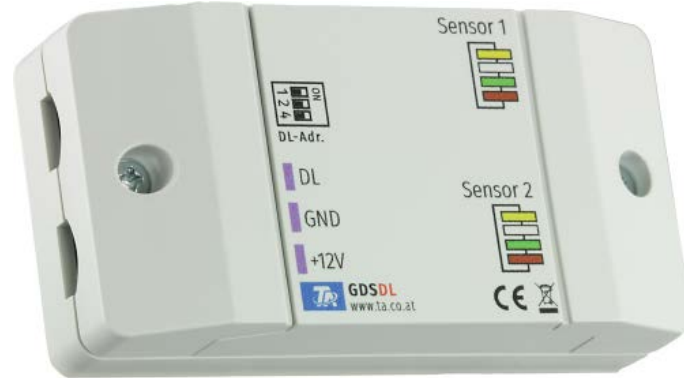


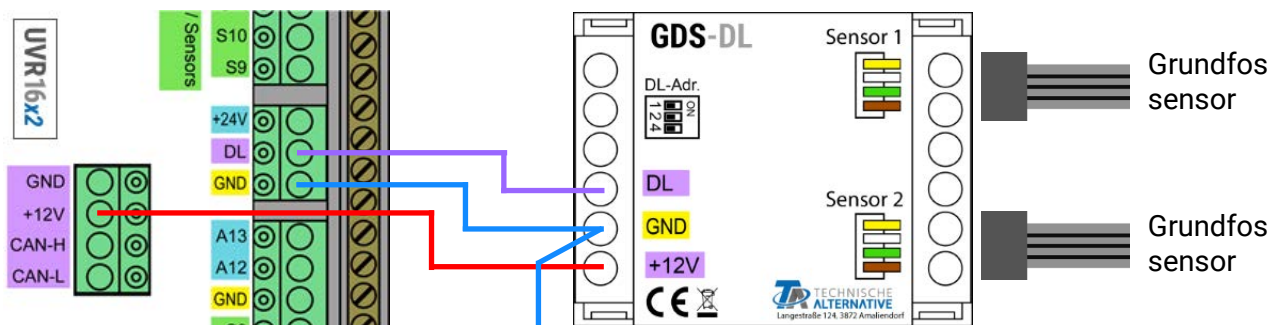
Grundfos signal converter



The **GDS-DL** (Grundfos **d**irect **s**ensor) converts **0,5 - 3,5 V** signals (as they are typically output by Grundfos sensors) for the DL bus. Up to two of these sensors (outputting two voltage signals each) can be converted at a time.

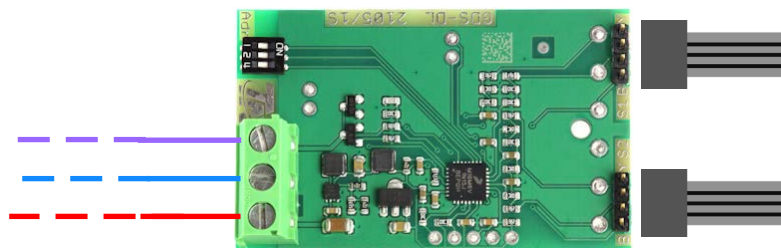
Terminal connection

Example: connection with a controller UVR16x2



The reference to the metal pipe's ground along the flow sensors must be regarded, according to the manufacturer's instructions.

View of the PCB:



The principles of DL bus cabling are described extensively in the installation instructions for the freely programmable controllers. The polarity of the DL bus is **not** interchangeable for this device.

12V supply (e.g., from CAN bus) is required.

The GDS-DL supplies voltage to the Grundfos sensors.

Index

The GDS-DL converts values of two sensors for the DL bus via the following indexes.

Every sensor outputs two signals: the primary measurement (litre/h or pressure) on channel 1, as well as temperature on channel 2.

