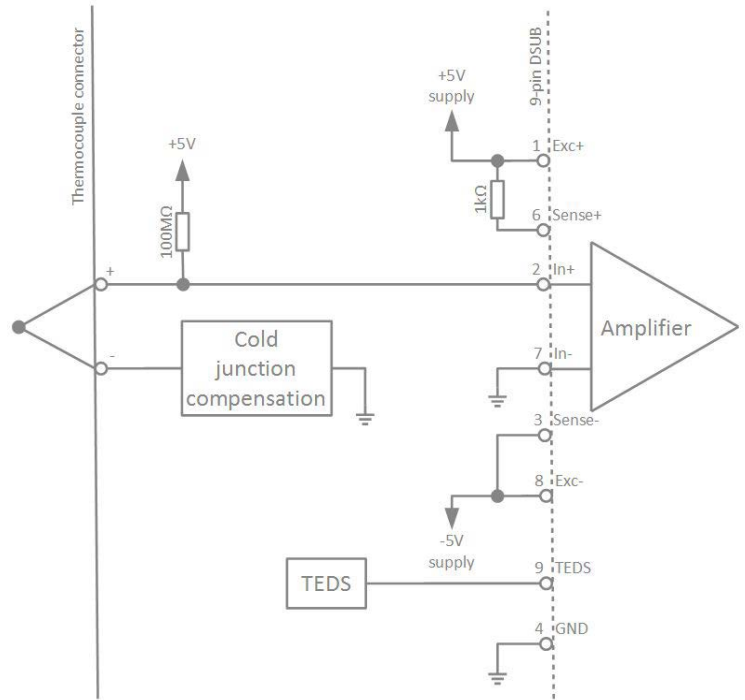
Basic circuit design of DSI-TH-x

The DSI-TH-x allows thermocouple temperature measurement with Dewesoft devices. The common thermocouple types K, J, T and E are supported. For high temperature applications also type C is supported. A high precision cold junction compensation is included in the adapter. The non-linearity of the thermocouple is compensated for in software.

A TEDS chip provides automatic adapter identification by software and the calibration data. In operation with the isolated SIRIUSi modules you will get a fully isolated thermocouple amplifier.

Note
In operation with the differential SIRIUS® modules (or Krypton® / DEWE-43, IOLITE) only isolated thermocouples should be used, because the thermocouple input is single ended.

3.3.1. DSI-TH-x Specifications

General specifications	
Sensor connector	Mini thermocouple, female
Thermocouple Types	DSI-TH-K: Type K DSI-TH-J: Type J DSI-TH-T: Type T DSI-TH-C: Type C DSI-TH-E: Type E
Cold junction compensation	Integrated
CJC accuracy	1.0 °C
Input impedance	> 10 MΩ
BIAS current	50 nA
Open TC detection	✓
Linearisation	Through software according to the sensor type
TEDS	For adapter identification and calibration data

Measurement hardware		SIRIUSi LVv2 SIRIUSi HD STGS SIRIUSi STGv2 SIRIUSi STGS	KRYPTONi STG SIRIUSi XHS-LV IOLITE STG	SIRIUSi STGMv3 MINITAURs	DEWE-43A SIRIUSi HD-LV	SIRIUSi HS-LVv2	SIRIUSi HS-STG	SIRIUSi MULTI
DSI-TH-K for thermocouple type K (DIN EN 60584-1)								
Input Range	**Actual reading**	**Typical accuracy [maximum accuracy]**						
-270 to 1370 °C	-250 to -200 °C	±3.2 [±18.2] °C	±11.3 [±21.3] °C	±4.9 [±18.2] °C	±9.9 [±18.2] °C	±2.2 [±21.3] °C	±2.2 [±9.7] °C	±4.9 [±34.9] °C
	-200 to -100 °C	±1.8 [±7.4] °C	±4.8 [±8.6] °C	±2.4 [±7.4] °C	±4.3 [±7.4] °C	±1.4 [±8.6] °C	±1.4 [±4.2] °C	±2.4 [±13.6] °C
	-100 to 0 °C	±1.4 [±4.3] °C	±3.0 [±4.9] °C	±1.7 [±4.3] °C	±2.7 [±4.3] °C	±1.2 [±4.9] °C	±1.2 [±2.6] °C	±1.7 [±7.5] °C
	0 to 200 °C	±1.3 [±3.5] °C	±2.5 [±4.0] °C	±1.5 [±3.5] °C	±2.3 [±3.5] °C	±1.1 [±4.0] °C	±1.1 [±2.3] °C	±1.5 [±6.0] °C
	200 to 1000 °C	±1.8 [±4.1] °C	±2.9 [±4.4] °C	±2.0 [±4.1] °C	±2.8 [±4.1] °C	±1.4 [±4.4] °C	±1.4 [±2.6] °C	±2.0 [±6.7] °C
	1000 to 1370 °C	±2.0 [±4.6] °C	±3.2 [±4.9] °C	±2.3 [±4.6] °C	±3.2 [±4.6] °C	±1.6 [±4.9] °C	±1.6 [±2.9] °C	±2.3 [±7.5] °C
DSI-TH-J for thermocouple type J (DIN EN 60584-1)								
Input Range	**Actual reading**	**Typical accuracy [maximum accuracy]**						
-200 to 1200 °C	-200 to -100 °C	±1.6 [±5.5] °C	±3.7 [±6.3] °C	±2.0 [±5.5] °C	±3.3 [±5.5] °C	±1.3 [±6.3] °C	±1.3 [±3.3] °C	±2.0 [±9.8] °C
	-100 to 0 °C	±1.3 [±3.4] °C	±2.5 [±3.9] °C	±1.5 [±3.4] °C	±2.3 [±3.4] °C	±1.2 [±3.9] °C	±1.2 [±2.2] °C	±1.5 [±5.8] °C
	0 to 500 °C	±1.4 [±3.0] °C	±2.2 [±3.3] °C	±1.6 [±3.0] °C	±2.1 [±3.0] °C	±1.2 [±3.3] °C	±1.2 [±2.0] °C	±1.6 [±4.8] °C
	500 to 1000 °C	±1.7 [±3.2] °C	±2.3 [±3.3] °C	±1.8 [±3.2] °C	±2.3 [±3.2] °C	±1.4 [±3.3] °C	±1.4 [±2.1] °C	±1.8 [±4.9] °C
	1000 to 1200 °C	±1.8 [±3.4] °C	±2.4 [±3.5] °C	±2.0 [±3.4] °C	±2.5 [±3.4] °C	±1.5 [±3.5] °C	±1.5 [±2.2] °C	±2.0 [±5.1] °C

DSI-TH-T for thermocouple type T (DIN EN 60584-1)								
Input Range	Actual reading	Typical accuracy [maximum accuracy]						
-270 to 400 °C	-250 to -200 °C	±2.7 [±14.7] °C	±9.2 [±17.2] °C	±4.1 [±14.7] °C	±8.1 [±14.7] °C	±1.9 [±17.2] °C	±1.9 [±7.9] °C	±4.1 [±28.1] °C
	-200 to -100 °C	±1.8 [±7.3] °C	±4.8 [±8.4] °C	±2.4 [±7.3] °C	±4.2 [±7.3] °C	±1.4 [±8.4] °C	±1.4 [±4.2] °C	±2.4 [±13.4] °C
	-100 to 0 °C	±1.4 [±4.5] °C	±3.1 [±5.2] °C	±1.7 [±4.5] °C	±2.8 [±4.5] °C	±1.2 [±5.2] °C	±1.2 [±2.8] °C	±1.7 [±8.0] °C
	0 to 200 °C	±1.3 [±3.6] °C	±2.5 [±4.1] °C	±1.5 [±3.6] °C	±2.3 [±3.6] °C	±1.1 [±4.1] °C	±1.1 [±2.3] °C	±1.5 [±6.1] °C
	200 to 400 °C	±1.3 [±3.0] °C	±2.2 [±3.3] °C	±1.5 [±3.0] °C	±2.0 [±3.0] °C	±1.1 [±3.3] °C	±1.1 [±2.0] °C	±1.5 [±4.8] °C

DSI-TH-E for thermocouple type E (DIN EN 60584-1)								
Input Range	Actual reading	Typical accuracy [maximum accuracy]						
-270 to 1000 °C	-250 to -200 °C	±2.3 [±10.2] °C	±6.5 [±11.8] °C	±3.2 [±10.2] °C	±5.8 [±10.2] °C	±1.7 [±11.8] °C	±1.7 [±5.6] °C	±3.2 [±19.0] °C
	-200 to -100 °C	±1.5 [±5.0] °C	±3.4 [±5.6] °C	±1.9 [±5.0] °C	±3.1 [±5.0] °C	±1.3 [±5.6] °C	±1.3 [±3.0] °C	±1.9 [±8.7] °C
	-100 to 0 °C	±1.3 [±3.2] °C	±2.3 [±3.6] °C	±1.5 [±3.2] °C	±2.1 [±3.2] °C	±1.1 [±3.6] °C	±1.1 [±2.1] °C	±1.5 [±5.4] °C
	0 to 500 °C	±1.3 [±2.4] °C	±1.9 [±2.6] °C	±1.4 [±2.4] °C	±1.8 [±2.4] °C	±1.2 [±2.6] °C	±1.2 [±1.7] °C	±1.4 [±3.7] °C
	500 to 1000 °C	±1.6 [±2.8] °C	±2.1 [±2.9] °C	±1.8 [±2.8] °C	±2.2 [±2.8] °C	±1.4 [±2.9] °C	±1.4 [±2.0] °C	±1.8 [±4.2] °C

DSI-TH-C for thermocouple type C (DIN EN 60584-1)								
Input Range	Actual reading	Typical accuracy [maximum accuracy]						
0 to 2320 °C	0 to 500 °C	±1.7 [±8.4] °C	±5.4 [±9.9] °C	±2.5 [±8.4] °C	±4.7 [±8.4] °C	±1.4 [±9.9] °C	±1.4 [±4.7] °C	±2.5 [±15.8] °C
	500 to 1000 °C	±2.0 [±6.7] °C	±4.4 [±7.6] °C	±2.5 [±6.7] °C	±4.1 [±6.7] °C	±1.5 [±7.6] °C	±1.5 [±3.9] °C	±2.5 [±12.0] °C
	1000 to 1500 °C	±2.4 [±8.0] °C	±5.2 [±9.0] °C	±3.0 [±8.0] °C	±4.9 [±8.0] °C	±1.8 [±9.0] °C	±1.8 [±4.6] °C	±3.0 [±14.3] °C
	1500 to 2000 °C	±3.0 [±10.0] °C	±6.4 [±11.1] °C	±3.8 [±10.0] °C	±6.1 [±10.0] °C	±2.1 [±11.1] °C	±2.1 [±5.6] °C	±3.8 [±17.8] °C
	2000 to 2320 °C	±4.1 [±13.7] °C	±8.6 [±15.1] °C	±5.1 [±13.7] °C	±8.4 [±13.7] °C	±2.7 [±15.1] °C	±2.7 [±7.6] °C	±5.1 [±24.5] °C

3.3.2. DSI-TH Input Connection
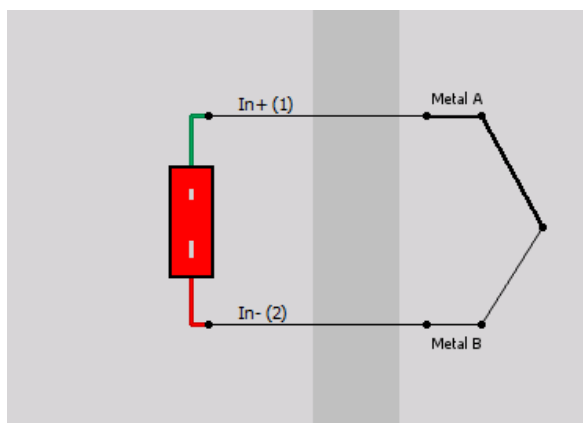
3.4. DSI-TH-UNI

DSI-TH-UNI adapter has universal thermocouple input allowing it to connect practically any type of thermocouple
(K, J, T, R, S, N, E, B, C).

DSI-TH-UNI has integrated cold junction compensation with CJC accuracy of 0.5 °C.

Universal thermocouple DSI adapter comes in an attractive compact chassis mounted directly on the host amplifier without any additional cable.

Host amplifier configuration and calibration coefficients can be read via TEDS.

DSI-TH-UNI

3.4.1. DSI-TH-UNI Specifications

General specifications	
Sensor connector	Mini thermocouple, female
Thermocouple Types	K, J, T, R, S, N, E, B, C
Cold junction compensation	Integrated
CJC accuracy	0.5 °C
Input impedance	> 10 MΩ
BIAS current	50 nA
Open TC detection	✓
Linearisation	Through software according to the sensor type
TEDS	For adapter identification and calibration data
Dimensions	52 x 31 x 15 mm (61 x 31 x 15 mm with screws)
Weight	40 g

Measurement hardware	SIRIUSi LVv2 SIRIUSi HD STGS SIRIUSi STGv2 SIRIUSi STGS	KRYPTONi STG SIRIUSi XHS-LV IOLITE STG	SIRIUSi STGMv3 MINITAURs	DEWE-43A SIRIUSi HD-LV	SIRIUSi HS-LVv2	SIRIUSi HS-STG	SIRIUSi MULTI

DSI-TH- for thermocouple type K (DIN EN 60584-1)

Input Range	Actual reading	Typical accuracy [maximum accuracy]						
	-250 to -200 °C	±2.7 [±17.7] °C	±10.8 [±20.8] °C	±4.4 [±17.7] °C	±9.4 [±17.7] °C	±1.7 [±20.8] °C	±1.7 [±9.2] °C	±4.4 [±34.4] °C
	-200 to -100 °C	±1.3 [±6.9] °C	±4.3 [±8.1] °C	±1.9 [±6.9] °C	±3.8 [±6.9] °C	±0.9 [±8.1] °C	±0.9 [±3.7] °C	±1.9 [±13.1] °C
	-100 to 0 °C	±0.9 [±3.8] °C	±2.5 [±4.4] °C	±1.2 [±3.8] °C	±2.2 [±3.8] °C	±0.7 [±4.4] °C	±0.7 [±2.1] °C	±1.2 [±7.0] °C
	0 to 200 °C	±0.8 [±3.0] °C	±2.0 [±3.5] °C	±1.0 [±3.0] °C	±1.8 [±3.0] °C	±0.6 [±3.5] °C	±0.6 [±1.8] °C	±1.0 [±5.5] °C
	200 to 1000 °C	±1.3 [±3.6] °C	±2.4 [±3.9] °C	±1.5 [±3.6] °C	±2.3 [±3.6] °C	±0.9 [±3.9] °C	±0.9 [±2.1] °C	±1.5 [±6.2] °C
-270 to 1370 °C	1000 to 1370 °C	±1.5 [±4.1] °C	±2.7 [±4.4] °C	±1.8 [±4.1] °C	±2.7 [±4.1] °C	±1.1 [±4.4] °C	±1.1 [±2.4] °C	±1.8 [±7.0] °C

DSI-TH- for thermocouple type J (DIN EN 60584-1)

Input Range	Actual reading	Typical accuracy [maximum accuracy]						
	-200 to -100 °C	±1.1 [±5.0] °C	±3.2 [±5.8] °C	±1.5 [±5.0] °C	±2.8 [±5.0] °C	±0.8 [±5.8] °C	±0.8 [±2.8] °C	±1.5 [±9.3] °C
	-100 to 0 °C	±0.8 [±2.9] °C	±2.0 [±3.4] °C	±1.0 [±2.9] °C	±1.8 [±2.9] °C	±0.7 [±3.4] °C	±0.7 [±1.7] °C	±1.0 [±5.3] °C
	0 to 500 °C	±0.9 [±2.5] °C	±1.7 [±2.8] °C	±1.1 [±2.5] °C	±1.6 [±2.5] °C	±0.7 [±2.8] °C	±0.7 [±1.5] °C	±1.1 [±4.3] °C
	500 to 1000 °C	±1.2 [±2.7] °C	±1.8 [±2.8] °C	±1.3 [±2.7] °C	±1.8 [±2.7] °C	±0.9 [±2.8] °C	±0.9 [±1.6] °C	±1.3 [±4.4] °C
-200 to 1200 °C	1000 to 1200 °C	±1.3 [±2.9] °C	±1.9 [±3.0] °C	±1.5 [±2.9] °C	±2.0 [±2.9] °C	±1.0 [±3.0] °C	±1.0 [±1.7] °C	±1.5 [±4.6] °C

DSI-TH- for thermocouple type T (DIN EN 60584-1)

Input Range	Actual reading	Typical accuracy [maximum accuracy]						
	-250 to -200 °C	±2.2 [±14.2] °C	±8.7 [±16.7] °C	±3.6 [±14.2] °C	±7.6 [±14.2] °C	±1.4 [±16.7] °C	±1.4 [±7.4] °C	±3.6 [±27.6] °C
	-200 to -100 °C	±1.3 [±6.8] °C	±4.3 [±7.9] °C	±1.9 [±6.8] °C	±3.7 [±6.8] °C	±0.9 [±7.9] °C	±0.9 [±3.7] °C	±1.9 [±12.9] °C
	-100 to 0 °C	±0.9 [±4.0] °C	±2.6 [±4.7] °C	±1.2 [±4.0] °C	±2.3 [±4.0] °C	±0.7 [±4.7] °C	±0.7 [±2.3] °C	±1.2 [±7.5] °C
	0 to 200 °C	±0.8 [±3.1] °C	±2.0 [±3.6] °C	±1.0 [±3.1] °C	±1.8 [±3.1] °C	±0.6 [±3.6] °C	±0.6 [±1.8] °C	±1.0 [±5.6] °C
-270 to 400 °C	200 to 400 °C	±0.8 [±2.5] °C	±1.7 [±2.8] °C	±1.0 [±2.5] °C	±1.5 [±2.5] °C	±0.6 [±2.8] °C	±0.6 [±1.5] °C	±1.0 [±4.3] °C

DSI-TH- for thermocouple type R (DIN EN 60584-1)

Input Range	Actual reading	Typical accuracy [maximum accuracy]						
	0 to 100 °C	±2.4 [±19.0] °C	±11.6 [±22.7] °C	±4.2 [±19.0] °C	±9.8 [±19.0] °C	±1.4 [±22.7] °C	±1.4 [±9.8] °C	±4.2 [±37.5] °C
	100 to 200 °C	±1.9 [±13.7] °C	±8.4 [±16.3] °C	±3.2 [±13.7] °C	±7.1 [±13.7] °C	±1.2 [±16.3] °C	±1.2 [±7.1] °C	±3.2 [±26.9] °C
	200 to 500 °C	±1.7 [±11.8] °C	±7.3 [±14.0] °C	±2.8 [±11.8] °C	±6.2 [±11.8] °C	±1.1 [±14.0] °C	±1.1 [±6.2] °C	±2.8 [±23.1] °C
	500 to 1000 °C	±1.6 [±9.9] °C	±6.1 [±11.6] °C	±2.5 [±9.9] °C	±5.3 [±9.9] °C	±1.1 [±11.6] °C	±1.1 [±5.2] °C	±2.5 [±19.1] °C
	1000 to 1500 °C	±1.7 [±8.5] °C	±5.3 [±9.8] °C	±2.4 [±8.5] °C	±4.7 [±8.5] °C	±1.1 [±9.8] °C	±1.1 [±4.5] °C	±2.4 [±16.0] °C
-50 to 1768 °C	1500 to 1768 °C	±2.0 [±8.7] °C	±5.4 [±9.9] °C	±2.7 [±8.7] °C	±5.0 [±8.7] °C	±1.3 [±9.9] °C	±1.3 [±4.7] °C	±2.7 [±16.2] °C

DSI-TH- for thermocouple type S (DIN EN 60584-1)

Input Range	Actual reading	Typical accuracy [maximum accuracy]						
	0 to 100 °C	±2.3 [±18.7] °C	±11.4 [±22.3] °C	±4.1 [±18.7] °C	±9.6 [±18.7] °C	±1.4 [±22.3] °C	±1.4 [±9.6] °C	±4.1 [±36.9] °C
	100 to 200 °C	±1.9 [±14.1] °C	±8.6 [±16.7] °C	±3.2 [±14.1] °C	±7.3 [±14.1] °C	±1.2 [±16.7] °C	±1.2 [±7.3] °C	±3.2 [±27.6] °C
	200 to 500 °C	±1.8 [±12.3] °C	±7.6 [±14.7] °C	±2.9 [±12.3] °C	±6.5 [±12.3] °C	±1.1 [±14.7] °C	±1.1 [±6.4] °C	±2.9 [±24.1] °C
	500 to 1000 °C	±1.7 [±10.8] °C	±6.7 [±12.7] °C	±2.7 [±10.8] °C	±5.8 [±10.8] °C	±1.1 [±12.7] °C	±1.1 [±5.7] °C	±2.7 [±20.9] °C
	1000 to 1500 °C	±1.9 [±9.4] °C	±5.8 [±10.8] °C	±2.7 [±9.4] °C	±5.2 [±9.4] °C	±1.3 [±10.8] °C	±1.3 [±5.0] °C	±2.7 [±17.6] °C
-50 to 1768 °C	1500 to 1768 °C	±2.2 [±10.1] °C	±6.2 [±11.5] °C	±3.0 [±10.1] °C	±5.7 [±10.1] °C	±1.4 [±11.5] °C	±1.4 [±5.4] °C	±3.0 [±18.8] °C

DSI-TH- for thermocouple type N (DIN EN 60584-1)

Input Range	Actual reading	Typical accuracy [maximum accuracy]						
	-250 to -200 °C	±3.9 [±28.9] °C	±17.5 [±34.2] °C	±6.7 [±28.9] °C	±15.0 [±28.9] °C	±2.2 [±34.2] °C	±2.2 [±14.7] °C	±6.7 [±56.7] °C
	-200 to -100 °C	±1.6 [±10.1] °C	±6.3 [±11.9] °C	±2.6 [±10.1] °C	±5.4 [±10.1] °C	±1.1 [±11.9] °C	±1.1 [±5.3] °C	±2.6 [±19.6] °C
	-100 to 0 °C	±1.0 [±5.2] °C	±3.3 [±6.1] °C	±1.5 [±5.2] °C	±2.9 [±5.2] °C	±0.8 [±6.1] °C	±0.8 [±2.9] °C	±1.5 [±9.9] °C
	0 to 500 °C	±0.9 [±4.3] °C	±2.8 [±5.1] °C	±1.3 [±4.3] °C	±2.4 [±4.3] °C	±0.7 [±5.1] °C	±0.7 [±2.4] °C	±1.3 [±8.2] °C
	500 to 1000 °C	±1.2 [±3.5] °C	±2.3 [±3.8] °C	±1.4 [±3.5] °C	±2.2 [±3.5] °C	±0.9 [±3.8] °C	±0.9 [±2.0] °C	±1.4 [±6.0] °C
-270 to 1300 °C	1000 to 1300 °C	±1.4 [±3.9] °C	±2.5 [±4.2] °C	±1.7 [±3.9] °C	±2.5 [±3.9] °C	±1.0 [±4.2] °C	±1.0 [±2.3] °C	±1.7 [±6.6] °C

DSI-TH- for thermocouple type E (DIN EN 60584-1)

Input Range	Actual reading	Typical accuracy [maximum accuracy]						
-270 to 1000 °C	-250 to -200 °C	±1.8 [±9.7] °C	±6.0 [±11.3] °C	±2.7 [±9.7] °C	±5.3 [±9.7] °C	±1.2 [±11.3] °C	±1.2 [±5.1] °C	±2.7 [±18.5] °C

|	-200 to -100 °C	±1.0 [±4.5] °C	±2.9 [±5.1] °C	±1.4 [±4.5] °C	±2.6 [±4.5] °C	±0.8 [±5.1] °C	±0.8 [±2.5] °C	±1.4 [±8.2] °C
	-100 to 0 °C	±0.8 [±2.7] °C	±1.8 [±3.1] °C	±1.0 [±2.7] °C	±1.6 [±2.7] °C	±0.6 [±3.1] °C	±0.6 [±1.6] °C	±1.0 [±4.9] °C
	0 to 500 °C	±0.8 [±1.9] °C	±1.4 [±2.1] °C	±0.9 [±1.9] °C	±1.3 [±1.9] °C	±0.7 [±2.1] °C	±0.7 [±1.2] °C	±0.9 [±3.2] °C
	500 to 1000 °C	±1.1 [±2.3] °C	±1.6 [±2.4] °C	±1.3 [±2.3] °C	±1.7 [±2.3] °C	±0.9 [±2.4] °C	±0.9 [±1.5] °C	±1.3 [±3.7] °C

DSI-TH- for thermocouple type B (DIN EN 60584-1)

Input Range	Actual reading	Typical accuracy [maximum accuracy]						
	200 to 500 °C	±5.3 [±48.2] °C	±29.1 [±57.7] °C	±10.1 [±48.2] °C	±24.4 [±48.2] °C	±2.9 [±57.7] °C	±2.9 [±24.3] °C	±10.1 [±95.8] °C
	500 to 1000 °C	±2.6 [±20.2] °C	±12.3 [±24.1] °C	±4.5 [±20.2] °C	±10.4 [±20.2] °C	±1.6 [±24.1] °C	±1.6 [±10.4] °C	±4.5 [±39.8] °C
	1000 to 1500 °C	±1.8 [±11.6] °C	±7.2 [±13.7] °C	±2.9 [±11.6] °C	±6.2 [±11.6] °C	±1.2 [±13.7] °C	±1.2 [±6.1] °C	±2.9 [±22.5] °C
	1500 to 1700 °C	±1.8 [±9.6] °C	±5.9 [±11.1] °C	±2.7 [±9.6] °C	±5.2 [±9.6] °C	±1.2 [±11.1] °C	±1.2 [±5.1] °C	±2.7 [±18.2] °C
0 to 1820 °C	1700 to 1820 °C	±2.0 [±9.8] °C	±6.1 [±11.3] °C	±2.8 [±9.8] °C	±5.4 [±9.8] °C	±1.3 [±11.3] °C	±1.3 [±5.2] °C	±2.8 [±18.5] °C

DSI-TH- for thermocouple type C (DIN EN 60584-1)

Input Range	Actual reading	Typical accuracy [maximum accuracy]						
	0 to 500 °C	±1.2 [±7.9] °C	±4.9 [±9.4] °C	±2.0 [±7.9] °C	±4.2 [±7.9] °C	±0.9 [±9.4] °C	±0.9 [±4.2] °C	±2.0 [±15.3] °C
	500 to 1000 °C	±1.5 [±6.2] °C	±3.9 [±7.1] °C	±2.0 [±6.2] °C	±3.6 [±6.2] °C	±1.0 [±7.1] °C	±1.0 [±3.4] °C	±2.0 [±11.5] °C
	1000 to 1500 °C	±1.9 [±7.5] °C	±4.7 [±8.5] °C	±2.5 [±7.5] °C	±4.4 [±7.5] °C	±1.3 [±8.5] °C	±1.3 [±4.1] °C	±2.5 [±13.8] °C
	1500 to 2000 °C	±2.5 [±9.5] °C	±5.9 [±10.6] °C	±3.3 [±9.5] °C	±5.6 [±9.5] °C	±1.6 [±10.6] °C	±1.6 [±5.1] °C	±3.3 [±17.3] °C
0 to 2320 °C	2000 to 2320 °C	±3.6 [±13.2] °C	±8.1 [±14.6] °C	±4.6 [±13.2] °C	±7.9 [±13.2] °C	±2.2 [±14.6] °C	±2.2 [±7.1] °C	±4.6 [±24.0] °C

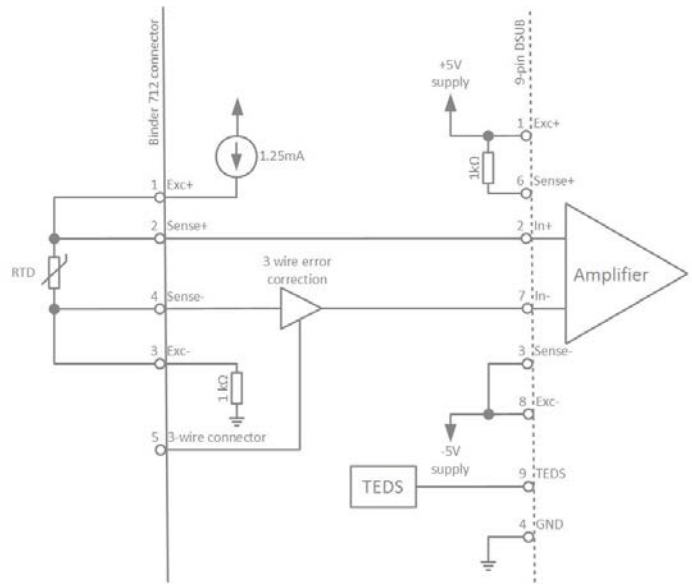## 3.4.2. DSI-TH-UNI Input Connection
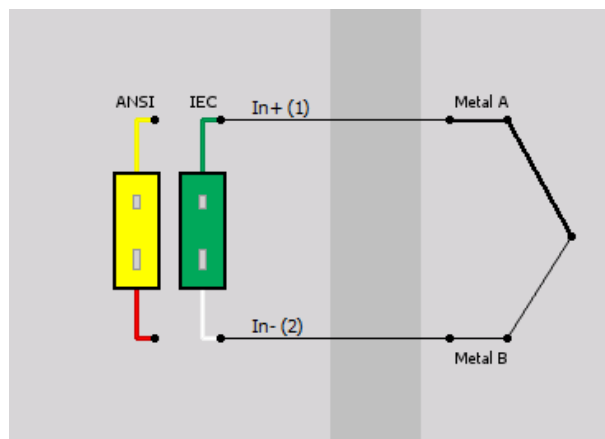
Wiring diagram for K-type thermocouple

3.5. DSI-RTD

DSI-RTD

Basic circuit design of DSI-RTD

3.5.1. DSI-RTD Specifications

| Inputs specifications	
Sensor connector	5-pin BINDER connector series 712
Supported sensors	Resistance: Pt100, Pt200, Pt500, Pt1000, Pt2000
Temperature range	-200 °C to 850 °C
Input offset	50 µV
Constant current	1.25 mA
Constant current accuracy	±0.02 % from calibrated value
Constant current drift	22 ppm/ °C
Linearisation	Through software according to sensor type
Connection types	2-, 3- or 4-wire
Bandwidth (-3 dB)	10 kHz (limited by bandwidth of host amplifier)
Input configuration	Isolated (max. 350 VDC) when using with isolated SIRIUSi modules, else differential
Typ. noise: 100 Hz bandwidth	0.03 °C
Input configuration	Isolated (max. 350 VDC) when using with isolated SIRIUSi modules, else differential
Amplifier settings	Automatically selected by software - Measurement: Voltage - Range: ±0.1 V to ±10 V - Excitation: 10 V

DSI-RTD Accuracy:

| Host amplifier			SIRIUSx LVv2 / STGv2 / HS-LV / HS-STG DEWE-43A MINITAURs	SIRIUSx STGMv2 / HD-LV / HD-STG KRYPTON STG	SIRIUSx Multi / STGM
Resistance Range	80 Ω		±0.05 % of reading ±120 mΩ	±0.05 % of reading ±120 mΩ	±0.05 % of reading ±200 mΩ
	800 Ω		±0.05 % of reading ±200 mΩ	±0.05 % of reading ±200 mΩ	±0.05 % of reading ±840 mΩ
	6 kΩ		±0.05 % of reading ±840 mΩ	±0.05 % of reading ±1500 mΩ	±0.05 % of reading ±8 Ω
DIN	**Sensor**	**Range**	**Temperature**		
EN 60751	Pt100	-200 to 850°C	±0.1 % of reading ±0.69 °C	±0.1 % of reading ±0.69 °C	±0.1 % of reading ±2.5 °C
EN 60751	Pt200	-200 to 850°C	±0.1 % of reading ±0.44 °C	±0.1 % of reading ±0.44 °C	±0.1 % of reading ±1.2 °C
EN 60751	Pt500	-200 to 850°C	±0.1 % of reading ±0.61 °C	±0.1 % of reading ±1 °C	±0.1 % of reading ±4 °C
		-200 to 150°C	±0.1 % of reading ±0.28 °C	±0.1 % of reading ±0.28 °C	±0.1 % of reading ±1.2 °C
EN 60751	Pt1000	-200 to 850°C	±0.1 % of reading ±0.39 °C	±0.1 % of reading ±0.8 °C	±0.1 % of reading ±3 °C
EN 60751	Pt2000	-200 to 550°C	±0.1 % of reading ±0.29 °C	±0.1 % of reading ±0.5 °C	±0.1 % of reading ±1.5 °C

3.5.2. DSI-RTD Input Connection

2-wire sensor connection
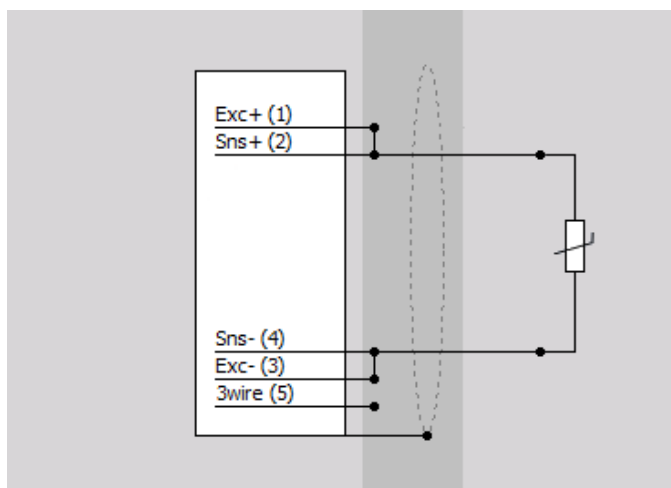
3-wire sensor connection
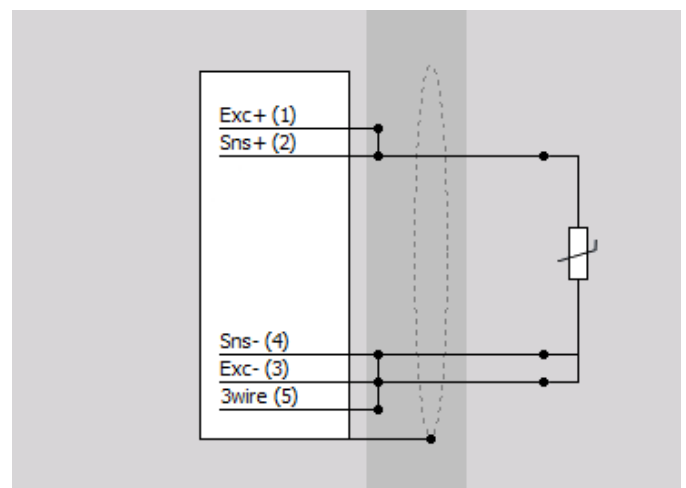
4-wire sensor connection
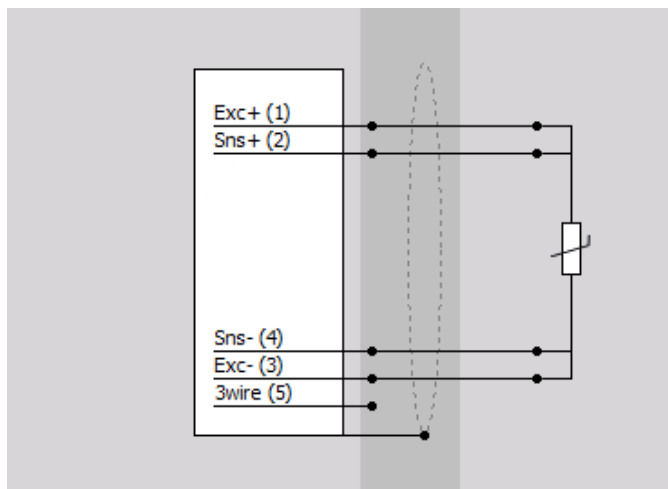
## 3.5.3. DSI-RTD Binder connector pinout

Binder 5-pin (female)

Pin	Name	Description
1	Exc+	Excitation+
2	Sns+	Sense+
3	Exc-	Excitation-
4	Sns-	Sense-
5	3-wire	3-wire connection

3.6. DSI-ACC

The DSI-ACC is designed to operate with IEPE sensors and IEPE compatible sensors (e.g. ICP®). The adapter provides a constant current source and high pass filter. Depending on the application, different excitation levels and high pass filters are available.

DIS-ACC
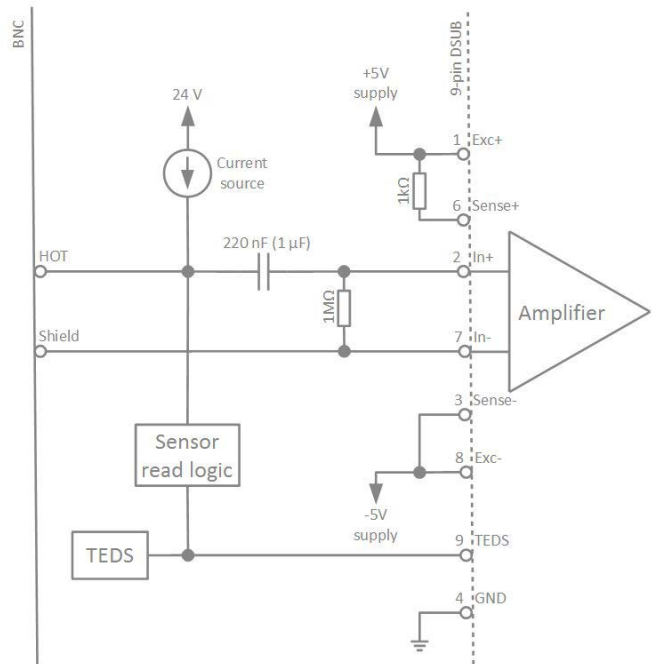
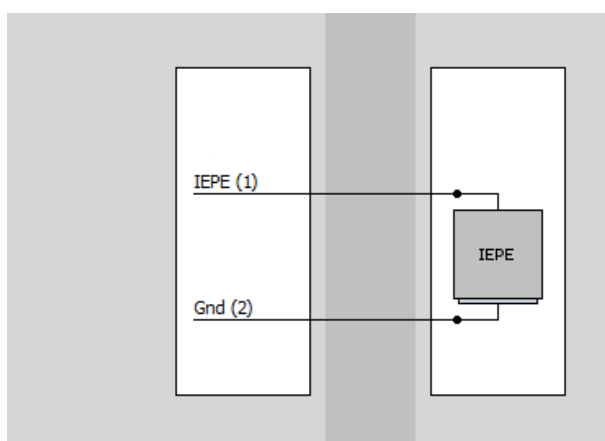*Basic circuit design of DSI-ACC*

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 single ended.

