

# OPERATION MANUAL



## Industrial pressure transmitter with digital I<sup>2</sup>C interface DRTR-I<sup>2</sup>C

### Description



### Technical Data

Industrial pressure transmitter DRTR-I <sup>2</sup> C	
Measuring range	-1...+100 bar relative, 1...50 bar absolute (18 types)
Power supply	5 V
Burst pressure	See Table
Output signal/ auxiliary energy	Digitale I <sup>2</sup> C/5 V DC
Accuracy at 23 °C	≤0,5% FSO (includes non-linearity, hysteresis, reproducibility, zero and final value error)
Temperature error (0...50 °C)	≤±0,02% FSO/K
Long term stability 1 year (15...25 °C)	≤0,3% FSO
Operating temperature range	-20...+80 °C
Pressure cell	Ceramics Al <sub>2</sub> O <sub>3</sub> 96%
Housing material	Stainless steel 1.4305, optional 1.4571
Seal	Viton® (FKM 80)
Dimensions	71 x 27 mm
Media compability	Gases, liquids. Not suitable for pasty/highly viscous/crystallizing media. Table on request.
Process connection	G1/4" outer thread
Protection class	Art.-no. -RV0...-R16B: IP64, -R25B...-R100B: IP65
CE-conformance	2014/30/EU
EMV-noise emission	EN 61000-6-3:2011
EMV-noise withstanding	EN 61000-6-1:2007

### Characteristic features

- From vacuum to 100 bar FS
- For measuring absolute and relative pressure
- Digital I<sup>2</sup>C-interface
- Temperature compensated
- Robust, media-resistant design, ceramic measuring cell
- Easy to install
- Water and oil resistant
- IP65 protection

### Typical areas of application

- Pneumatics
- Hydraulics
- Machinery and plant technology
- Vehicle Technology
- Liquids

### Features

The pressure sensor with digital I<sup>2</sup>C interface of the series DRTR I<sup>2</sup>C transmit the measured value as a calibrated and temperature-compensated signal. The product range covers 18 graded variants for absolute and relative pressure in the pressure range from vacuum to 100 bar full scale (See table). Through a precise calibration of 7 measurement points at 3 different temperatures, it achieves outstanding precision and very few temperature errors. Depending on variant, the sensors are ideal for measurement of static or dynamic absolute pressure, or relative pressure in liquids and gases.

Typical applications for his sensor in the fields of pneumatics, hydraulics as well as industrial applications. Another field of application is the measurement of liquids such as motor oil or fuel in vehicles. The robust sensor housing made of stainless steel with protection class IP65 has a G1/4" external thread media connection.

The electrical connection is made via the digital I<sup>2</sup>C interface. A custom addressing of the transmitter is possible from factory to customer. It is then possible to use multiple transmitters on the I<sup>2</sup>C bus.



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### Models for absolute pressure

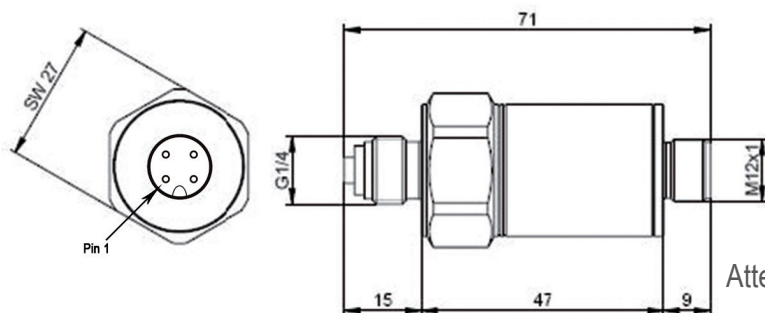
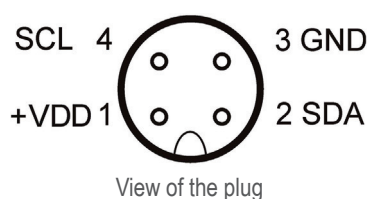
Measuring range	Burst pressure	Order No. absolute pressure
1 bar abs.	4 bar	DRTR-I <sup>2</sup> C-A1B
2 bar abs.	5 bar	DRTR-I <sup>2</sup> C-A2B
5 bar abs.	12 bar	DRTR-I <sup>2</sup> C-A5B
10 bar abs.	25 bar	DRTR-I <sup>2</sup> C-A10B
20 bar abs.	50 bar	DRTR-I <sup>2</sup> C-A20B
50 bar abs.	120 bar	DRTR-I <sup>2</sup> C-A50B

### Models for relative pressure

Measuring range	Burst pressure	Order No. relative pressure
-1...0 bar	4 bar	DRTR-I <sup>2</sup> C-RV0
-1...+1 bar	4 bar	DRTR-I <sup>2</sup> C-RV1
0...1,6 bar	4 bar	DRTR-I <sup>2</sup> C-R1B6
0...2,5 bar	6,25 bar	DRTR-I <sup>2</sup> C-R2B5
0...4 bar	10 bar	DRTR-I <sup>2</sup> C-R4B
0...6 bar	15 bar	DRTR-I <sup>2</sup> C-R6B
0...10 bar	25 bar	DRTR-I <sup>2</sup> C-R10B
0...16 bar	40 bar	DRTR-I <sup>2</sup> C-R16B
0...25 bar	62,5 bar	DRTR-I <sup>2</sup> C-R25B
0...40 bar	100 bar	DRTR-I <sup>2</sup> C-R40B
0...60 bar	150 bar	DRTR-I <sup>2</sup> C-R60B
0...100 bar	175 bar	DRTR-I <sup>2</sup> C-R100B

### Connection assignment

Sensor connector M12		
1	VDD	Power supply +5 V DC
2	SDA	Serial I <sup>2</sup> C data
3	GND	Masse
4	SCL	Serial clock I <sup>2</sup> C



#### Attention

Please avoid extreme mechanical and inappropriate exposure.

The device/product is not suitable for potential explosive areas and medical-technical applications.

For further information, please visit our website:  
[www.bb-sensors.com](http://www.bb-sensors.com)

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### I<sup>2</sup>C-Interface

The communication corresponds to the standard I<sup>2</sup>C protocol. All technical specification of the protocol can be obtained from the documentation "Serial Interface of B+B ASIC". The documentation is available on request or can be downloaded from [www.bb-sensors.com](http://www.bb-sensors.com). The standard address of the component is 0x78, the component can always be communicated with this address. The address is to be understood as a 7 bit address, left justified and with masked R/WBit is the Read-address 0xF1.

Additionally, a second address can also be programmed during configuration ex factory, through which the pressure sensor can be addressed.

From this address 0x78 (7 bit address), 2 Bytes can be read. The following assignment is applicable:

Data		
0x78	Byte_0	MSB pressure
	Byte_1	LSB pressure

### Scaling of measured value

Byte 0 and 1 represent the pressure value and is transmitted as a 15 bit value (bit 0 - 14).

The most significant bit (bit 15) is always 0 during normal operation and in case of error, bit 15 is set to 1.

Following scaling is applicable for the measured values:

Pressure	
Numeric value over I <sup>2</sup> C Interface	0x 0000...7FFF dec. 0...32767
Physical value	as per model
Scaling	$P = V / 32768 * \text{measuring range}$