



## Differential pressure sensor



The **DPS23-DL** differential pressure sensor measures the pressure difference between the two ports. Alternatively, one of these ports can be left unconnected, in which case the differential pressure between the port and the module's immediate environment will be measured.

The DPS23-DL comes in 5 different versions with a variety of measuring ranges. For index allocation, it is important to take account of the sensor used.

The DPS23-DL has three sensor inputs for either a PT1000 sensor or a digital signal (on/off).

## Standard delivery

- DPS23-DL in universal enclosure
- 1x pneumatic tube 4x0.75, length: 2 metres
- 1x 1/8" push-fit fitting

## Index

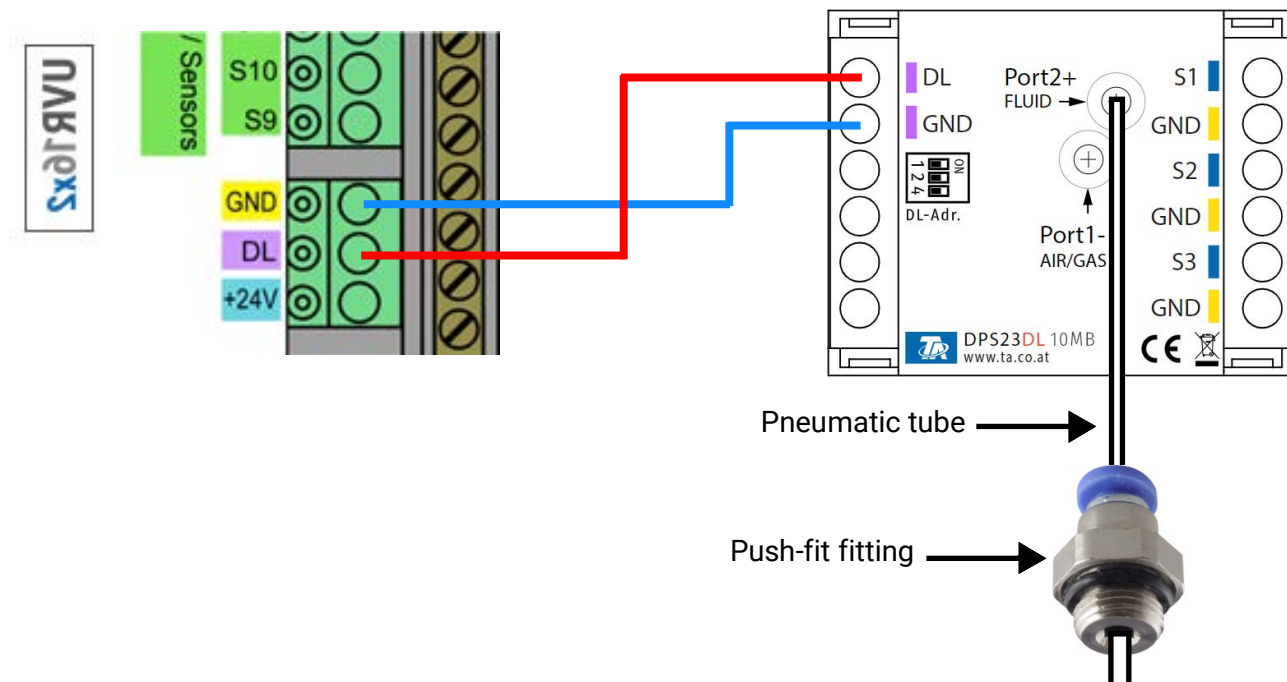
The DPS23-DL outputs the following values to the DL bus:

Index	Unit	Value	
1-3	Temperature °C	Temperature measurement of the differential pressure sensor/digital signals	
4	Pressure (Pa)	Differential pressure at sensor <b>-2 to 2 mbar</b>	DPS23- <b>2mb</b> -DL
5	Pressure (Pa)	Differential pressure at sensor <b>-10 to 10 mbar</b>	DPS23- <b>10mb</b> -DL
6	Pressure (Pa)	Differential pressure at sensor <b>0-100 mbar</b>	DPS23- <b>100mb</b> -DL
7	Pressure (mbar)	Differential pressure at sensor <b>0-1000 mbar</b>	DPS23- <b>1b</b> -DL
8	Pressure (bar)	Differential pressure at sensor <b>0-10 bar</b>	DPS23- <b>10b</b> -DL
9	Temperature °C	Temperature in the module itself	
10	Dimensionless	Dimensionless number from 0-7. Issues the input statuses of indices 11-13 in binary. See chapter "Binary decoder".	
11-13	On/Off	Digital signals S1-S3	

# Connection

## Electrical connection

**Example:** connection to a UVR16x2 controller



The principles of DL bus cabling are described extensively in the installation instructions for the freely programmable controllers. The polarity of the data link is interchangeable.