3.6.1. DSI-ACC Specifications

Inputs specifications				
Sensor connector	BNC			
Supported sensors	IEPE / ICP			
Amplifier settings	Automatically selected by software - Measurement: Voltage - Range: ±0.1 V to ±10 V - Excitation: 10 V			
	DSI-ACC	**DSI-ACC-0.16Hz**	**DSI-ACC-20mA**	**DSI-ACC-0.16Hz-20mA**
Sensor excitation	4 mA ±10 %	4 mA ±10 %	20 mA ±15 %	20 mA ±15 %
Compliance voltage	> 22 Volt	> 22 Volt	> 20 Volt	> 20 Volt
Accuracy 30 Hz to 30 kHz	0.3 %	0.07 %	0.3 %	0.07 %
High pass filter	0.8 Hz	0.16 Hz	0.8 Hz	0.16 Hz
Power consumption	300 mW	300 mW	800 mW	800 mW
Supported Amplifiers (exceptions)	-	-	Only on: SIRIUS LV/LV+, STG/STG+, HS-LV/HS-LV+, HS-STG/HS-STG+	Only on: SIRIUS LV/LV+, STG/STG+, HS-LV/HS-LV+, HS-STG/HS-STG+
Gain drift	50 ppm/°C			
Max. input offset	12 mV			
Input impedance	1 MΩ			
Supply voltage	±5 V (±1 %)			
Input configuration	Isolated (max. 350 VDC) when using with isolated SIRIUSi modules, else single ended			
Bandwidth	up to 500 kHz (limited by bandwidth of host amplifier)			
Low-pass filter	10 Hz to 100 kHz (depending on host amplifier)			
Ranges	100 mV, 1000 mV, 10000 mV (SIRIUS-HS series offers more ranges)			
Typical SNR @ 30 kHz bandwidth				
10000 mV	up to 125 dB (limited by the SNR of the host amplifier)			
1000 mV	up to 110 dB (limited by the SNR of the host amplifier)			

3.6.2. DSI-ACC Input Connection

3.6.3. DSI-ACC connector pinout
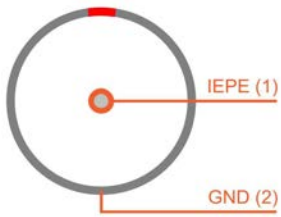
ACC connector: pin-out (BNC)

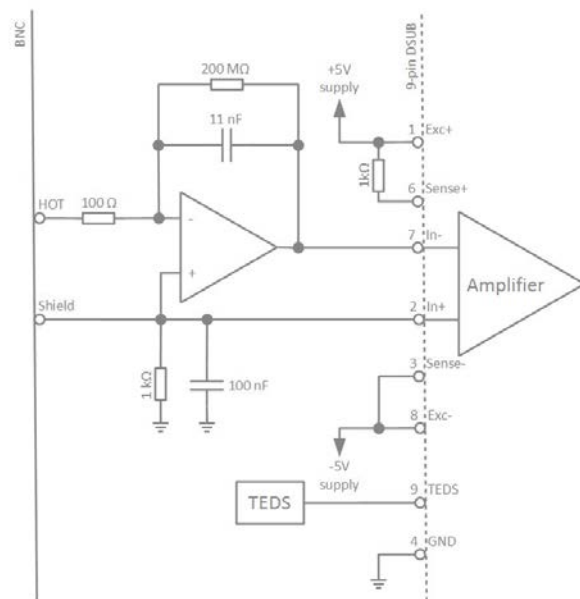| Pin	Description
1	IEPE
2	Gnd

3.7. DSI-CHG-50

The DSI-CHG adapter can be used for charge sensors up to 50,000 pC with Dewesoft devices.

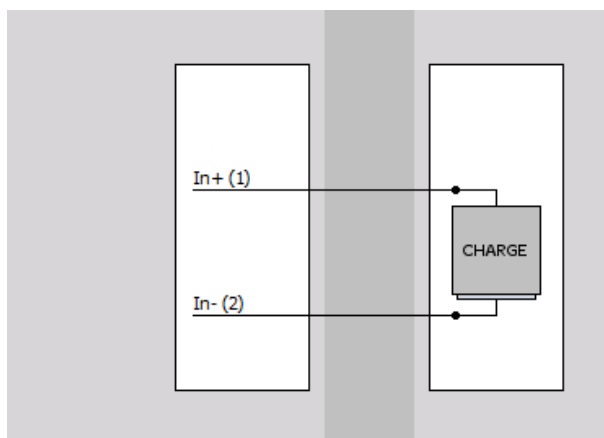*DSI-CHG-50*

Basic circuit design of DSI-CHG-50

Important

In operation with the isolated SIRIUSi modules you will get a fully isolated charge amplifier. In operation with differential modules (SIRIUS®, Krypton®, DEWE-43, IOLITE) the input configuration is single ended.
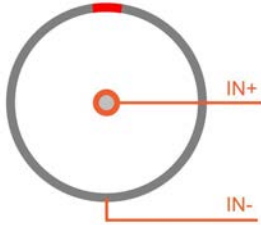
3.7.1. DSI-CHG-50 Specifications

Inputs specifications	
Sensor connector	BNC
Supported sensors	Charge sensors
Accuracy	0.5 %
Gain drift	100 ppm/°C
Supply voltage	±5 V (±1 %)
Power consumption	max. 100 mW
Input configuration	Isolated (max. 350 VDC) when using with isolated SIRIUSi modules, else single-ended
Bandwidth	0.07 Hz up to 300 kHz (limited by bandwidth of host amplifier)
Low-pass filter	10 Hz to 100 kHz (depending on host amplifier)
Range	1,000 / 10,000 / 50,000 pC (SIRIUS-HS series offers more ranges)
Typ. SNR @ 30 kHz bandwidth	up to 125 dB (limited by the SNR of the host amplifier)
Max. offset	20 pC (compensated in DEWESoft® by software filter)
High-pass filter	0.07 Hz, 1 Hz, 10 Hz
Amplifier settings	Automatically selected by software - Measurement: Voltage - Range: ±0.1 to ±10 V - Excitation: 10 V

3.7.2. DSI-CHG-50 Input Connection

3.7.3. DSI-CHG-50 connector pinout
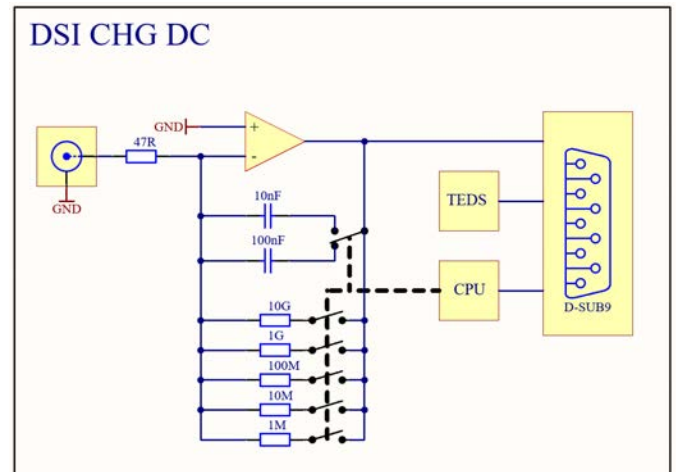

DSI-CHG-50 connector: pin-out (BNC)

Pin	Description
1	In+
2	In-

3.8. DSI-CHG-DC

The DSI-CHG-DC adapter can be used for charge sensors up to 50,000 pC with Dewesoft devices.

DSI-CHG-DC

3.8.1. DSI-CHG-DC Specifications

Inputs specifications	
Sensor connector	BNC
Supported sensors	Charge sensors
Supply voltage	12 V to 15 V (±1 %)
Power consumption	Max. 0.8 W
Input configuration	Isolated (max. 350 VDC) when using with isolated SIRIUSi modules, else single-ended
Bandwidth	20 kHz (500 kpC range) to 200 kHz (50 kpC) Bandwidth may be limited on amplifiers with < 500 mW Exc. power supply
Range	500 kpC 50 kpC 10 kpC 1 kpC

High-pass filter	500 kpC range: - DC (filter off) - 0.14 mHz (time constant > 1000 s) - 1.4 mHz (time constant > 100 s) - 14 mHz (time constant > 10 s) - 0.14 Hz (time constant > 1 s) 50 kpC / 10 kpC / 1 kpC range: - DC (filter off) - 1.4 mHz (time constant > 100 s) - 14 mHz (time constant > 10 s) - 0.14 Hz (time constant > 1 s) - 1.4 Hz (time constant > 0.1 s)
DC drift	500 kpC range: typ. < 0.1 pC/s (max. < 1 pC/s) 50 kpC / 10 kpC / 1 kpC range: typ. < 0.05 pC/s (max. < 0.5 pC/s)
Supported Amplifiers	SIRIUS LV/LV+, MULTI, STGM/STGM+, STG/STG+, HD-LV, HD-STGS, HS-LV/HS-LV+, HS-STG/HS-STG+ KRYPTON-6xSTG IOLITE-6xSTG *Other amplifiers support pending
Amplifier settings	Automatically selected by software: - Measurement: Voltage - Range: ±0.1 V to ±10 V - Excitation: 12 V / 15 V

3.8.2. DSI-CHG-DC Input Connection
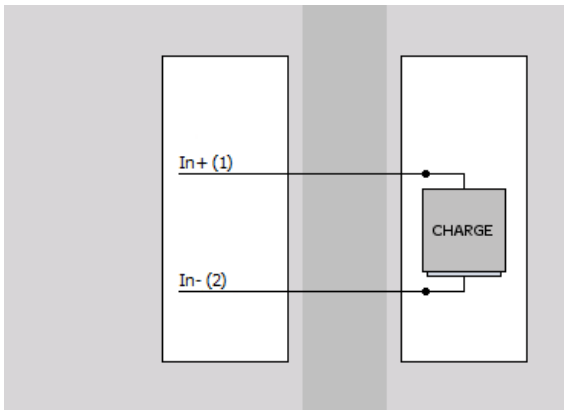
3.8.3. DSI-CHG-DC connector pinout
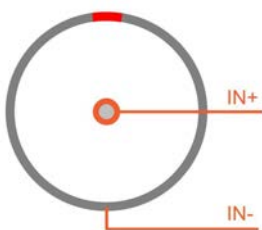
DSI-CHG-DC connector: pin-out (BNC)

Pin	Description
1	In+
2	In-

3.9. 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
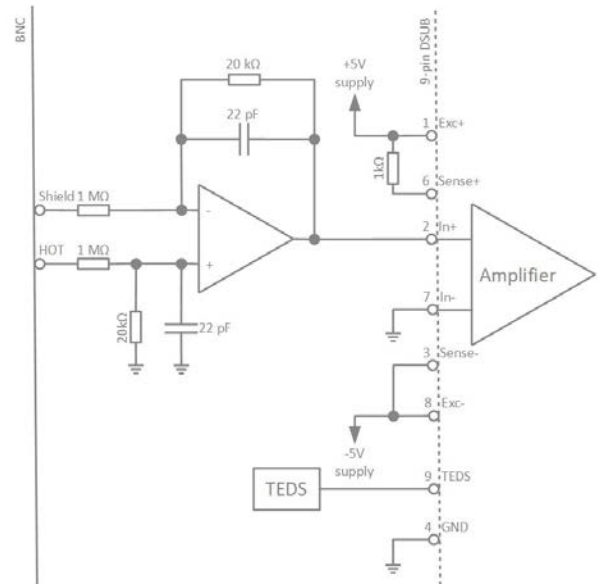
Basic circuit design of DSI-V-200

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.

3.9.1. 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 MΩ
Input impedance In-	1 MΩ
Gain drift	Typical 15 ppm/K (max. 30 ppm/K)
Input offset drift	Typical 10 µV/K (max. 25 µV/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.

3.9.2. DSI-V-200 Input Connection

3.9.3. DSI-V-200 connector pinout

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

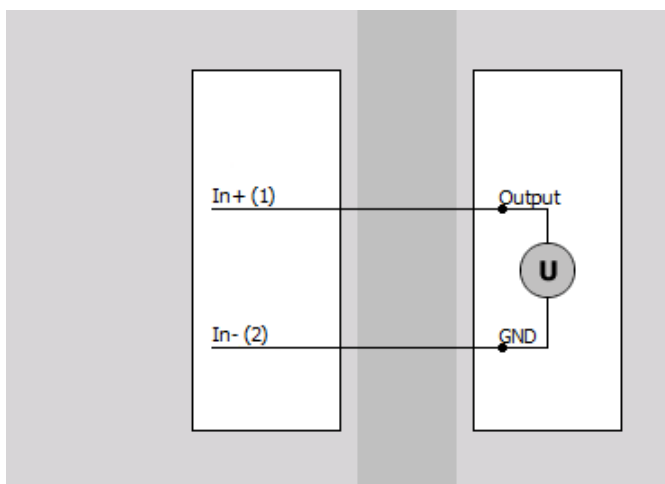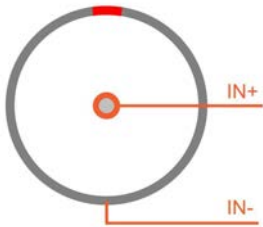| Pin	Description
1	In+
2	In-

3.10. 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 SIRIUSwe or KRYPTON STG.
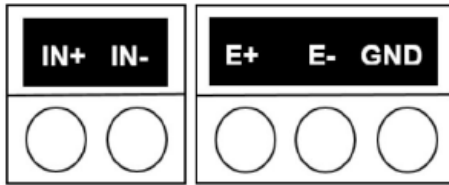

DSI-20mA

DSIw-20mA

3.10.1. 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 mm² / 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

3.10.2. DSI-20mA Output connector pinout

Surface Mount Terminal Strips with Push-Buttons

Pin	Description
E+	Excitation +
E-	Excitation -
GND	AGND
IN+	IN+
IN-	IN-
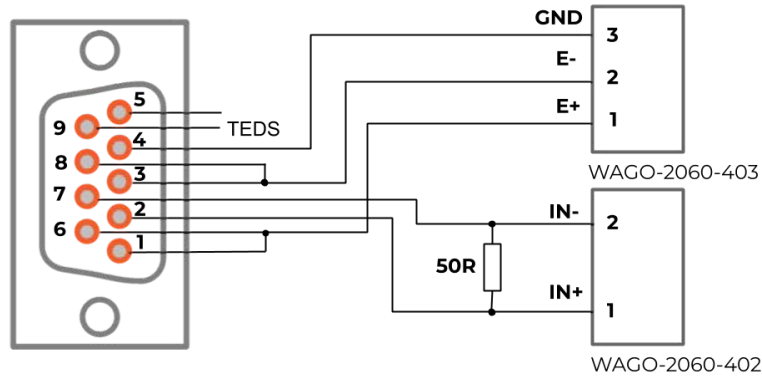
DSI-20mA Input Connection

3.10.3. DSI-20mA Assembly
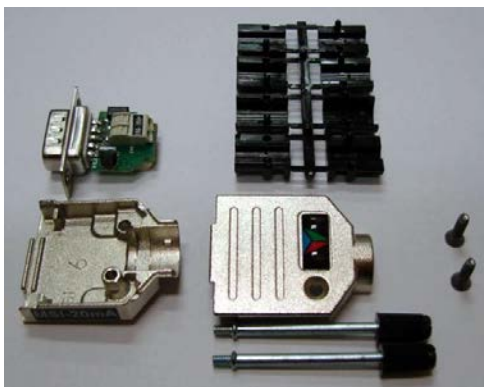
Bundle content

Top

Bottom

3.10.4. DSIw-20mA Output connector pinout
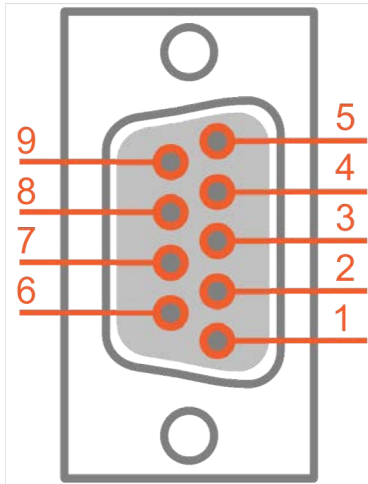
STG connector: pin-out (DSUB-9 female)

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

3.11. DSI-5A

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

DSI-5A-D9m

3.11.1. 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 mm² 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

Important

Isolated voltage input amplifiers are recommended for connecting shunt resistor adapters.
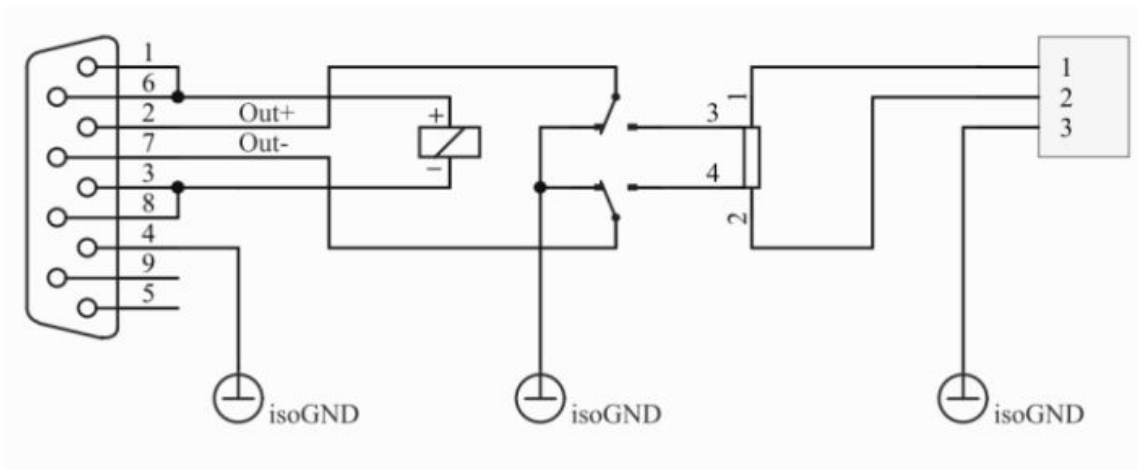
3.11.2. DSI-5A input connection
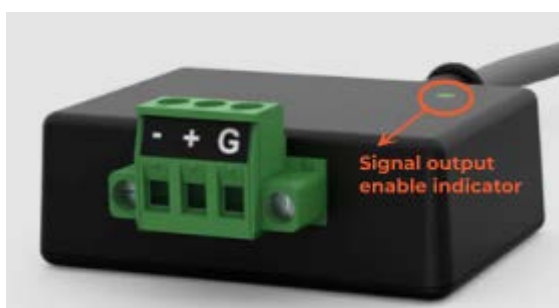
DSI-5A input connector

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

3.11.3. DSI-5A output connector

3.12. DSI-LVDT

LVDTs (Linear Variable Differential Transformers) are linear position sensors. They are used to measure linear displacement and position over relatively short distances.

DSI-LVDT

3.12.1. Electrical specifications

The DSI LVDT adapter is powered by EXC voltage. The LVDT adapter is compatible with SIRIUS(i) (variable EXC) or DEWE-43A type instrument (fixed +/-5V EXC).

General specifications	
Sensor connector	**DB9 Female**
Power supply Exc. Voltage	10 V – 15 V, from EXC+ to EXC- outputs
Power supply Exc. Current	44 mA, from EXC+ to EXC- outputs (see 1)
Output voltage	1.00 V = 500 mV/V (see 2)
Output bandwidth	1 kHz
Gain error	1 % of Full Scale
Output TCR	55 ppm/K of Full Scale
Sensor VTR = S x d, Sensitivity	2000 mV/V maximum
Sensor supported type	Differential LVDR or RVDT, Inductive Half-Bridge LVDT
Sensor Exc. voltage	2.88 Vrms (differential) (see 3)
Sensor Exc. frequency	Selectable 4.02 kHz / 9.60 kHz typical; 2.5% error
Phase compensation	-50 °C to +85 °C at 4 kHz; -75 °C to +70 °C at 10 kHz
TEDS	1024-bit, 1-Wire EEPROM (see 4)

1) Absolute maximum rating, specified for SIRIUSi
2) For sensor VTR (Voltage Transfer Ratio) = 1000 mV/V
3) Sinusoidal, 50dB THD typical, not possible to sync from adapter to adapter
4) Only one device per TEDS line is supported. Can be set to internal (adapter) or external (sensor)

For more detailed information about the DSI-LVDT adaptor please check the DSI-LVDT-manual on our web page.

3.12.2. LVDT connectors

3.12.2.1. Input connector pinout
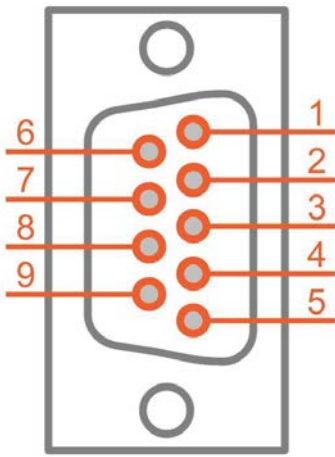
9 pin DSUB male

Pin	Name	I/O	Description
1	PS+	I, Power	Power Supply +
2	Out+	O, Signal	Adapter Output (Single ended) +
3	PSEn-	I, Signal	Power Supply Enable -
4	AGND	I	Analog Ground
5	Reser.	I/O	Reserved / Not Connected
6	PSEn+	I, Signal	Power Supply Enable +
7	Out-	O, Signal	Adapter Output (Ground) -
8	PS-	I, Power	Power Supply -
9	TEDS	I/O, Signal	TEDS

3.12.2.2. Output connector pinout
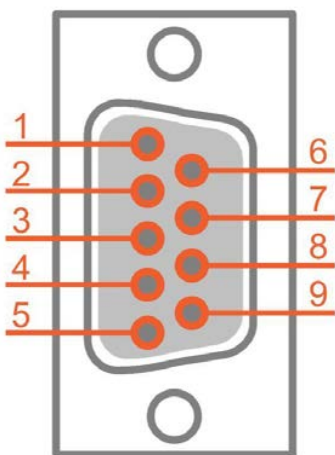
9 pin DSUB female

Pin	Name	I/O	Description
1	Exc+	O, Power	Sensor supply, excitation +
2	In+	I, Signal	Sensor Output +
3	Sns-	I, Signal	Sense -
4	AGND	I	Analog Ground
5	Reser.	I/O	Reserved / Not Connected
6	Sns+	I, Signal	Sense +
7	In-	I, Signal	Sensor Output -
8	Exc-	O, Power	Sensor supply, excitation -
9	Reser.	I/O	Reserved / Not Connected

3.13. DS-16xLVDTr

DS-16xLVDTr uses a unique ratiometric architecture to eliminate several of the disadvantages associated with traditional approaches to LVDT interfacing. DS-16xLVDTr combines 16 channels of DSI-LVDT adapters in a 19"-rack housing with 1U height.

Main advantage of the new design is a synchronous excitation signal provided from the external function generator to a BNC front connector (IN connector). When using multiple DS-LVDTr devices the EXC signal can be daisy-chained from the BNC OUT connector to the BNC IN connector on the other device.

Additionally, there are 16 DSUB-9M (male) connectors on the front panel of DS-16xLVDTr for the connection to the Dewesoft host amplifier. Each connector is a trimmer used for phase adjustment.

On the back panel are 16 DSUB-9F (female) connectors for the sensor connection. DS-16xLVDTr supports measurements with full-bridge and half-bridge LVDT sensor types.

DS-16xLVDTr

3.13.1. General specifications

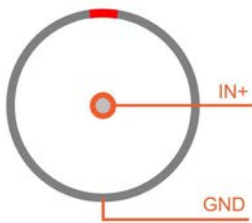| Parameter	Description
Power supply Exc. Voltage	10V – 15V, from EXC+ to EXC- outputs (SIRIUS STGv2 = 15V supply)
Power consumption per channel	320mW (15V supply, no load) 800mW (15V supply, 100R load on 3Vrms)
Output voltage max.	500mV for 1000mV/V HB LVDT
Output bandwidth	1kHz (-6dB, 90deg phase)
Gain error	1% of Full Scale
Output TCR	55ppm/K of Full Scale
Sensor supported type	Full Bridge / Half-Bridge LVDT impedance min. 120R.
SYNC Input Voltage	500mVrms typical recommended 1700mVrms max recommended
Sensor Exc. voltage	3Vrms max (15V supply) set on SYNC Inputs: 1.76 * Sync Input (Vrms) @ 4kHz 1.70 * Sync Input (Vrms) @ 10kHz
Sensor Exc. frequency	4kHz to 10kHz typical, set on SYNC Inputs
Phase compensation	-50° to +85° @ 4kHz -75° to +70° @ 10kHz
TEDS	1024-Bit, 1-Wire EEPROM
Operating temperature	-20°C to +50°C
Ingress protection	IP20
Humidity	5% to 85% RH non condensing @ 50°C
Dimensions	444 x 221 x 44 mm (W x D x H)
Weight	2300g

For more detailed information about the DS-16xLVDTr please check the DS-16xLVDTr-manual on our web page.

3.13.2. LVDTr connectors

3.13.2.1. SYNC inputs

2x BNC SYNC input connectors

BNC SYNC input pinout

| Parameter	Description	Comment
Input connectors	2 x BNC	Parallel, Not isolated
Coupling	AC - High pass	-3dB @ 16Hz (1st order)
Input impedance	1MR	
Overvoltage Protection / ESD	36V	Bidirectional TVS
Overcurrent Protection	2.4mA typical	Resettable
Input Bandwidth	4kHz	Att: 0% 17deg phase relative to input
	10kHz	Att: <2% 45deg phase relative to input
	20kHz	-3dB @ 20kHz (2nd order)

3.13.2.2. Input connector pinout
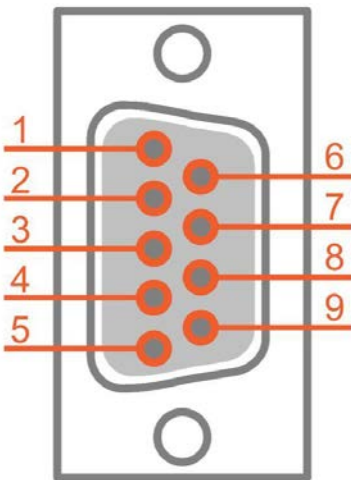
9 pin DSUB female

Pin	Name	I/O	Description
1	Exc+	O, Power	Sensor supply, excitation +
2	In+	I, Signal	Sensor Output +
3	Sns-	I, Signal	Sense -
4	AGND	I	Analog Ground
5	Reser.	I/O	Reserved / Not Connected
6	Sns+	I, Signal	Sense +
7	In-	I, Signal	Sensor Output - [1.]
8	Exc-	O, Power	Sensor supply, excitation -
9	Reser.	I/O	Reserved / Not Connected

Important

1. Optional **internal** HB completion: Do not connect Sensor Output-. Pin-7 internally terminated as Half-Bridge. Must specify when ordered!

3.13.2.3. Output connector pinout
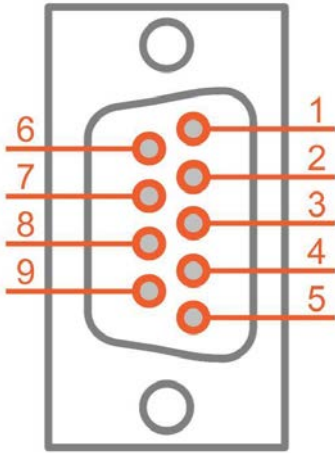
9 pin DSUB male

Pin	Name	I/O	Description
1	PS+	I, Power	Power Supply +
2	Out+	O, Signal	Adapter Output (Single ended) +
3	PSEn-	I, Signal	Power Supply (sns) -
4	AGND	I	Analog Ground
5	Reser.	I/O	Reserved / Not Connected
6	PSEn+	I, Signal	Power Supply (sns) +
7	Out-	O, Signal	Adapter Output (Ground) -
8	PS-	I, Power	Power Supply -
9	TEDS	I/O, Signal	TEDS

3.13.2.4. Typical connection to DEWESoft amplifier w. DSUB-9 connector

Use shielded DSUB9-male to DSUB9-female extension cable.

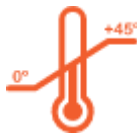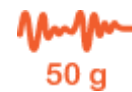**Pin Assignment
DSUB9-female**

**Pin Assignment
DSUB9-male**
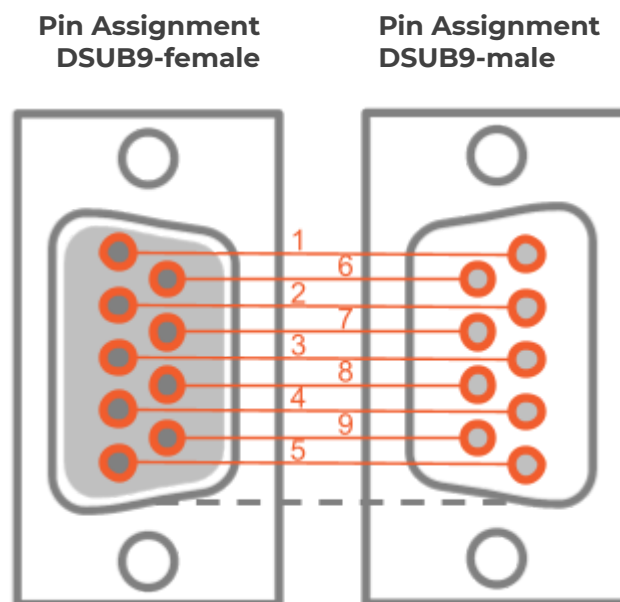
4. DS Battery Packs

Battery packs for our data acquisition systems for stand-alone, in-vehicle or remote test and measurement applications.

IP30	0°C to +45°C	Shock rating 50g

Main features

- RUGGED AND RELIABLE: Battery packs are built in rugged aluminum chassis, machined out of a single brick of aluminum for reliable operation on the field. Only high-quality Li-Ion batteries are used.

- LARGE CAPACITY: Battery packs ensure enough power for your on-road and field test and measurement applications so you don't have to worry about losing any data due to lack of power supply. DS-BP2i total capacity is 192Wh and DS-BP4i total capacity is rated to 384Wh, this will ensure 3 hours of operation for SBOX data logger with 32 channel SIRIUS DAQ system without replacing batteries.

- HOT-SWAP FUNCTIONALITY: Internal Li-Ion batteries are hot-swappable, meaning they can be replaced during the measurement to ensure your data acquisition system never runs out of power.

- DAISY CHAIN: Battery packs can be daisy chained together to further increase the autonomy.

- ISOLATED POWER SUPPLY: For in-vehicle measurements, an isolated power supply on battery packs will guard you against unwanted ground loops.

- REVERSE POLARITY PROTECTION: Battery packs are protected against wrong connections to the input power supply.

- ADAPTIVE CHARGING: Charging current is dynamically adapted, depending on the output load. When there is no significant load at the output, the batteries are charged with 2 A per battery. When external load increases and the power of external PSU rises close to the limit, charging current is reduced to 1 A per battery. If the load is still increasing, the charging of batteries is stopped. With this feature, we ensure that maximum required power from external supply is limited.

- STATUS INDICATOR: Battery pack comes with LCD status indicator as well as USB connection to the DAQ unit so you will always know how much power you have left.

- USB: Battery packs are equipped with a USB connector. It is used to connect the battery pack to the computer, where it introduces itself as native battery for windows (HID UPS Battery). Icon in the task bar also appears with the status of batteries. Battery pack information can also be observed in DEWESoft.

4.1. Specifications overview

General	DS-BP2i	DS-BP4i
Number of batteries	2	4
Total capacity at fully charged state	12.5 Ah	25 Ah
Battery life at max. rated power	> 1 h	> 1.5 h
Input wrong polarity protection	YES	
Hot Swap	YES	
	Recommended Hot swapping at > 15-20% total SOC Replace one-by-one all batteries with matched SOC	
Max Hot Swap Output Power	75 W	220 W
Isolation	500 V	
Power		
Power supply	12 - 36 V DC	
Power consumption	Charging power 75 W - 85 W	Charging power 150 W - 160 W
Power out		
Maximum power	160 W	250 W
Output Voltage	14.4 V Nominal, 16.8 V Max. 24 V with external supply	
Battery Output Current	7.5 A per battery	
Output Current	15 A, LEMO 1B 2pin 17 A, LEMO 2B 3pin	15 A, LEMO 1B 2pin 25 A, LEMO 2B 2pin
Efficiency	85 % Typ.	
Interfaces and options		
USB	USB-B mini Data, Battery status information	
CAN	NO	YES
Remote-On	In / Out on LEMO 3pin	In on CAN D9m
Display	LCD, status display	
Digital inputs		
Remote Input low level	< 1 V	
Remote Input high level	4 V - 36 V	
Remote Input high current	2 mA Typ.	< 5 mA
Remote-Out	2 mA CCS	NO
Display		
Type	Transflective LCD	
Resolution	2 x 16 characters	
Displayed information	Temperature, Voltage, Current, Status, Power, Capacity, Endurance	
Display background color	Green @ 100 % State Of Charge Red @ 0 % SOC	
Size	65 x 16 mm	

Batteries	
Battery type	RRC2024 Li-Ion (4S/3P)
Compliance Information	IEC62133 / CE / UL2054 / FCC / PSE / KC / Gost / EAC / CQC / RCM / BIS / TISI / BSMI / UN38.3 / RoHS / REACH
Operating Temperature	0 °C to 45 °C Charge -20 °C to 60 °C Discharge
Storage Temperature	-20 °C to 50 °C Max. -20 °C to 25 °C Recommended Extended storage at temperature >40°C could degraded battery performance and life
Altitude	No restrictions, battery can be stored, charged and discharged between 0 – 15000 m
Voltage	14.4 V Nominal 16.8 V Max.
Nominal capacity	6.6 Ah
Discharge current	10 A
Safety	Over Charge: 17.2 V, 5.3 A Over Discharge: 11 A Over Temperature @ charging: 55 °C, 45 °C recovery Over Temperature @ discharging: 70 °C, 60 °C recovery Short circuit: YES, 35 A threshold (auto reset)
Dimensions	167.2 x 107.2 x 21.5 mm
Weight of single battery	0.6 kg

Environmental		
Operating Temperature	0 °C - 40 °C	
Storage Temperature	-20 °C - 60 °C	
Humidity	10 % to 90 % RH, no dew condensation	
IP rating	IP30	
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	

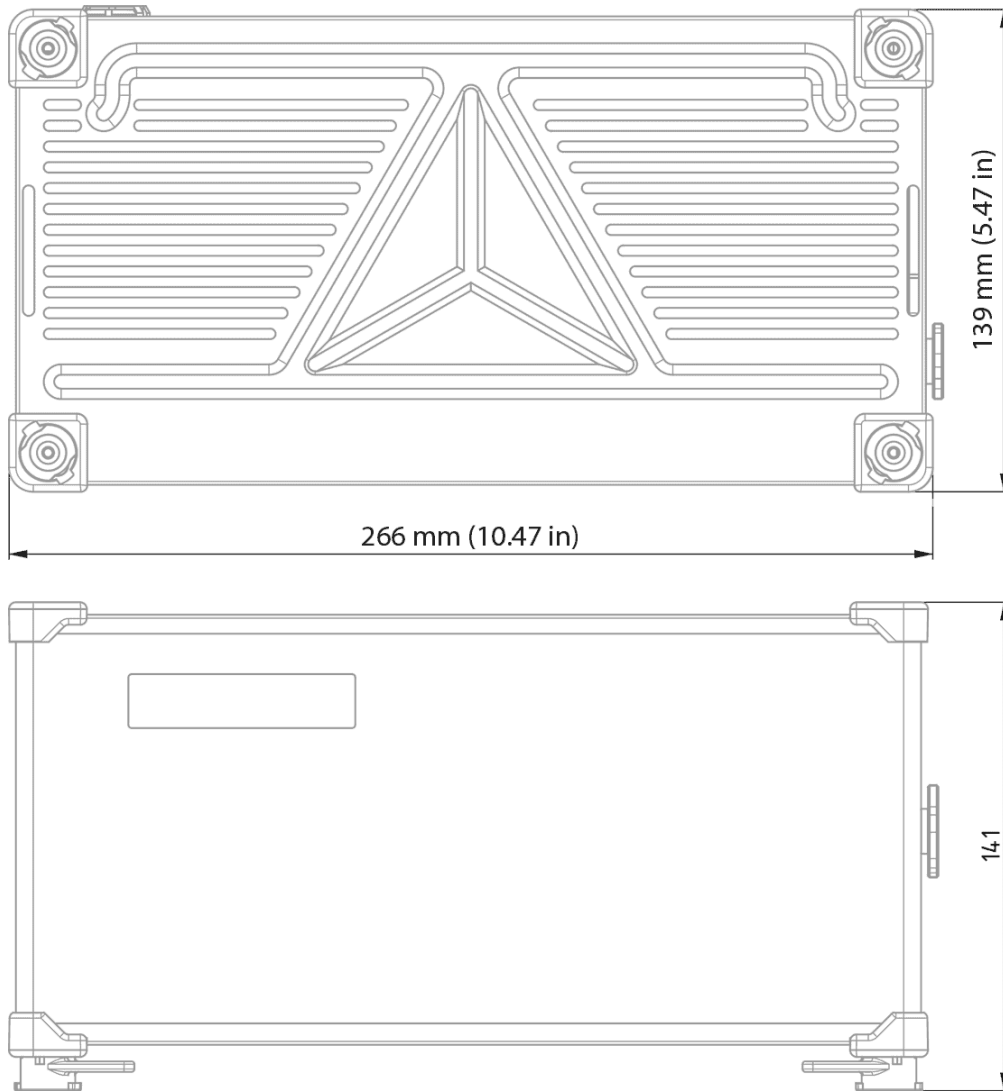| Physical		
Dimensions	266 x 139 x 85 mm	266 x 139 x 141 mm
Weight	1.6 kg 2.8 kg including batteries	1.9 kg 4.3 kg including batteries

4.1.1. Dimensions

4.1.1. DS-BP2i
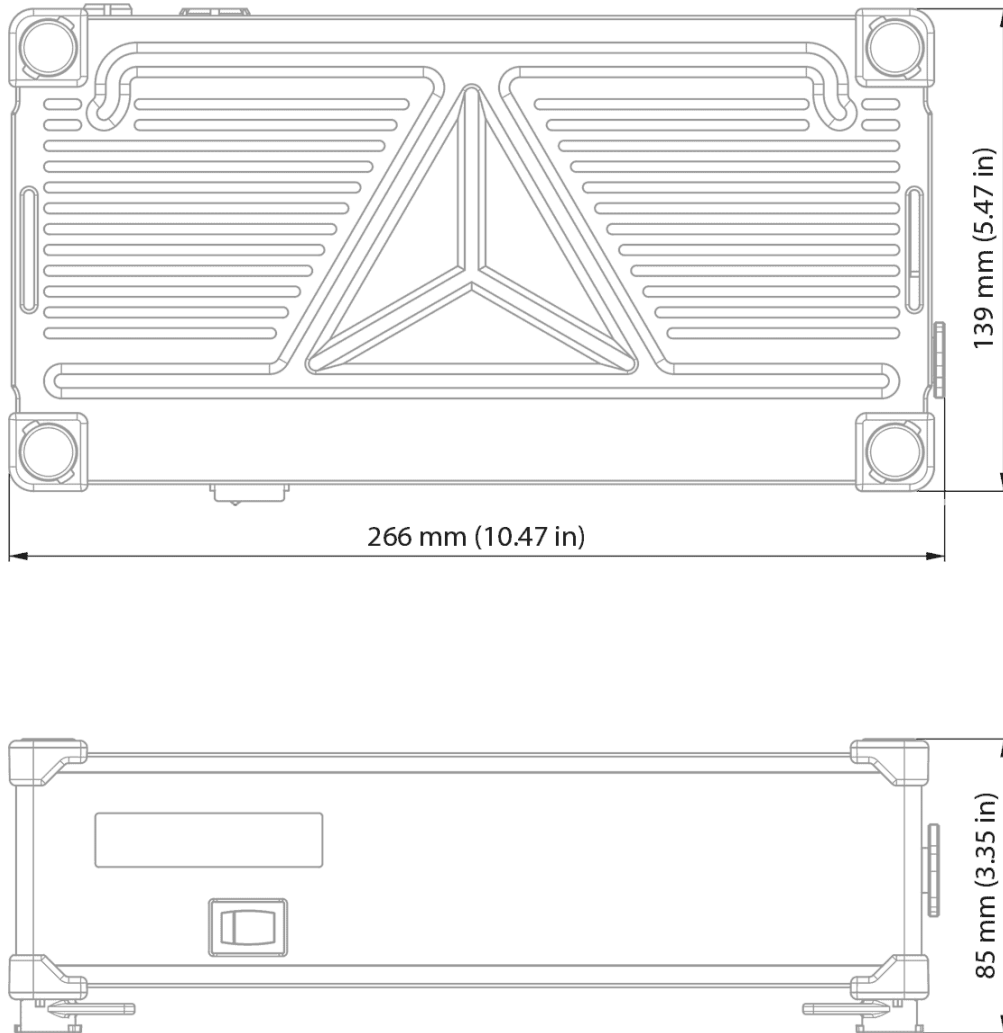
Dimensions : DS-BP2i

4.1.2. DS-BP4i

Dimensions : DS-BP4i

4.1.3. General information

Daisy Chain
Battery pack has additional connectors for daisy chain connection of multiple units. Total capacity, autonomy and power capability is increased.
Please see chapters: "Daisy chain connection" for details:
- Connection diagram
- Cable types
- Capability and limitations

Batteries
Li-Ion rechargeable Smart Battery packs are used. The battery is comprised of twelve (12) Lithium Ion rechargeable 18650 cells, assembled in a 4 series / 3 parallel (4S/3P) design. Each cell has an average voltage of 3.60V and a nominal capacity of 2200mAh, providing a battery pack of 14.40V and 6600mAh nominal. The battery is designed to communicate with a host or a charger through the System Management Bus (SMBus) protocol. The battery is SMBus and SBDS Revision 1.1 compliant. The battery design includes protection for over charge, over discharge and short circuit. Additional safety measures are designed into the battery to protect against over temperature and over current situations.

