

Temperature sensor type TE2 is a compact temperature sensor, based on RTD technology, which is designed and produced to meet the requirements in industries where threaded or hygienic connections are used.

Description

Temperature sensor type TE2 comprises a series of basic elements which can be combined in various ways to a TE2 temperature sensor. The product offers great flexibility in respect to modification, service and maintenance.

The sensor can be made to feature a RTD output signal or with a built in temperature transmitter with 4-20 mA output.

Safety instruction

This instrument is built and tested according to the current EU-directives and packed in technically safe conditions. In order to maintain this condition and to ensure safe operation, the user must follow the hints and warnings given in this instruction.

During the installation the valid national rules have to be observed. Ignoring the warnings may lead to severe personal injury or substantial damage of property.

The product must be operated by trained staff. Correct and safe operation of this equipment is dependent on proper transport, storage installation and operation.

All electrical wirings must conform to local standards. In order to prevent stray electrical radiation, we recommend twisted and shielded input cables and also to keep power supply cables separated from the input cables. The connection must be made according to the connection diagrams.

Before switching on the power supply take care that other equipment is not affected. Ensure that the power voltage and the conditions is the environment comply with the specification of the device.

Before switching of the power supply voltage, check the possible effects on other equipment and the processing system.

Note

After mounting of the device - do check that the housing has a ground potential.

The product contains non-replaceable parts, except from insert and/or transmitter if selected. In case of malfunction the product must be sent to Baumer for repair.

Environment

Pressure
(see data sheet) Depending on connection
16...100 bar

Humidity <100% RH, condensing

Protection class M12 plug IP67
DIN plug IP65

Vibrations GL, test 2 (sensor tube <200 mm)



Technical specifications

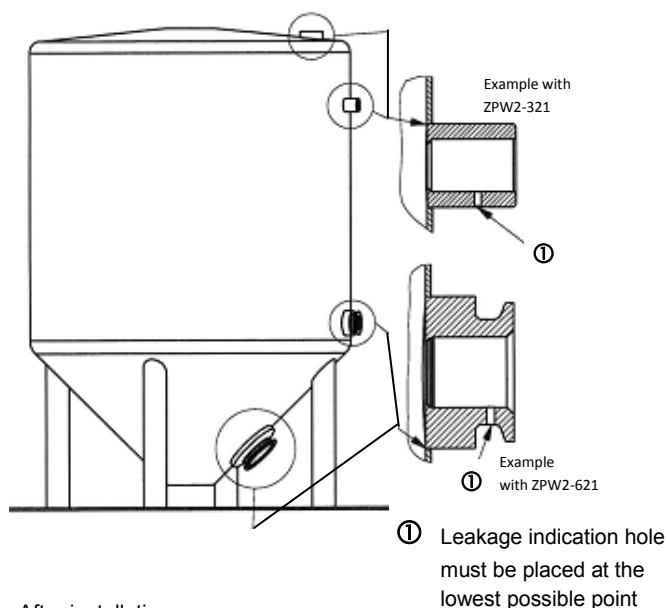
Sensor and connection material		Stainless steel, AISI 316L Stainless steel, AISI 316L + PEEK	
Housing		Stainless steel, AISI 304	
Electrical connection		Standard	M12, 4-wire plug
		Option	DIN 43650-A plug
Media temperature	Standard	-40...125°C on sensor tube tip	
	W. cooling neck	-50...250°C on sensor tube tip	
Ambient temperature	DIN plug	-40...125°C	w. RTD output only
	M12 plug	-40...85°C	
Time constant τ_{50}	tip Ø6 mm	in water	3,0 s
	tip Ø4 mm	in water	2,5 s
	tip Ø3 mm	in water	1,3 s
	Conical sensor	in water	<1,0 s

Transmitter, type TE2

Input	Pt100 (IEC/DIN/EN 60751-2)	
Output	4...20 mA (max. 700 Ω @ 24)	
Accuracy,	input	<0,25°C (@ ≤100°C)
	output	<0,1% signal span (16 mA)
	repeatability	<0,1°C
	temperature drift	Typ. <0,003%/°C / Max. <0,01%/°C
Range	-40...150°C (programmable)	
Minimum span	25°C	
Supply	8...35 VDC	
Protection	Reversed polarity protected	
Programmability	By FlexProgrammer 9701	

Mounting

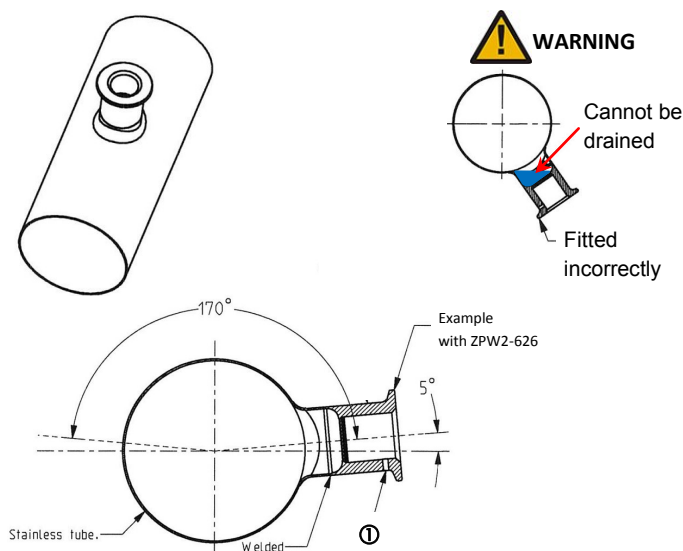
- 1) Use only a Baumer counterpart
- 2) The inspection hole should be visible and drained
- 3) Mount the adapter in a self-drained position/angle
- 4) Level the inner surface of the pipe with the counterpart



After installation

- Check the leak tightness of the sleeve.
- Check the tightness of the M12 plug.

