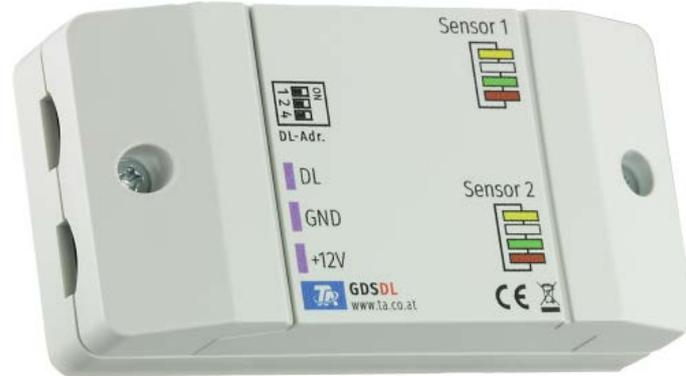


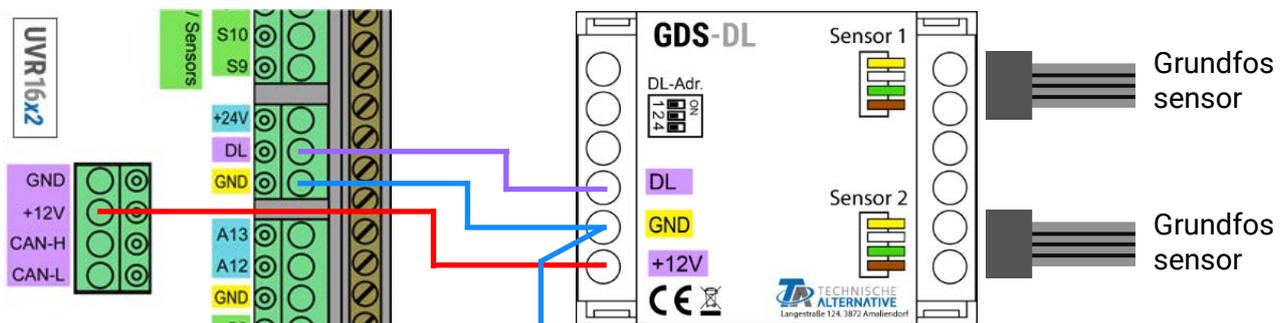
## Grundfos signal converter



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.

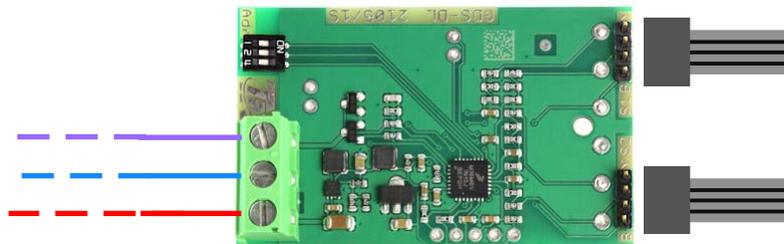
## Terminal connection

**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     | <b>Litre/h</b> (scaled for VFS 2-40)       | Sensor 1 | Channel 1 |
| 2     | <b>Temperature</b> (°C)                    |          | Channel 2 |
| 3     | <b>Pressure</b> (bar) (scaled for RPS 0-4) |          | Channel 1 |
| 4     | <b>Voltage</b> (Volt)                      |          | Channel 1 |
| 5     | <b>Voltage</b> (Volt)                      |          | Channel 2 |
| 6     | <b>Litre/h</b> (scaled for VFS 2-40)       | Sensor 2 | Channel 1 |
| 7     | <b>Temperature</b> (°C)                    |          | Channel 2 |
| 8     | <b>Pressure</b> (bar) (scaled for RPS 0-4) |          | Channel 1 |
| 9     | <b>Voltage</b> (Volt)                      |          | Channel 1 |
| 10    | <b>Voltage</b> (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).