Hot swapping
Battery pack is designed so that batteries can be hot-swapped while still providing output power. When hot swapping batteries, output voltage and state of charge must be taken into account. When there is one full battery in the system and another one is empty, the full one takes all the load. To prevent battery damage, maximum output current from a single battery is limited.

Important
- Recommended Hot swapping at > 15-20% total SOC.
- Replace one-by-one all batteries with matched SOC.
- Single battery will not support full load or long duration between swapping.

Caution
Output current from a single battery is limited to 7.0 A - 7.5 A.
Maximum power out when Hot swapping:
- DS-BP2i: 75 W
- DS-BP4i: 220 W

Isolation

Input and output electrical ground are galvanically isolated. This allows us to use BP on the different ground potentials and thus protecting from unwanted ground loops.

> ### ⚠ Warning
> Isolation shall be considered as **BASIC INSULATION**. Basic insulation forms a single level of insulation that provides basic protection against shock.

> ### Caution
> Isolation voltage specification (500 V) should be considered as MINIMUM ISOLATION PEAK TEST VOLTAGE. Maximum isolation peak test voltage level could be two to four times higher.

Stacking

> ### Hint
> Both battery packs - DS-BP2i and DS-BP4i are built in standard SIRIUS form factor, so you can stack your power supply under your DAQ device. Clever click mechanism will enable the battery to attach to SIRIUS and/or SBOX instruments. This ensures safe placing into the measurement environment, to prevent rolling and bouncing around.
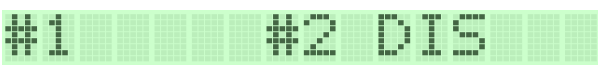
LCD information

Important

The LCD screen on the new battery pack is displaying the most important information about the system.

```
96% 16.0V 28.2C
Time: 120 min
```

```
26% 11.2V 28.2C
#3 DIS #3 DIS
```

Example of LCD information

Top row			
Info	**89% 16.0V 28.2C**		
Details	State Of Charge (SOC) 0% to 100%	Output Voltage 24 V when plugged in 10.5 V to 16.6 V maximum when on batteries.	Highest internal measured temperature (Battery cells or input DC/DC)

Bottom row	(Toggled)
Info	**Time: 250 min**
Details	Estimated time to empty depending on load >10000 min when plugged in
Info	**#1 DIS #2 DIS**
Details	Top battery is discharging Second battery is discharging
Info	**#3 CHG #4 CHG**
Details	In BP4 third battery is charging In BP4 bottom battery is charging
Info	**#1 #2 DIS**
Details	Top battery slot is empty or no battery detected Second battery is discharging

Hint

State of charge is also indicated with LCD backlight colour and dimming. When full, the backlight is bright green and when empty, the LCD backlight is red.

```
100% 24.0V 37.2C
Time: >10000 min
```

Batteries are full

```
2% 10.8V 33.2C
#1 DIS #2 DIS
```

Batteries are empty

FAN operation

Internal fans will activate if one of the below conditions are met.

Condition	Fan ON	
Power	Power supply is plugged in	
Temperature	Internal temperature sensors detected > 35 ℃	Battery 1, Battery 2, (Battery 3, Battery 4), input DC/DC
Output	Discharging current from either battery > 600 mA	

System Monitor

Connect DS-BP with USB to PC. BP is recognised as: HID UPS Battery.
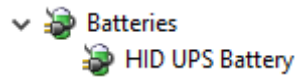
OS Device manager information

Start DEWESoft and select System monitor in Channel setup screen.

DEWEsoft System monitor information

CAN

Battery pack DS-BP4i has a dedicated CAN connector and Remote-On functionality. See chapter: "CAN connector" under DS-BP4i for details.

4.2. DS-BP2i: Battery pack

DS-BP2i front side

DS-BP2i rear Side

🔧 **Example**

DS-BP2i autonomy:
- Single ACC+ slice for over 12 hours (e.g. when you use it with an external laptop)
- SBOX and an ACC+ slice for over 2 hours

4.2.1. Rear side

DS-BP2i back connectors

Connector assignment from left to right.

Name	Type
OUT	2x LEMO 1B 2 pin Female (SIRIUS type)
OUT	2x LEMO 2B 3pin Female (SBOX type)
Name	**Type**
IN/OUT	LEMO 2B 3pin Female
IN	LEMO 2B 3pin Male
Name	**Type**
USB	USB Mini B with side screw locks.

See chapter "Power in connector" and "Power out connector" for details.

4.2.2. Power IN and IN/OUT connector
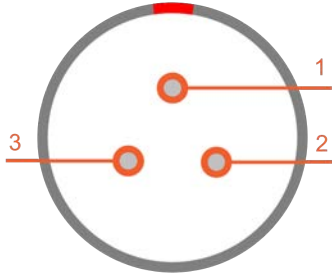
Pin	Name	Description
1	V +	Supply
2	GND	Ground
3	Remote - In	Remote - In pin

Power IN connector: pin-out (3-pin LEMO male)

Connector type (on the battery pack): EEJ.2B.303.CLA
Mating connector type (for the cable): FGJ.2B.303.CLL*
* more collets and bend reliefs for cable variant are available
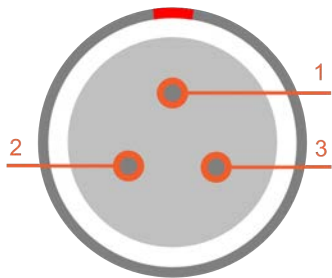
Pin	Name	Description
1	V +	Supply
2	GND	Ground
3	Remote - In	Remote - In pin

Power IN/OUT connector: pin-out (3-pin LEMO female)

Connector type (on the battery pack): EEG.2B.303.CLL
Mating connector type (for the cable): FGG.2B.303.CLA*
* more collets and bend reliefs for cable variant are available
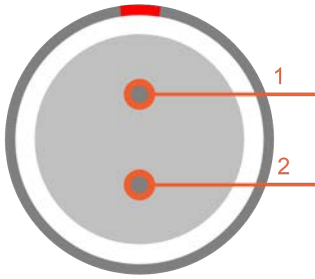
Important
Supply, Ground and Remote-In are connected together for both connectors.
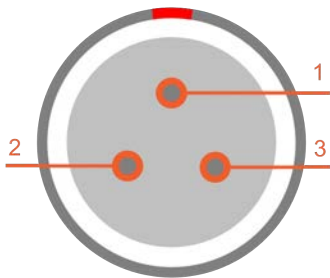
4.2.3. Power OUT connectors

Power out connector: pin-out (2-pin LEMO female)

Pin	Name	Description
1	V +	Supply
2	GND	Ground

Connector type (on the battery pack): EEG.1B.302.CLL
Mating connector type (for the cable): FGG.1B.302.CLA*
* more collets and bend reliefs for cable variant are available

Power out connector: pin-out (3-pin LEMO female)

Pin	Name	Description
1	V +	Supply
2	GND	Ground
3	Remote - Out	Remote - Out

Connector type (on the battery pack): EEG.2B.303.CLL
Mating connector type (for the cable): FGG.2B.303.CLA*
* more collets and bend reliefs for cable variant are available

Important
Supply, Ground and Remote-Out are connected together for all connectors.
Ground is isolated from IN, IN/OUT Ground!

Example
Use large cross-section and short cables for maximum efficiency. With 1.5mm^2 (AWG 15) 2 Watts on every meter of cable (Lead & Return wires) is wasted at 10 A.

Hint

Remote on will not turn on DS-BP2i, only powered DAQ instruments will be controlled.

To power the DAQ system on, press the Power switch OR apply a voltage between 4 V and 36 V with at least 2 mA to the Remote-In pin. To power off the system press the Power switch or reduce the voltage on Remote-On below 0.5 V.

Remote-Out output is a 2 mA constant current source that is following Remote-In state. Remote-Out is capable of driving the Remote-In of the next daisy chained device. Remote-Out and Remote-In are isolated.
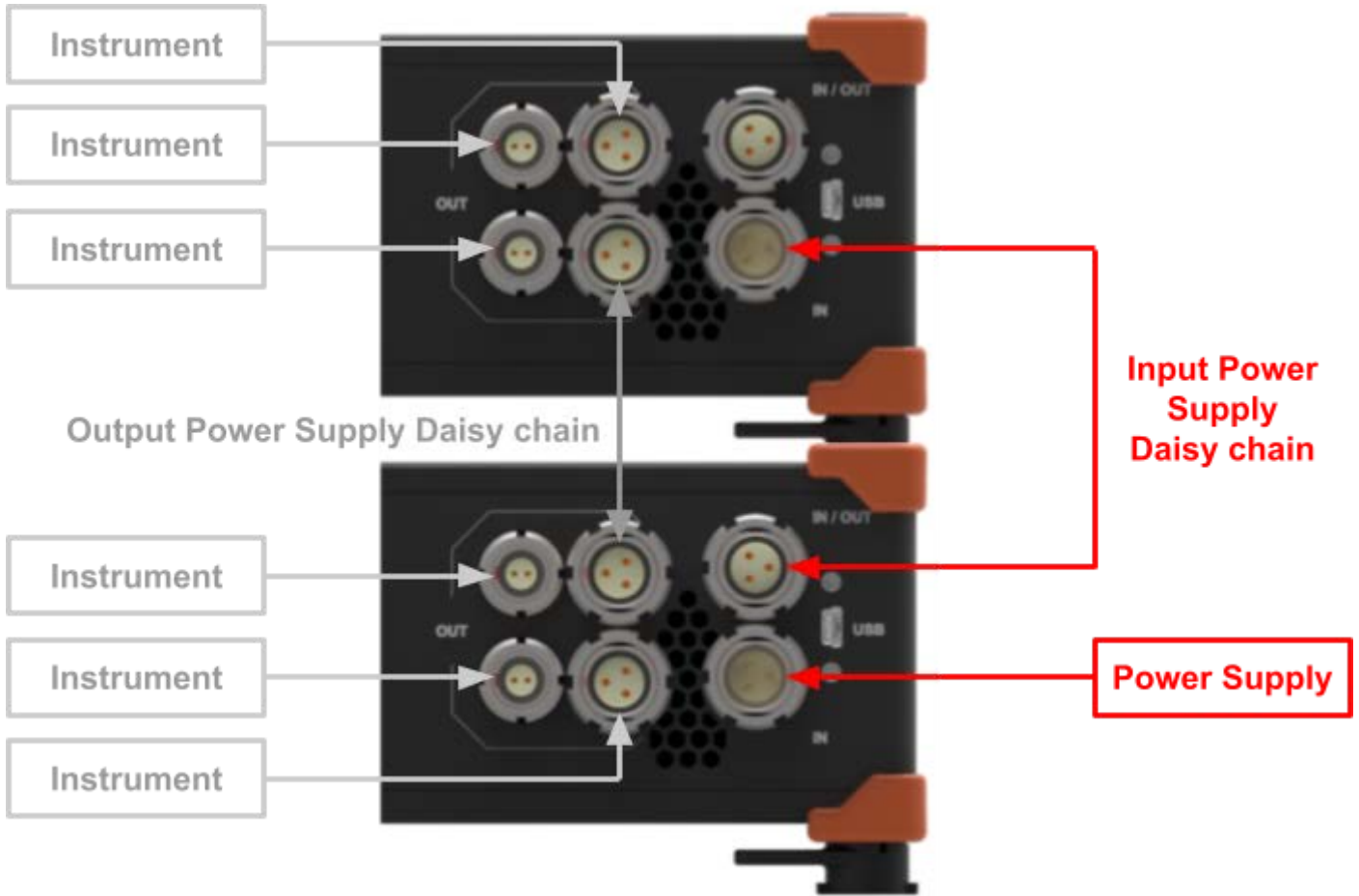
4.2.4. BP2i Daisy chain connection

Warning

Power off all instruments and battery packs before making and changing connections.

Important

Please follow the connection diagram below. Note that Inputs and Outputs are in parallel. Output capabilities will increase with daisy chain connection. Input power supply requirements also double.
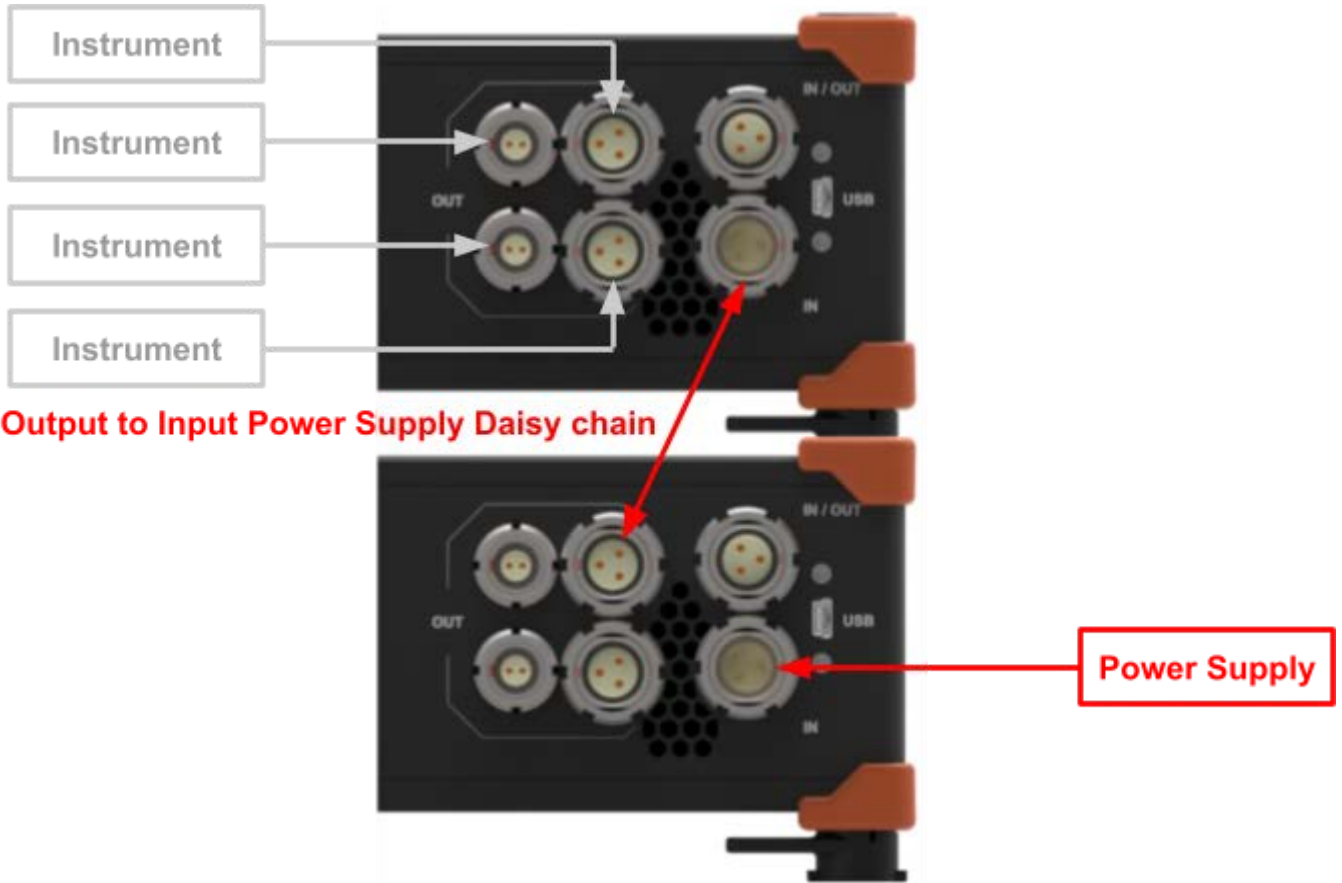
DS-BP2i daisy chain : Paralel Input & Output

💡 Hint
Output Power Supply Daisy chain may be omitted. Output capabilities will be limited to a single device.

DS-BP2i daisy chain : Not recommended : Series Input & Output

⚠️ Caution

Above connection is not recommended. Due to efficiency losses input charging power is increased, autonomy and capacity is decreased. Output power is limited to a single device. Bottom BP will be discharged first and will be charging the top device and providing power to instruments.
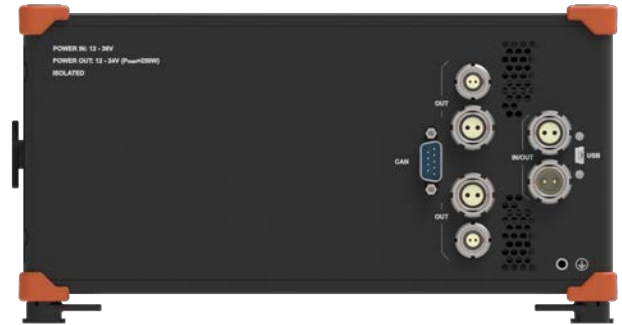
4.2.5. Scope of supply

Short name	Name	Quantity
CABLE-USBASmini-USBBS-1m	USB AMS - Mini USB BMS 1m USB AMS-BMS 1m	1
L2B3f-OPEN-5m	Open end DC power supply cable	1
L2B3m-L2B3f-0.4m	Power supply daisy chain cable	1
PS-200W-L2B3f	AC/DC power supply adapter	1

4.3. DS-BP4i: Battery Pack

DS-BP4i front side

DS-BP4i rear Side

Example

DS-BP2i autonomy:
- Single ACC+ slice for over 24 hours (e.g. when you use it with an external laptop)
- SBOX and an ACC+ slice for over 4 hours

4.3.1. Rear side

DS-BP4i back connectors

Connector assignment from left to right.

Name	Type
OUT	2x LEMO 1B 2 pin Female (SIRIUS type)
OUT	2x LEMO 2B 2pin Female (R8 type)

Name	Type
IN/OUT	LEMO 2B 2pin Female
IN	LEMO 2B 2pin Male (R8 type)

Name	Type
USB	USB Mini B with side screw locks.
CAN	DSUB9 Male

See chapter "Power in connector" and "Power out connector" for details.
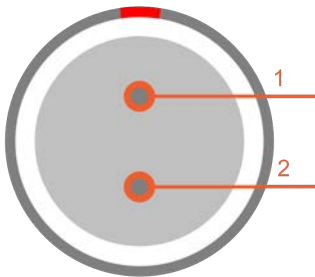
4.3.2. Power IN and IN/OUT connector
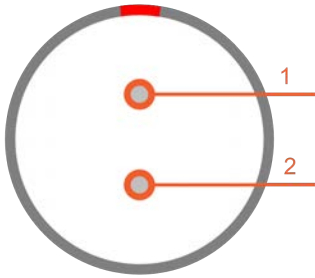
Pin	Name	Description
1	V +	Supply
2	GND	Ground

Power IN connector: pin-out (2-pin LEMO male)

Power connector (on the battery pack): EEJ.2B.302.CLA
Mating connector (for the cable): FGJ.2B.302.CYM*
* more collets and bend reliefs for cable variant are available

Pin	Name	Description
1	V +	Supply
2	GND	Ground

PowerIN/OUT connector: pin-out (2-pin LEMO female)

Connector type (on the battery pack): EEG.2B.302.CLL
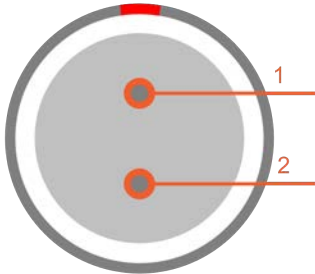Mating connector type (for the cable): FGG.2B.302.CYC*
* more collets and bend reliefs for cable variant are available

Important
Supply and Ground are connected together for both connectors.
Ground is isolated from OUT Ground!
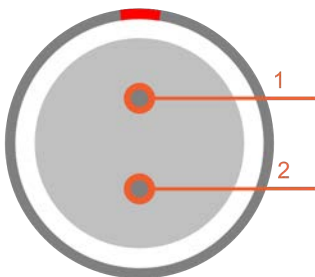
4.3.3. Power OUT connectors

Power out connector: pin-out (2-pin LEMO female)

Pin	Name	Description
1	V +	Supply
2	GND	Ground

Connector type (on the battery pack): EEG.1B.302.CLL
Mating connector type (for the cable): FGG.1B.302.CLA*
* more collets and bend reliefs for cable variant are available

Power out connector: pin-out (2-pin LEMO female)

Pin	Name	Description
1	V +	Supply
2	GND	Ground

Connector type (on the battery pack): EEG.2B.302.CLL
Mating connector type (for the cable): FGG.2B.302.CYC*
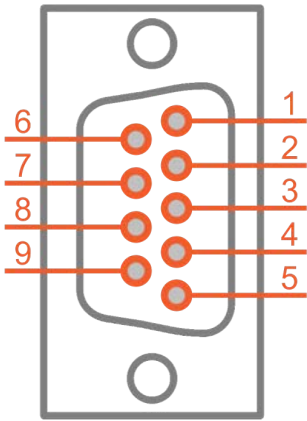* more collets and bend reliefs for cable variant are available

Important
Supply and Ground are connected together for all connectors.
Ground is isolated from IN, IN/OUT Ground!

Example
Use large cross-section and short cables for maximum efficiency. With 2.5mm^2 (AWG 13) 8 Watts on every meter of cable (Lead & Return wires) is wasted at 25 A.

4.3.4. CAN connector

CAN connector (DSUB-9 male)

Pin	Name
1	CAN +5 V (isolated, 100 mA, polyfuse and RP diode)
2	CAN LOW (isolated)
3	GND (Power OUT GND)
4	Not connected
5	Not connected
6	CAN GND (isolated)
7	CAN HIGH (isolated)
8	Remote-ON
9	+5 V (100 mA, polyfuse and RP diode)

Important

Remote-ON functionality is supported on CAN port of the DS-BP4i.
Battery status as supported over USB will be available also via CAN protocol messages in future firmware releases.

Hint

To power the Battery Pack system on, press the Power switch OR apply a voltage between 4 V and 36 V to the Remote-On pin. To power off the system press the Power switch or reduce the voltage on Remote-On below 0.5 V. +5 V and GND is provided on CAN connector pin 8 and pin 5.
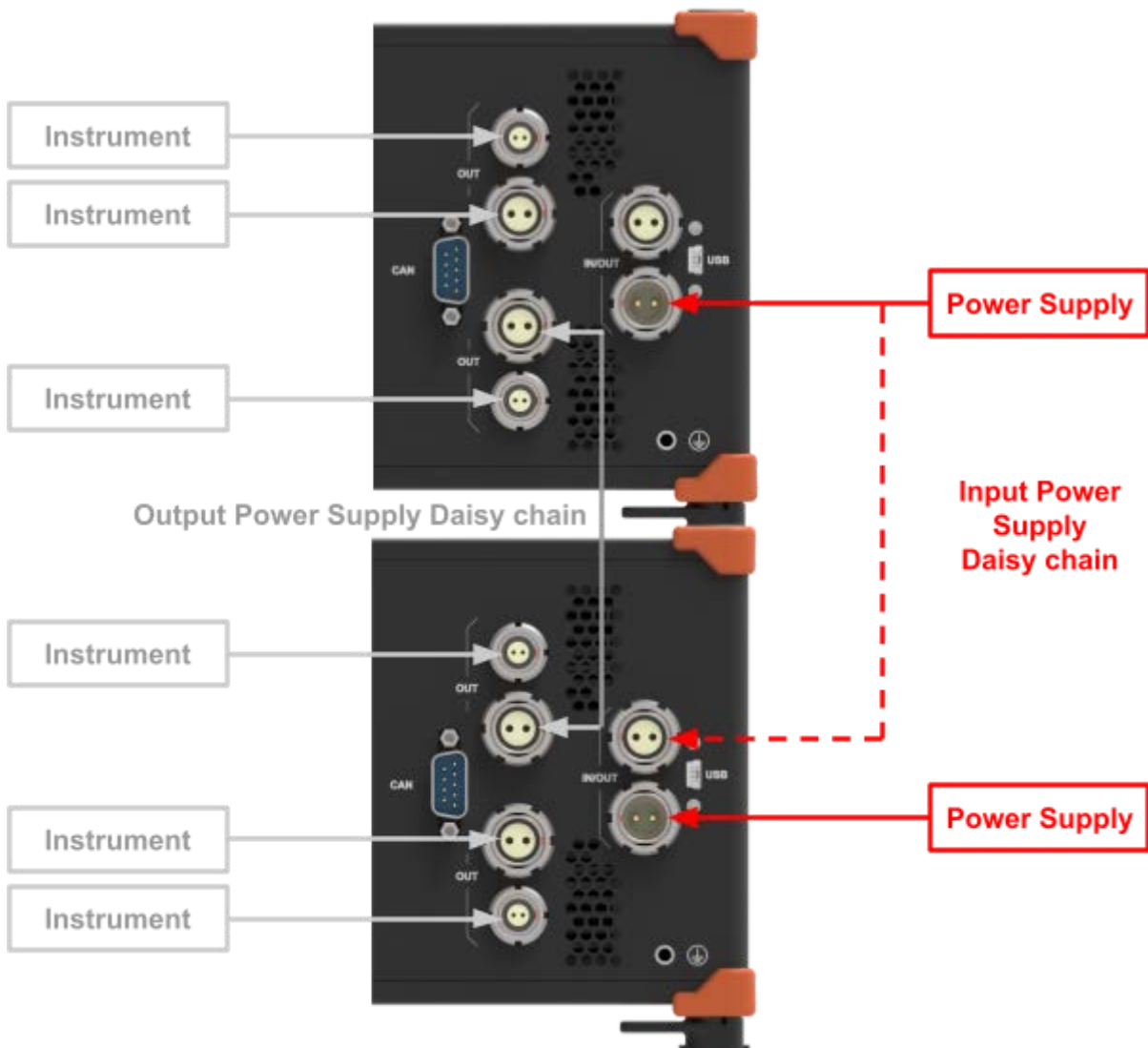
4.3.5. BP4i Daisy chain connection

! Warning
Power off all instruments and battery packs before making and changing connections.
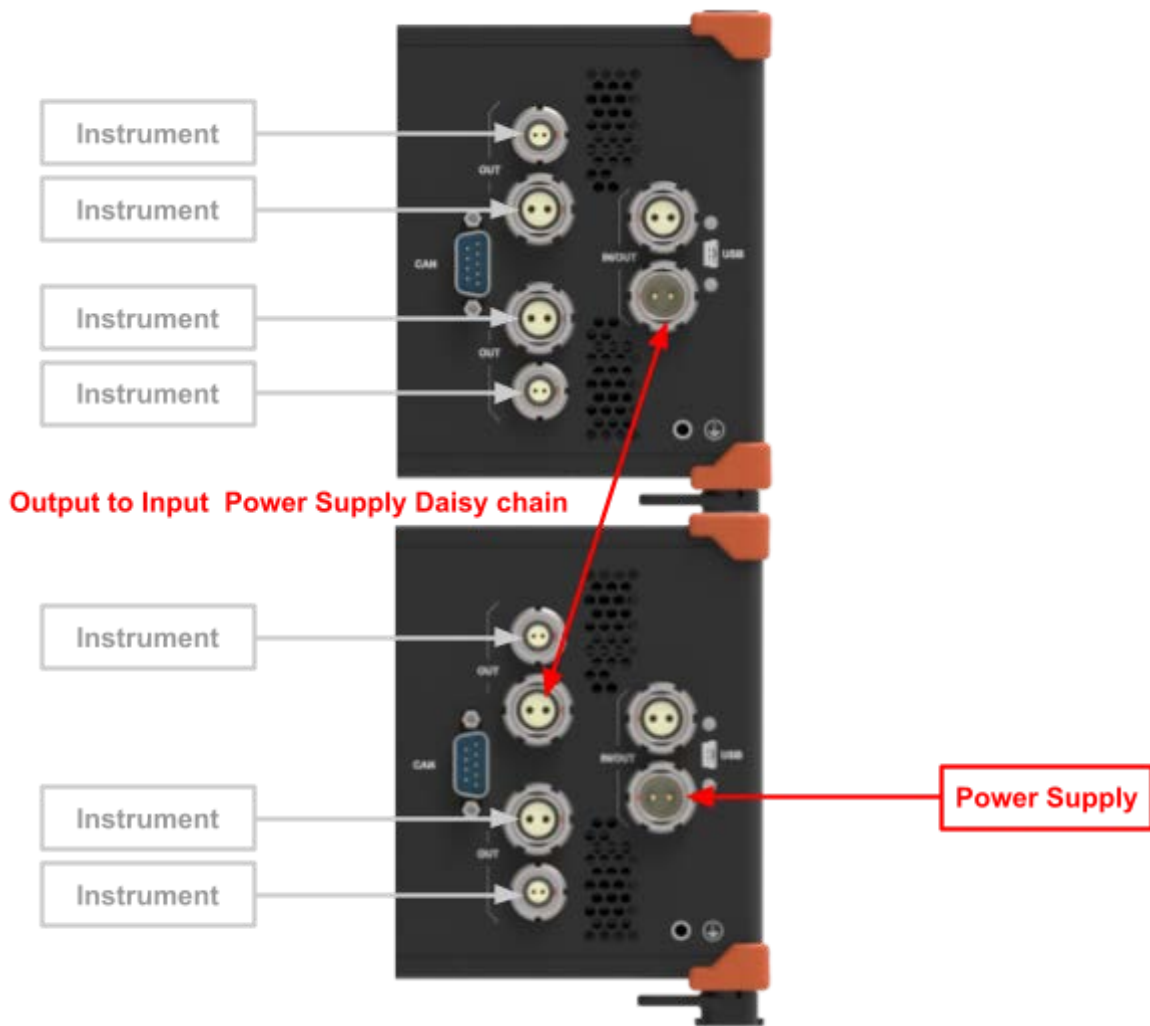
☝ Important
Please follow the connection diagram below. Note that Inputs and Outputs are in parallel. Output capabilities will increase with daisy chain connection. Input power supply requirements also double. Please respect maximum ratings for single connector.

DS-BP4i daisy chain : Paralel Input & Output

DS-BP4i daisy chain : Not recommended : Series Input & Output

Caution

Above connection is not recommended. Due to efficiency losses input charging power is increased, autonomy and capacity is decreased. Output power is limited to a single device. Bottom BP will be discharged first and will be charging the top device and providing power to instruments.

4.3.6. Scope of supply

Short name	Name	Quantity
CABLE-USBASmini-USBBS-1m	USB AMS - Mini USB BMS 1m USB AMS-BMS 1m	1
L2B2f-OPEN-5m	DC power cable with 2pin LEMO with open end	1
L2B2m-L2B2f-0.4m	Power supply daisy chain cable, LEMO 2pin, R8 to DS-BP4i	1
L2B2m-L2B3f-0.4m	Power supply daisy chain cable, LEMO 2pin to 3pin, SBOX to DS-BP4i	1
PS-250-L2B2F	Power Supply 250W 24V 10,41A	1

5. Power supply accessories

5.1. POWER-SPLITTER-1xL3B2m-3xL2B3f

The latest product in the accessories line is POWER-SPLITTER-1xL3B2m-3xL2B3f.

This product is designed for distributing power from a single power source to SIRIUS systems used for in-vehicle testing.

The compact box on the POWER-SPLITTER-1xL3B2m-3xL2B3f features a power input connector, 3B-sized 2-pin Lemo, that can be used for currents up to 35 A.
Unregulated power is distributed to three power output connectors, 2B-sized 3-pin connectors, that can take currents up to 17 A.

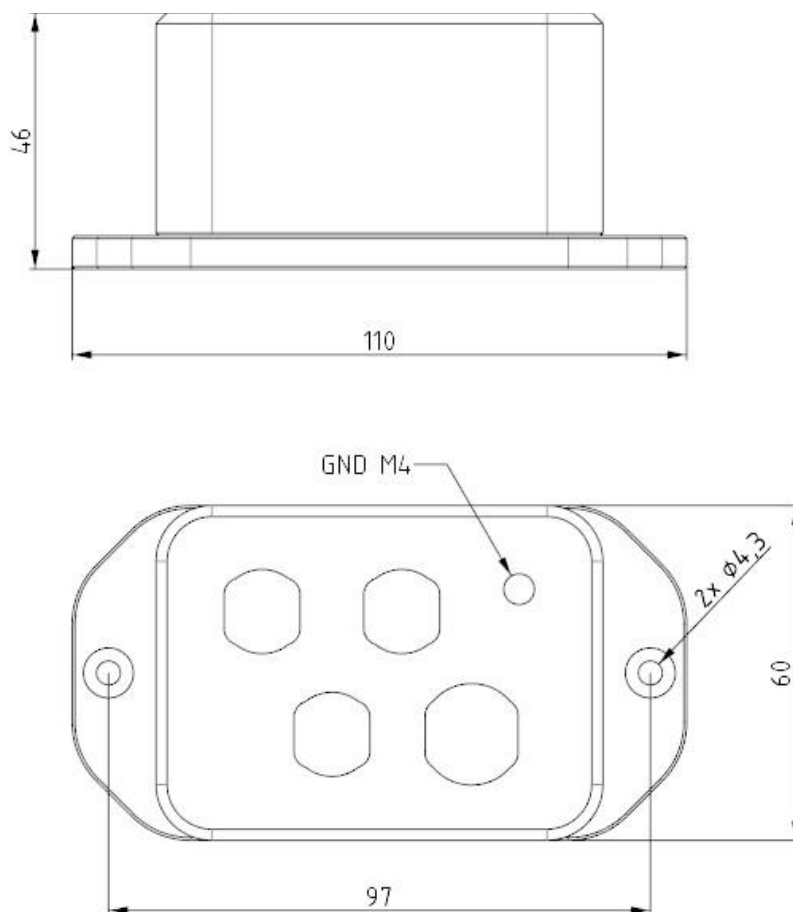POWER-SPLITTER-1xL3B2m-3xL2B3f includes M4 insert for grounding.

> ❗ **Warning**
> There is no protection inside the POWER-SPLITTER-1xL3B2m-3xL2B3f.

POWER-SPLITTER-1xL3B2m-3xL2B3f

5.2. Technical drawing

5.3. Specifications

Power IN	
Input connector (current limit)	1xL3B2m (up to 35 A)
Connector part number	EEJ.3B.302.CLA
Power OUT	
Output connectors (current limit)	3xL2B3f (up to 17 A)
Connector part number	EEG.2B.303.CLL
Additional	
Grounding	M4 insert

6. Sensors

6.1. Current Transducers

High-accuracy sensors for AC/DC current measurement and power analysis. From current clamps to high-precision zero flux current transducers and Rogowski coils.

