Operating instructions
Electronic pressure sensor

PPA

Contents

1   Preliminary note

You will find instructions, technical data, approvals and further information using the QR code on the unit / packaging or at www.ifm.com.

1.1   Symbols used

✓	Requirement
▶	Instructions
▷	Reaction, result
[...]	Designation of keys, buttons or indications
→	Cross-reference
[!]	Important note Non-compliance may result in malfunction or interference.
[i]	Information Supplementary note

2   Safety instructions

- The unit described is a subcomponent for integration into a system.

  – The system architect is responsible for the safety of the system.

  – The system architect undertakes to perform a risk assessment and to create documentation in accordance with legal and normative requirements to be provided to the operator and user of the system. This documentation must contain all necessary information and safety instructions for the operator, the user and, if applicable, for any service personnel authorised by the architect of the system.

- Read this document before setting up the product and keep it during the entire service life.

- The product must be suitable for the corresponding applications and environmental conditions without any restrictions.

- Only use the product for its intended purpose (→ Intended use).

- Only use the product for permissible media (→ Technical data).

- If the operating instructions or the technical data are not adhered to, personal injury and/or damage to property may occur.

- The manufacturer assumes no liability or warranty for any consequences caused by tampering with the product or incorrect use by the operator.

- Installation, electrical connection, set-up, operation and maintenance of the product must be carried out by qualified personnel authorised by the machine operator.

- Protect units and cables against damage.

- Use in gases at pressures > 25 bar only on request.

3   Intended use

The unit measures and monitors the system pressure of machines and installations.

The sensor operates as a single slave in the AS-i network (slave profile S-7.3.c).

It converts the detected pressure into digitally coded analogue values and transfers these values to the control level (master, controller or host).

Analogue value representation:

Signed 16-bit value as two's complement value. The analogue value transmission protocol is specified in the slave profile 7.3.

A master of AS-i version 2.1 detects the slave automatically. The analogue value transmission to slave profile 7.3 is then supported. Masters of AS-i version 2.0 require a special driver (additional function block, available as an accessory).

3.1   Application area

Type of pressure: relative pressure

> [!] Information on pressure rating and bursting pressure → Data sheet

> [!] Avoid static and dynamic overpressure exceeding the indicated pressure rating by taking appropriate measures. The indicated bursting pressure must not be exceeded. Even if the bursting pressure is exceeded only for a short time, the unit may be destroyed. ATTENTION: Risk of injury!

4   Installation

!   Before installing and removing the unit: Make sure that no pressure is applied to the system.

▶ Insert the unit in a process connection G1/4.

▶ Tighten firmly. Recommended tightening torque: 25 Nm (max. 50 Nm).

5   Electrical connection
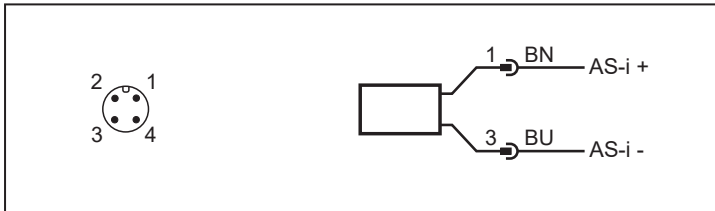
⚠ The unit must be connected by a qualified electrician.

The national and international regulations for the installation of electrical equipment must be adhered to.

Voltage is supplied via the AS-i network.

▶ Disconnect power.

▶ Connect the unit as follows:

Pin	Core colour	
1:	BN	Brown
3:	BU	Blue
Colours to DIN EN 60947-5-2		

6   Parameter setting

Addressing:

You can address the sensor by using an addressing unit, the master or by means of the AS-i software of the host (the components must support AS-i version 2.1).

▶ Assign an address between 1 and 31; at the factory the address is set to 0.

7   Operation

▶ After mounting and electrical connection, check the safe functioning of the unit.

Operating and fault indication on the sensor:

LED green	ON = unit is ready for operation
LED red	ON = no communication
	FLASHING = internal fault, is transferred to the master as peripheral fault

Slave profile:

	Pressure range		
	0…600 bar	0…400 bar	0…10 bar
I/O Code [hex]	7	7	7
ID Code [hex]	3	3	3
Extended ID2 Code [hex]	C	C	C
ID1 Code for pressure values [hex]	0	0	1
Slave address (factory setting)	0	0	0

Representation of measured values by data bits D16...D1:

	Pressure range		
	0…600 bar	0…400 bar	0…10 bar
Overflow (measured value outside the value range); overflow bit is set	32767	32767	32767
Overrange (measured value is valid but outside the nominal range)	6000…6300	4000…4200	10000…10500
Nominal Range (measured value in the specified value range)	0…6000	0…4000	0…10000
Underrange (measured value is valid but outside the nominal range)	-10…0	-10…0	-500…0
Underflow (measured value outside the value range); overflow bit is set	-32768	-32768	-32768
Representation of measured values following ID1	bar x 10	bar x 10	mbar
Increments min.	10	10	20

Assignment of the data bits:

Extension Bits	E3	Only 1 measuring channel is used. The bits E3, E2 and E1 are always 0.
	E2	
	E1	
User Information Data	D16	The analogue values measured are transferred via the data bits D1...D16 according to slave profile 7.3.
	D15	
	D14	
	D13	
	D12	
	D11	
	D10	
	D9	

User Information Data	**D8**	The analogue values measured are transferred via the data bits D1...D16 according to slave profile 7.3.
	D7	
	D6	
	D5	
	D4	
	D3	
	D2	
Additional Information Bits	**D1**	
	O	Overflow bit
	V	Valid bit

Overflow bit:

O= 0: measured value is within the value range

O= 1: measured value is outside the value range

(above max. value for overload or below minimum value for overload)

Valid bit:

V = 0: measured value not valid

V = 1: measured value valid

8 Troubleshooting

Automatic troubleshooting according to AS-i version 2.1.

- Power-up: During power-up the data is marked faulty until a valid data transfer is guaranteed.

- After interruption of the data communication the watchdog function starts communication again.

- Data triple in wrong order: If a fault occurs, the sensor sets its data triples to 0 (invalid) and waits for a new triple sequence.

9   Disposal, repair and return

▶ After use dispose of the unit in an environmentally friendly way in accordance with the applicable national regulations.

▶ In case of return shipment, ensure that the unit is free from soiling, especially from dangerous and toxic substances.

▶ It is not possible to repair the unit.