- 5) The 3-A mark or the arrow shall be placed upwards
- 6) Welding should be grinded to $Ra \leq 0.8 \mu m$
- 7) Tighten the instrument in the adapter with a torque of
M12 stainless steel 12...16 Nm M12 PEEK 8...12 Nm
G $\frac{1}{2}$ B hygienic stainless steel 15...20 Nm



If the seal is leaking and the media appears in the inspection hole, the seal is to be changed immediately.

Before reassembly, clean the hole and inside of the connection with detergent and sanitising liquid. Use a small brush. Verify that all of the inside area is completely clean.

Reassemble and verify that the connection is tight.

Do not use Teflon, elastomer or other types of gaskets for the hygienic process connection featuring a conical seal.

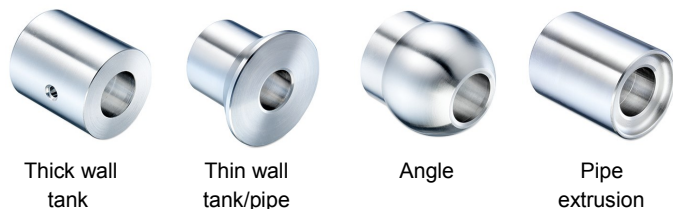
Adapter for TE2 with
G $\frac{1}{2}$ B hygienic connection



Welding sleeve for TE2 with
Baumer G1/8 conical hygienic connection



Welding sleeve for TE2 with
G $\frac{1}{2}$ hygienic connection



Welding sleeve for TE2 with
M12 hygienic connection

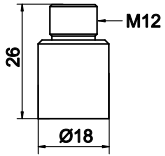


Welding sleeve for TE2 with
3A DN 38 (BHC B01) connection

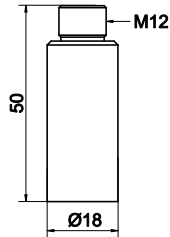


Dimensions

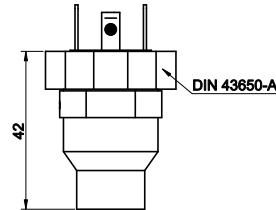
M12 × 1
Pt 100 output



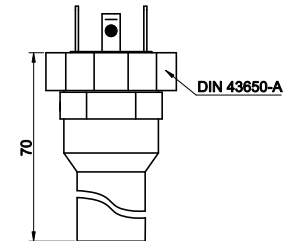
M12 × 1
4 ... 20 mA output



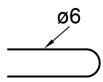
DIN 43650 - A
Pt 100 output



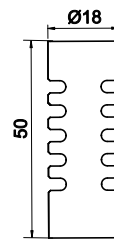
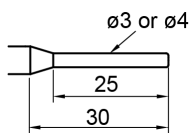
DIN 43650 - A
4 ... 20 mA output