Current

TEDS compatible

-40°C to +85°C

6.1.1. Main Features

- **AC/DC CURRENT MEASUREMENT**: Dewesoft offers high-accuracy zero-flux current transducers, Rogowski coils, current clamps and shunts for AC and/or DC current measurement.

- **HIGH ACCURACY**: Highly precise zero flux current transducers or fluxgate compensated clamps are a perfect fit for most demanding power measurements for E-mobility, inverter and motor testing applications.

- **UP TO 30 000 AMPS**: DEWESoft offers a very wide range of current measurement ranges up to 30 000 (30 thousand) amps.

- **-40°C to +85°C**: DEWESoft offers current transducers with a wide temperature range. Ideal for winter testing (-40 °C, -40 °F) and summer testing (+85 °C, 185 °F).

- **INTEGRATED SENSOR POWER SUPPLY**: Current clamps such as Iron-core, Rogowski coils, and Hall Compensated clamps can be directly supplied by the LV Amplifier. Fluxgate and zero flux transducers need an external power supply unit (PWR-MCTS2).

- **FLEXIBLE**: There are more than 1000 different current sensors available on the market. If you want to connect your own or other sensors we are very happy to help you here. Dewesoft instruments allow connecting most types of current transducers.

6.1.2. Zero-Flux Transducers specifications

	IT 60-S	IT 200-S	IT 400-S	IN 500-S	IT 700-S	IN 1000-S	IN 2000-S
Primary Current Range DC RMS Sinus	60 A	200 A	400 A	500 A	700 A	1000 A	2000 A
Conversion ratio	1:600	1:1000	1:2000	1:750	1:1750	1:1500	1:2000
Overload Ability Short Time (100 ms)	300 Apk	1000 Apk	2000 Apk	5000 Apk	3500 Apk	5000 Apk	10000 Apk
Max. burden resistor (100 % of Ip)	10 Ω	10 Ω	2.5 Ω	2.5 Ω	2.5 Ω	4 Ω	3.5 Ω
di/dt (accurately followed)	25 A/µs	100 A/µs	100 A/µs	100 A/µs	100 A/µs	100 A/µs	100 A/µs
Temperature influence	< 2.5 ppm/K	< 2 ppm/K	< 1 ppm/K	< 0.2 ppm/K	< 1 ppm/K	< 0.3 ppm/K	< 0.1 ppm/k
Output Ratio	100 mA at 60 A	200 mA at 200 A	200 mA at 400 A	666 mA at 500 A	400 mA at 200 A	666 mA at 1000 A	1 A at 2000 A
Bandwidth (0.5 % of Ip)	DC … 800 kHz	DC … 500 kHz	DC … 500 kHz	DC … 520 kHz	DC … 250 kHz	DC … 440 kHz	DC … 140 kHz
Linearity	< 0.002 %	< 0.001 %	< 0.001 %	< 0.003 %	< 0.001 %	< 0.003 %	< 0.003 %
Offset	< 0.025 %	< 0.008 %	< 0.004 %	< 0.001 %	< 0.005 %	< 0.0012 %	< 0.0012 %
Frequency Influence	0.04 %/kHz	0.06 %/kHz	0.06 %/kHz	0.01 %/kHz	0.12 %/kHz	0.1 %/kHz	0.1 %/kHz
Angular Accuracy	< 0.025 ° + 0.06 °/kHz	< 0.025 ° + 0.05 °/kHz	< 0.025 ° + 0.09 °/kHz	< 0.01 °	< 0.025 ° + 0.18 °/kHz	< 0.01 ° + 0.05 °/kHz	< 0.01 ° + 0.075 °/kHz
Rated isolation voltage RMS, single isolation CAT III, pollution deg. 2, IEC 61010-1 standards, EN 50178 standards	2000 V 1000 V	2000 V 1000 V	2000 V 1000 V	1000 V	1600 V 1000 V	1000 V	1000 V
Test voltage 50 / 60 Hz, 1 min	5.4 kV	5.4 kV	5.4 kV	4.2 kV	4.6 kV	4.2 kV	6 kV
Inner diameter	26 mm	26 mm	26 mm	38 mm	30 mm	38 mm	70 mm
Dimension	93 x 77 x 47	93 x 77 x 47	93 x 77 x 47	128 x 106 x 54	128 x 106 x 67	128 x 106 x 54	231 x 220 x 76
Supply voltage (±5 %)	±15 V	±15 V	±15 V	±15 V	±15 V	±15 V	±15 V
Operating humidity	20 % to 80 % (not condensing)	20 % to 80 % (not condensing)	20 % to 80 % (not condensing)	20 % to 80 % (not condensing)	20 % to 80 % (not condensing)	20 % to 80 % (not condensing)	20 % to 80 % (not condensing)
Operating temperature	+ 10 °C to + 50 °C	+ 10 °C to + 50 °C	+ 10 °C to + 50 °C	- 40 °C to + 85 °C	+ 10 °C to + 50 °C	- 40 °C to + 85 °C	- 40 °C to + 85 °C
DEWESoft® Shunt	5 Ω	5 Ω	2 Ω	1 Ω	2 Ω	1 Ω	1 Ω
PWR-MCTS2 needed	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Compatible amplifiers	SIRIUS LV / HS-LV / XHS-LV SIRIUS STG / HS-STG SIRIUS STGM DEWE 43	SIRIUS LV / HS-LV / XHS-LV SIRIUS STG / HS-STG SIRIUS STGM DEWE 43	SIRIUS LV / HS-LV / XHS-LV SIRIUS STG / HS-STG SIRIUS STGM DEWE 43	SIRIUS LV / HS-LV / XHS-LV SIRIUS STG / HS-STG SIRIUS STGM DEWE 43	SIRIUS LV / HS-LV / XHS-LV SIRIUS STG / HS-STG SIRIUS STGM DEWE 43	SIRIUS LV / HS-LV / XHS-LV SIRIUS STG / HS-STG SIRIUS STGM DEWE 43	SIRIUS LV / HS-LV / XHS-LV SIRIUS STG / HS-STG SIRIUS STGM DEWE 43

Cable length	5 m - MCTS to Transducer 0.3 m - Amplifier to MCTS	5 m - MCTS to Transducer 0.3 m - Amplifier to MCTS	5 m - MCTS to Transducer 0.3 m - Amplifier to MCTS	5 m - MCTS to Transducer 0.3 m - Amplifier to MCTS	5 m - MCTS to Transducer 0.3 m - Amplifier to MCTS	5 m - MCTS to Transducer 0.3 m - Amplifier to MCTS	5 m - MCTS to Transducer 0.3 m - Amplifier to MCTS
Data Sheet	IT 60-S	IT 200-S	IT 400-S	IN 500-S	IT 700-S	IN 1000-S	IN 2000-S

Transducer Specifications

> **⚠ Warning**
>
> Never operate the zero-flux-transducers (IT 60-S, IT 200-S, IT 400-S, IN 500-S, IT 700-S, IN 1000-S, IN 2000-S) without power supply (SIRIUSi-PWR-MCTS2, SIRIUS_ir-PWR-MCTS2). The zero-flux transducer can be damaged!

6.1.2.1. Dimensions
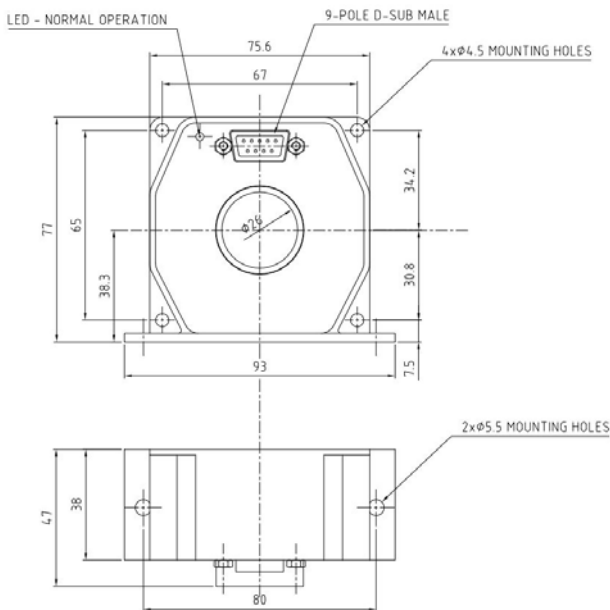
Dimensions IT 60-S, IT 200-S and IT 400-S
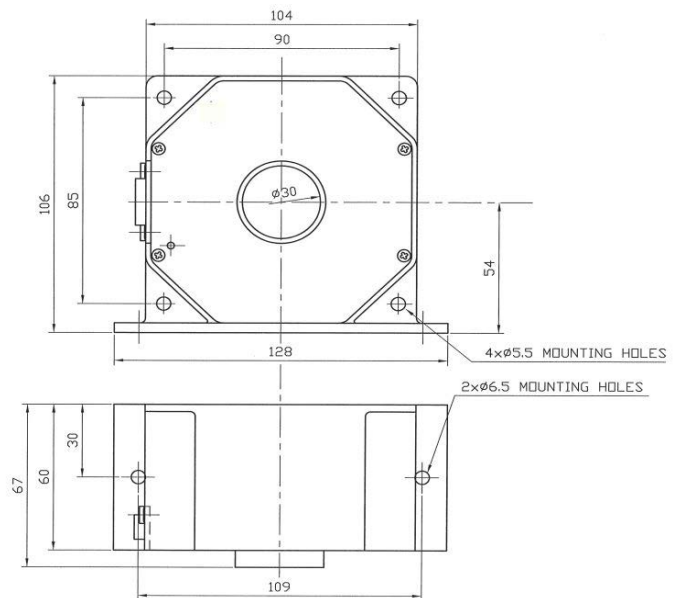
Dimensions IT 700-S
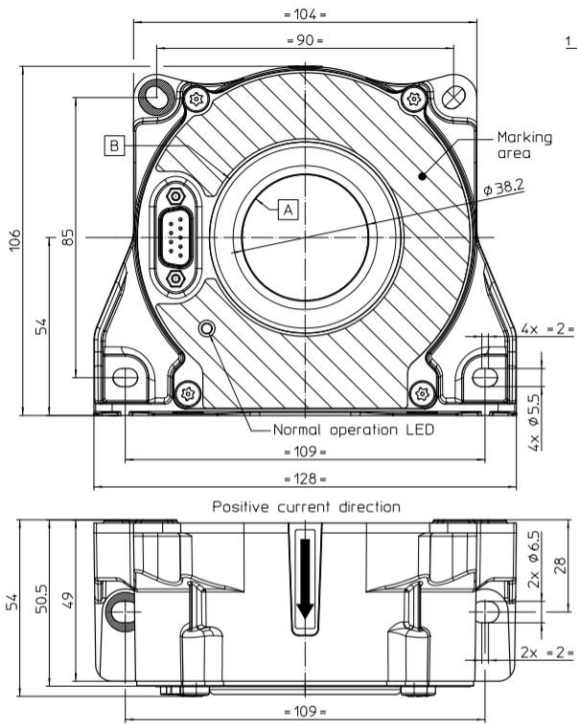
Dimensions IN 500-S and IN 1000-S
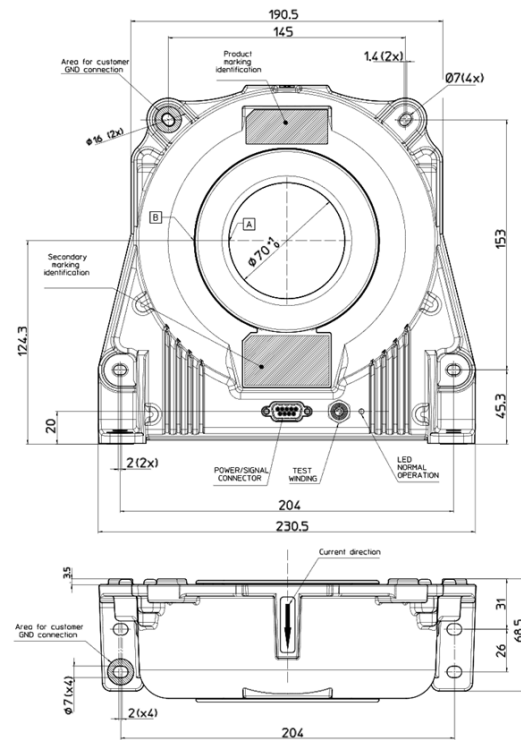
Dimensions IN 2000-S

Overcurrent protection

As soon as electrical saturation appears, the transducer switches from normal operation to over current mode. This electrical saturation appears in any case beyond 1.1 times the current range. Under these conditions:

- the contact (operation status) between pin 8 to 3 (of D-SUB-9 connector) switches off, this contact becomes open
- the green LED (located on the cover plate of the transducer and related to operation status) switches off

The over current mode remains until the primary current decreases to a value lower than a recovery current. In DEWESoft the overcurrent can be seen as digital input.

6.1.2.2. Shunt DSI-MCTS-X00-03M Specifications

Resistor	
Technology	Metal Foil
DSI-MCTS-60-03M	5 Ω / 1 Watt
DSI-MCTS-200-03M	5 Ω / 1 Watt
DSI-MCTS-400-03M	2 Ω / 1 Watt
DSI-MCTS-500N-03M	1 Ω / 2 Watt
DSI-MCTS-700-03M	2 Ω / 1 Watt
DSI-MCTS-1000N-03M	1 Ω / 2 Watt

DSI-MCTS-2000N-03M	1 Ω / 2 Watt
Pulse Power (5 sec)	200 %
Accuracy	
Amplitude Accuracy	±0.01 %
Temperature Coefficient	Typ: ±2 ppm/°C (max. ± 5 ppm/°C)
Load Life Stability	±0.005 % @ 25 °C, 2000 h at rated power
Frequency Characteristics	
Angular Accuracy	< 1° @ 500 kHz
Frequency Range	< 0.5 dB @ 1000 kHz
Rise Time	1 ns
Inductance (L)	max. 0.1 µH (typical 0.03 µH)
Capacitance (C)	max. 1 pF (typical 0.5 pF)

6.1.2.3. Amplitude and Phase Chart
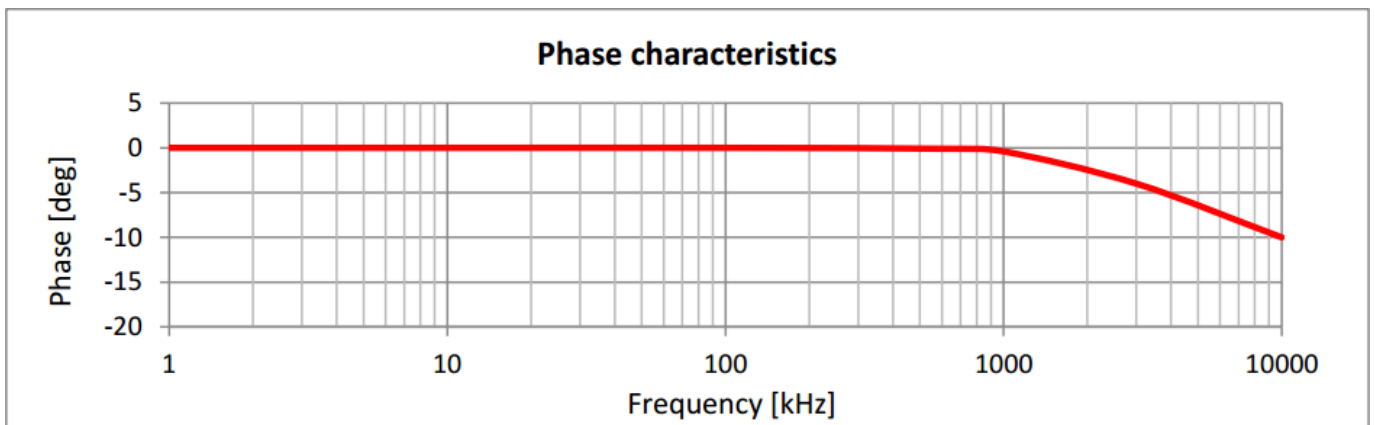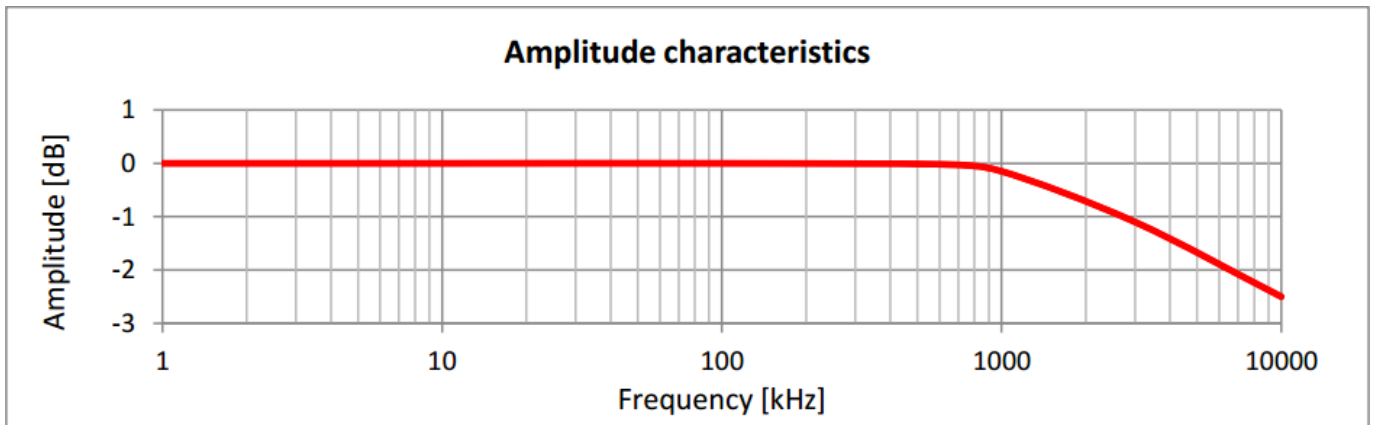
SHUNT DSI-MCTS-X00-03M Characteristics

6.1.2.4. Power Supply for Transducers

SIRIUS PWR-MCTS2 is a power supply unit for powering current transducers directly from Dewesoft instruments without any external power supply. SIRIUS PWR-MCTS2 can be built into SIRIUS compatible chassis or directly into R1, R2, R3, R4 or R8 data acquisition systems.

There are 2 versions of the power supply available. The 4 channel and the 8 channel HD models. The 4 channel version is able to deliver 20 W per channel, whereas the 8 channel can deliver 15 W per channel.

The power supply comes in the SIRIUSi chassis or SIRIUSir rack version, making it one of the most compact power supplies on the market.

SIRIUSi-PWR-MCTS2 4 Channel

SIRIUSi-HD-PWR-MCTS2 8 Channel

SIRIUSir-PWR-MCTS2 4 Channel and SIRIUSir-HD-PWR-MCTS2 8 Channel

	SIRIUSir-PWR-MCTS2/ SIRIUSi-PWR-MCTS2	SIRIUSir-HD-PWR-MCTS2/ SIRIUSi-HD-PWR-MCTS2
Power Supply	9 - 36 VDC	
Max. Power Consumption	85 W	
Physical Dimensions [mm]	265 x 140 x 65	
Operating Temperature	-20 to 50 °C	
Storage Temperature	-40 to 85 °C	
Humidity (@60°C)	95 % RH non-condensing	
Output	4x isolated power supply (1500 VDC , 60 sec)	8x isolated power supply (1500 VDC , 60 sec)
Output Voltage	±15 VDC	±15 VDC
Output Power per Channel	20 W	15 W
Short Circuit Protection	Indefinite (automatic recovery)	
Overload protection	150 % of Iout max. typical	

6.1.2.5. Connecting Zero-Flux to Sirius®

Zero-Flux to MCTS
First connect the zero-flux transducer (e.g. IN 1000-S) with the D9m-D9f-5M-MCTS cable to the SIRIUSi-PWR-MCTS slice to the Sensor 1 input:

Zero-Flux to MCTS connection

The D9m-D9f-5M-MCTS cable is a simple extension cable and can be used for all zero-flux transducers (60 A up to 2000 A).

MCTS to Sirius

Then take the corresponding DSI-MCTS-x-03M cable (where x must match the Zero-Flux transducer: e.g. for the IN-500-S, you need the DSI-MCTS-500-03M cable) and use Output 1 of the SIRIUSi-PWR-MCTS and connect it to the first LV input of the SIRIUSi-4xHS-HV,4xHS-LV slice:


MCTS to Sirius® connection

Note: The DSI-MCTS-x-03M cable only can be used for the corresponding zero-flux transducer. The cables have a built-in shunt, which must match the corresponding transducer. The following table shows which shunt cables belong to the corresponding zero-flux transducer:

Shut Cable	Zero-Flux Transducer
DSI-MCTS-60-03M	IT 60-S
DSI-MCTS-200-03M	IT 200-S
DSI-MCTS-400-03M	IT 400-S
DSI-MCTS-500N-03M	IN 500-S
DSI-MCTS-700-03M	IT 700-S
DSI-MCTS-1000-03M	IT 1000-S
DSI-MCTS-1000N-03M	IN 1000-S
DSI-MCTS-2000N-03M	IN 2000-S

Multiple Flux-Transducers

When you have multiple Flux-Transducers you simply repeat the previous steps for each transducer. For example, when you use a three-phase system, in star connection, it will look like this:
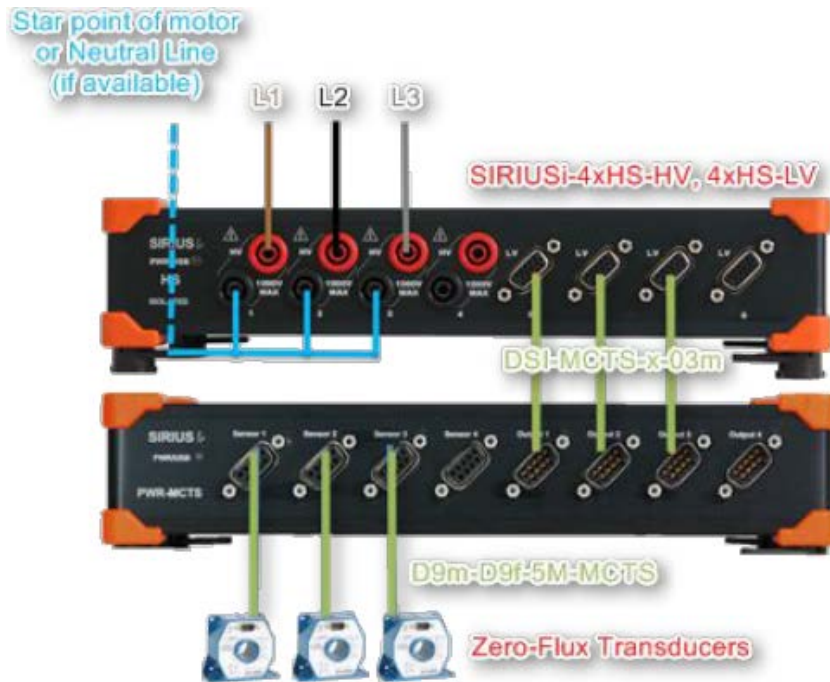
Three-phase system in star connection

Hint

You will find how to connect voltage and current transducers to the system for different wiring configurations (DC, 1-phase, 2-phase, 3-phase delta-star-aron-V, etc.) in the DewesoftX® PRO training course "POWER ANALYSIS"
https://training.dewesoft.com/online/course/power-analysis

6.1.2.6. Connectors pin-outs

Transducer connector pin-out
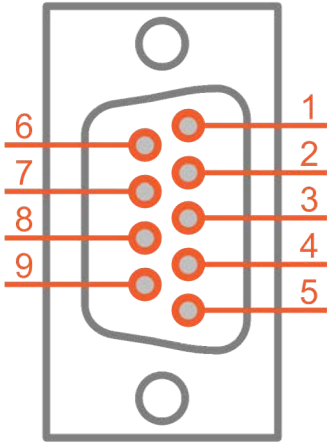
Output connector: pin-out (DSUB-9 male)

Pin	Name	Description
1	RETURN	Return
2	NC	Not connected
3	Normal op. st.	Normal op. st.
4	GND	Ground
5	-Uc	-Supply
6	OUT	Output
7	NC	Not connected
8	Normal op. st.	Normal op. st.
9	+Uc	+Supply

SIRIUS-PWR-MCTS2 connectors pin-out

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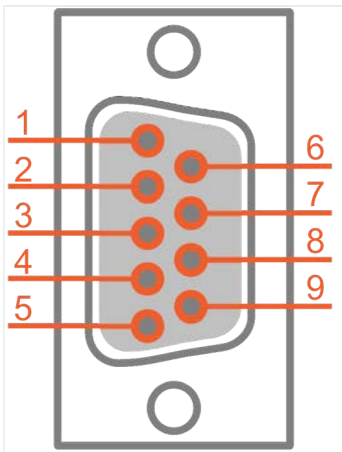
Sensor connector: pin-out (DSUB-9 female)

Pin	Name	Description
1	RETURN	Return
2	TEDS	TEDS
3	Normal op. st.	Normal op. st.
4	GND	Ground
5	-15 V	-15 V supply
6	OUT	Output
7	NC	Not connected
8	Normal op. st.	Normal op. st.
9	+15 V	+15 V supply

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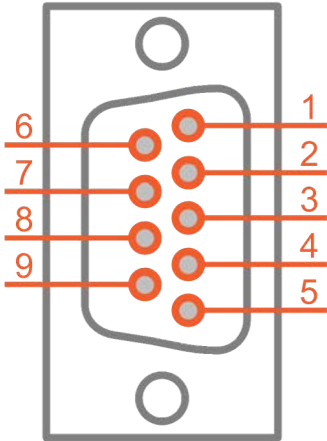
Output connector: pin-out (DSUB-9 male)

Pin	Name	Description
1	RETURN	Return
2	TEDS	TEDS
3	Normal op. st.	Normal op. st.
4	GND	Ground
5	NC	Not connected
6	OUT	Output
7	NC	Not connected
8	Normal op. st.	Normal op. st.
9	NC	Not connected

DSI-MCTS-x-03M cable pin-out
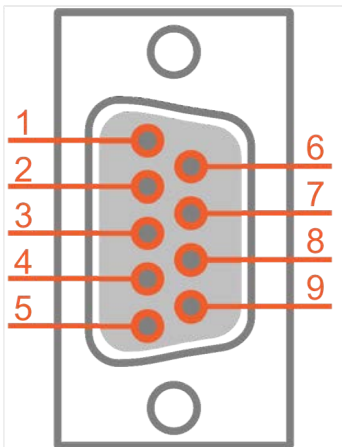
DSI-MCTS-x-03M connector: pin-out (DSUB-9 female)

Pin	Name	Description
1	RETURN	Return
2	NC	Not connected
3	GND	Ground
4	GND	Ground
5	NC	Not connected
6	OUT	Output
7	NC	Not connected
8	Normal op. st.	Normal op. st.
9	NC	Not connected
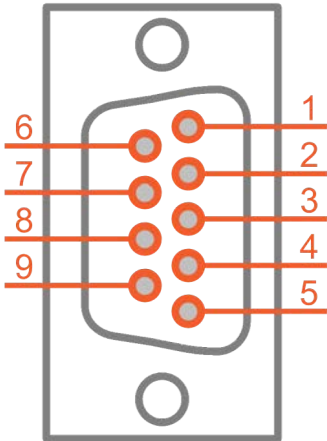
DSI-MCTS-x-03M connector: pin-out (DSUB-9 male)

Pin	Name	Description
1	NC	Not connected
2	In+	In+
3	NC	Not connected
4	GND	Ground
5	Digital IO	Digital IO
6	NC	Not connected
7	In-	In-
8	NC	Not connected
9	TEDS	TEDS

6.1.2.7. DewesoftX® setup

The DSI-MCTS-x-03M cable has an integrated TEDS chip, which stores data about scaling, calibration etc. of the zero-flux transducer. If you connect this Shunt cable to the LV input of the Sirius® slice, the configuration data is read and applied to the DewesoftX® channel setup automatically.

Settings: TEDS feature

For the automatic setup to work, you must first activate this feature in the DewesoftX® settings. Please check that the "Enable DSI adapters, TEDS sensors" check-box is activated:
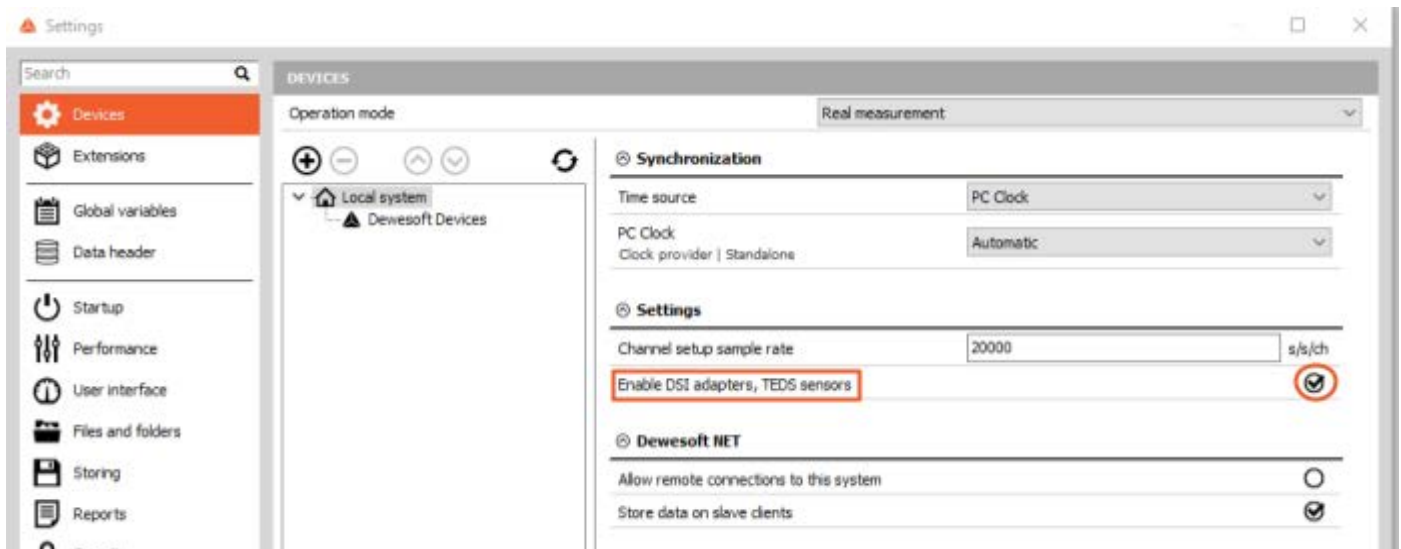
DewesoftX® TEDS setting

Channel Setup

When the TEDS feature is activated, then the channel setup will immediately detect the sensor when you connect it (e.g. IN 1000-S) you will see the corresponding transducer in the Ampl.name column (e.g. DSI-MCTS-1000N). Also notice, that the type of measurement will be changed to Current:

Ch. Setup: Analog in

Finally, open the Setup of the individual channels, and fine-tune the remaining setting: e.g. change the channel name, set a suitable measurement range, set a low-pass filter, …

Channel setup

6.1.3. DC CLAMPS FluxGate Technology

	DS-CLAMP-200DC		DS-CLAMP-500DCS		DS-CLAMP-500DC		DS-CLAMP-1000DC	
Current Range	200 A DC or AC RMS		500 A DC or AC RMS		500 A DC or AC RMS		1000 A DC or AC RMS	
Sensitivity	± 10 mV/A		± 4 mV/A		± 4 mV/A		± 2 mV/A	
Bandwidth	DC to 500 kHz		DC to 200 kHz		DC to 100 kHz		DC to 20 kHz	
TEDS	Fully supported		Fully supported		Fully supported		Fully supported	
Conductor Position Sensitivity	max. ± 0.1 % of reading		max. ± 0.1 % of reading		max. ± 0.2 % of reading		max. ± 0.2 % of reading	
Zero Offset (+25°C)	max. ± 10 mA		max. ± 250 mA		max. ± 250 mA		max. ± 50 mA	
Error due Earth Magnetic Field	max. ± 50 mA		max. ± 100 mA		max. ± 150 mA		max. ± 150 mA	
Temp. Coefficient	± 0.01 %/°C		± 0.01 %/°C		± 0.01 %/°C		± 0.01 %/°C	
Accuracy	Amplitude	Phase Error	Amplitude	Phase Error	Amplitude	Phase Error	Amplitude	Phase Error
DC	± 0.3 % rdg. ± 40 mA	-	± 0.3 % rdg. ± 100 mA	-	± 0.3 % rdg. ± 100 mA	-	± 0.3 % rdg. ± 200 mA	-
to 100 Hz	± 0.3 % rdg. ± 20 mA	± 0.1 °	± 0.3 % rdg. ± 50 mA	± 0.1 °	± 0.3 % rdg. ± 50 mA	± 0.1 °	± 0.3 % rdg. ± 100 mA	± 0.1 °
100 - 500 Hz	± 0.3 % rdg. ± 40 mA	± 0.2 °	± 0.3 % rdg. ± 100 mA	± 0.2 °	± 0.3 % rdg. ± 100 mA	± 0.2 °	± 0.5 % rdg. ± 200 mA	± 0.2 °
500 Hz - 1 kHz	± 0.5 % rdg. ± 40 mA	± 0.5 °	± 0.5 % rdg. ± 100 mA	± 0.5 °	± 0.5 % rdg. ± 100 mA	± 0.5 °	± 1.0 % rdg. ± 200 mA	± 0.5 °
1 kHz - 5 kHz	± 1.0 % rdg. ± 40 mA	± 1.0 °	± 1.0 % rdg. ± 100 mA	± 1.0 °	± 1.0 % rdg. ± 100 mA	± 1.5 °	± 2.0 % rdg. ± 200 mA	± 1.5 °
5 kHz - 10 kHz	± 1.5 % rdg. ± 40 mA	± 1.5 °	± 1.5 % rdg. ± 100 mA	± 1.5 °	± 1.5 % rdg. ± 100 mA	± 2.0 °	± 5.0 % rdg. ± 500 mA	± 2.0 °
10 kHz - 20 kHz	± 5 % rdg. ± 40 mA	± (0.5 + 0.1 f [kHz]) °	± 5 % rdg. ± 100 mA	± (0.5 + 0.1 f [kHz]) °	± 5 % rdg. ± 100 mA	± (0.2 f [kHz]) °	± 30 % rdg. ± 1000 mA	± 10.0 °
20 kHz - 50 kHz	± 5 % rdg. ± 40 mA	± (0.5 + 0.1 f [kHz]) °	± 5 % rdg. ± 100 mA	± (0.5 + 0.1 f [kHz]) °	± 10 % rdg. ± 250 mA	± (0.2 f [kHz]) °	± 30 % rdg. ± 1000 mA	± 10.0 °
50 kHz - 100 kHz	± 15 % rdg. ± 100 mA	± (0.5 + 0.1 f [kHz]) °	± 15 % rdg. ± 250 mA	± (0.5 + 0.1 f [kHz]) °	± 30 % rdg. ± 250 mA	± (0.2 f [kHz]) °	± 30 % rdg. ± 1000 mA	± 10.0 °
100 kHz - 200 kHz	± 5 % rdg. ± 40 mA	± (0.5 + 0.1 f [kHz]) °	± 30 % rdg. ± 250 mA	± (0.5 + 0.1 f [kHz]) °	/	/	/	/
200 kHz - 300 kHz	± 5 % rdg. ± 40 mA	± (0.5 + 0.1 f [kHz]) °	/	/	/	/	/	/
300 kHz - 500 kHz	± 30 % rdg. ± 100 mA	-	/	/	/	/	/	/
Dimensions [mm]	153 x 67 x 25		153 x 67 x 25		238 x 114 x 35		238 x 114 x 35	
Max. Conductor Size	20 mm		20 mm		50 mm		50 mm	
Power Supply	± 11 V to ± 15 V		± 11 V to ± 15 V		± 11 V to ± 15 V		± 11 V to ± 15 V	

| Current Consumption	max. 6 VA	max. 7 VA	max. 7 VA	max. 7 VA
Operating Environment	Indoors, Pollution Degree II, altidude up to 2000m	Indoors, Pollution Degree II, altidude up to 2000m	Indoors, Pollution Degree II, altidude up to 2000m	Indoors, Pollution Degree II, altidude up to 2000m
Operating Temp.	- 40 °C to + 85 °C	- 40 °C to + 85 °C	- 40 °C to + 85 °C	- 40 °C to + 85 °C
Operating Humidity	up to 80 % (not condensing)	up to 80 % (not condensing)	up to 80 % (not condensing)	up to 80 % (not condensing)
Safety Standards	EN61010-2-032:2012	EN61010-2-032:2012	EN61010-2-032:2012	EN61010-2-032:2012
EMC Standards	EN61326-1:2013	EN61326-1:2013	EN61326-1:2013	EN61326-1:2013
Rohs	EN50581:2012	EN50581:2012	EN50581:2012	/
PWR-MCTS2 needed	Yes	Yes	Yes	Yes
Compatible amplifiers	SIRIUS LV / HS-LV / XHS-LV SIRIUS STG / HS-STG SIRIUS STGM DEWE 43	SIRIUS LV / HS-LV / XHS-LV SIRIUS STG / HS-STG SIRIUS STGM DEWE 43	SIRIUS LV / HS-LV / XHS-LV SIRIUS STG / HS-STG SIRIUS STGM DEWE 43	SIRIUS LV / HS-LV / XHS-LV SIRIUS STG / HS-STG SIRIUS STGM DEWE 43
Cable length	3 m - MCTS to Clamp 0.3 m - Amplifier to MCTS	3 m - MCTS to Clamp 0.3 m - Amplifier to MCTS	3 m - MCTS to Clamp 0.3 m - Amplifier to MCTS	3 m - MCTS to Clamp 0.3 m - Amplifier to MCTS
Data Sheet	DS-CLAMP-200DC	DS-CLAMP-500DCS	DS-CLAMP-500DC	DS-CLAMP-1000DC

6.1.4. Frequency derating curves
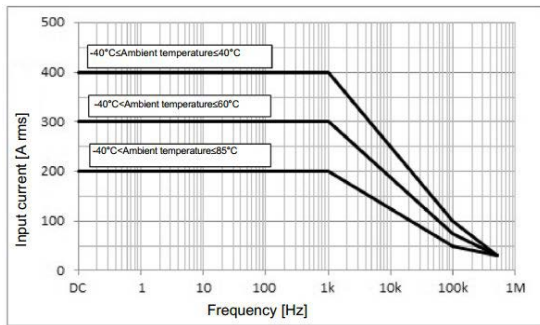
Frequency derating curve DS-CLAMP-200DC
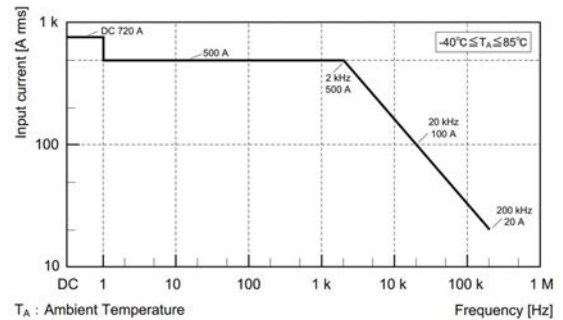
Frequency derating curve DS-CLAMP-500DCS
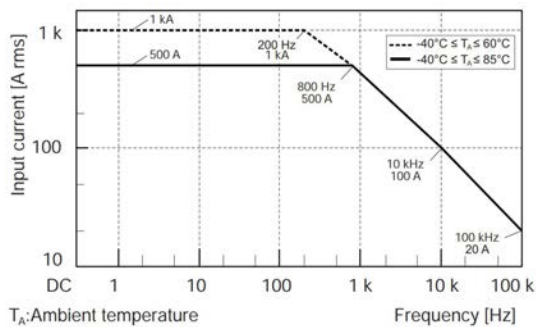

Frequency derating curve DS-CLAMP-500DC
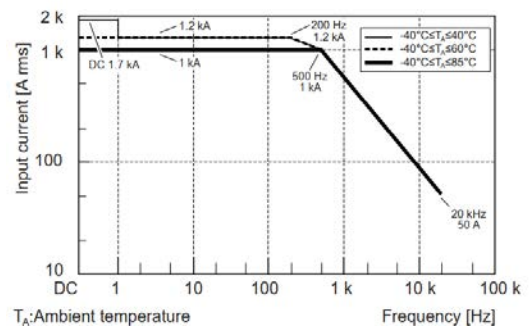

Frequency derating curve DS-CLAMP-1000DC

6.1.4.1. Measurement procedure (Typ: FluxGate Technology)

At the start of measurement

1. Connect the device to the product with which you wish to use it. (while that product's power is off)

2. Turn of the product with which you wish to use the device

3. Perform zero-adjustment (0 ADJ) or demagnetization (DEMAG) as necessary. (See "Demagnetization (DEMAG) and zero-adjustment (0 ADJ).")