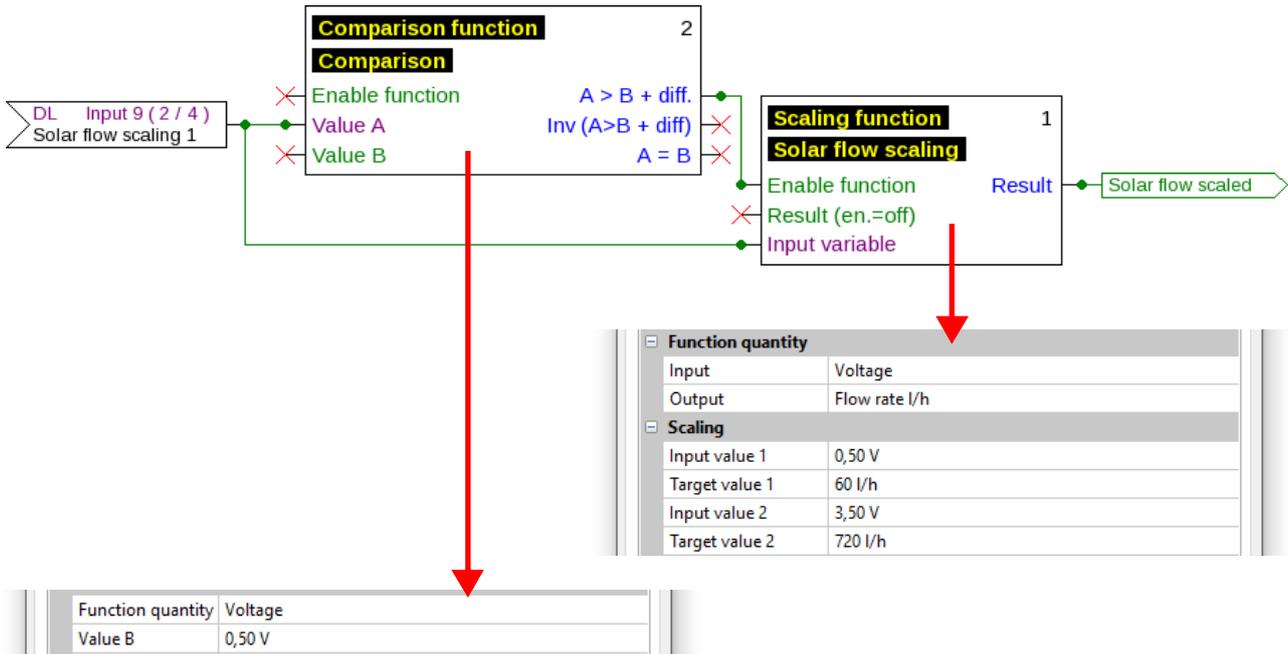
## Programming in TAPPS2

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

The 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“.

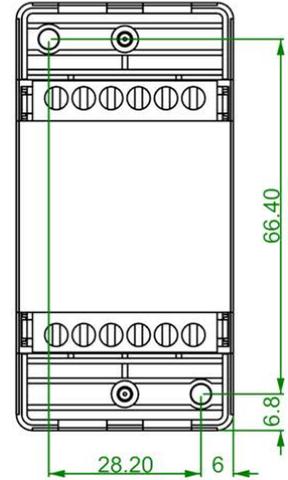
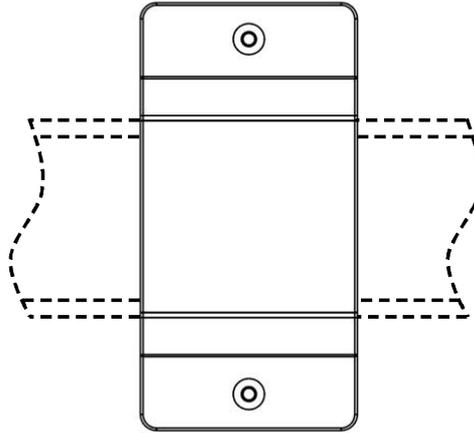
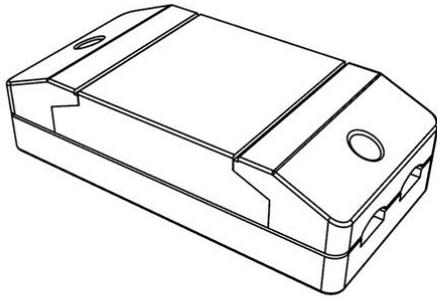
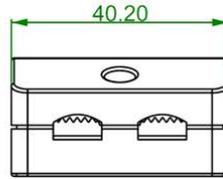
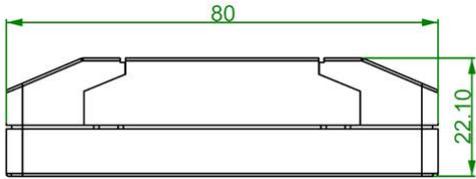
**Example:**

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



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 <sup>2</sup>                  |
| Grundfos sensor connector       | Micro JST plug<br>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

© 2023