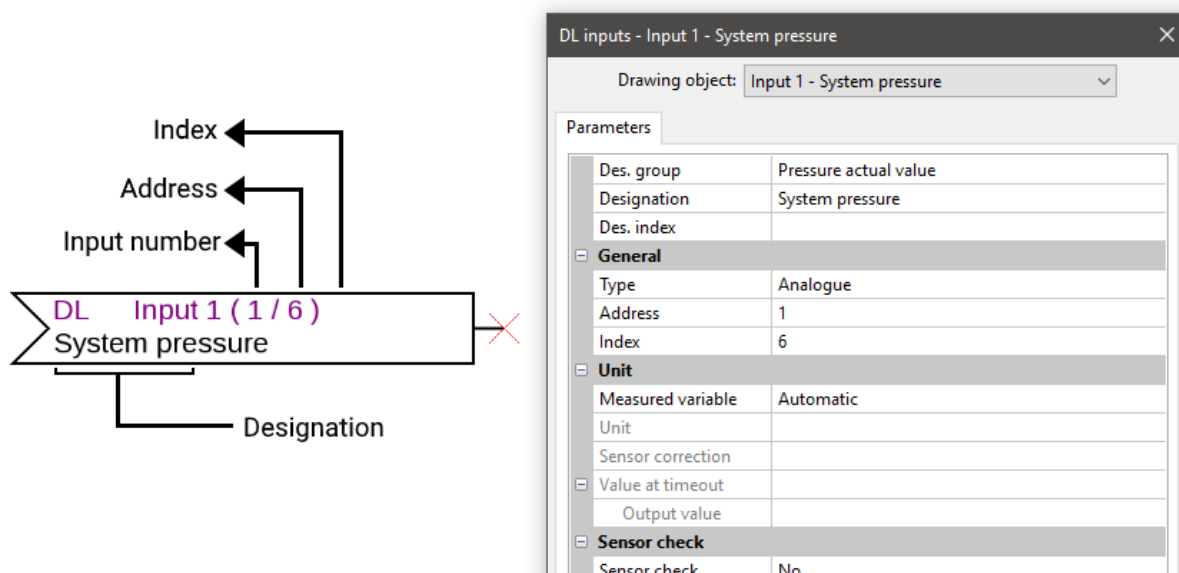
The supplied pneumatic tube (2 m) is adjusted as required and connected to the DPS23-DL. This tube is routed further into the push-fit fitting. Press the blue area to allow the tube to be inserted as far as it will go and fixed in place. The push-fit fitting has a 1/8" thread for further connection options.

The + port is suitable for fluids and gases which do not corrode silicon. No liquids must come into contact with the - port.

If no tube is connected at the - port, the device will measure the differential pressure between the + port and the immediate environment of the module itself.

## Programming in TAPPS2

In the following example, the default DL bus address 1 is used.



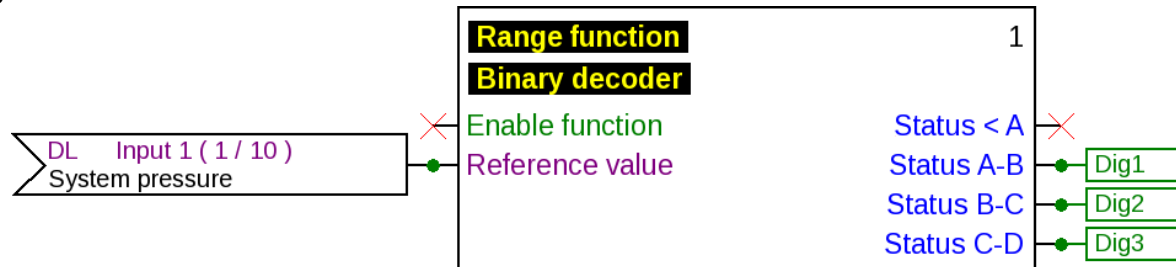
The most important settings can be found under **General**. Specify the DL bus address set on the DPS23-DL (default 1), as well as the index of the required input.

If the **Measured variable** is set to **Automatic**, no further settings are required under **Unit**.

The table under **Index** (page 1) provides information about which index belongs to which input status.

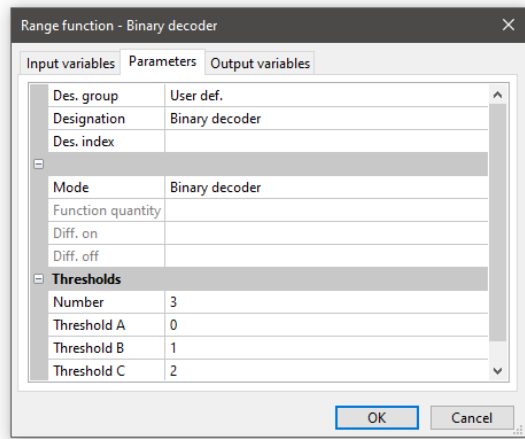
# Binary decoder (only x2 devices)

To evaluate the states of the 3 digital inputs using a single index, a range function is required in binary decoder mode.



The DL input with **Index 13** outputs a number between 0 and 7, which is decoded by the binary decoder to produce a binary number with the input statuses. That DL input must therefore be linked to the input variable **Reference value** (as shown in the graphic).

The settings for the thresholds must be made in accordance with the graphic below.