4. Slide the lock lever until the UNLOCKED label is visible and the mechanism in place. Then slide the clamp lever to open the clamp mechanism. Apply the clamp mechanism to roughly the center of the conductor being measured.
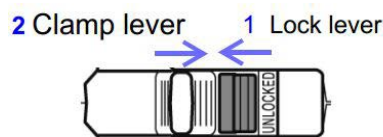
5. Slide the clamp lever to close the clamp mechanism, verify that the tips of the clamp mechanism have met each other properly, and slide the lock lever until the LOCKED label is visible to lock the mechanism in place.
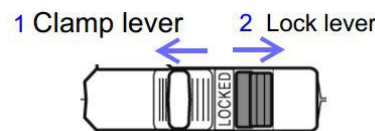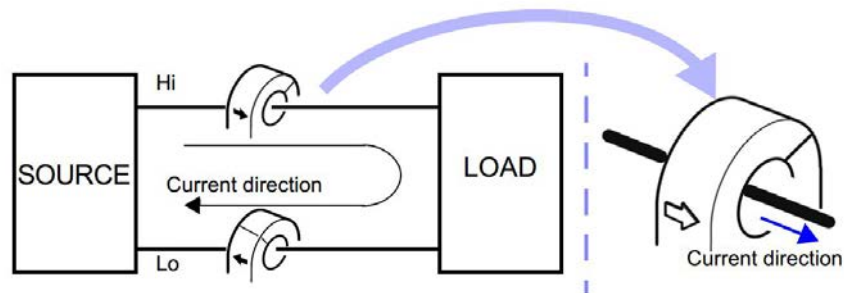

6. Start measurement
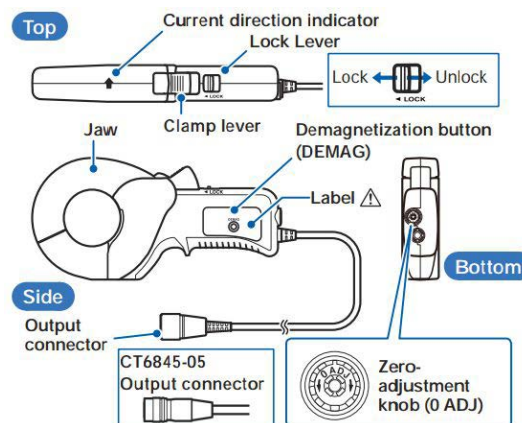
Use of the lock lever for DS-CLAMP-500DC

Wiring

Example Wiring

- Make sure the direction of the arrow on the case matches the direction of the current flow. If they are oriented incorrectly, the output signal from the sensor will be reversed.
- When the device is used with a wattmeter, follow the wiring instructions provided with the wattmeter.
- High-frequency large current at a frequency of 1 kHz or higher can increase measurement error or distort the measured waveform due to the position of the conductor to be measured. Locate the conductor as close as possible to the center of the clamp. Unclamped conductors carrying a high-frequency large current can also increase measurement error or distort the measured waveform. Keep unclamped conductors away from the clamp of the device.
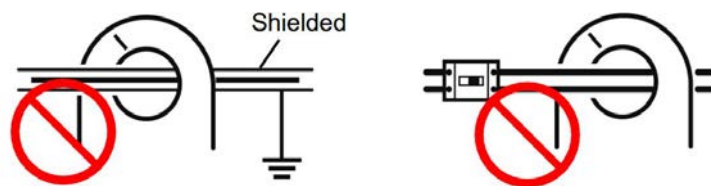
Demagnetization (DEMAG) and zero-adjustment (0 ADJ)

An offset will be output immediately after the power is turned on and when an overcurrent in excess of the rated current is input to the device. Since this offset will cause an error during DC current measurement, perform zero-adjustment as follows:

1. Slide the clamp lever to open the clamp mechanism and press the "DEMAG" button on the panel.
2. Open and close the clamp mechanism two or three times, confirm that the offset output is stabilized, and then slide the lock lever until the LOCKED label is visible to lock the mechanism in place.
3. Monitor the offset output and perform zero-adjustment with the zero-adjustment knob on the bottom of the device.

⚠ Warning

- Zero-adjustment cannot be performed while the device is receiving current input.
- Because offset output varies with the surrounding environment and the ambient temperature (terrestrial magnetism and devices that generate magnetic fields), zero adjustment should be performed at the same location at which measurements will be made.
- If the device is connected to an instrument with a zero correction function, align the notch of the zero-adjustment knob with the center.
- Mechanical shock, for example from dropping the instrument, may cause the offset to shift.
- If unable to fully correct values, perform demagnification (DEMAG) several times with the clamp in the closed position.

When measurement is complete

1. Slide the lock lever until the UNLOCKED label is visible. Then slide the clamp lever to open the clamp mechanism and remove the device from the conductor.
2. Turn off the product with which the device is being used.
3. Disconnect the device from the product's connector.

6.1.4.2. DS-CLAMP-200DC

DS-CLAMP-200DC

DS-CLAMP-200DC: Connection

The DS-CLAMP-200DC needs the SIRIUSi-PWR-MCTS2 power supply. The DS-CLAMP-200DC is connected to the SIRIUSi-PWR-MCTS2. An adapter cable D9m-D9f-03M-CLAMP brings the low voltage signal to the Sirius® HS-LV or Sirius® LV input amplifier:

DS-CLAMP-200DC: Connection

6.1.5. DS-CLAMP-500DC

DS-CLAMP-500DC

DS-CLAMP-500DC: Connection

The DS-CLAMP-500DC needs the SIRIUSi-PWR-MCTS2 or SIRIUSir-PWR-MCTS2 power supply. The DS-CLAMP-500DC is connected to the SIRIUSi-PWR-MCTS2 or SIRIUSi-PWR-MCTS2. An adapter cable D9m-D9f-03M-CLAMP brings the low voltage signal to the Sirius® HS-LV or Sirius® LV input amplifier:
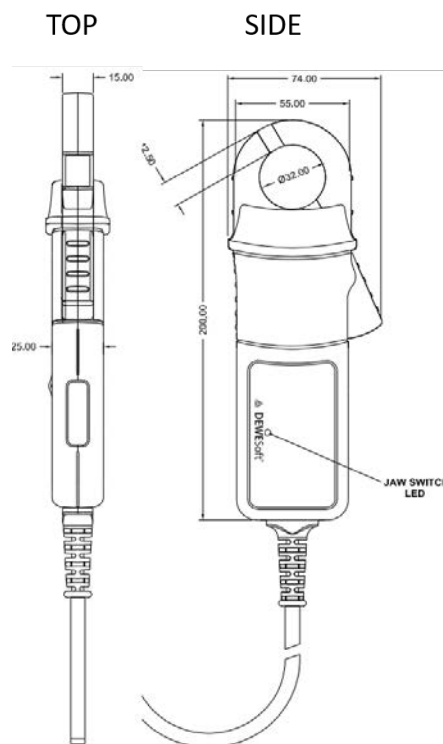

DS-CLAMP-500DC: Connection

6.1.5.1. DS-CLAMP-1000DC

DS-CLAMP-1000DC

DS-CLAMP-1000DC: Connection

The DS-CLAMP-1000DC needs the SIRIUSi-PWR-MCTS2 or SIRIUSir-PWR-MCTS2 power supply. The DS-CLAMP-1000DC is connected to the SIRIUSi-PWR-MCTS2 or SIRIUSi-PWR-MCTS2. An adapter cable D9m-D9f-03M-CLAMP brings the low voltage signal to the Sirius® HS-LV or Sirius® LV input amplifier:

DS-CLAMP-1000DC: Connection

6.1.6. DC CLAMPS Hall Effect Technology

	DS-CLAMP-150DC	DS-CLAMP-150DCS	DS-CLAMP-1800DC
Current Range	200 A DC or 150 A AC RMS	250 A DC or 150 A AC RMS	1800 A DC or AC RMS
Sensitivity	20 mV/A	20 mV/A	1 mV/A
Accuracy (+25°C)	1 % + 2 mA	1 % + 2 mA	0 - 1000 A: ± 2.5 % of reading ± 0.5 A 1000 - 1500 A: ± 3.5 % of reading 1500 - 1800 A: ± 5 % of reading
Bandwidth	DC to 100 kHz	DC to 100 kHz	DC to 20 kHz
Resolution	± 1 mA	± 1 mA	± 1 mA
TEDS	Fully supported	Fully supported	Fully supported
Conductor Position Sensitivity	± 0.5 %	± 0.5 %	± 1.5 %
Zero Offset (+25°C)	± 10 mV max. + 1 mV/°C	± 10 mV max. + 1 mV/°C	-
Error du Earth Magnetic Field	± 0.5 mV	±0.5 mV	max. 150 mA
Temp. Coefficient	± 0.02 % of reading / °C	± 0.02 % of reading / °C	± 0.15 % of reading / °C
Zero	Auto zero @ power supply of sensor	Auto zero @ power supply of sensor	Auto zero via push-button
Dimensions [mm]	205 x 60 x 15	106 x 100 x 25	205 x 60 x 15
Max. Conductor Size	32 mm	25 mm	32 mm
Power Supply	± 10 V	± 10 V	+ 9 V
Current Consumption	30 mA + 1mA/A measured	30 mA + 1mA/A measured	max. 25mA
Jaws Open Indication	Yes	No	No
Operating Temp.	0 to + 60 °C	0 to + 60 °C	0 to + 50 °C
Operating Humidity	15 % to 85 % (not condensing)	15 % to 85 % (not condensing)	15 % to 85 % (not condensing)
Safety Standards	EN 61010-1:2010 EN 61010-2-032:2012 EN 61010-2-031:2012	EN 61010-1:2010 EN 61010-2-032:2012 EN 61010-2-031:2012	EN 61010-1:2010 EN 61010-2-032:2012 EN 61010-2-031:2012
Safety	300 Vrms CAT III	300 Vrms CAT III	300 Vrms CAT III
EMC Standards	EN 61326-2-2:2013	EN 61326-2-2:2013	EN 61326-2-2:2013
PWR-MCTS2 needed	No	No	No
Compatible Amplifiers	SIRIUS LV / HS-LV / XHS-LV	SIRIUS LV / HS-LV / XHS-LV	SIRIUS LV / HS-LV / XHS-LV SIRIUS STG / HS-STG SIRIUS STGM KRYPTON STG DEWE-43
Cable length	3 m	3 m	3 m
Data Sheet	DS-CLAMP-150DC	DS-CLAMP-150DCS	DS-CLAMP-1800DC

6.1.6.1. DS-CLAMP-150DC

TOP   SIDE

DS-CLAMP-150DC

DS-CLAMP-150DC Dimensions

DS-CLAMP-150DC: Connection

The DS-CLAMP-150DC can be connected directly to a Sirius® LV or Sirius® HS-LV amplifier with DSUB-9 connector
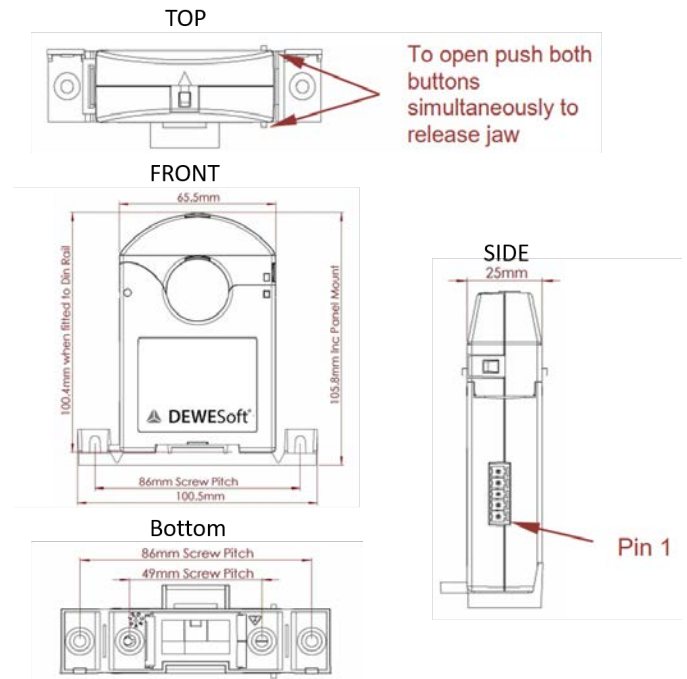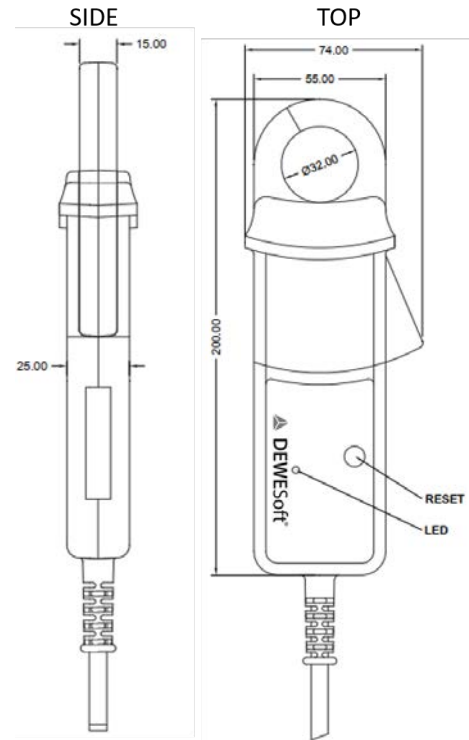

DS-CLAMP-150DC: Connection

6.1.6.2. DS-CLAMP-150DCS

TOP

To open push both buttons simultaneously to release jaw

FRONT

65,5mm

100,4mm when fitted to Din Rail

105,8mm Inc Panel Mount

86mm Screw Pitch
100,5mm

SIDE
25mm

Pin 1

Bottom
86mm Screw Pitch
49mm Screw Pitch

DS-CLAMP-150DCS

DS-CLAMP-150DCS Dimentions

DS-CLAMP-150DCS: Connection

The DS-CLAMP-150DCS can be connected directly to a Sirius® LV or Sirius® HS-LV amplifier with DSUB-9 connector.

DS-CLAMP-150DCS: Connection

6.1.6.3. DS-CLAMP-1800DC

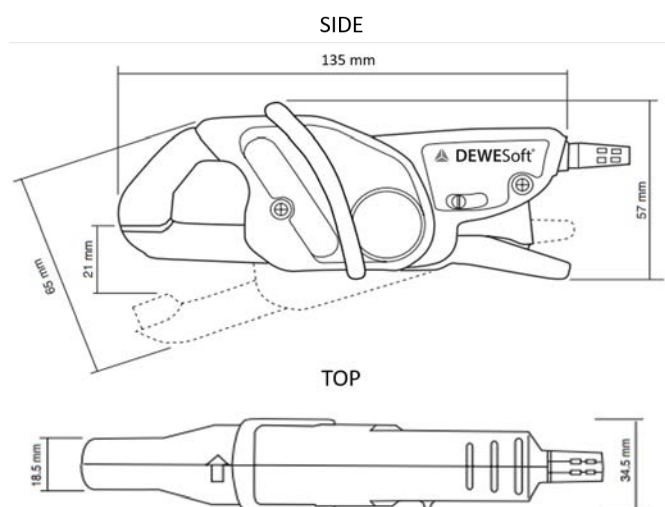DS-CLAMP-1800DC

DS-CLAMP-1800DC: Dimensions

DS-CLAMP-1800DC: Connection

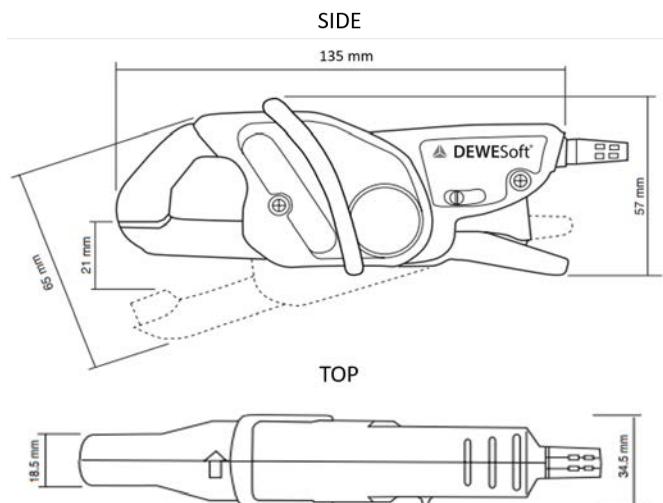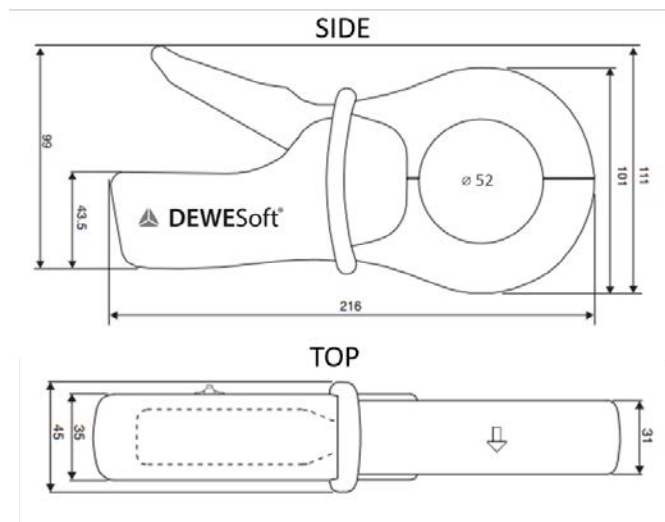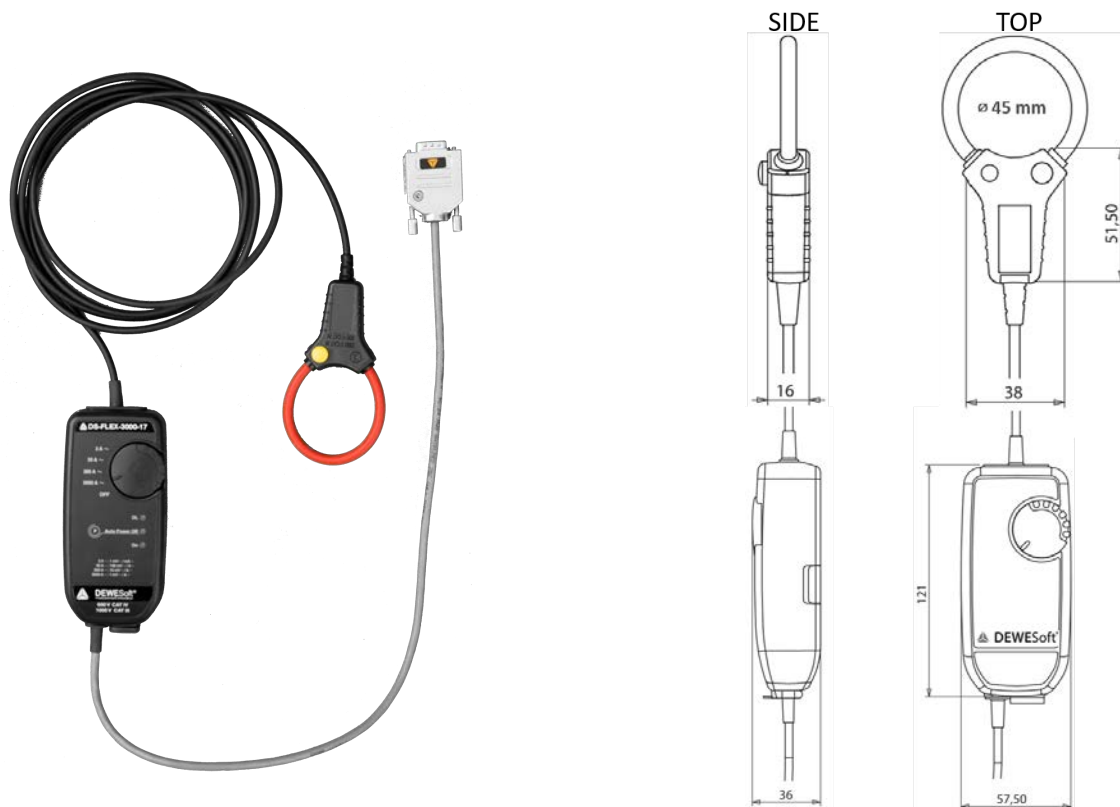*The DS-CLAMP-1800DC can be connected directly to all DewesoftX® amplifiers with DSUB-9 connector (e.g. Sirius® LV).*

DS-CLAMP-1800DC: Connection

6.1.7. AC CLAMPS

	DS-CLAMP-5AC	DS-CLAMP-15AC	DS-CLAMP-200AC	DS-CLAMP-1000AC
Type	Iron-Core	Iron-Core	Iron-Core	Iron-Core
Range	5 A AC RMS	15 A AC RMS	200 A AC RMS	1000 A AC RMS
Sensitivity	100 mV/A	100 mV/A	10 mV/A	1 mV/A
Accuracy (+25 °C)	5 mA - 0.5 A ± 2 % of reading 0.5 A - 1 A ± 1 % of reading 1 A - 12 A ±0 .5 % of reading	< 1 A ± 2.5 % of reading 1 A - 15 A ± 1 % of reading	0.5 A - 10 A ± 3.5 % of reading 10 A - 100 A ± 2.5 % of reading 100 A - 240 A ± 1 % of reading	< 1 A ± 2 % of reading 10 A - 100 A ± 0.5 % of reading 100 A - 1200 A ± 0.3 % of reading
Phase Error	5 mA - 0.5 A ± 2 ° 0.5 A - 1 A ± 1° 1 A - 12 A ± 1 °	< 1 A ± 5 ° 1 A - 15 A ± 3 °	0.5 A - 10 A not specified 10 A - 100 A ≤ 5 ° 100 A - 240 A ≤ 2.5 °	< 1 A not specified 10 A - 100 A ≤ 1 ° 100 A - 1200 A ≤ 0.7 °
Bandwidth	2 Hz to 5 kHz	2 Hz to 10 kHz	2 Hz to 10 kHz	2 Hz to 10 kHz
Resolution	0.01 A	0.01 A	0.5 A	0.001 A
TEDS	Fully supported	Fully supported	Fully supported	Fully supported
Overload Capability	1.5 x I nominal	1.3 x I nominal	1.3 x I nominal	1.3 x I nominal
Conductor Position Sensitivity	≤ 0.5 % of reading	≤ 0.5 % of reading	≤ 0.5 % of reading	≤ 0.1 % of reading
Influence of Crest Factor	≤ 1 %	≤ 3 %	≤ 3 %	≤ 1 %
Error due Earth Magnetic Field	/	≤ 15 mV/A @ 50 Hz	≤ 15 mV/A @ 50 Hz	≤ 15 µV/A @ 50 Hz
Temperature Coefficient	±0.015 % / °C	≤ 0.2 % / 10 °C	≤ 0.2 % / 10 °C	≤ 0.1 % / 10 °C
Influence of Frequency	/	< 5 % of output signal from 20 Hz ... 1 kHz < 10 % of output signal from 1 kHz ... 10 kHz	< 3 % of output signal from 20 Hz ... 1 kHz < 12 % of output signal from 1 kHz ... 10 kHz	< 1 % of output signal from 30 Hz ... 48 Hz < 0.5 % of output signal from 35 Hz ... 1 kHz < 1 % of output signal from 1 kHz ... 5 kHz
Dimensions [mm]	102 x 34 x 24	135 x 51 x 30	135 x 51 x 30	216 x 111 x 45
Conductor Diameter	15 mm	20 mm	20 mm	52 mm
Operating Temperature	-10 °C to +55 °C	-40 °C to +70 °C	-40 °C to +70 °C	-40 °C to +70 °C
Operating Humidity	up to 85 % (not condensing)	up to 85 % (not condensing)	up to 85 % (not condensing)	up to 85 % (not condensing)
Safety Standards	EN61010-2 EN61010-2-032:2012	EN61010-2 EN61010-2-032:2012	EN61010-2 EN61010-2-032:2012	EN61010-2 EN61010-2-032:2012
Safety	CAT III 600V CAT IV 300V	CAT III 600V CAT IV 300V	CAT III 600V CAT IV 300V	CAT III 600V CAT IV 300V
EMC Standards	EN61326-1:2013	EN61326-1:2013	EN61326-1:2013	EN61326-1:2013

PWR-MCTS2 needed	No	No	No	No
Compatible Amplifiers	SIRIUS LV / HS-LV / XHS-LV SIRIUS STG / HS-STG SIRIUS STGM DEWE 43	SIRIUS LV / HS-LV / XHS-LV SIRIUS STG / HS-STG SIRIUS STGM DEWE 43	SIRIUS LV / HS-LV / XHS-LV SIRIUS STG / HS-STG SIRIUS STGM DEWE 43	SIRIUS LV / HS-LV / XHS-LV SIRIUS STG / HS-STG SIRIUS STGM DEWE 43
Cable length	2 m	1.4 m	1.4 m	1.4 m
Data Sheet	DS-CLAMP-5AC	DS-CLAMP-15AC	DS-CLAMP-200AC	DS-CLAMP-1000AC

6.1.7.1. DS-CLAMP-5AC

DS-CLAMP-5AC
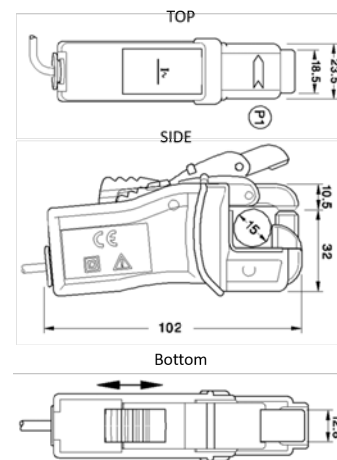
DS-CLAMP-5AC: Dimensions

DS-CLAMP-5AC: Connection

The DS-CLAMP-5AC can be connected directly to all DewesoftX® amplifiers with DSUB-9 connectors (e.g. Siriusi-LV).

DS-CLAMP-5AC: Connection

6.1.7.2. DS-CLAMP-15AC

SIDE

TOP

DS-CLAMP-15AC

DS-CLAMP-15AC: Connection

The DS-CLAMP-15AC can be connected directly to all DewesoftX® amplifiers with DSUB-9 connectors (e.g. Siriusi-LV).

DS-CLAMP-15AC: Connection

6.1.7.3. DS-CLAMP-200AC

DS-CLAMP-200A

DS-CLAMP-200A Dimentions

DS-CLAMP-200AC: Connection

The DS-CLAMP-200AC can be connected directly to all DewesoftX® amplifiers with DSUB-9 connectors (e.g. Siriusi-LV).

DS-CLAMP-200AC: Connection

6.1.7.4. DS-CLAMP-1000AC

DS-CLAMP-1000AC

DS-CLAMP-1000AC Dimensions

DS-CLAMP-1000AC: Connection

The DS-CLAMP-1000AC can be connected directly to all DewesoftX® amplifiers with DSUB-9 connectors (e.g. Siriusi-LV).

DS-CLAMP-1000AC: Connection

6.1.8. Rogowsky coils AC

	DS-FLEX-3000-17	DS-FLEX-3000-35	DS-FLEX-3000-35HS	DS-FLEX-3000-80	DS-FLEX-30000-120
Type	Rogowski coil	Rogowski coil	Rogowski coil	Rogowski coil	Rogowski coil
Current Range	3 A, 30 A, 300 A, 3000 A AC RMS	3 A, 30 A, 300 A, 3000 A AC RMS	3000 A AC RMS	3 A, 30 A, 300 A, 3000 A AC RMS	30 A, 300 A, 3000 A, 30000 A AC RMS
Sensitivity	1000 mV/A, 100 mV/A, 10 mV/A, 1 mV/A	1000 mV/A, 100 mV/A, 10 mV/A, 1 mV/A	10 mV/A	1000 mV/A, 100 mV/A, 10 mV/A, 1 mV/A	100 mV/A, 10 mV/A, 1 mV/A, 0.1 mV/A
Accuracy (+25 °C)	≤ 1.5 %	≤ 1.5 %	≤ 1.0 %	≤ 1.5 %	≤ 1.5 %
Phase Error	≤ 1.0 deg	≤ 1.0 deg	≤ 1.0 deg	≤ 1.0 deg	≤ 1.0 deg
Bandwidth	3 A: 10 Hz to 10 kHz Others: 10 Hz to 20 kHz	3 A: 10 Hz to 10 kHz Others: 10 Hz to 20 kHz	5 Hz - 1MHz	3 A: 10 Hz to 10 kHz Others: 10 Hz to 20 kHz	30 A: 10 Hz to 5 kHz Others: 10 Hz to 20 kHz
TEDS	Not supported	Not supported	Fully supported	Not supported	Not supported
Noise	≤ 0.04 Arms	≤ 0.04 Arms	≤ 0.04 Arms	≤ 0.04 Arms	≤ 0.04 Arms
Temperature Coefficient	≤ 0.5 % / 10 °C	≤ 0.5 % / 10 °C	≤ 0.5 % / 10 °C	≤ 0.5 % / 10 °C	≤ 0.5 % / 10 °C
Casing Dimensions [mm]	120 x 58 x 36	120 x 58 x 36	140 x 64 x 28	120 x 58 x 36	120 x 58 x 36
Coil Length	170 mm	350 mm	350 mm	800 mm	1200 mm
Coil Diameter	45 mm	100 mm	100 mm	250 mm	380 mm
Power Supply	+5 V	+5 V	+9 V	+5 V	+5 V
Operating Temperature	- 10 °C to + 55 °C	- 10 °C to + 55 °C	- 10 °C to + 55 °C	- 10 °C to + 55 °C	- 10 °C to + 55 °C
Operating Humidity	up to 90 % (not condensing)	up to 90 % (not condensing)	up to 90 % (not condensing)	up to 90 % (not condensing)	up to 90 % (not condensing)
Safety Standards	EN60529 EN61010-2 EN61010-2-032:2012	EN60529 EN61010-2 EN61010-2-032:2012	EN60529 EN61010-2 EN61010-2-032:2012	EN60529 EN61010-2 EN61010-2-032:2012	EN60529 EN61010-2 EN61010-2-032:2012
Safety	CAT IV 600V	CAT IV 600V	CAT III 1000V	CAT IV 1000V	CAT IV 1000V
EMC Standards	EN61326-1:2013	EN61326-1:2013	EN61326-1:2013	EN61326-1:2013	EN61326-1:2013
PWR-MCTS2 needed	No	No	No	No	No
Compatible amplifiers	SIRIUS LV / HS-LV / XHS-LV SIRIUS STG / HS-STG SIRIUS STGM DEWE 43	SIRIUS LV / HS-LV / XHS-LV SIRIUS STG / HS-STG SIRIUS STGM DEWE 43	SIRIUS LV / HS-LV / XHS-LV SIRIUS STG / HS-STG SIRIUS STGM DEWE 43	SIRIUS LV / HS-LV / XHS-LV SIRIUS STG / HS-STG SIRIUS STGM DEWE 43	SIRIUS LV / HS-LV / XHS-LV SIRIUS STG / HS-STG SIRIUS STGM DEWE 43
Cable length	2.5 m (Extendable to 10 m upon request)	2.5 m (Extendable to 10 m upon request)	2.5 m (Extendable to 10 m upon request)	2.5 m (Extendable to 10 m upon request)	2.5 m (Extendable to 10 m upon request)
Data Sheet	DS-FLEX-3000-17	DS-FLEX-3000-35	DS-FLEX-3000-35HS	DS-FLEX-3000-80	DS-FLEX-30000-120

6.1.8.1. DS-FLEX-3000-17

DS-FLEX-3000-17

DS-FLEX-3000-17 Dimensions

DS-FLEX-3000-17: Connection

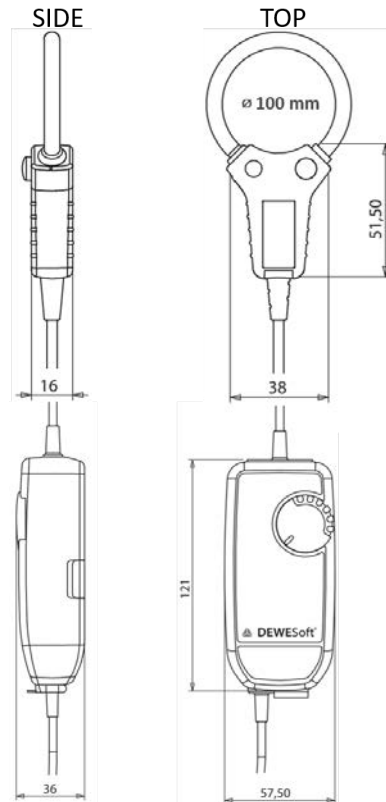The DS-FLEX-3000-17 can be connected directly to a Sirius® amplifier with DSUB-9 connector.

DS-FLEX-3000-17: Connection

6.1.8.2. DS-FLEX-3000-35

DS-FLEX-3000-35

DS-FLEX-3000-35 Dimensions

DS-FLEX-3000-35: Connection

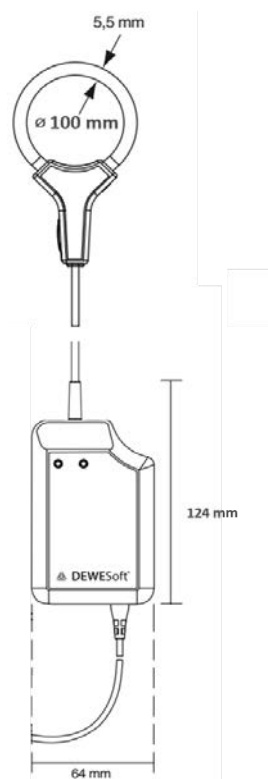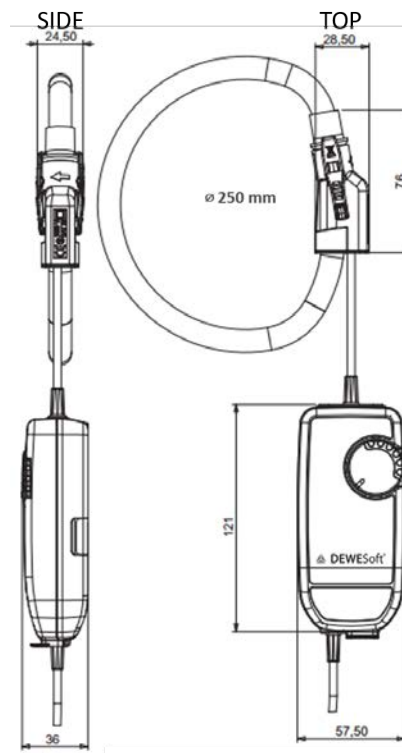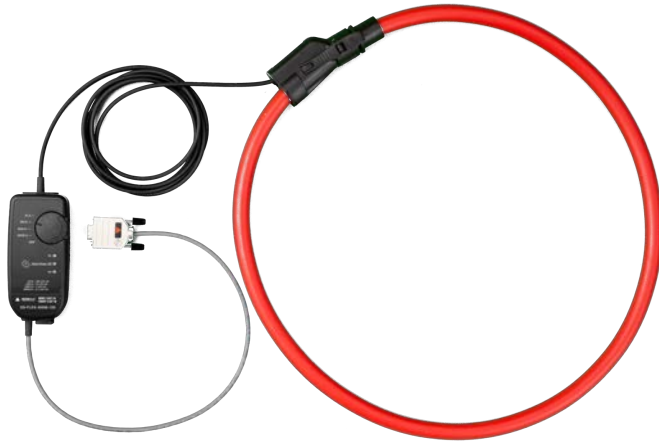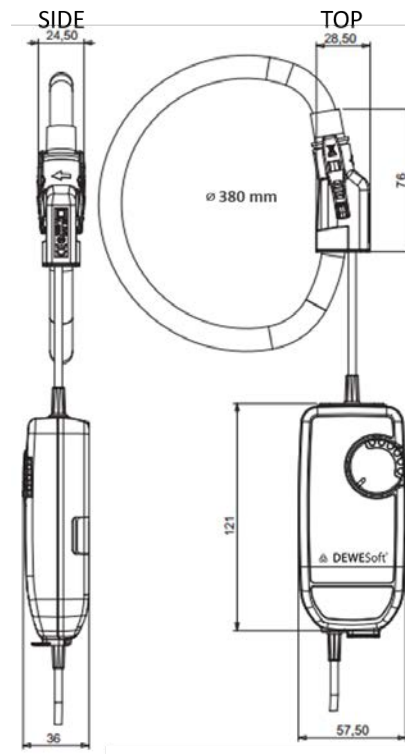The DS-FLEX-3000-35 can be connected directly to a Sirius® amplifier with DSUB-9 connector.

