

Dedicated 6-channel system interface unit for ultra-stable, high precision fluxgate technology current transducers.

Powers up to 6 x DS50 to DL2000 at the same time.



### Features

- Compact 19" rack mount 1U height
- Current transducers' output signals available via 4mm banana plugs
- Individual or serial access to calibration windings of all 6 transducers via 4mm banana plugs
- 15-pin DSUB connector provides access to isolated status signals of each transducer and power
- Front LEDs indication of normal operation for each transducer and power LED for DSSIU-6-1U
- Universal autorange (100-240V AC 50-60Hz) AC input voltage or 127-370V DC input voltage.



## Specifications

| Parameter                              | Symbol   | Unit              | Min    | Typ | Max                        | Comment                                 |
|----------------------------------------|----------|-------------------|--------|-----|----------------------------|-----------------------------------------|
| <b>Mains input</b>                     |          |                   |        |     |                            |                                         |
| AC input voltage                       | $V_{AC}$ | $V_{rms}$         | 90     |     | 264                        | Autoranging <sup>1)</sup>               |
| Power rating                           |          | W                 |        |     | 350                        |                                         |
| AC nominal current                     | $I_{AC}$ | $A_{rms}$         |        |     | 2.1A @ 115V<br>1.1A @ 230V | For exceptions please see <sup>2)</sup> |
| Frequency                              | f        | Hz                | 50     |     | 60                         | Autoranging                             |
| <b>Transducer output port</b>          |          |                   |        |     |                            |                                         |
| Supply voltage                         | $U_{cc}$ |                   | ±14.75 |     | ±15.75                     | x6 channels                             |
| Ripple                                 |          | mV <sub>rms</sub> |        |     | 10                         |                                         |
| <b>Status Port (Isolated output)</b>   |          |                   |        |     |                            |                                         |
| Collector-Emitter current              |          | mA                |        |     | 100                        |                                         |
| Collector-Emitter Voltage off          |          | v                 |        |     | 100                        |                                         |
| Reverse collector emitter voltage, off |          | v                 |        |     | 0.3                        |                                         |
| Collector-Emitter voltage, on          |          | v                 |        |     | 1.2                        | @100mA                                  |
| Isolation to chassis                   |          | v                 |        |     | 300                        |                                         |

- 1) 100-240V~ ±10% "~" refers to EN61010-1 table 1, symbol 2 meaning alternating current
- 2) Exception for DL2000ID and DL2000UB-1V : DSSIU-6-1U can only handle 4 pcs. DL2000ID/DL2000UB-1V at low voltage input 115V. With high voltage input 230V the DSSIU-6-1U can handle 6 pcs. DL2000ID/DL2000UB -1V.

## Channel configuration

Each channel does have 5 connectors.

- Transducer (DSUB9) for connection to the transducer
- YELLOW Calibration + (4mm Banana) the positive connection for the calibration current
- YELLOW Calibration - (4mm Banana) the negative connection for the calibration current
- RED + (4mm Banana) is positive output from the measured current
- BLACK - (4mm Banana) is negative output from the measured current



When this symbol is present it is important to read the safety notice before use of product.

## Environmental, safety and mechanical specifications

| Parameter                           | Unit                                                                                                                                                                                                                                                                                  | Min | Typ | Max  | Comment                 |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|------|-------------------------|
| Altitude                            | m                                                                                                                                                                                                                                                                                     |     |     | 2000 |                         |
| Usage                               |                                                                                                                                                                                                                                                                                       |     |     |      | Designed for indoor use |
| Polution Degree                     |                                                                                                                                                                                                                                                                                       |     |     | 2    |                         |
| Ambient operating temperature range | °C                                                                                                                                                                                                                                                                                    | 5   |     | 40   |                         |
| Storage temperature range           | °C                                                                                                                                                                                                                                                                                    | 0   |     | 60   |                         |
| Relative humidity                   | %                                                                                                                                                                                                                                                                                     | 20  |     | 80   | Non-condensing          |
| Mass                                | kg                                                                                                                                                                                                                                                                                    |     | 5.1 |      |                         |
| Connections                         | DSUB9 female for transducer connection<br>4mm banana (red and black) jacks for output of measured current from transducers<br>4mm banana (Yellow) jacks for connection of calibration current to transducer<br>DSUB15 female for status information<br>IEC inlet for mains connection |     |     |      |                         |
| Standards                           | IEC61326-1 EMC<br>IEC61010-1:2010 3rd Edition                                                                                                                                                                                                                                         |     |     |      |                         |
| External devices                    | Only connect Danisense transducers to the DSSIU-6-1U                                                                                                                                                                                                                                  |     |     |      |                         |
| Cleaning                            | The unit should only be cleaned with a damp cloth. No detergent or chemicals should be used.                                                                                                                                                                                          |     |     |      |                         |



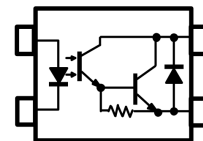
**Caution:** Only connect calibration currents not exceeding the calibration current maximum rating of the connected transducer.