3 thresholds, defined in sequence from 0 to 2, correctly transfer the decoded value.

The binary decoder uses output variable **Status A-B** to issue the status of input 1; output variable **Status B-C** to issue the status of input 2, etc. The user is responsible for the further use of these variables.

# DL address

The DPS23-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 set to "ON".

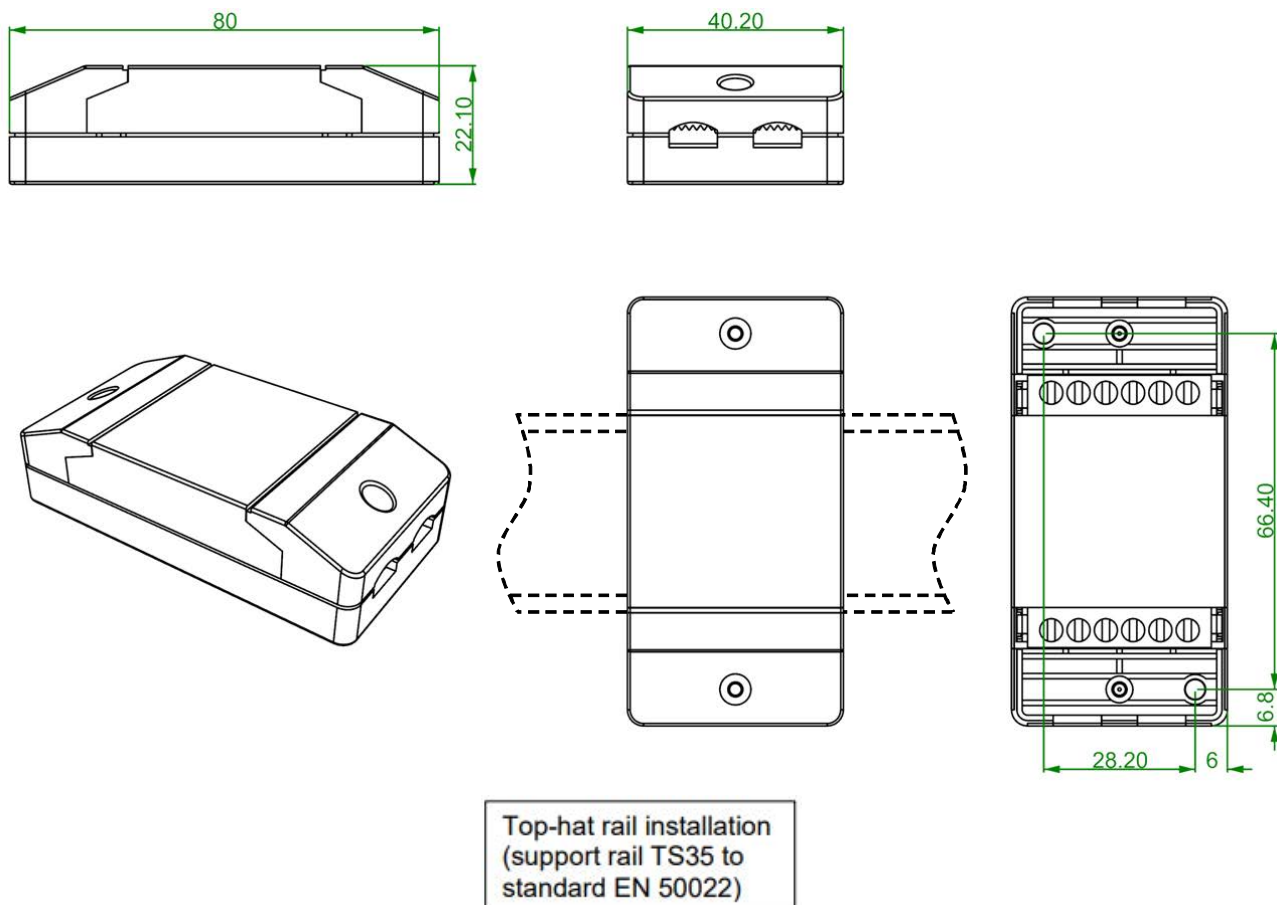
## Example

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



Position of DIP switches as per the example.

## Dimensions in mm



## Technical data

Accuracy	See table below
DL bus load	39 % (15 %, if inputs S1-S3 are not used)
Terminal capacity	Max. 1.5 mm <sup>2</sup>
IP rating	IP 20
Max. ambient temperature	45 °C
Tube connection	See table below

Sensor   Property	Measuring range	Burst pressure	Accuracy	External diameter of the tube connector
DPS23- <b>2mb</b> -DL	-2.5 to 2.5 mbar	0.2 bar	± 2 %	3.2 mm
DPS23- <b>10mb</b> -DL	-10 to 10 mbar	0.2 bar	± 2 %	
DPS23- <b>100mb</b> -DL	0 to 100 mbar	1 bar	± 1.5 %	
DPS23- <b>1b</b> -DL	0 to 1000 mbar	5 bar	± 1.5 %	
DPS23- <b>10b</b> -DL	0 to 10 bar	30 bar	± 1.5 %	

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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