DS-FLEX-3000-35: Connection

6.1.8.3. DS-FLEX-3000-35-HS

DS-FLEX-3000-35-HS

DS-FLEX-3000-35-HS Dimensions

DS-FLEX-3000-35-HS: Connection

The DS-FLEX-3000-35-HS can be connected directly to a Sirius® amplifier with DSUB-9 connector.

DS-FLEX-3000-35-HS: Connection

6.1.8.4. DS-FLEX-3000-80

DS-FLEX-3000-80

DS-FLEX-3000-80 Dimensions

DS-FLEX-3000-80: Connection

The DS-FLEX-3000-80 can be connected directly to a Sirius® amplifier with DSUB-9 connector.

DS-FLEX-3000-80: Connection

6.1.8.5. DS-FLEX-30000-120

SIDE   TOP
24,50   28,50
ø 380 mm
76
121
36   57,50

DS-FLEX-30000-120

DS-FLEX-30000-120 Dimensions

DS-FLEX-30000-120: Connection

The DS-FLEX-30000-120 can be connected directly to a Sirius® amplifier with DSUB-9 connector.

DS-FLEX-30000-120: Connection

6.1.9. Isolated Current Transducers
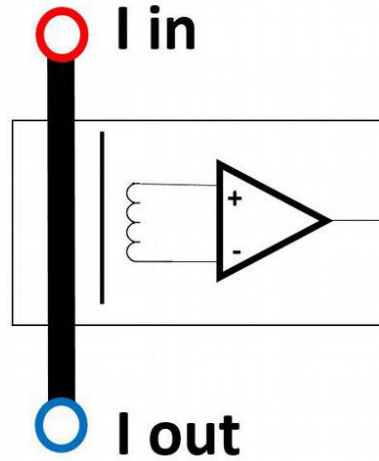
Isolated Transducer

6.1.9.1. DSIi 10A, 20A

Dewesoft offers isolated 10 A and 20 A DSI adapters including integrated current transducers for direct AC or DC current measurements with accuracy down to 0.5 %.

DSIi 10A isolated current transducer
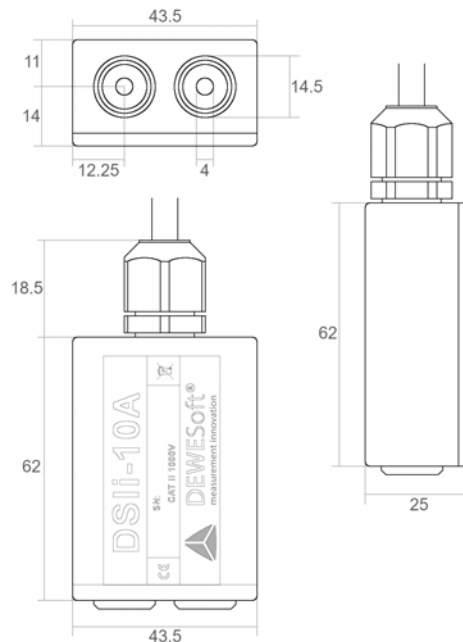
DSIi 10A isolated current transducer Dimensions

DSIi 10A isolated current transducer connected

DSIi-10A Specifications

Inputs specifications	
Input connector type	4mm Banana
Current Range	10 A DC or ACpeak
Accuracy	0.5 % of reading
Phase Error	< 0.1° (50 Hz)
Bandwidth	1 kHz (0.05 dB, 0.1°) 10 kHz (0.1 dB, 1.5°) 100 kHz (0.2 dB, 6°)
TEDS	Fully Supported
Overload Capability	100 A nominal current for < 1 sec
Zero Offset	20 mA
Temperature Coefficient	40 ppm/K
Environmental specifications	
Dimensions	65 x 44 x 24 mm
Power Supply	5 V
Current Consumption	max. 30 mA
Operating Temperature	-40 °C to +55 °C
Isolation	4 kVp
Safety	600 V CAT III

DSIi 20A isolated current transducer connected

DSIi-20A Specifications

Inputs specifications	
Input connector type	4mm Banana
Current Range	20 A DC or ACpeak
Accuracy	0.5 % of reading
Phase Error	< 0.1° (50 Hz)
Bandwidth	1 kHz (0.05 dB, 0.1°) 10 kHz (0.1 dB, 1.5°) 100 kHz (0.2 dB, 6°)
TEDS	Fully Supported
Overload Capability	100 A nominal current for < 1 sec
Zero Offset	20 mA
Temperature Coefficient	40 ppm/K
Environmental specifications	
Dimensions	65 x 44 x 24 mm
Power Supply	5 V
Current Consumption	max. 30 mA
Operating Temperature	-40 °C to +55 °C
Isolation	4 kVp
Safety	600 V CAT III

6.1.10. Shunts

6.1.10.1. DS-SHUNT-05

DS-SHUNT-05
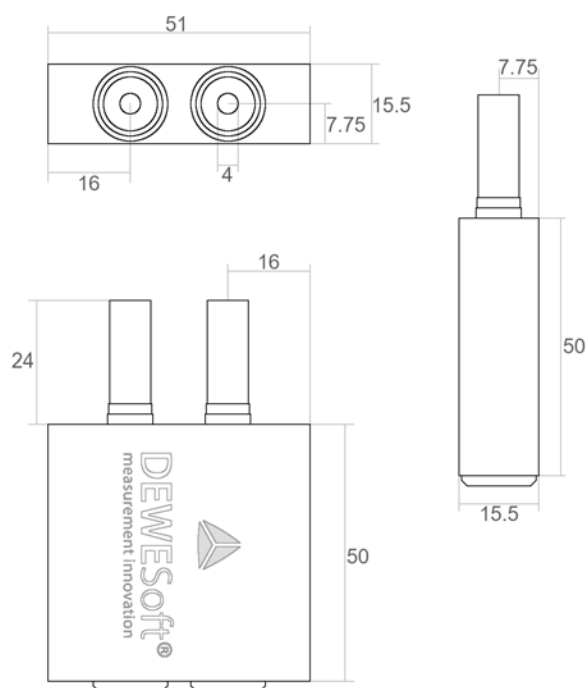
DS-SHUNT-05 Dimensions

6.1.10.2. DS-SHUNT-05 Specifications

Inputs specifications	
Current Range	5A AC
Resistance	50mΩ
Sensitivity	50 mV/A
Accuracy	0.1% of reading
Overload Capability	5x for < 1sec 2.5x for < 10sec
Temperature Coefficient	20 ppm/K
Dimensions	5.0 x 5.0 x 1.5 cm
Safety	600V CAT II

6.1.10.3. BNC-SHUNT-50ohm

The BNC-SHUNT-50ohm allows current measurement of up to 20mA.

6.1.10.4. BNC-SHUNT-50ohm Specifications

Inputs specifications	
Input current	4 mA – 20 mA (typ.)
Shunt resistor	50.000 Ω
Resistance Tolerance	±0.01%
Temperature Coefficient	±0.05ppm/°C typical (0°C to +60°C) ±0.2ppm/°C typical (-55°C to +125°C MIL Range)
Power Rating	20 mW [1]

Caution

(1) Do not exceed the absolute maximum rating!

6.2. DS-TACHO

6.2.1. DS-TACHO1

General specifications	
Trigger / Retrigger level:	±10 mV … ±2 V (adjustable with screwdriver)
Input type	AC-Coupled, 1 Hz
Input low pass filter	22 kHz, 1st order
Bandwidth	1 Hz to 500 kHz
Input impedance	150 kΩ
Min input voltage	40 mVpp, (Umin[mVpp] = 2.8 * Fin(kHz) + 40)
Max input voltage:	±50 Vdc, 100 Vac
Power supply output	+5 Vdc, +12 Vdc (max current depending on used DEWESoft device)

6.2.1.1. Connectors
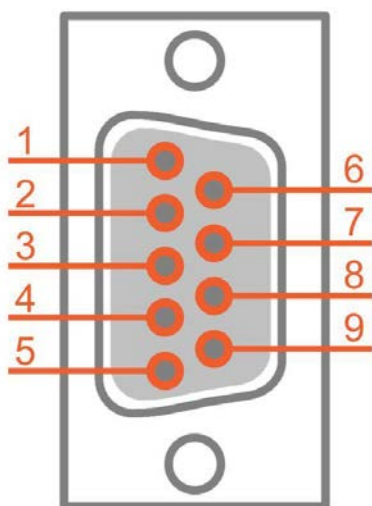
Pin	Description
1	P out (+5 V)
2	Signal (Analog in from tacho)
3	n.c.
4	GND
5	+12 V
6	P out (+5 V)
7	GND
8	n.c.
9	n.c.

6.2.1.2. Output connector pinout
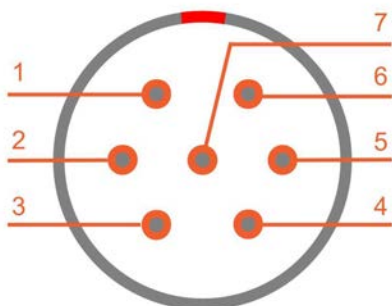
Pin	Description
1	Digital Out
2	n.c.
3	n.c.
4	n.c.
5	+5 V power supply input (from e.g. DEWE-43, SIRIUS)
6	+12 V power supply input (from e.g. DEWE-43, SIRIUS)
7	GND

6.2.2. Operation

Connect the DS-TACHO1 with the LEMO 7pin to a DEWE-43 or SIRIUS Counter input, and on the DSUB 9pin side to your analog tacho probe signal (e.g. magnetic pick up sensor with screw, 1 pulse per revolution).

Start the rotating machine, then use a screwdriver to manually adjust the trigger level on the DS-TACHO1, see picture below.

How to adjust the trigger level

When the trigger is detected correctly, the blue LED will flash. Vary the RPM on the machine to check if the trigger level is ok for the whole RPM range.

The lowest detectable frequency for the counter input on the DEWE-43 / SIRIUS is 5 Hz, therefore if you have 1 pulse/ revolution, the lowest RPM is 300. If you need to measure lower RPM, you could increase the number of pulses per revolution (e.g. for an inductive probe, mount a screw every 90° on the rotating disk and then divide result by 4).
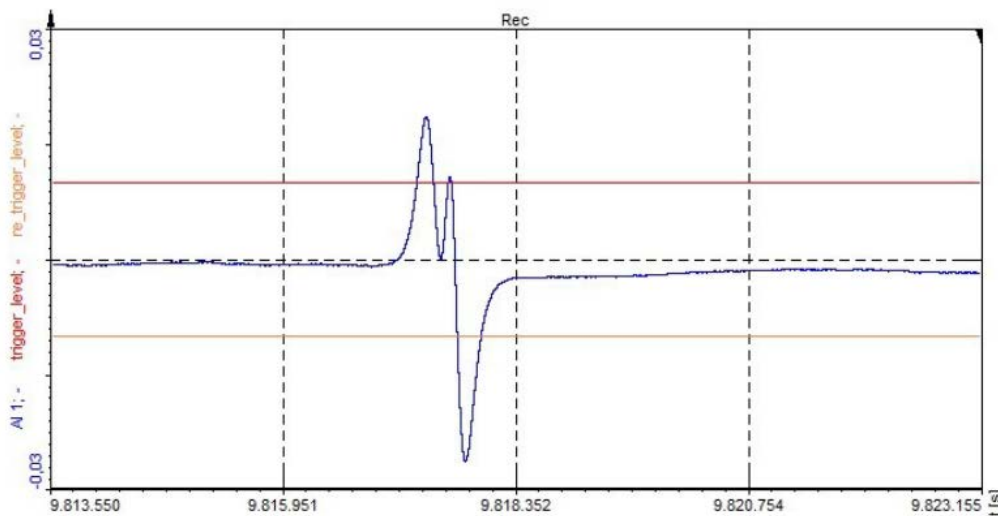
Example of analog input signal

In this example you see the input signal of a magnetic tacho probe (coil) when a screw on the disk is passing by. The higher the RPM, the higher the induced voltage, so here you have to set the trigger level low (shown in the picture +/10 mV).

The upper (red) line is the trigger level, the lower (orange) line is the retrigger level. The signal has to fall below the lower line to be armed for the next trigger again. This even makes it possible to correctly detect a bad signal as shown above!

6.2.3. DS-TACHO2

The DS-TACHO2 is an optical sensor, suitable for RPM measurement or simple object detection.

DS-TACHO2 (Shipping includes the mounting material)

6.2.3.1. DS-TACHO2 Specifications

General	
Speed Range	1-250,000 RPM
Illumination	Visible Red LED
Operating Temp.	14 °F to 158 °F [-10 °C to 70 °C]
Operating Range	up to 36" [0.9 m] and 45 degrees from target
Cable Length	8 feet [2.4 m]
Connection	Lemo 1B 7 pin (FGG.1B.307)
Material	303 Stainless Steel supplied with two M16 Jam Nuts and Mounting Bracket
Lens	Acrylic Plastic
Dimensions	Threaded Tube 2.90 in x 0.62 in diameter [M16 x 1.5 x 74 mm] long
Power Requirement	3.0 - 15 Vdc @ 40 mA
Output Signal	Negative pulse input voltage (+V) to
On-Target Indicator	Green LED on end cap

Operation instructions

The DS-TACHO2 is capable of detecting a reflected pulse from a target consisting of T-5 Reflective Tape at distances of up to 36 inches [1 m] from the rotating object and angles up to 45 degrees. For most applications, a ½" [12 mm] square piece of Reflective Tape (T-5) should be applied to a clean area on the rotating object.

The DS-TACHO2 should be mounted (using the supplied jam nuts and aluminum mounting bracket) and optically aligned to illuminate the target once per revolution. The user must hold "steady" or mount the ROS to obtain an accurate measurement.

It is recommended that the optical Sensor be placed at a slight angle (15 degrees) from perpendicular, so that the Sensor will receive only pulses from the reflective marker. It should be at least 1 inch from the reflective target to avoid false triggering. The green LED On-Target Indicator will blink at the input frequency rate when it is properly aimed. NOTE: The green LED On-Target Indicator will blink on and off at slow speeds and remain on steady at high speeds.

The DS-TACHO2 is supplied with a Lemo 1B connector (FGG.1B.307) fitting to DewesoftX® counter inputs.
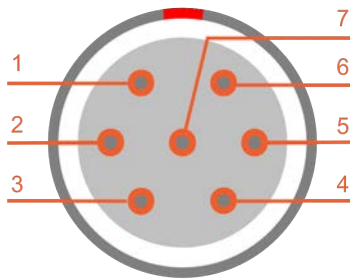
DS-TACHO2 connector: pin-out (7-pin LEMO female)

Pin	Description
1	Signal (+V to 0 Vdc Pulse)
5	+V (Positive Power supply)
7	GND

Correct operation of the sensor can be checked at any time by aiming it at an original design fluorescent light and observing a 120 Hz or 100 Hz (two times your mains frequency) square wave on the signal output. If the sensor is being used with a tachometer, the tachometer will read 7200 RPM or 6000 RPM. The Sensor will not pick up newer "energy efficient" design fluorescent lights.
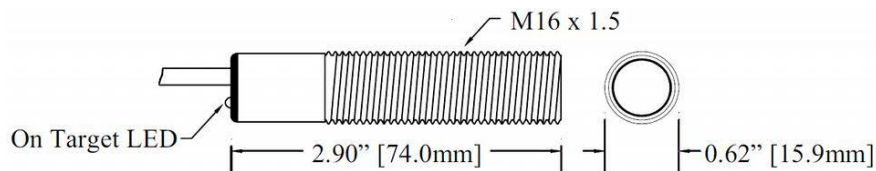
Dimensions

Sensor Dimensions

6.2.4. DS-TACHO3

The DS-TACHO3 is an optical laser sensor suitable for RPM measurement or simple object detection.

DS-TACHO3 (Shipping includes the mounting material)

6.2.4.1. DS-TACHO3 Specifications

General	
Speed Range	1-250,000 RPM
Illumination	Visible Red Laser, Class 2
Laser Specifications / Classification	Class 2 (per IEC 60825-1 Ed 1.2 2001-8) Complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50, dated July 26, 2001.
Maximum Laser Output	1 mW
Pulse Duration	Continuous
Beam Divergence	<1.5 mrad
Beam Diameter	4 x 7 mm typical at 2 m
Laser Diode Life	8,000 operating hours MTBF (1 year warranty)
On-Target Indicator	Green LED on wire end cap
Operating Range	Up to 25 feet [7.6 m] and 60 degrees offset from target
Power Requirement	3.0 - 15 Vdc, 0.13 W
Output	Positive pulse when target present – Output Voltage=Supply Voltage
Operating Temp.	14 °F to 158° F [-10 °C to 70° C]
Humidity	Maximum relative humidity 80% for temperature up to 88 °F [31 °C] decreasing linearly to 50% relative humidity at 104 °F [40 °C]
Connection	Lemo 1B 7 pin (FGG.1B.307)
Cable Length	8 feet [2.4 m]
Material	303 Stainless Steel supplied with two M18 Jam Nuts and Mounting Bracket
Lens	Acrylic Plastic
Dimensions	Threaded Tube 3.12 in x 0.71 in diameter [M18 x 1.5 x 79.4 mm] long

LASER RADIATION
AVOID DIRECT EYE EXPOSURE
CLASS 2 LASER PRODUCT
MAX OUTPUT POWER: 1mW
EMITTED WAVELENGTH: 650nm
CLASSIFIED TO IEC 60825-1:2001

Operation instructions

The Remote Optical Laser Sensor has a visible red laser light source and green LED on-target indicator. The class 2 laser source acts as the aiming device during setup and can accurately measure speeds from 1-250,000 RPM from a distance of up to 25 feet with a maximum offset angle of 60 degrees from the rotating object. The sensor is housed in a threaded 303 stainless steel tube and supplied with a 90 degree mounting bracket and jam nuts.

The DS-TACHO3 is supplied with a Lemo 1B connector (FGG.1B.307) fitting to DewesoftX® counter inputs.
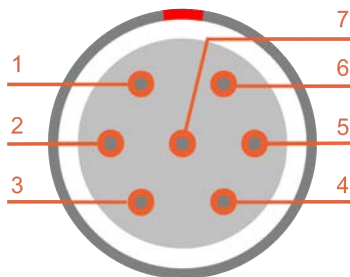
DS-TACHO3 connector: pin-out (7-pin LEMO female)

Pin	Description
1	Signal (+V to 0 Vdc Pulse)
5	+V (Positive Power supply)
7	GND

Correct operation of the sensor can be checked at any time by aiming it at an original design fluorescent light and observing a 120 Hz or 100 Hz (two times your mains frequency) square wave on the signal output. If the sensor is being used with a tachometer, the tachometer will read 7200 RPM or 6000 RPM. The Sensor will not pick up newer "energy efficient" design fluorescent lights.
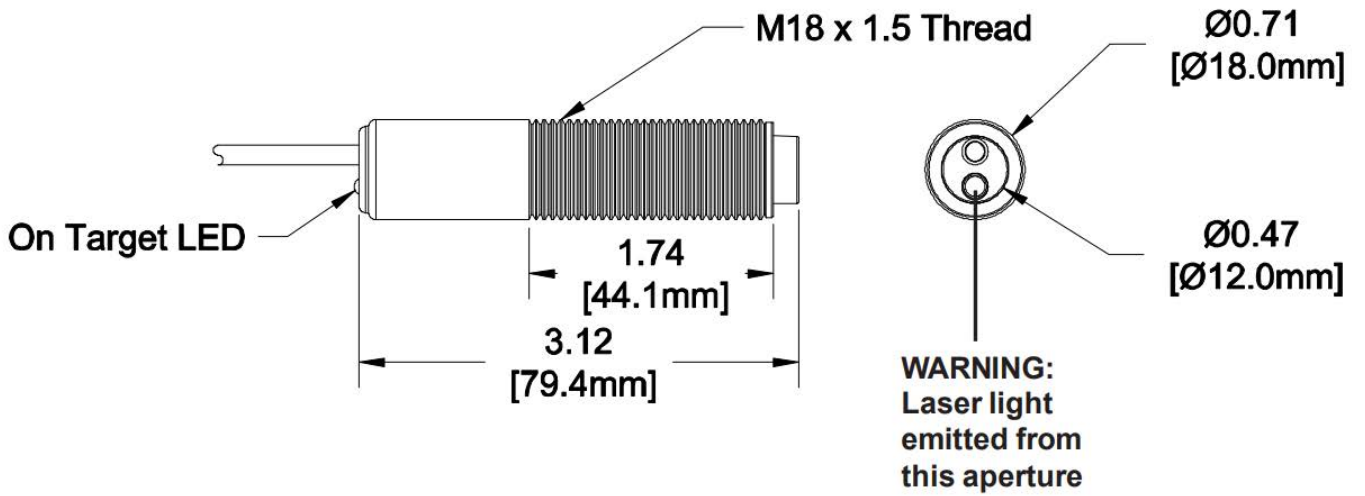
Dimensions

Sensor Dimensions

6.2.4.2. Set up in Dewesoft

Connect the sensor to the counter input (ACC+, STG+, Multi, …) and enter the counter setup.

Counter channel setup

Under the Basic application select Sensor (encoder, CDM, tacho…) mode. From the dropdown menu select the Tacho (Digital) as a sensor type. It depends on the connection of the sensor which signal is selected as Signal input (CNT_IN1 or CNT_IN0). After selecting all the mentioned parameters, you can immediately see the angle and the frequency of rotation.

Counter settings

6.2.4.3. Measurement

Once the sensor is properly connected and defined in DEWESoft, it can be used for frequency measurements (for example: order tracking, balancing, basic RPM measurements, …).
Example: in the order tracking setup you can directly select the tacho as a frequency channel.

Frequency measurement

The lowest detectable frequency for the counter input on the DEWE-43 / SIRIUS is 5 Hz, therefore if you have 1 pulse/revolution, the lowest RPM is 300.

6.2.5. DS-TACHO4

6.2.5.1. Scope of Delivery

The DS-Tacho4 shipment contains the following items:

1) Probe
2) Sensor
3) Tripod
4) Tape
5) Adapter sleeve (6mm)

Scope of delivery

6.2.5.2. Sensor

Sensor

6.2.5.4. Tripod

Tripod: Box-dimensions: 63x50x55 mm

6.2.5.3. Probe

Probe

6.2.5.5. Tape
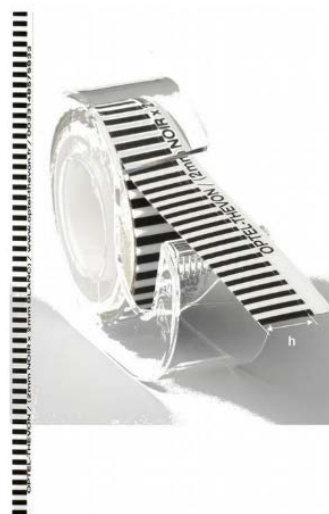
Black/white tape

6.2.5.6. Operation

6.2.5.6.1. Mounting of the Probe
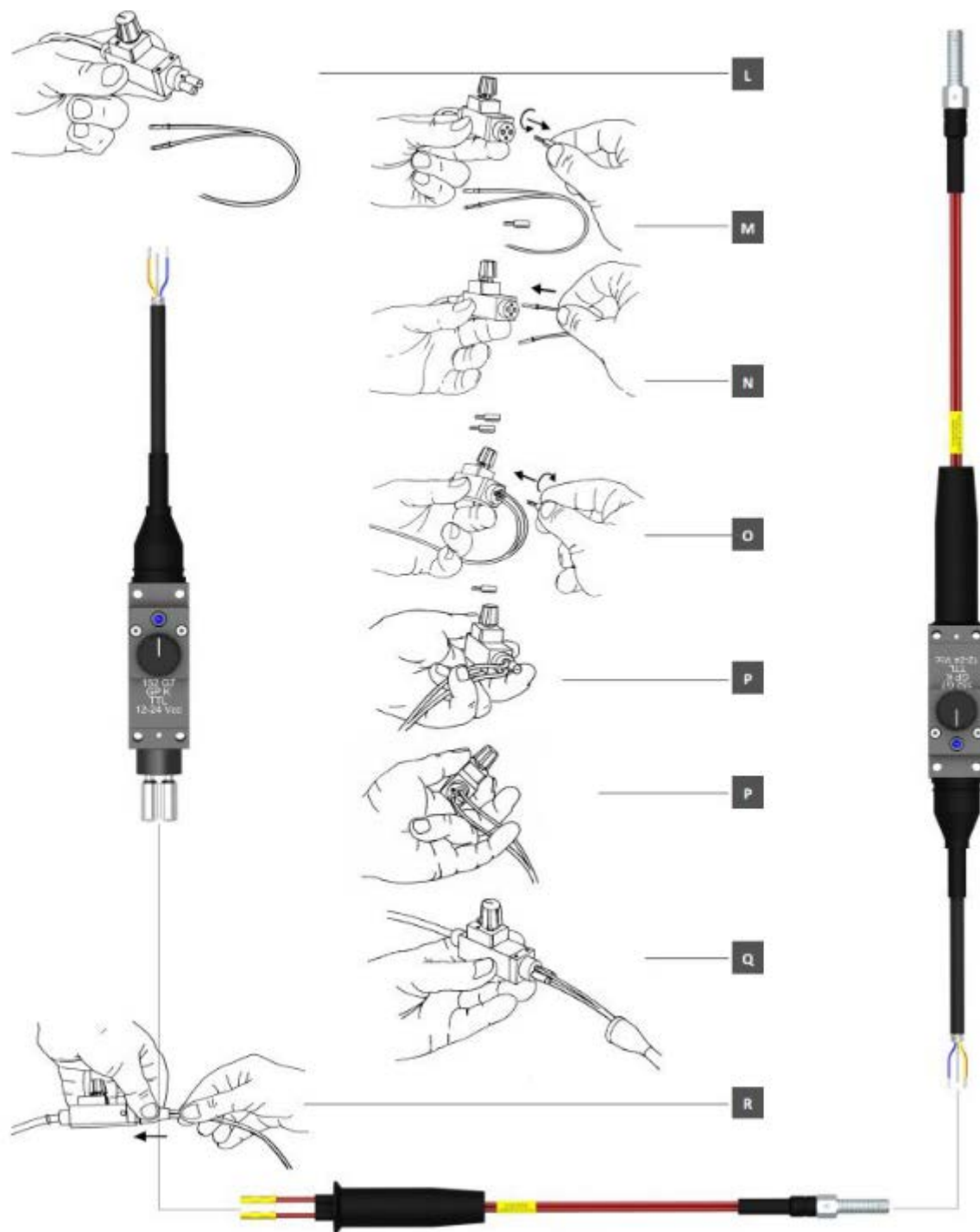
Mounting of the Probe

L: Ensure that you have all items required at your disposal, i.e. the sensor, the probe, and the two hand-pieces for optical fixation

M: Put the two hand-pieces down if they are on the optical head of the sensor
N: Insert the two optical fibres with their respective rivets

O: Screw the first hand-piece on and tighten moderately; a little gap between the rivet head and the optical head is normal

P: Remove the two fibres in order to allow for mounting of the second hand-piece

Q: Make sure that the two fibres and their rivets are assembled correctly

R: Hold both probe and sensor simultaneously when inserting the rubber sleeve to avoid damaging the two optical fibres on the level of the rivets.

6.2.5.6.2. Using the Tripod

To mount the probe to the Tripod, you need the 6mm Adapter sleeve.

First put the adapter sleeve over the probe and then mount it in the Tripod.
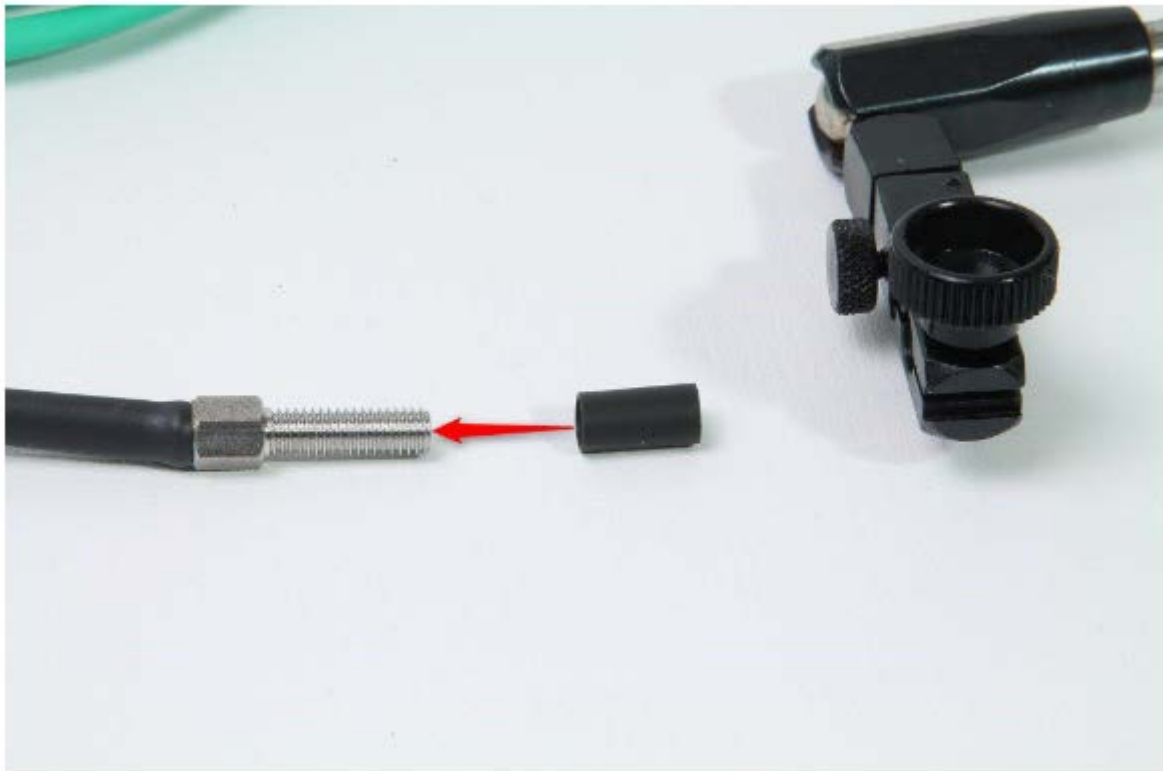
Using the Tripod

6.2.5.6.3. Adjustment of the probes

Operational mode of the sensor can be seen at the end of the optical fibre by a light beam (not dangerous), which is emitted when the sensor is in "1" mode and not emitted when the sensor is in "0" mode. The sensor keeps its wavelength in near Infra-Red to ensure power and immunity of the detection function. This also gives an indication about the condition of the optical fibre.

The sensor should be placed about 2 to 5mm above the tape. A sensitivity potentiometer is available to adjust the trigger level for reliable pulse output.

First turn the potentiometer in mid position. Bring the probe closer to the target until the indicator at the head lights up, targeting the white mark. Shift the probe, and repeat this operation in order to detect the triggering limits on the black marks of the target. Set up the probe in an average position (length), review this operation to confirm the accurate detection: the set up is finished.
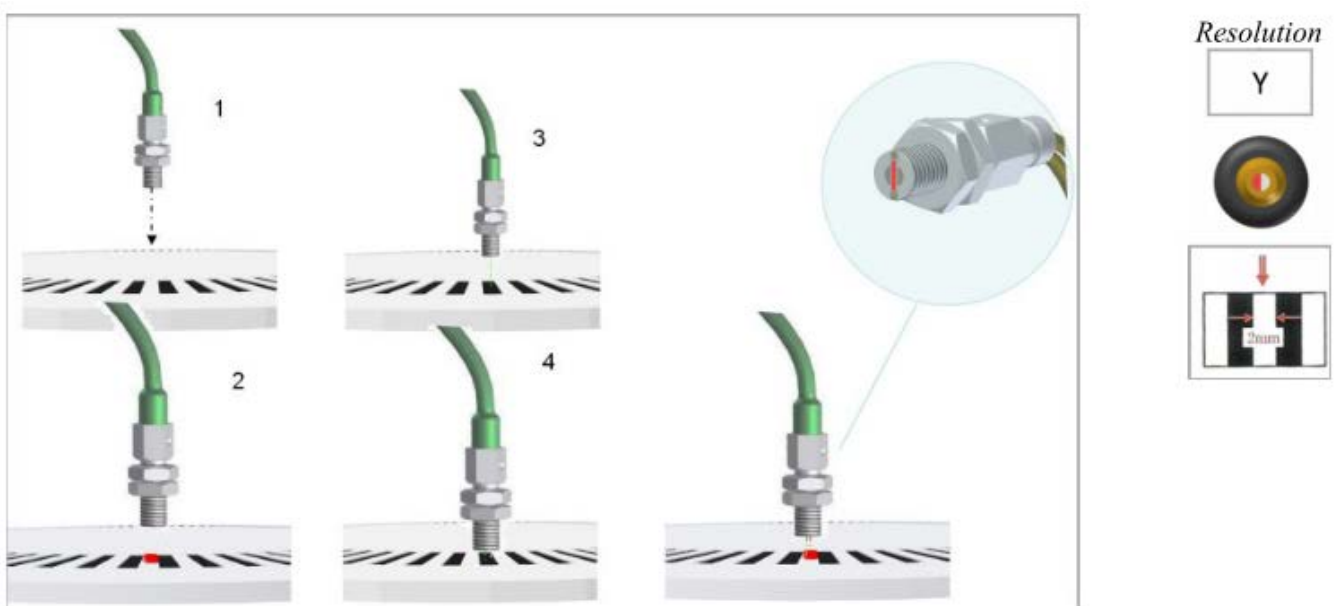
Probe adjustment

6.2.5.7. Optional Reflector Types

For optional reflector types please contact sales@dewesoft.com.
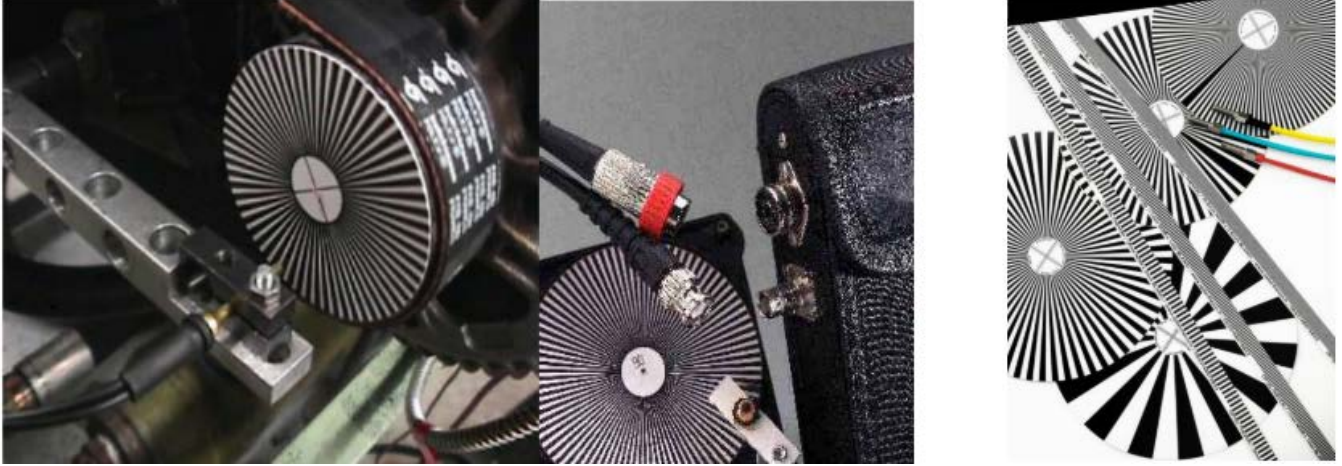

Different reflector types

6.2.5.7.1. Automatic gap detection

When applying the black/white tape to the rotating shaft there will be an irregular rasterization at the transition point. This can be used as the zero pulse to indicate a defined start position. On the other hand this would result in a rpm drop or spike in our rpm measurement.

A software procedure automatically measures the pulses per revolution and also detects the exact gap length to enable robust and high quality measurement.

Gap example
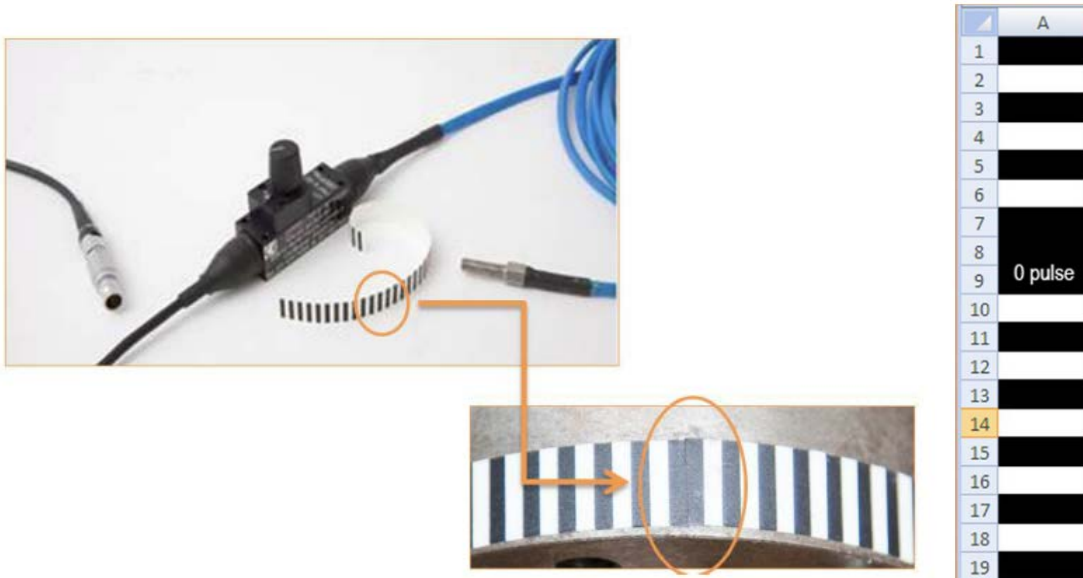
![pointing finger icon] **Important**

The zero pulse must be at least 3 pulses long.