## Status port

The status port provides access to the status of the system via optical isolated pins in a DSUB15.

Overview: (Current direction is from + to -)

| Status Port | + | -  |
|-------------|---|----|
| Channel 1   | 1 | 9  |
| Channel 2   | 2 | 10 |
| Channel 3   | 3 | 11 |
| Channel 4   | 4 | 12 |
| Channel 5   | 5 | 13 |
| Channel 6   | 6 | 14 |
| Power       | 7 | 15 |



Use a pull up resistor value which does not exceed 100mA when the pin is @ 1V.

Example:

5V supply, resistor of 1kOhm is connected between 5V and + of channel 1 (pin 1) and pin 9 is connected to 0V.

If the transducer is working correctly pin 1 and 9 are shorted with above optocoupler circuit.

The voltage on pin 1 will be around 1V and current  $I @ = (5V - 1V) / 1kOhm = 4mA$

## Calibration winding access

Each channel gives access to the calibration winding of transducers with this feature. Currently the following transducers do support this functionality.

- DS200ID-CD1000 - 1000 turns calibration winding (Max 200mA) - Equals a primary current of 200A
- DS200ID-CD100 - 100 turns calibration winding (Max 100mA) - Equals a primary current of 10A
- DS600ID-CD100 - 100 turns calibration winding (Max 100mA) - Equals a primary current of 10A
- DL2000ID-CD100 - 100 turns calibration winding (Max 100mA) - Equals a primary current of 10A

Each transducers calibration winding can be driven either in series with the other transducers or independently with its own power supply.

When using the DS200ID-CD1000, it is possible to do a full scale calibration from -200A to 200A.

### Principle for calibration:

It is important to use a stable current source. If the current source is calibrated then there is no need for an Amperemeter on the calibration current.

Example for DS200ID-CD1000 on channel X configured with a 1V voltage module

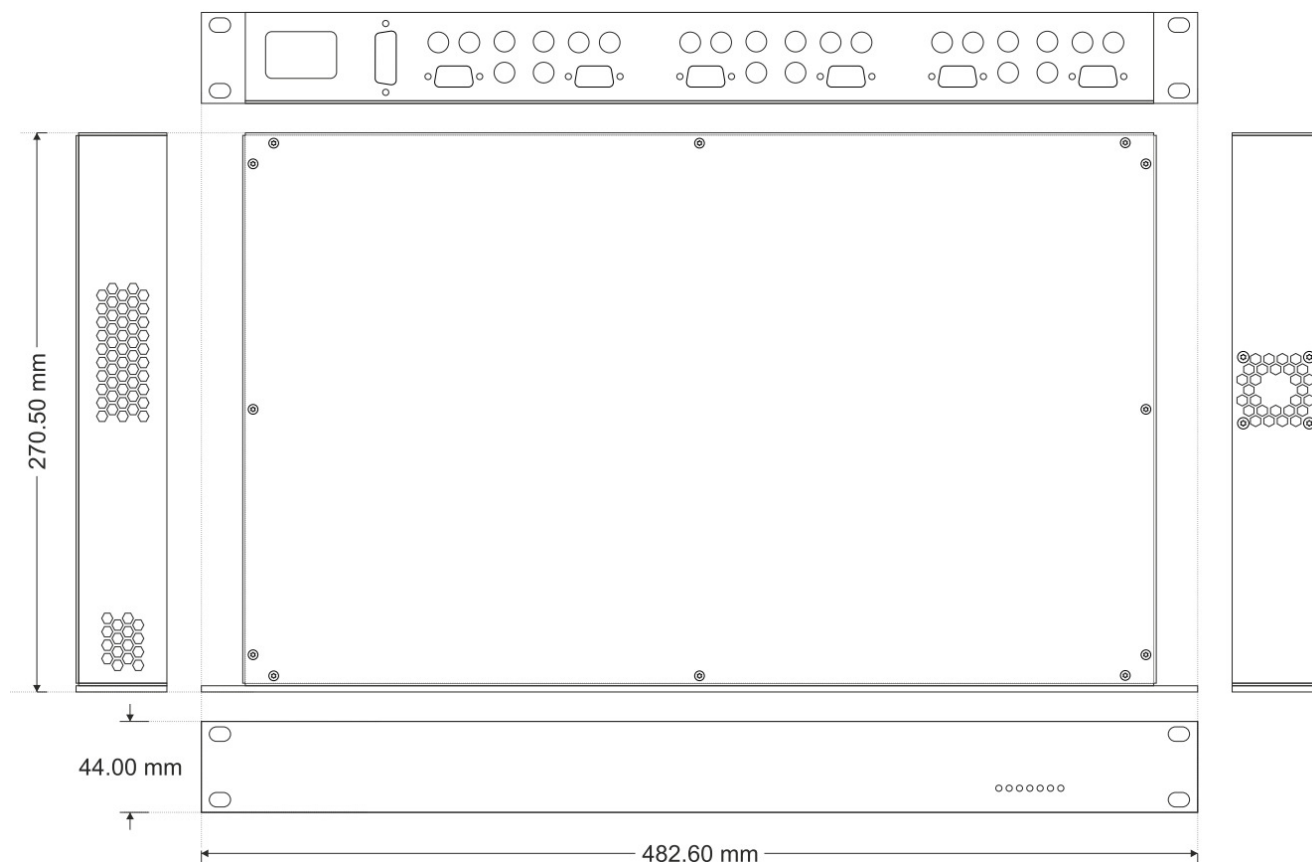
1. Connect transducer to channel X on DSSIU-6-1U
2. Ensure light is on for channel X on the frontside of the DSSIU-6-1U - meaning the transducer is in normal operation
3. Ensure no primary current through the transducer
4. Read the voltage output from channel X - This is the offset of the transducer  $V(\text{offset})$
5. Connect a stable current source to the calibration winding of channel X - +100mA
6. Let the current stabilize according to current source specification
7. Measure the voltage -  $V(100A)$
8. Change polarity of the calibration current (Either by swapping the calibration cable from + to -, or by changing the polarity directly on the current source if possible)
9. Let the current stabilize according to current source specification
10. Measure the voltage -  $V(-100A)$

