

ifm electronic



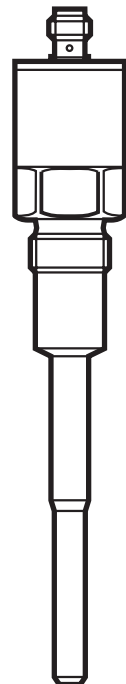
Installation Instructions  
Temperature transmitter

**efector600®**

**TAA431**

**UK**

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# 1 Functions and features

The temperature transmitter operates as a single slave in the AS-i network (slave profile S-7.3.C).

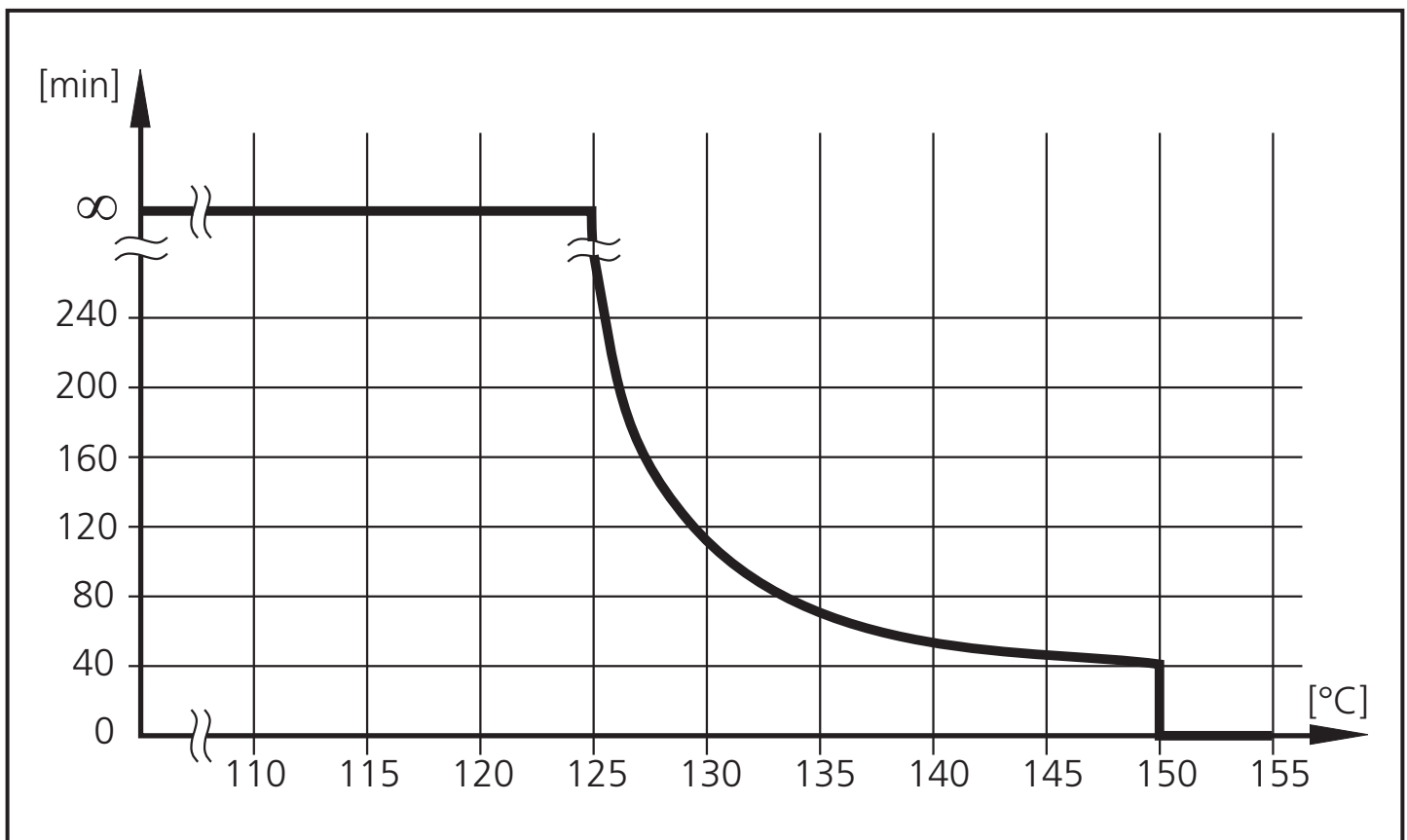
It detects the current system temperature, converts it into digital coded analog values and transfers these values to the control level (master, controller or host).