Index	Unit (scaling)	Source	
1	Litre/h (scaled for VFS 2-40)	Sensor 1	Channel 1
2	Temperature (°C)		Channel 2
3	Pressure (bar) (scaled for RPS 0-4)		Channel 1
4	Voltage (Volt)		Channel 1
5	Voltage (Volt)		Channel 2
6	Litre/h (scaled for VFS 2-40)	Sensor 2	Channel 1
7	Temperature (°C)		Channel 2
8	Pressure (bar) (scaled for RPS 0-4)		Channel 1
9	Voltage (Volt)		Channel 1
10	Voltage (Volt)		Channel 2

The inputs of the module measure a range of **0,5 - 3,5 V**. These measurements are converted for the DL bus several times, with different scaling (or without any).

Indexes with the same source (e.g., index 1, 3 and 4) refer to the same measurement, only with different scaling, from 0,5 - 3,5 V to the appropriate unit as stated. For measurements other than temperature, pressure or litre/h, the appropriate index with unit dimensionless must be used and manually scaled (e.g., using the scaling function).

Programming in TAPPS2

In the following example, the factory-set DL bus address of 1 is used.

The diagram on the left shows a component labeled 'DL Input 1 (1 / 1) System pressure'. Arrows point from this component to labels: 'Index' (pointing to the '1' in the index field), 'Address' (pointing to the '1' in the address field), 'Input number' (pointing to the '1' in the input number field), and 'Designation' (pointing to the text 'System pressure').

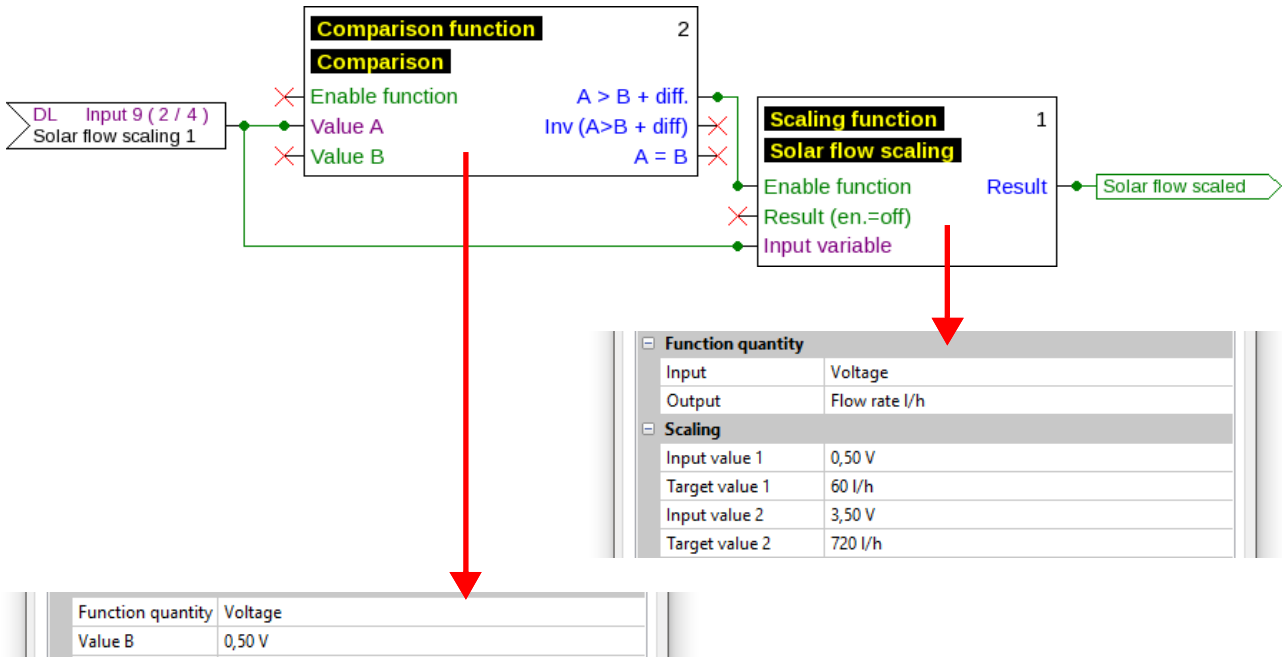
The software interface on the right is titled 'DL inputs - Input 1 - System pressure'. It shows a 'Drawing object' dropdown set to 'Input 1 - System pressure'. Under the 'Parameters' tab, the following settings are visible:

- Des. group: Pressure actual value
- Designation: System pressure
- Des. index: (empty)
- General**
 - Type: Analogue
 - Address: 1
 - Index: 1
- Unit**
 - Measured variable: Automatic
 - Unit: (empty)
 - Sensor correction: (empty)
- Value at timeout**
 - Output value: (empty)
- Sensor check** (expanded)

The most relevant settings are in the section **General**. There, the address set on the GDS-DL (factory setting: 1) must be input, as well as the index of the desired value. The indexes 1-3 and 6-8 (see table page 2) are for usage with the specified units (= measured variable „automatic“). If other indexes are used, the desired unit must be input (measure variable „User def.“).

Scaling

When using a flower sensor other than a VFS 2-40, a scaling function is required. To increase accuracy, usage of a scaling function in **l/h** is recommended.



In the example above, the scaling is changed from l/min to l/h.

Volt	l/min	l/h
0,5 V	1 l/min	60 l/h
3,5 V	12 l/min	720 l/h

The comparison function serves to block the measurement below 0,5 V.

DL address

The GDS-DL has a default address of 1. This address can be changed using the DIP switches in the device. The final address is made up of the default 1 and the sum of the DIP switches that are switched to „ON“.

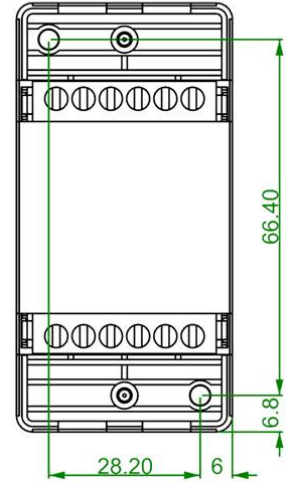
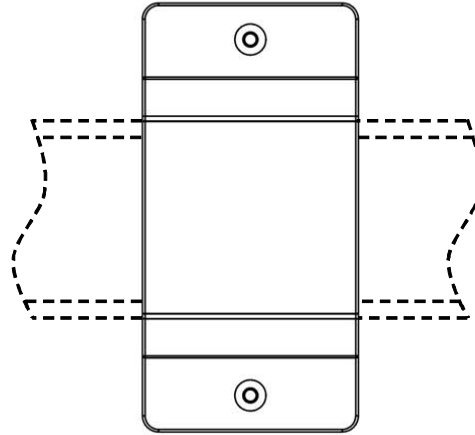
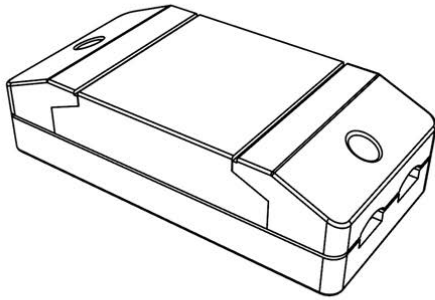
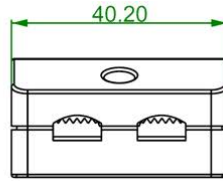
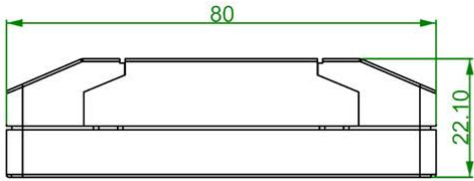
Example:

Desired address	6
Default setting	1
Dip-switches 1 and 4	+ 5
Sum = address	= 6
DIP switches 1 and 4 must be set to ON .	



Position of DIP switches acc. to example.

Measurements in mm



Top-hat rail installation
(support rail TS35 to
standard EN 50022)

Technical Data	
DL bus load	5%
IP rating	IP20
Terminal	max. 1,5 mm ²
Grundfos sensor connector	Micro JST plug 2 mm pin space, 4 poles
Max. ambient temperature	45 °C
Power supply	12 V
Input voltage range	0,5 - 3,5 V
Accuracy of voltage measurement	typ. ± 1%

Subject to technical modifications as well as typographical and printing errors. This manual is only valid for devices with the corresponding firmware version. Our products are subject to constant technical advancement and further development. We therefore reserve the right to make changes without prior notice

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