$V_{out}(100A)$  theoretical is 0.5V or 5V depending on voltage module installed.

$V_{out}(-100A)$  theoretical is -0.5V or -5V depending on voltage module installed.

When evaluating the transducer performance it is important to take the different uncertainties of the measurement instruments into account.

## Mechanical Dimensions



## Package content

- 2m mains power cable—region specific
- DSSIU-6-1U
- 4 x rubber feet
- 4 x Rack screws with nuts
- Manual / Datasheet

## User Guide

### Intended use:

The DSSIU-6-1U is designed to work with Danisense transducers with DSUB9 connection powered by  $\pm 15V$ .

### Instruction for use:

1. Do not power up the device before all cables are connected.
2. Only use cable provided by Danisense to ensure correct wiring and dimension of cable.
3. Ensure that it is easy to unplug the mains cord in case of system problems.
4. Place the primary conductor through the aperture of the transducer(s)
5. If the DSSIU-6-1U is intended for desk use, mount the rubber feet which are part of the package.
6. If the DSSIU-6-1U is intended for Rack mounting, use the screw kit for mounting and do not mount the rubber feet.
7. Connect a DSUB cable between DSSIU-6-1U and each sensor
8. Connect a low impedance amperemeter, measuring resistor or power analyzer on the secondary output (4mm red and black connectors)
9. Ensure that no calibration connectors are attached when measuring primary current. Always avoid to create a calibration short circuit, between + and — calibration connection.
10. There is a risk of electrical shock if an uninsulated busbar with high voltages is touching the metal enclosure of the transducer. Please ensure before powering up the system that no primary busbar can touch the metal enclosure.
11. When all connection are secured - connect mains power with the mains cable delivered. If other cables are used ensure that the cable has sufficient rating for operation.
12. Apply primary current

### Safety Instructions:

DO NOT TRY TO DISASSEMBLE THE UNIT.

If the green transducer diode is not operating when the system is powered up, disconnect power and contact Danisense for further instruction.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

It is mandatory to support the unit when rack mounted, either on the sides or backside.

### Indications:

When mains is applied the left light diode on the front under the power symbol will light green.



For each sensor channel connected a green light diode will light on the front if the connection is correct and the sensor is operating within normal range.

**Declaration of Conformity**

Danisense A/S  
Malervej 10  
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Declares that under our sole responsibility that this product is in conformity with the provisions of the following EC Directives, including all amendments, and with national legislation implementing these directives:

Directive 2014/30/EU

Directive 2014/35/EU

And that the following harmonized standards have been applied

EN 61010-1 (Third Edition):2010, EN 61010-1:2010/A1:2019

EN 61010-2-030:2021/A11:2021

EN 61326-1:2013

All DANISENSE products are manufactured in accordance with RoHS directive 2011/65/EU. Annex II of the RoHS directive was amended by directive 2015/863 in force since 2015, expanding the list of 6 restricted substances (Lead, Hexavalent Chromium, PBB, PBDE and Cadmium)

Danisense follows the provision in EN 63000:2018



Place

Taastrup, Denmark

Date

2022-03-15

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