## Analog value representation

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

A master of AS-i version 2.11 detects the slave automatically. The analog 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).

- Measuring range: -10...150 °C / 14...302 °F
- Measuring element: Pt 1000 to DIN EN 60751, class A
- Temperature resistance



Maximum operation time depending on the medium temperature

## 2 Installation

### 2.1 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 2.11).

Assign an address between 1 and 31. At the factory the address is set to 0.

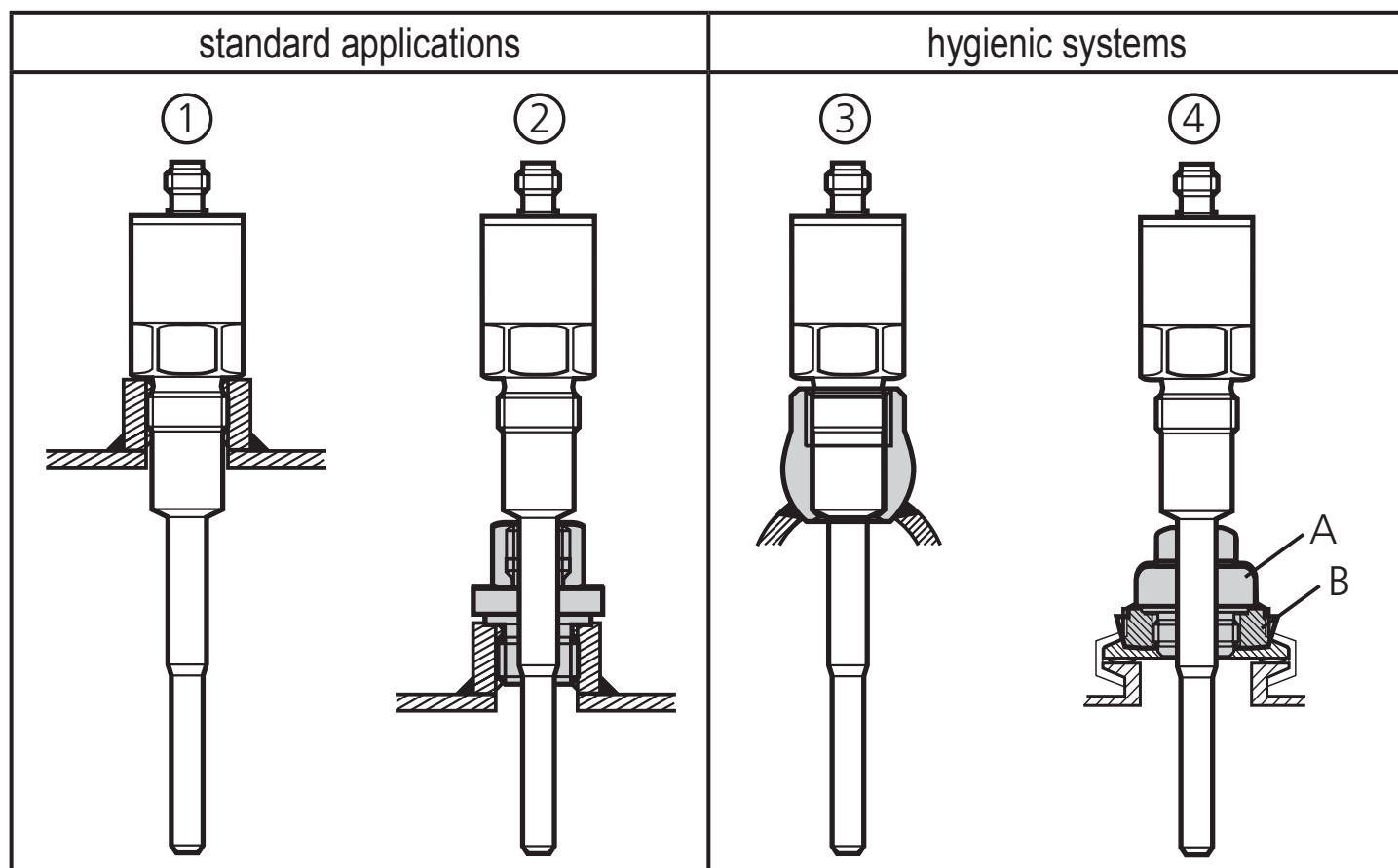
### 2.2 Mechanical installation

There are a number of possibilities:

1. Installation to G $\frac{1}{2}$  process connection.
2. Installation with E30016 (G  $\frac{1}{2}$ ) or E30024 ( $\frac{1}{2}$ " NPT) progressive ring fitting.
3. Installation with welding adapter E30055 (ball adapter) or E30056 (collar adapter).
4. Installation with E34110 clamp adapter for hygienic systems (A) and process adapter (B).