6.2.5.8. Technical

6.2.5.8.1. Sensor set-up

Power supply must be perfectly rectified, filtered, and constantly deliver more than 120mA /12V.This is not an "open collector" output sensor, but PNP output. 152 G7 can support reverse tension, this tension modifies signal's Amplitude. 152 G7 TTL Voltage output is 5Vcc , 152 G7 Voltage output is nominal voltage input -1.5Vcc. If the sensor is connected to the acquisition system the use of dedicated measurement connectors and matching cables is recommended. Please refrain from extending the cable. Otherwise, the sensor's operation may be affected. To confirm that the sensor is live, check if a faint red LED glows on the small light channel in front of the sensor optical head; You can also use a digital camera to see the I.R. Light. The brightness of this small red light is independent of the position of the potentiometer.

6.2.5.8.2. Sensor plug-in

V Rating: 12/24Vcc
V Minima: 10Vcc
V Maxima: 30Vcc
I: 120mA/12Vcc
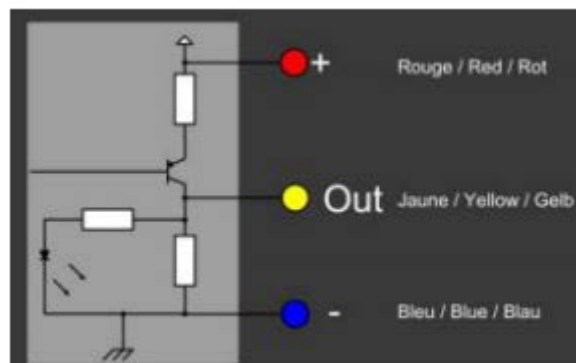
Sensor pinout

6.2.5.8.3. Specifications

Specifications	DS-Tacho4
Supply voltage	9 - 30 VDC
Supply current @ 12 V	100 mA
Max. input frequency	260 kHz
Output	TTL
Rise time	100 ns
Fall time	<1 µs
Temperature range	-10 to 50 °C non condensing
Temperature fiber sensor	-40 to 100 °C
Temperature B&W tape	-10 to 60 °C
Weight	150 g (0.33 lb.)
Working area of probe	2 - 5 mm
Trigger level adjustable	Potentiometer 3/4 turn
Probe diameter	M6 x 20 mm
Black/white tape	2 mm black, 2 mm white; width 10 mm; 1 m tape included
Connector	Lemo FGG.1B.307, directly fits to a Dewesoft counter input

6.2.5.8.4. Lemo connector

1: IN0/A
2: IN1/B
3: IN2/Z
7: GND
6: +12V
5: +5V
4: DO
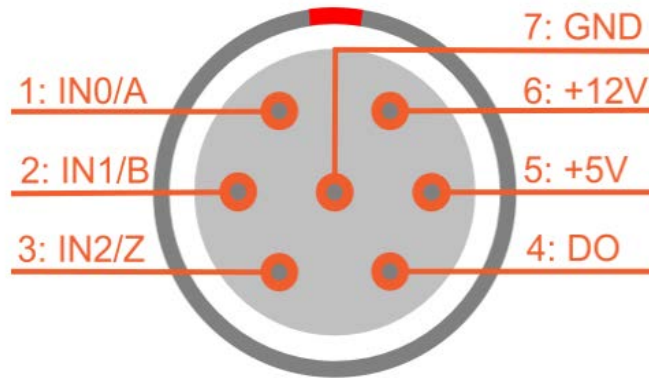
Counter pin-out (Lemo 7 pin)

Connector Type: L1B7f
Connector on the measurement module: EGG.1B.307.CLL
Mating connector: FGG.1B.307.CLAD52

6.2.5.8.5. Physical Diagram

56   1,5 metre

49   30   10

14   48   20   24
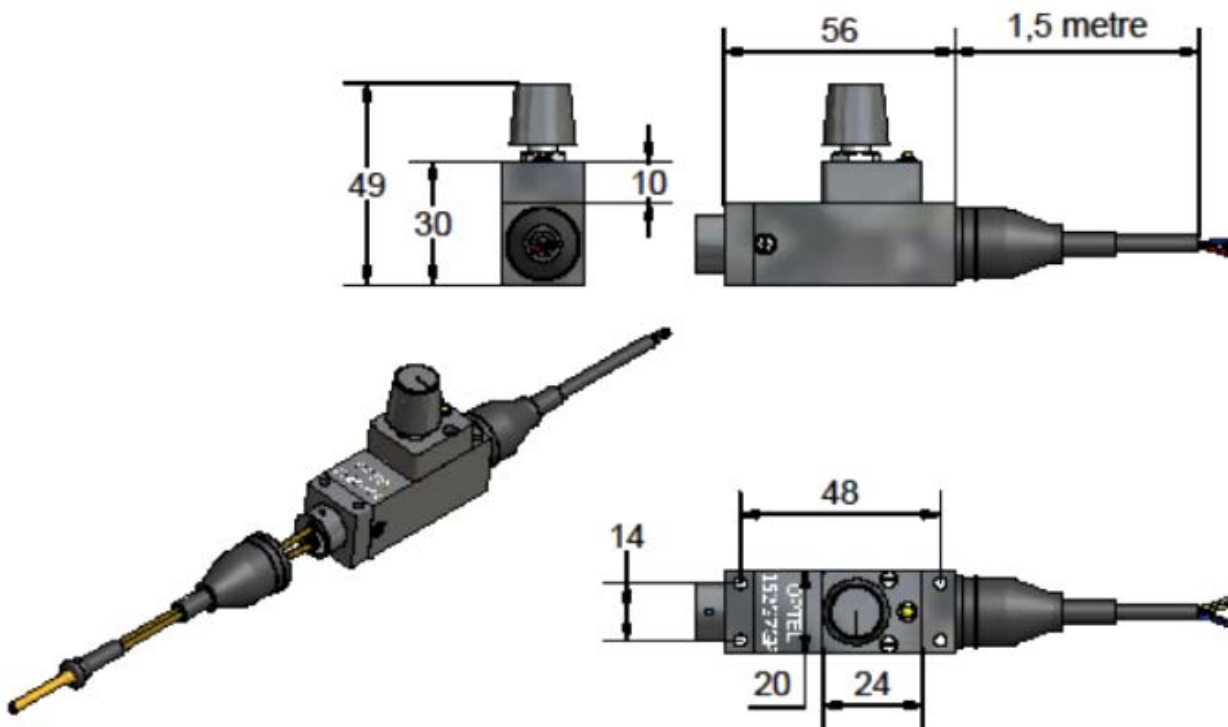
Sensor dimensions

7. Mounting plates

- Mounting plates are equipped with a smart click mechanism that allows several Dewesoft DAQ systems to be firmly fixed to the mounting plate.
- All mounting plates are milled from a single block of aluminum in our state-of-the-art CNC tool shop.
- Different mounting plates allows to mount SIRIUS units to rigid surfaces and to stack KRYPTON units or other devices and accessories on the top.
- Rugged mounting systems for SIRIUSw and SBOXw expands the usability of these devices even further providing a vibration-damping mechanism.

7.1. DS-MOUNT-1

This mount can be used to mount SIRIUS data acquisition systems and SBOX data processing computers to the wall, floor, or any other flat surface.

The DS-MOUNT1 is equipped with 4 holes where you can firmly screw it to any flat surface. Smart click corners are available where you can firmly clip SIRIUS, SBOX, MINITAURs, IOLITE, or SBOX systems with the smart click mechanism.
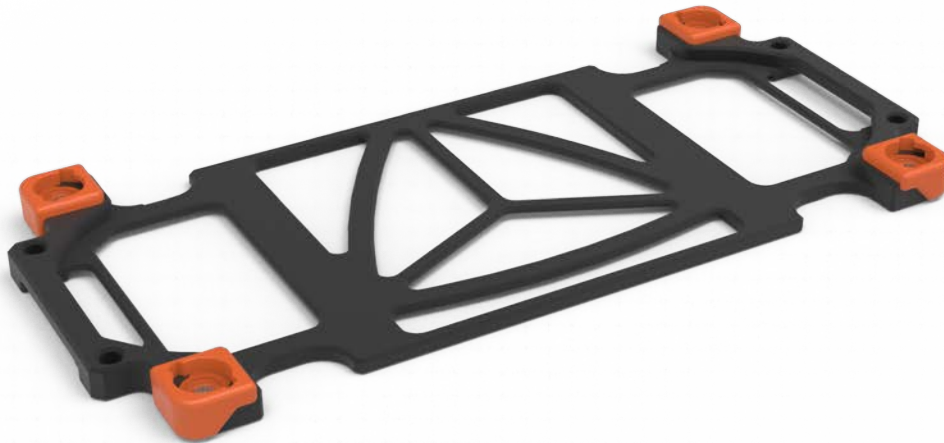
DS-MOUNT-1

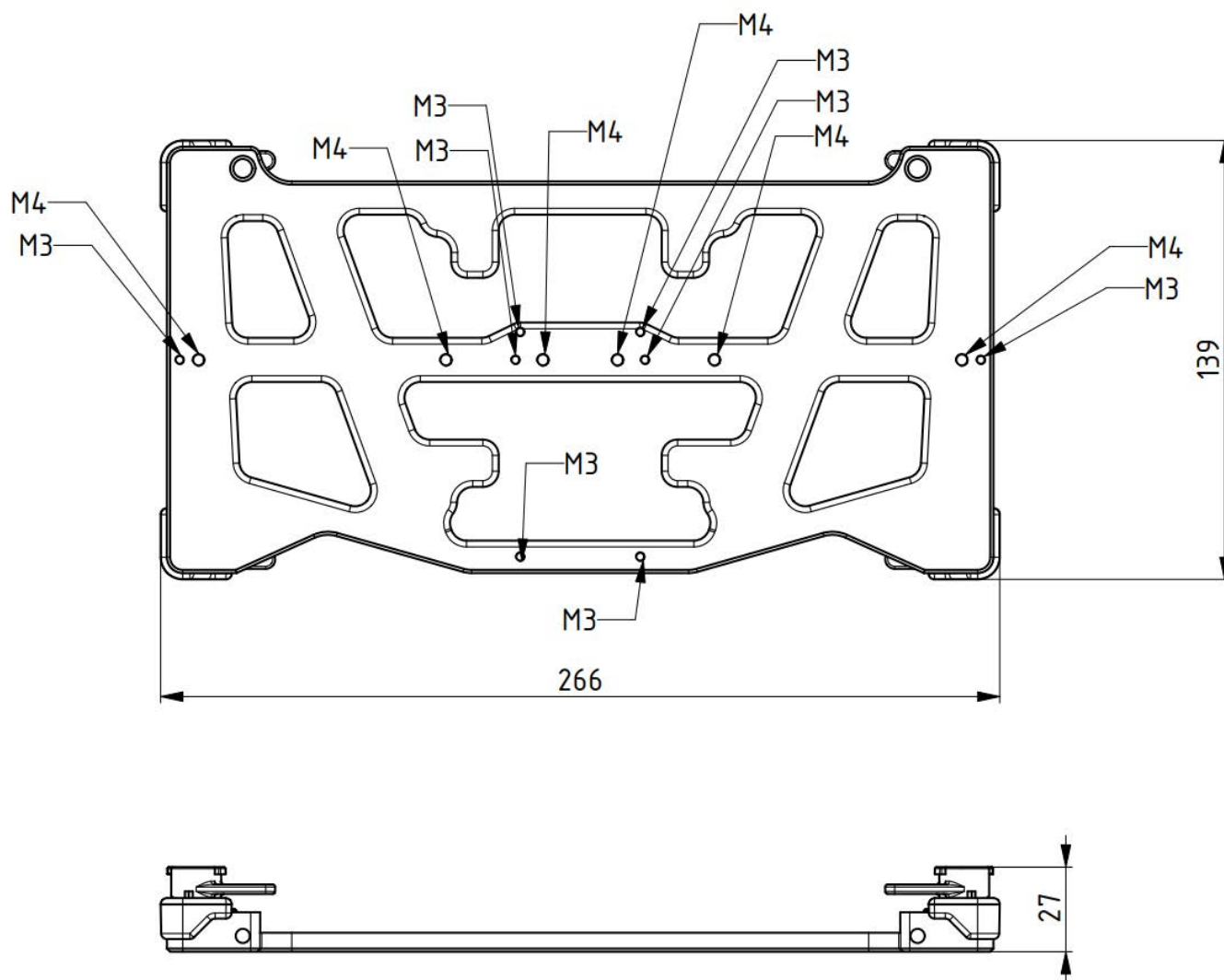### 7.1.1. DS-MOUNT-1 Technical drawing
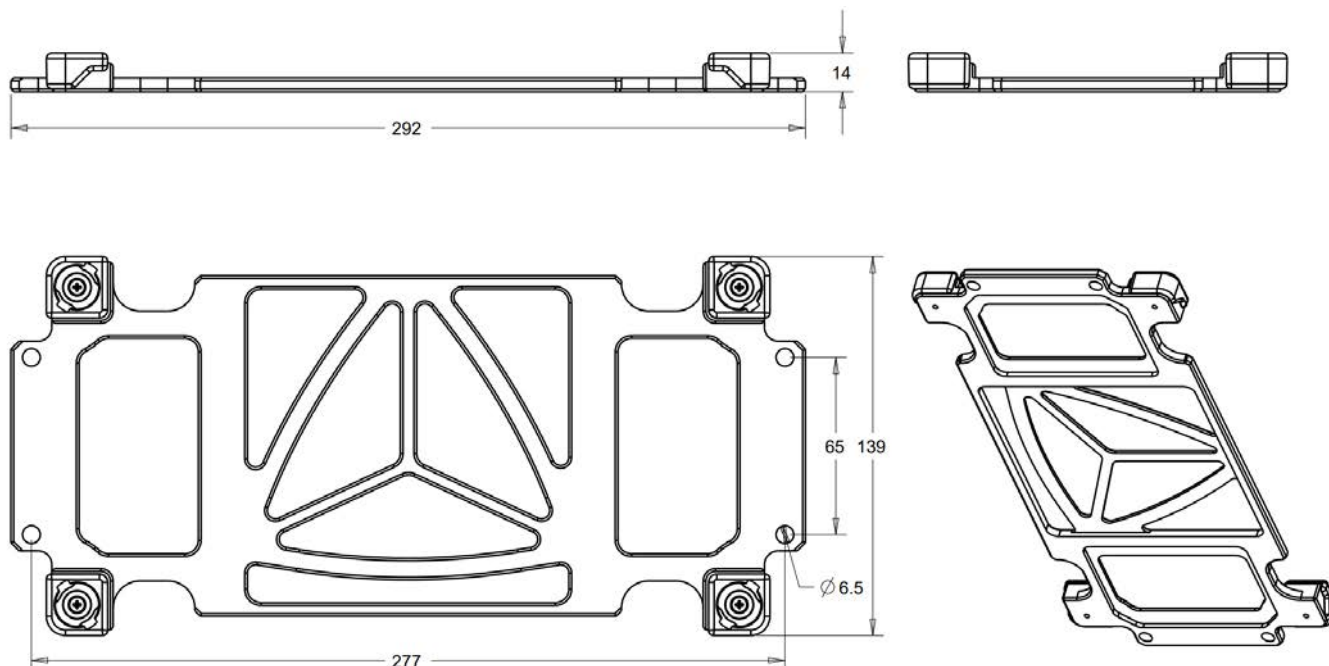
7.2. DS-MOUNT-2

DS-MOUNT-2 can be used to fit small instruments, such as DS-CAN2, GPS/IMU devices, or any other accessory that needs to be firmly fixed on top of the SIRIUS DAQ systems or SBOX processing computers.
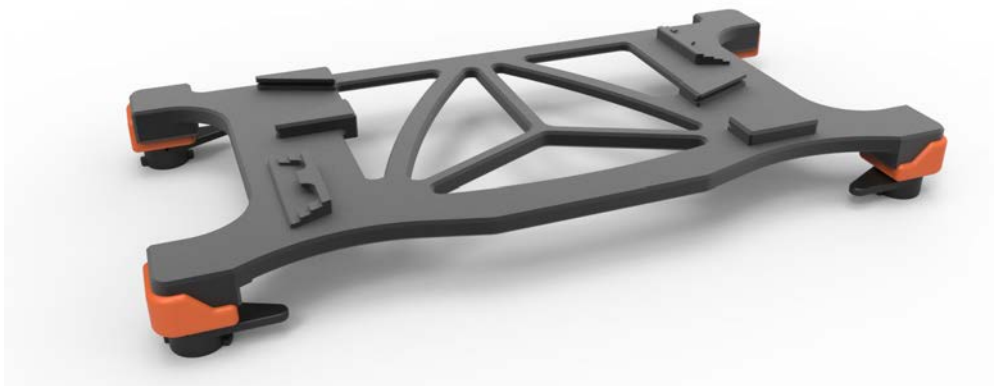

DS-MOUNT-2

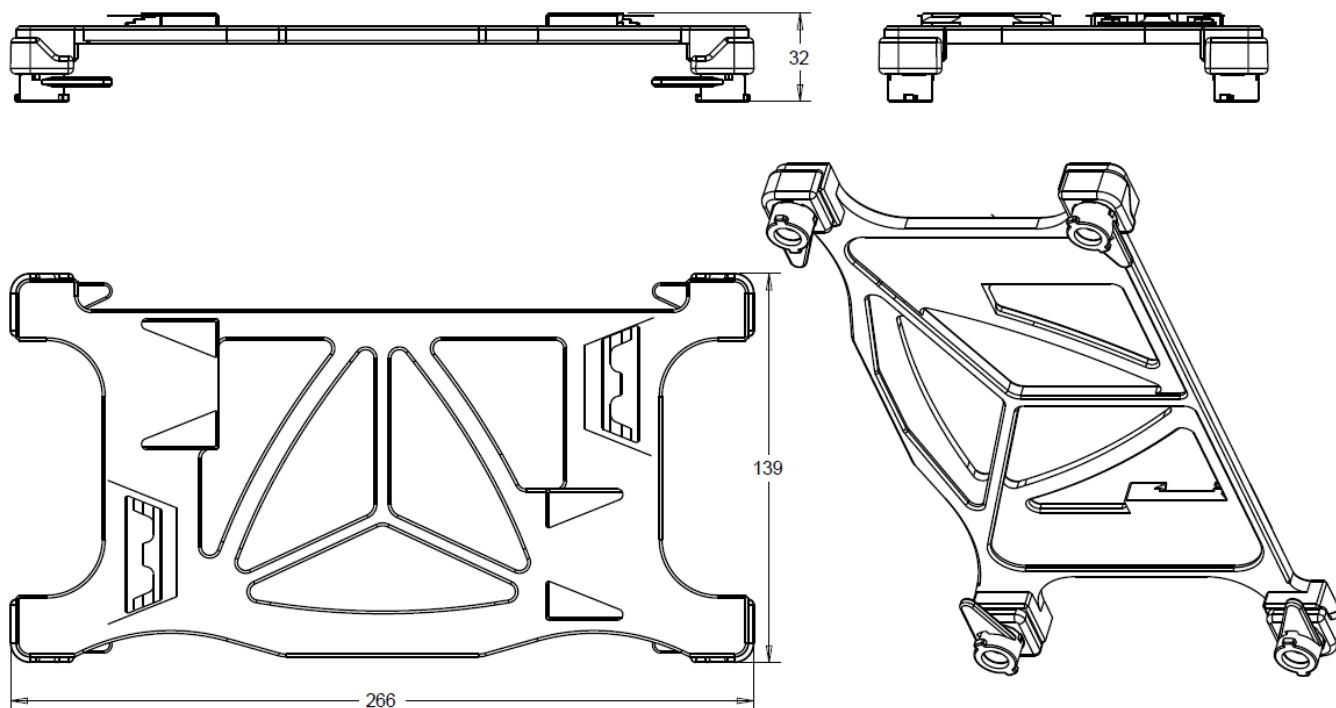## 7.2.1. DS-MOUNT-2 Technical drawing

7.3. DS-MOUNT-2K

Top mounting plate for binding up to two KRYPTON data acquisition systems to the SIRIUS or MINITAURs data acquisition systems, SBOX computer, or battery packs.

DS-MOUNT-2K

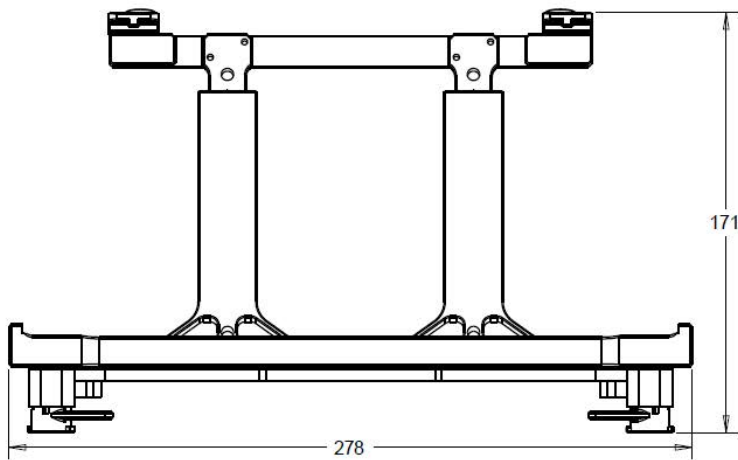## 7.3.1. DS-MOUNT-2K Technical drawing

7.4. DS-MOUNT-3

Top plate with display handle and holder for our portable LCD displays. Clever click mechanism will allow the mount to fit our SIRIUS, IOLITE, SBOX, MINITAURs, or DS-BP battery packs and allow easy mounting of the LCD display.
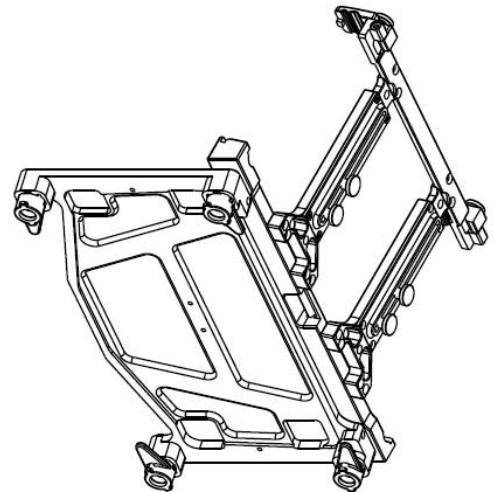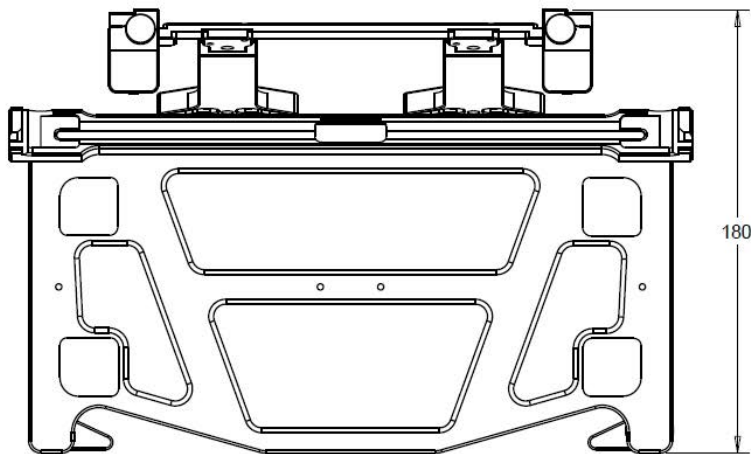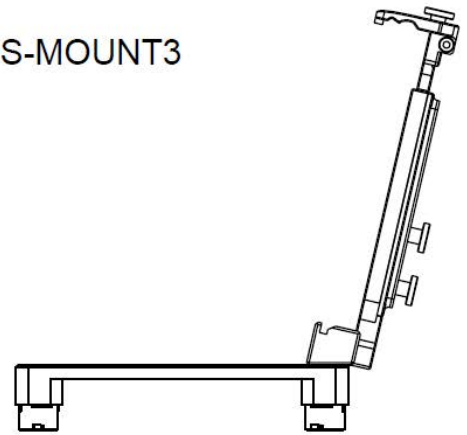

DS-MOUNT-3

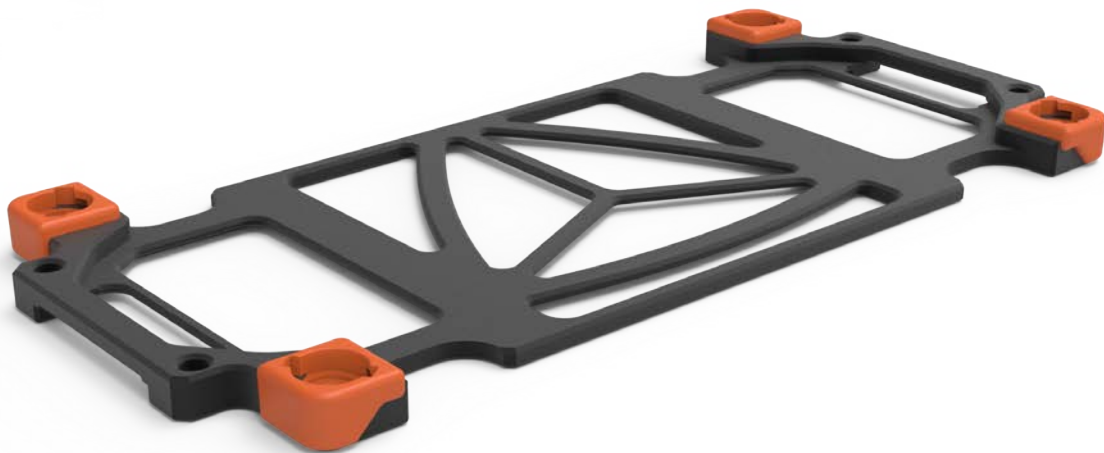## 7.4.1. DS-MOUNT-3 Technical drawing

DS-MOUNT3

7.5. DS-MOUNT-4
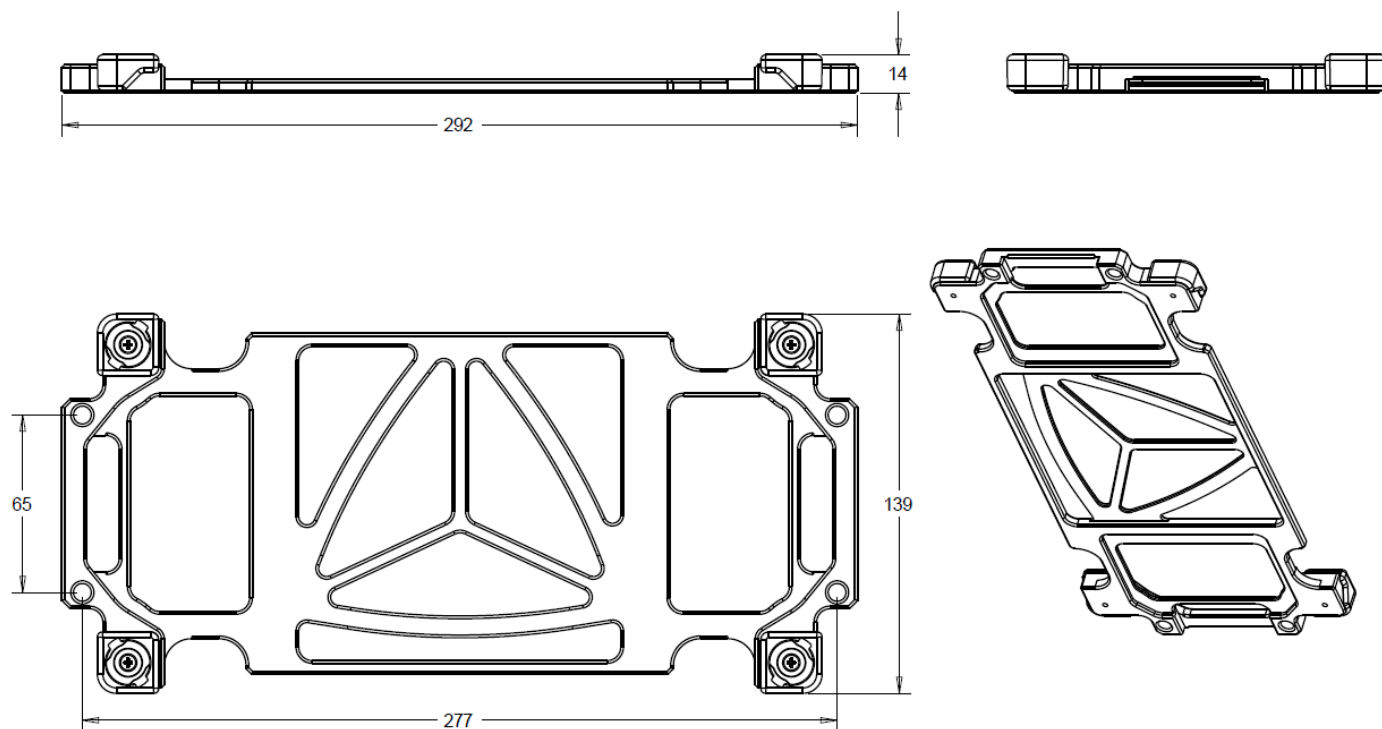
Bottom aluminium mounting plate with easy click mechanism, same as on SIRIUS single slice.
Fits to SIRIUS slice, R2, R4, SBOX, BP2i, BP4i

DS-MOUNT-4

7.5.1. DS-MOUNT-4 Technical drawing

7.6. DS-MOUNT-19

Mounting plate for fitting SIRIUS, MINITAURs data acquisition systems, and SBOX data loggers into a 19˝ rack cabinet.
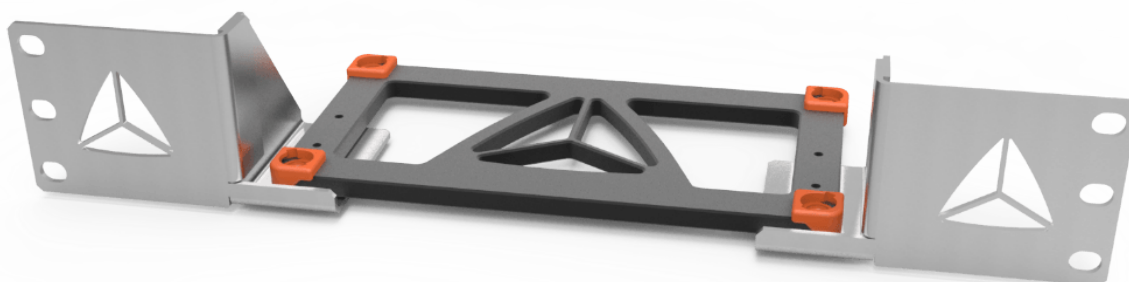
DS-MOUNT-19

7.6.1. DS-MOUNT-19 Technical drawing
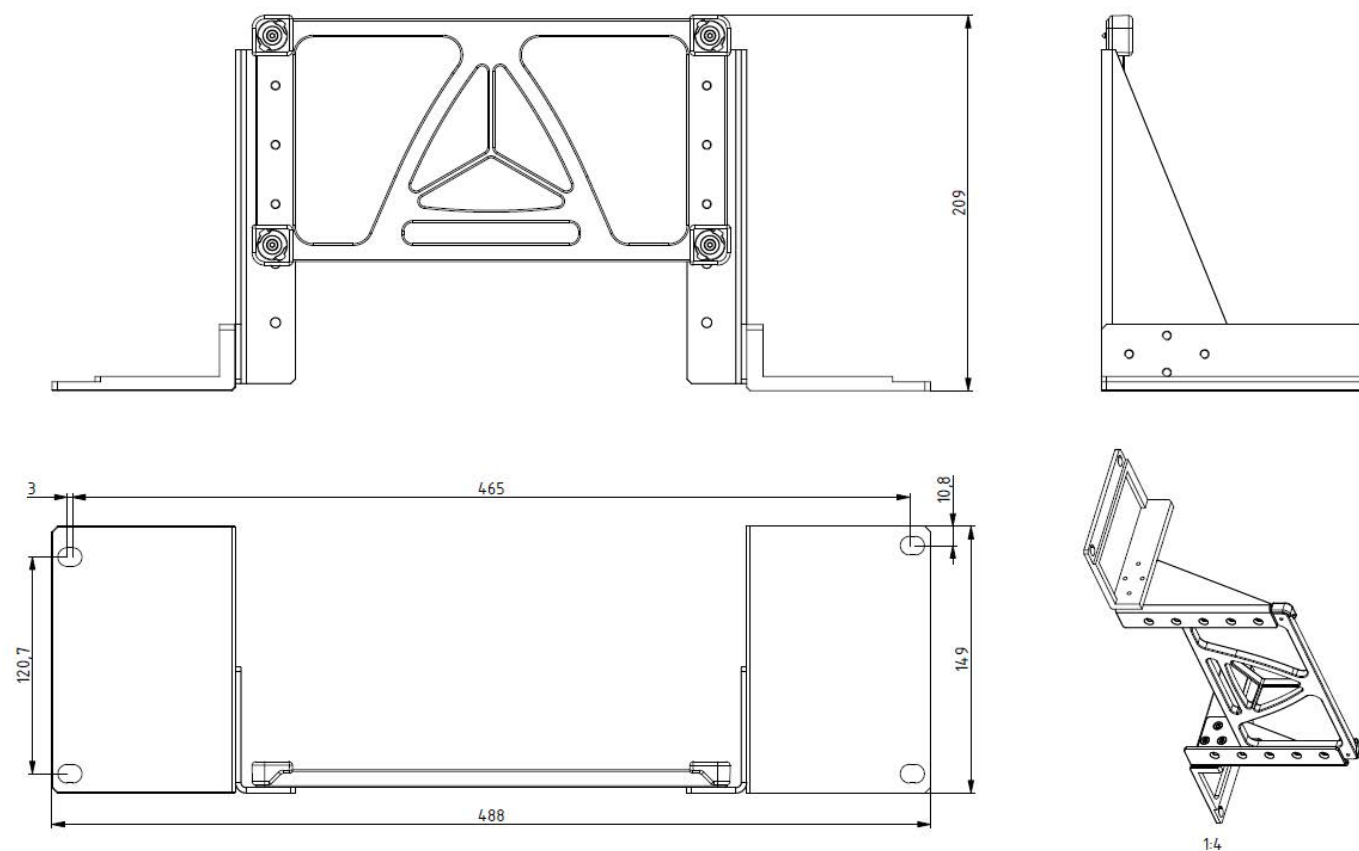
7.7. DS-MOUNT-19-R8x

19" rack-compatible mounting kit for SIRIUS R8x data acquisition systems. The easy-to-screw-on handles can enable R8 systems to be easily mounted in standard 19'' rack cabinets.

It fits all R8 models - R8, R8B, R8D, R8DB, R8R, R8Rrt, R8rt

DS-MOUNT-19-R8x

7.7.1. DS-MOUNT-19-R8x Technical drawing
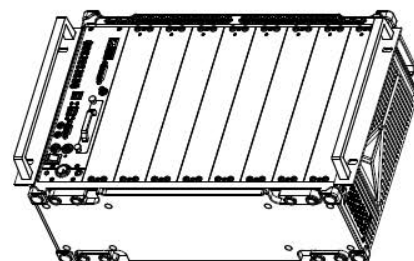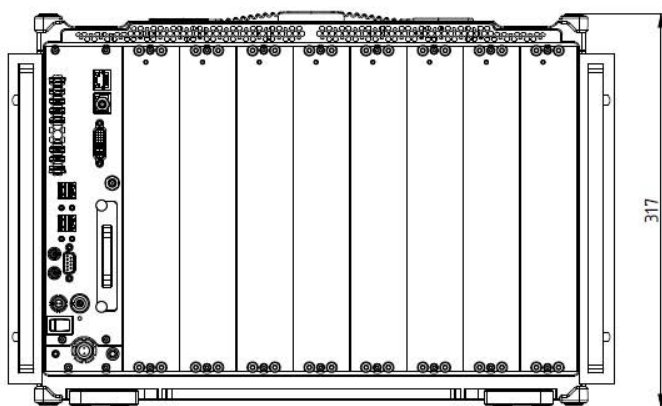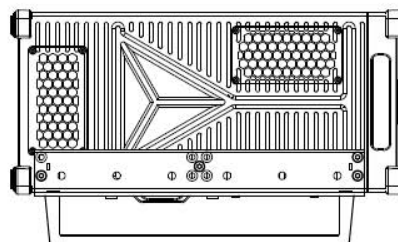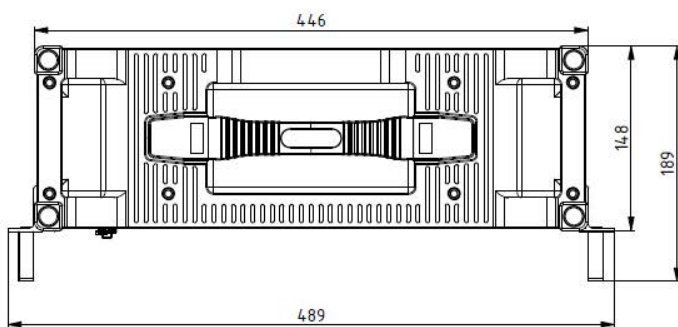
All dimensions are in mm.

7.8. DS-MOUNT-DISP-12

Mount that fits DS-DISP-12, our 12'' multi-touch LED screen DS-DISP-12, on a SIRIUS slice compatible plate. Smart click-mechanism enables plane and display to be firmly fixed above SIRIUS DAQ system, SBOX data logger or MINITAURs DAQ system.