Slightly grease the contact areas between the sensor and adapter using a lubricating paste which is suitable and approved for the application.

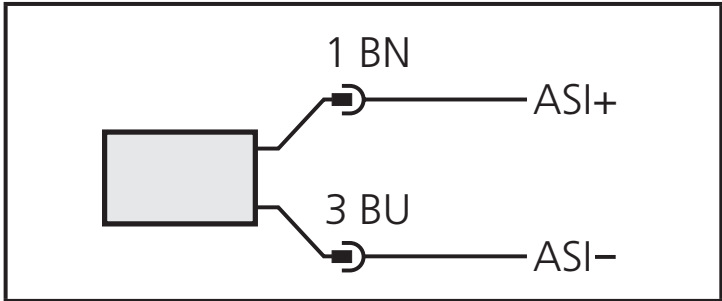
For information on the installation with adapters / progressive ring fittings please refer to the instructions enclosed with the respective articles.



tightening torque: 30...50 Nm

### 2.3 Connection to the AS-i system

Connect the sensor with the AS-i system by using the M12 connector.  
Voltage is supplied via the AS-i network.  
Wiring:



Core colours of ifm sockets:  
1 = BN (brown),  
3 = BU (blue)

UK

Referring to UL: For use on a low voltage circuit with overcurrent protection in accordance with UL873 Tab. 28.1 or  $I_{max} = 100/U_b$  ( $U_b$  = voltage of the circuit).

### 2.4 Installation and set-up / Operation

After mounting and wiring check whether the unit operates correctly.  
Indication at the sensor in the operating mode:

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

### 2.5 Slave profile

I/O Code [hex]	7
ID Code [hex]	3
Extended ID2 Code [hex]	C
ID1 Code code for temperature values [hex]	6
Slave address (factory setting)	0

## 2.6 Representation of measured values by data bits D16...D1

Overflow (measured value outside the value range), overflow bit is set	32767
Overrange (measured value is valid but outside the nominal range)	1500...1650
Nominal Range (measured value in the specified value range)	-100...1500
Underrange (measured value is valid but outside the nominal range)	-150...-100
Underflow (measured value outside the value range), overflow bit is set	-32768
Representation of measured values following ID1	°C × 0.1
Increments min.	0.1

## 2.7 Fault handling

Automatic fault handling 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.

## 2.8 Data bits

During one transmission cycle the following data is transferred in data triples.

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 analog values measured are transferred via the data bits D1...D16 according to slave profile 7.3.
	D15	
	D14	
	D13	
	D12	
	D11	
	D10	
	D9	
	D8	
	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

### 3 Technical data

Operating voltage [V].....	18...31.6 DC (AS-i)
Reverse polarity protection / overload protection	
Current consumption [mA].....	< 25
Measuring range [°C / °F].....	-10...150 / 14...302
Measuring element.....	1 x Pt 1000 to DIN EN 60751, class A
Accuracy.....	± 0.3 K (-10...150°C / 14...302°F)
Resolution [°C / °F].....	< 0.05 / 0.09
Dynamic response (according to DIN EN 60751) [s].....	T05 = 1 / T09 = 3
Housing material.....	stainless steel 316L / 1.4404; stainless steel (304S15); stainless steel (303S22); PA
Materials (wetted parts).....	stainless steel 316L / 1.4404
Max. medium temperature [°C].....	150°C (< 40 min.)
Operating temperature [°C] .....	-25...+70
Storage temperature [°C] .....	-40...+100
Permissible overl. pressure [bar].....	300 <sup>1)</sup>
Protection .....	IP 69K
Protective class .....	III
Shock resistance [g] .....	50 (DIN / IEC 68-2-27, 11ms)
Vibration resistance [g] .....	20 (DIN / IEC 68-2-6, 10 - 2000 Hz)
EMC	
EN 61000-4-2 ESD:.....	4 / 8 kV
EN 61000-4-3 HF radiated: .....	10 V/m
EN 61000-4-4 Burst:.....	2 kV
EN 61000-4-5 Surge:.....	0.5 / 1 kV
EN 61000-4-6 HF conducted:.....	10 V

<sup>1)</sup> only applies to the sensor; for installation in adapters the indications in the adapter data sheet shall apply



4 Scale drawing