DS-MOUNT-DISP-12

7.8.1. DS-MOUNT-DISP-12 Technical drawing

DS-MOUNT-DISP12
Scale: 1:2
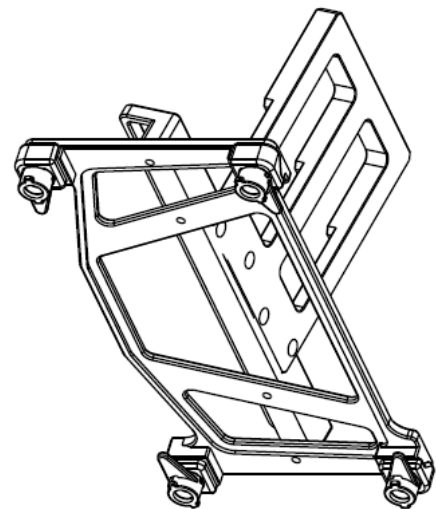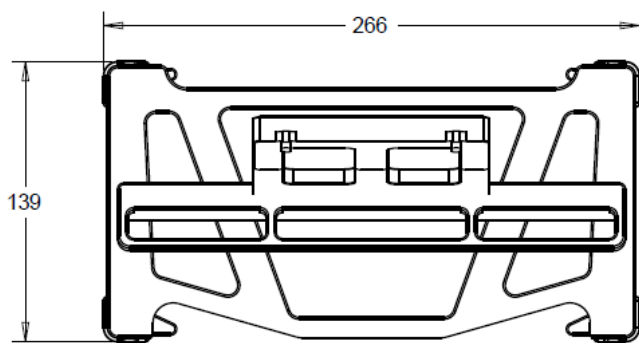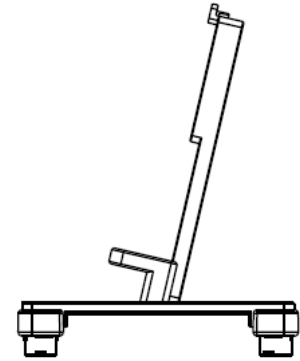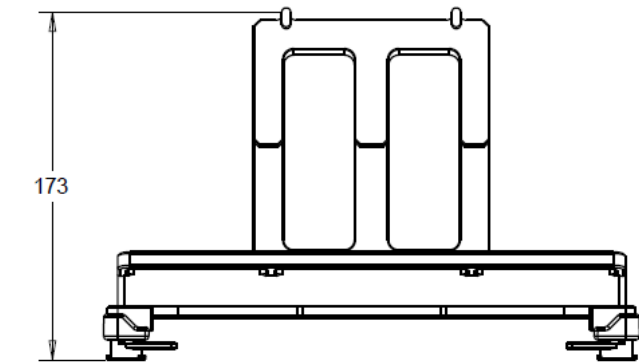
7.9. DS-MOUNT-K2

Mounting plate for a KRYPTON and KRYPTON CPU data acquisition systems. The mount features an aluminum ground plate with an easy click mechanism, which is the same as the one found on the top side of all Krypton instruments. It is suitable for mounting any Krypton as well as a Krypton CPU.

Please note that the mechanism is not meant to sustain large vibrations and a huge stack of devices.
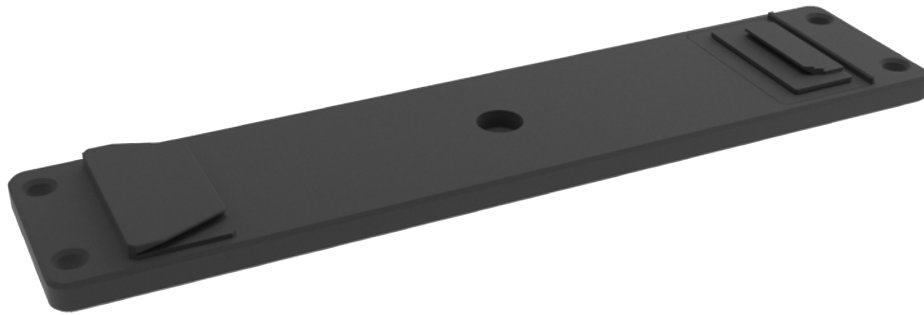
DS-MOUNT-K2

7.9.1. DS-MOUNT-K2 Technical drawing
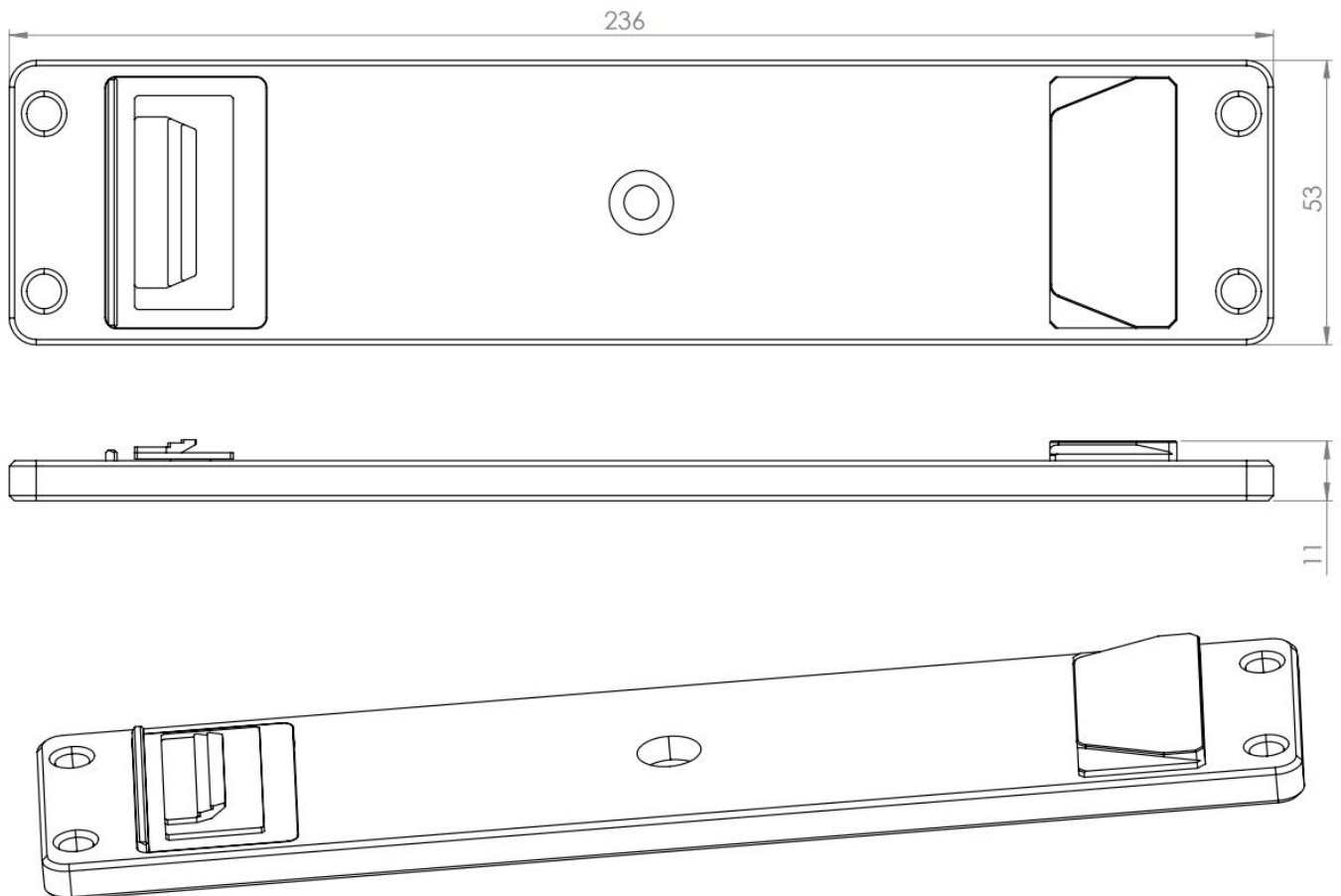
7.10. DS-MOUNT-K3

Bottom aluminium mounting plate with click mechanism, same as on the KRYPTON multi units. Please note that the plate is meant to sustain large vibrations for a single device.
Fits to: KRYPTON multi, KRYPTON CPU.

DS-MOUNT-K3

7.10.1. DS-MOUNT-K3 Technical drawing
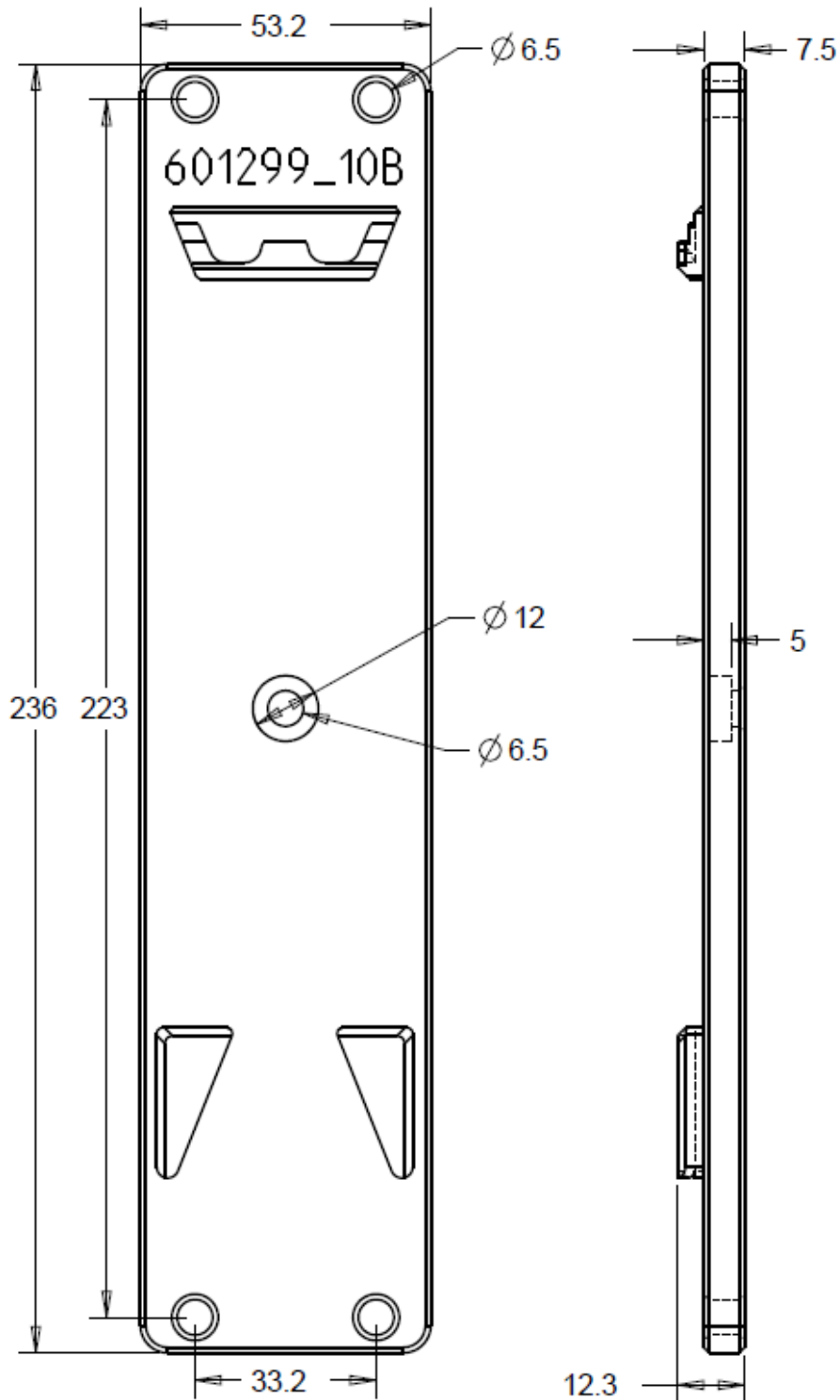
7.11. DS-MOUNT2-M

DS-MOUNT2-M is designed for the SIRIUS mini line of data acquisition systems. This aluminum mounting plate is designed to fit the SIRIUS MINI instrument on top of SIRIUS modular slices, R2, R4, IOLITE R8, SBOX, DS-BP2i, and DS-BP4i.

DS-MOUNT2-M features a handle and already known click mechanism for easy instrument clipping into place.
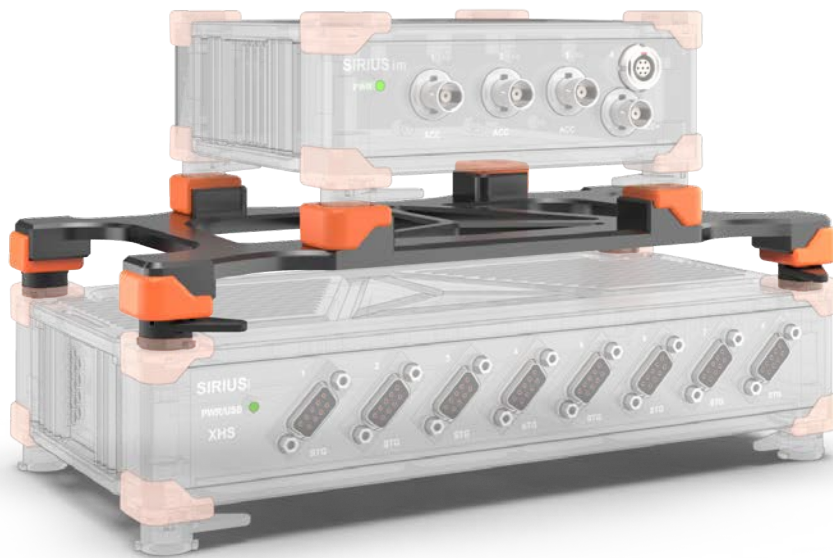
DS-MOUNT2-M

7.11.1. DS-MOUNT2-M Technical drawing
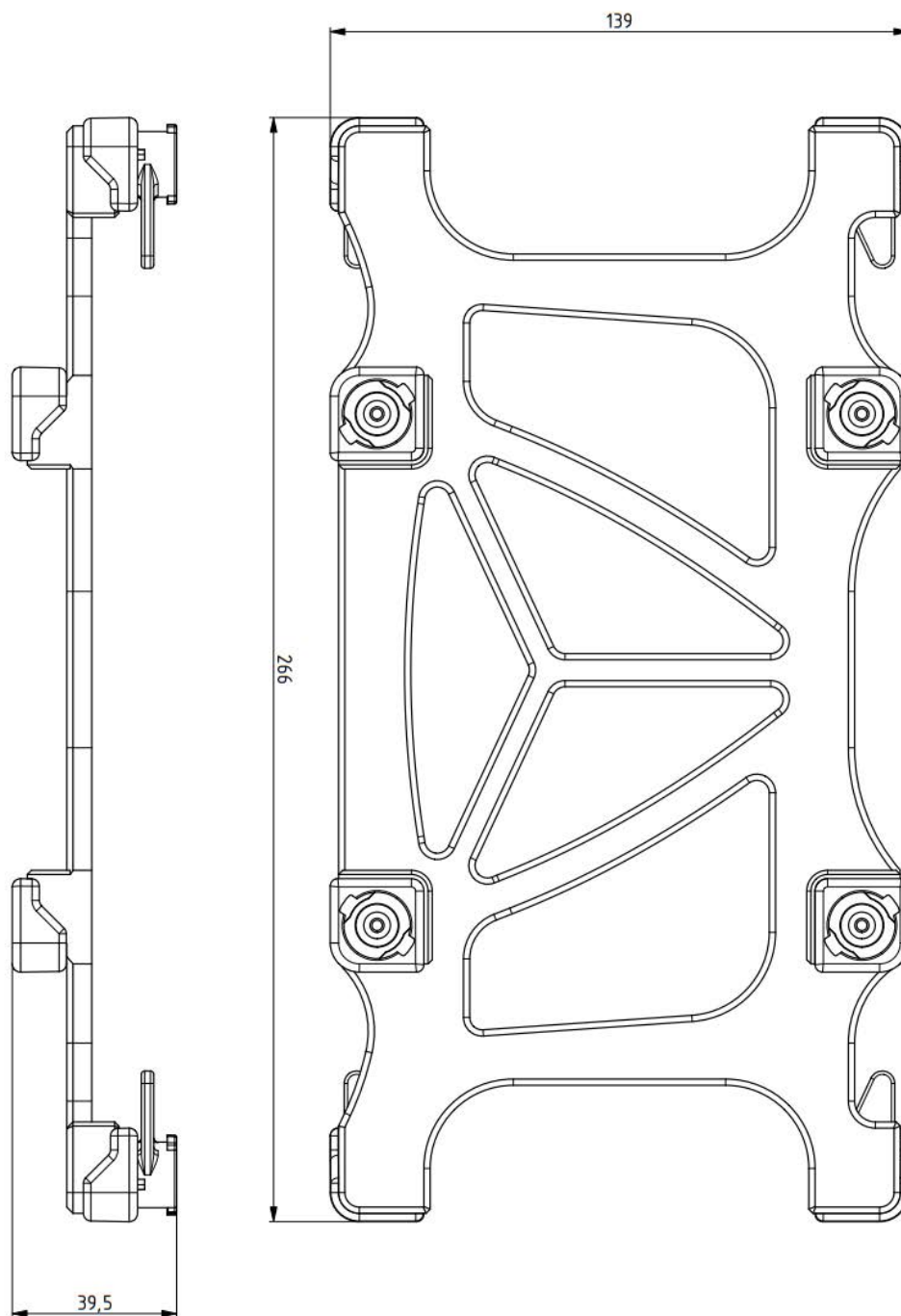
7.12. DS-MOUNT-R1x-R2x

Bottom aluminium mounting plate. Fits to: R1DB, R1B, R2DB, R2B, R2D.

DS-MOUNT-R1x-R2x

7.12.1. DS-MOUNT-R1x-R2x Technical drawing
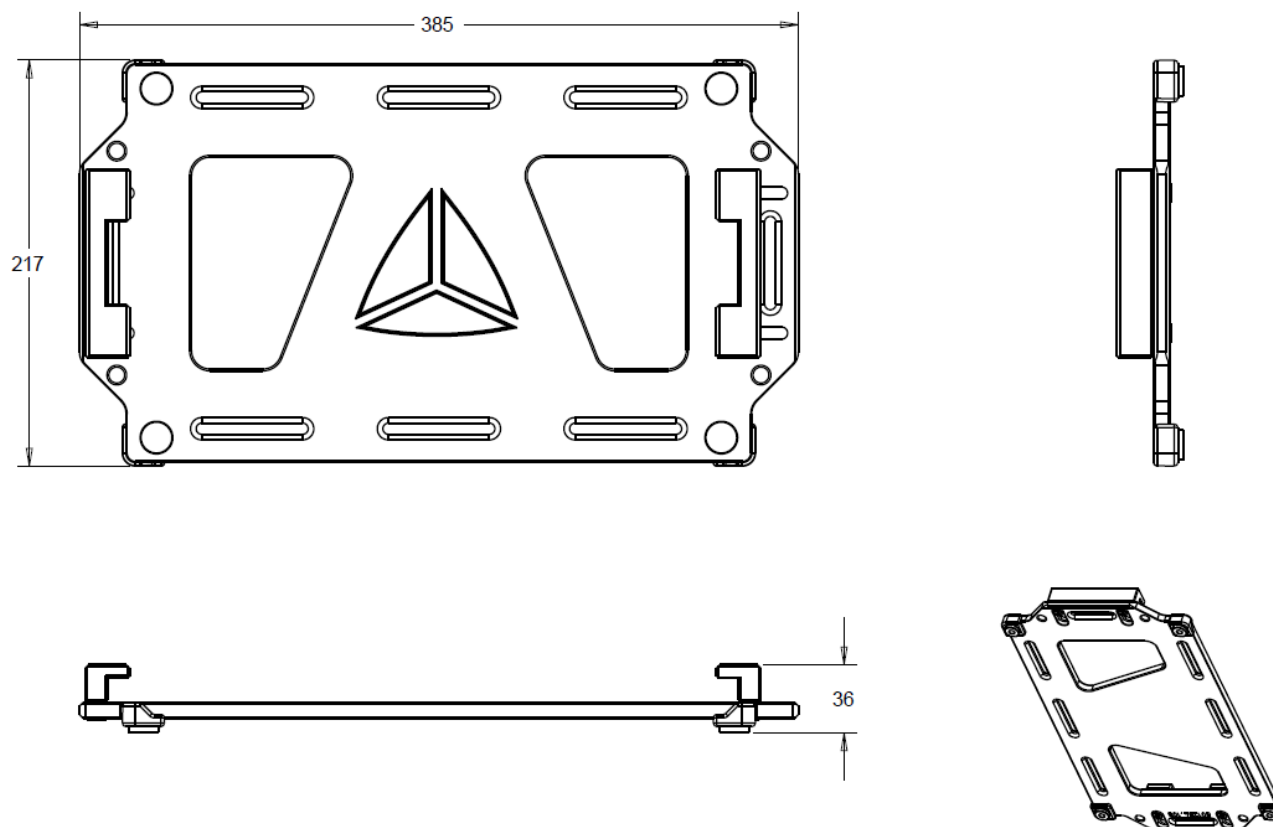
8. Appendix

8.1. Glossary and abbreviations

This glossary includes explanations of some of the most important terms and abbreviations that are used in documentation.

CJC
Cold **j**unction **c**ompensation.

Thermocouples measure the temperature difference between two points, not absolute temperature. To measure a single temperature one of the junctions - normally the cold junction - is maintained at a known reference temperature, and the other junction is at the temperature to be sensed.

Having a junction of known temperature, while useful for laboratory calibration, is not convenient for most measurement and control applications. Instead, they incorporate an artificial cold junction using a thermally sensitive device such as a thermistor or diode to measure the temperature of the input connections at the instrument, with special care being taken to minimize any temperature gradient between terminals. Hence, the voltage from a known cold junction can be simulated, and the appropriate correction applied. This is known as cold junction compensation.

dB
The **d**eci**b**el (dB) is a logarithmic unit that indicates the ratio of a physical quantity (usually power or intensity) relative to a specified or implied reference level. A ratio in decibels is ten times the logarithm to base 10 of the ratio of two power quantities.

Dewesoft
Dewesoft refers to the company.
DewesoftX® refers to the software suite for data acquisition, data processing, data analysis and much more. See www.dewesoft.com

DSI®
The versatile **D**ewesoft **S**mart **I**nterface adapters make it possible to connect virtually any sensor to the DSUB9 analogue input of your Dewesoft instrument and read both the TEDS information from the adapter and from the connected sensor. For example: use a DSI-ACC adapter to connect an IEPE/ICP input to your DEWE-43. Since the adapter includes a TEDS sensor, DewesoftX® X can read all the sensor configuration automatically

Dynamic Range
Dynamic Range is the ratio of a specified full scale input range to the minimum detectable value (peak spurious signal). The value for dynamic range is expressed in decibels (dB).

FFT
Fast **F**ourier **t**ransformation (FFT) can be used to show the frequency components of the acquired signals in amplitude
and frequency. DewesoftX® has a built-in visual control that makes FFT easy to use.

GND

the electrical ground (aka. earth)

Hz
The hertz (symbol: Hz) is the SI unit of frequency defined as the number of cycles per second of a periodic signal.

ICP®
Integrated Circuit-Piezoelectric, or ICP®, is a trademark of PCB Piezotronics, Inc. and refers specifically to the IEPE devices that they manufacture.

IEPE
Integrated **E**lectronic **P**iezo**e**lectric refers to a type of transducer that is packaged with a built-in charge amplifier or
voltage amplifier.
see also ICP®

LED
A **l**ight-**e**mitting **d**iode is a semiconductor light source.

PC
Sirius® systems are typically connected to a Personal Computer which runs DewesoftX® to fetch the measurement data.
See also: Host System

RFI
Electromagnetic interference (EMI) is called **R**adio-**f**requency **i**nterference, when it is in the radio frequency spectrum. RFI is a disturbance generated by an external source that affects an electrical circuit by electromagnetic induction, electrostatic coupling, or conduction.

RMS
Root **M**ean **S**quare, also known as the quadratic mean, is a statistical measure of the magnitude of a varying quantity. It is especially useful when varieties are positive and negative, e.g., sinusoids. RMS is used in various fields, including electrical engineering.

RTD
Resistance thermometers, also called resistance temperature detectors or resistive thermal devices (RTDs), are temperature sensors that exploit the predictable change in electrical resistance of some materials with changing temperature; e.g. Pt100 and Pt1000

SNR
Signal to Noise Ratio is the ratio of the RMS value of the full scale input range to the total RMS noise measured with the inputs shorted together. The value for SNR is expressed in decibels (dB).

TEDS

A **T**ransducer **E**lectronic **D**ata**S**heet (TEDS) is a standardized method of storing transducer (sensors or actuators) identification, calibration, correction data, and manufacturer-related information. DewesoftX® X uses the manufacturer related information to store DewesoftX® specific amplifier settings and configuration directly to the TEDS-chip: Thus, you just need to connect the sensor to the measurement device and everything is set up and you can start the measurement immediately!

9. Warranty information

Notice
The information contained in this document is subject to change without notice.

Note:
Dewesoft d.o.o. shall not be liable for any errors contained in this document. Dewesoft MAKES NO WARRANTIES OF ANY KIND WITH REGARD TO THIS DOCUMENT, WHETHER EXPRESS OR IMPLIED. DEWESOFT SPECIFICALLY DISCLAIMS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Dewesoft shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory, in connection with the furnishing of this document or the use of the information in this document.

The copy of the specific warranty terms applicable to your Dewesoft product and replacement parts can be obtained from your local sales and service office. To find a local dealer for your country, please visit https://dewesoft.com/support/distributors.

9.1. Calibration

Every instrument needs to be calibrated at regular intervals. The standard norm across nearly every industry is annual calibration. Before your Dewesoft data acquisition system is delivered, it is calibrated. Detailed calibration reports for your Dewesoft system can be requested. We retain them for at least one year, after system delivery.

9.2. Support

Dewesoft has a team of people ready to assist you if you have any questions or any technical difficulties regarding the system. For any support please contact your local distributor first or Dewesoft directly.

Dewesoft d.o.o.
Gabrsko 11a
1420 Trbovlje Slovenia

Europe Tel.: +386 356 25 300
Web: http://www.dewesoft.com
The telephone hotline is available Monday to Friday from 07:00 to 16:00 CET (GMT +1:00)

9.3. Service/repair

The team of Dewesoft also performs any kind of repairs to your system to assure safe and proper operation in the future. For information regarding service and repairs please contact your local distributor first or Dewesoft directly on https://dewesoft.com/support/rma-service.

9.4. Restricted rights

Use Slovenian law for duplication or disclosure. Dewesoft d.o.o. Gabrsko 11a, 1420 Trbovlje, Slovenia / Europe.

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9.6. Trademarks

We take pride in our products and we take care that all key products and technologies are registered as trademarks all over the world. The Dewesoft name is a registered trademark. Product families (KRYPTON, SIRIUS, DSI, DS-NET, IOLITE) and technologies (DualCoreADC, SuperCounter, GrandView) are registered trademarks as well. When used as the logo or as part of any graphic material, the registered trademark sign is used as a part of the logo. When used in text representing the company, product or technology name, the ® sign is not used. The Dewesoft triangle logo is a registered trademark but the ® sign is not used in the visual representation of the triangle logo.

10. Safety instructions

Your safety is our primary concern! Please be safe!

10.1. Safety symbols in the manual

! **Warning**
Calls attention to a procedure, practice, or condition that could cause body injury or death

Caution
Calls attention to a procedure, practice, or condition that could possibly cause damage to equipment or permanent loss of data.

10.2. General Safety Instructions

! **Warning**

The following general safety precautions must be observed during all phases of operation, service, and repair of this product. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the product. Dewesoft d.o.o. assumes no liability for the customer's failure to comply with these requirements.

All accessories shown in this document are available as an option and will not be shipped as standard parts.

10.2.1. Environmental considerations

Information about the environmental impact of the product.

10.2.2. Product End-of-Life handling

Observe the following guidelines when recycling a Dewesoft system:

10.2.3. System and components recycling

Production of these components required the extraction and use of natural resources. The substances contained in the system could be harmful to your health and to the environment if the system is improperly handled at its end of life! Please recycle this product in an appropriate way to avoid unnecessary pollution of the environment and to keep natural resources.

This symbol indicates that this system complies with the European Union's requirements according to Directive 2002/96/EC on waste electrical and electronic equipment (WEEE). Please find further information about recycling on the Dewesoft web site www.dewesoft.com

Restriction of Hazardous Substances

This product has been classified as Monitoring and Control equipment and is outside the scope of the 2002/95/EC RoHS Directive. However, we take care of our environment and the product is lead-free.

10.2.4. General safety and hazard warnings for all Dewesoft systems

The safety of the operator and the unit depend on following these rules.

- Use this system under the terms of the specifications only to avoid any possible danger.
- Read your manual before operating the system.
- Observe local laws when using the instrument.
- DO NOT touch internal wiring!
- DO NOT use any higher supply voltage than specified!
- Use only original plugs and cables for harnessing.
- You may not connect higher voltages than rated to any connectors.
- The power cable and connector serve as Power-Breaker. The cable must not exceed 3 meters, the disconnect function must be possible without tools.
- Maintenance must be executed by qualified staff only.
- During the use of the system, it might be possible to access other parts of a more comprehensive system. Please read and follow the safety instructions provided in the manuals of all other components regarding warning and security advice for using the system.
- With this product, only use the power cable delivered or defined for the host country.
- DO NOT connect or disconnect sensors, probes or test leads, as these parts are connected to a voltage supply unit.
- Ground the equipment: For Safety Class 1 equipment (equipment having a protective earth terminal), a non-interruptible safety earth ground must be provided from the mains power source to the product input wiring terminals.
- Please note the characteristics and indicators of the system to avoid fire or electric shocks. Before connecting the system, please read the corresponding specifications in the product manual carefully.
- The inputs must not, unless otherwise noted (CATx identification), be connected to the main circuit of category II, III and IV.
- The power cord separates the system from the power supply. Do not block the power cord, since it has to be accessible for the users.
- DO NOT use the system if equipment covers or shields are removed.
- If you assume the system is damaged, get it examined by authorized personnel only.
- Adverse environmental conditions are Moisture or high humidity Dust, flammable gases, fumes or dissolver Thunderstorm or thunderstorm conditions (except assembly PNA) Electrostatic fields, etc.
- The measurement category can be adjusted depending on the module configuration.

- Any other use than described above may damage your system and is attended with dangers like short-circuiting, fire or electric shocks.
- The whole system must not be changed, rebuilt or opened.
- DO NOT operate damaged equipment: Whenever it is possible that the safety protection features built into this product have been impaired, either through physical damage, excessive moisture, or any other reason, REMOVE POWER and do not use the product until the safe operation can be verified by service-trained personnel. If necessary, return the product to the Dewesoft sales and service office for service and repair to ensure that safety features are maintained.
- If you assume a more riskless use is not provided anymore, the system has to be rendered inoperative and should be protected against inadvertent operation. It is assumed that a more riskless operation is not possible anymore if the system is damaged obviously or causes strange noises. the system does not work anymore. the system has been exposed to long storage in adverse environments. the system has been exposed to heavy shipment strain.
- Warranty void if damages caused by disregarding this manual. For consequential damages, NO liability will be assumed!
- Warranty void if damage to property or persons caused by improper use or disregarding the safety instructions.
- Unauthorized changing or rebuilding the system is prohibited due to safety and permission reasons (CE).
- Be careful with voltages >25 VAC or >35 VDC! These voltages are already high enough in order to get a perilous electric shock by touching the wiring.
- The product heats during operation. Make sure there is adequate ventilation. Ventilation slots must not be covered!
- Only fuses of the specified type and nominal current may be used. The use of patched fuses is prohibited.
- Prevent using metal bare wires! Risk of short circuit and fire hazard!
- DO NOT use the system before, during or shortly after a thunderstorm (risk of lightning and high energy over-voltage). An advanced range of applications under certain conditions is allowed with therefore designed products only. For details please refer to the specifications.
- Make sure that your hands, shoes, clothes, the floor, the system or measuring leads, integrated circuits and so on, are dry.
- DO NOT use the system in rooms with flammable gases, fumes or dust or in adverse environmental conditions.
- Avoid operation in the immediate vicinity of high magnetic or electromagnetic fields, transmitting antennas or high-frequency generators, for exact values please refer to enclosed specifications.
- Use measurement leads or measurement accessories aligned with the specification of the system only. Fire hazard in case of overload!
- Lithium ion batteries are classified as not hazardous when used according to the recommendations of the manufacturer described in Battery Safety Data Sheet, which is available for download from our homepage: http://www.dewesoft.com/download.
- Do not switch on the system after transporting it from a cold into a warm room and vice versa. The thereby created condensation may damage your system. Acclimatize the system unpowered to room temperature.
- Do not disassemble the system! There is a high risk of getting a perilous electric shock. Capacitors still might be charged, even if the system has been removed from the power supply.
- The electrical installations and equipment in industrial facilities must be observed by the security regulations and insurance institutions.
- The use of the measuring system in schools and other training facilities must be observed by skilled personnel.

- The measuring systems are not designed for use in humans and animals.
- Please contact a professional if you have doubts about the method of operation, safety or the connection of the system.
- Please be careful with the product. Shocks, hits and dropping it from already- lower level may damage your system.
- Please also consider the detailed technical reference manual as well as the security advice of the connected systems.
- This product has left the factory in safety-related flawlessness and in proper condition. In order to maintain this condition and guarantee safety use, the user has to consider the security advice and warnings in this manual.

EN 61326-3-1:2008
IEC 61326-1 applies to this part of IEC 61326 but is limited to systems and equipment for industrial applications intended to perform safety functions as defined in IEC 61508 with SIL 1-3.

The electromagnetic environments encompassed by this product family standard are industrial, both indoor and outdoor, as described for industrial locations in IEC 61000-6-2 or defined in 3.7 of IEC 61326-1.

Equipment and systems intended for use in other electromagnetic environments, for example, in the process industry or in environments with potentially explosive atmospheres, are excluded from the scope of this product family standard, IEC 61326-3-1.

Devices and systems according to IEC 61508 or IEC 61511 which are considered as "operationally well-tried", are excluded from the scope of IEC 61326-3-1.

Fire-alarm and safety-alarm systems, intended for the protection of buildings, are excluded from the scope of IEC 61326-3-1.

11. Documentation version history

Version	Date [dd.mm.yyyy]	Notes
V20-1	01.07.2020	● The NEW Accessories and sensors manual - Reworked and revised version
V21-1	09.04.2021	● Updated section 11.2.4. General safety and hazard warnings for all Dewesoft systems ● Added DSI-TH-E ● Updated DSI-TH-xx accuracy table ● Added cable length for all current sensors ● Updated BP2i and BP4i specifications and features ● Added BNC-SHUNT-50ohm ● Added frequency derating curve DS-CLAMP-1000DC ● Removed dimensions IT 1000-S ● Added dimensions for IN 500-S, IN 1000-S and IN 2000-S ● Text change for Current clamp power supply unit ● Changed product to DSI-5A v2, updated specifications ● Updated all specs from current clamps; added links to source doc
V21-2	12.05.2021	● Minor fixes

V21-3	26.10.2021	● Updated
		  ○ DSI-20mA adapter input accuracy
		  ○ DSI-TH-UNI updated specification
		  ○ DSI-RTD updated connection pictures
		  ○ Current transducers - updated specs and added links to the data sheets
		  ○ Current clamps - updated specs and added links to the data sheets
		● Added
		  ○ DSI-LVDT
		  ○ DSI-LVDTr
		  ○ DSIw-20mA
		  ○ DSI-ACC-0.16Hz-20mA
		  ○ DSI-TH-UNI
		  ○ DS-MOUNTS
		  ○ Power-splitter
		  ○ DSI-RTD binder pinout
		  ○ DSI-ACC, DSI-CHG-50, DSI-CHG-DC,DSI-V-200 connector pinout

11.1. Previous versions history

Version	Date [dd.mm.yyyy]	Notes
1.0.0	01.12.2015	● Initial revision
1.0.1	02.12.2015	● Corrected SNR ranges of MSI-ACC
1.1.2000	02.03.2016	● Added chapter for Sensors
1.2.2000	12.05.2016	● Added DSI® adapters: TH-x, ACC, CHG-50, V-200, RTD, 20mA ● Added MSI-V-200 ● Added MSI-RTD ● Updated Battery Packs ● Updated Accuracy of DS-CLAMP-150DC and DS-CLAMP-150DCS ● Updated Specs of PWR-MCTS2
1.2.2001	12.05.2016	● Corrected Sensor excitation of DSI-ACC-20mA
1.2.2002	27.05.2016	● Added DS-SHUNT-05 ● Zero-Flux Transducers: corrected Output Ratio of IT 700-S ● Added DSIi-10A
1.2.2003	12.05.17	● DS-SHUNT-05: added Phase Error and Bandwidth ● AC CLAMPS: updated Current Ranges ● removed "Overload Capability" from Table 15: DC CLAMP: Characteristics ● updated "Table 18: DSIi-10A Specifications" ● Added MSI-5A ● Updated Zero-Flux-Transducers: added / updated specifications, dimensions (graphically), overcurrent protection ● Added SHUNT-DSI-MCTS-X00-03M: Table, Amplitude and Phase Chart ● Updated DS-CLAMPS: Splitting table in two parts: Flux-Gate and Hall effect ● @ Flux-Gate: New table, frequency derating curves, measurement procedure, updated pictures for DS-CLAMP 200DC, 500 DCS and 500DC ● @ Hall effect: Updated Specification table ● Updated FLEX: Table updated (new coils), pictures updated, text updated
1.2.2004	29.06.17	● DSI-ACC Accuracy update from 0.2;0.05;0.2% to 0.3:0.07;0.3%
1.2.2005	13.12.17	● Added DS-TACHO2 and DS-TACHO3
1.2.2006	04.04.18	● AC CLAMPS, DS-CLAMP-15AC Accuracy and Phase Error update
1.2.2007	07.05.18	● DS-CLAMP-150DC & DS-CLAMP-150DCS specifications update

1.2.2008	25.01.18	• DS-CLAMP-1000DC, IN 1000-S and IN 2000-S added • DS-FLEX-300-17-HS added
1.2.2009	29.04.19	• DS-CLAMP-200AC specification update
1.2.10	29.11.19	• DS-Flex-3000-17 specification update • DS-Flex-3000-35-HS specification update

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