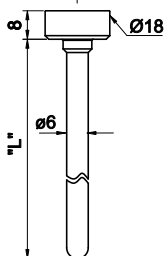
Standard sensor tip



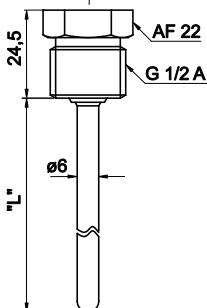
Fast response sensor tip



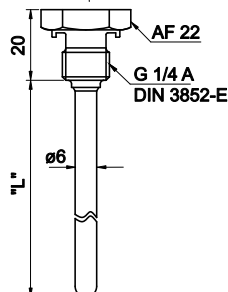
Cooling neck



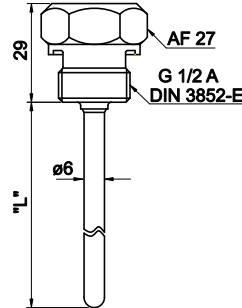
Without
Connection
Code 1



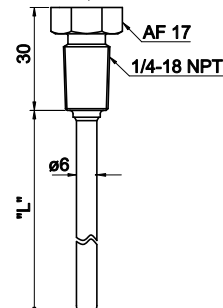
G 1/2 B
ISO 228/1
Code 3



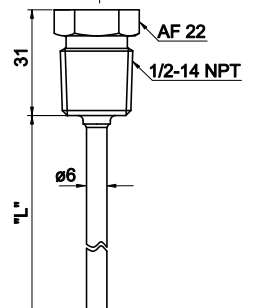
G 1/4 A
DIN 3852 - E
Code 8



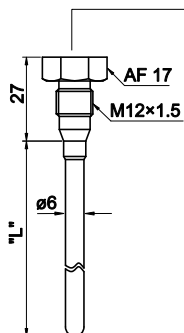
G 1/2 A
DIN 3852 - E
Code F



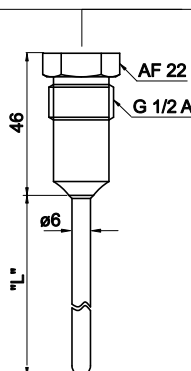
1/4" NPT
ANSI B1.20.1
Code E



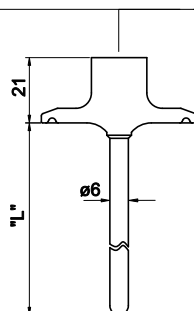
1/2" NPT
ANSI B1.20.1
Code D



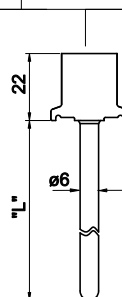
M12
Hygienic
Code 5



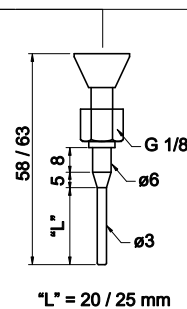
G 1/2 B
Hygienic
Code 4



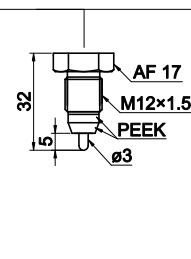
DN25 / DN38
ISO 2852
Code 9



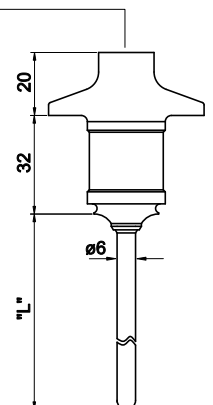
DN 15
TriClamp
Code A



G 1/8
Conical
Code 7



M12
Hyg. PEEK
Code 6



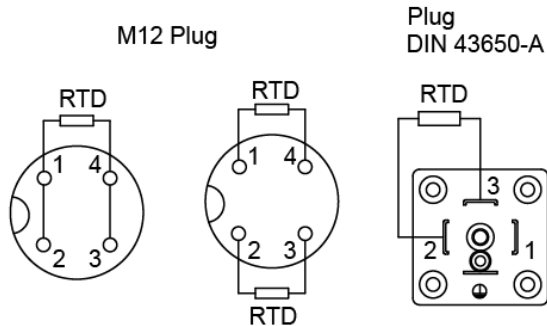
3A DN 38
BHC B01
Code B

Temperature sensor TE2

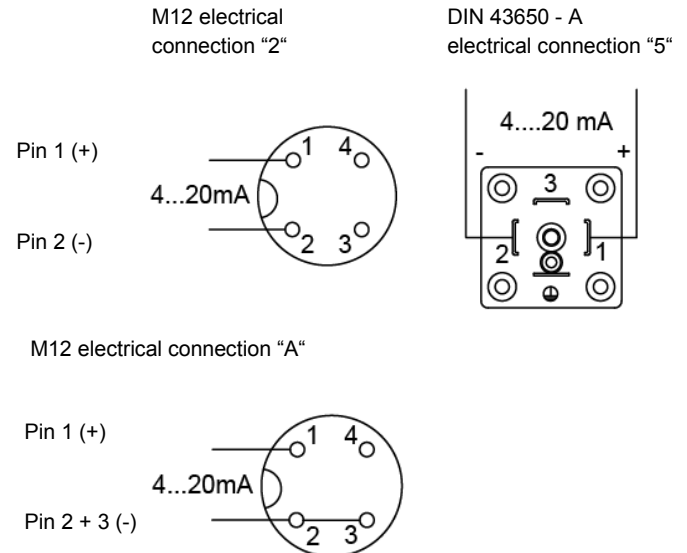
Operating Instructions

Electrical installation

With Pt100 output



With 4...20 mA output

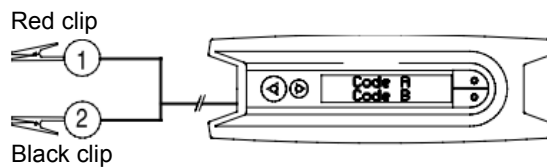


Connection to the FlexProgrammer 9701

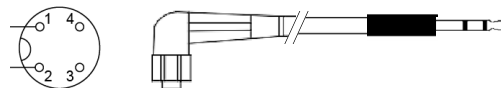
Note:

Disconnect loop supply before connecting the FlexProgrammer to the transmitter.

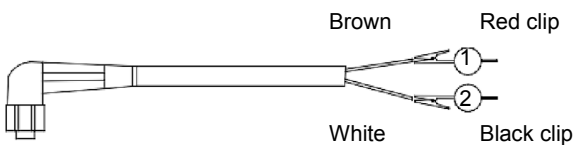
Connection of FlexProgrammer - Crocodile clips (incl. in 9701 kit)



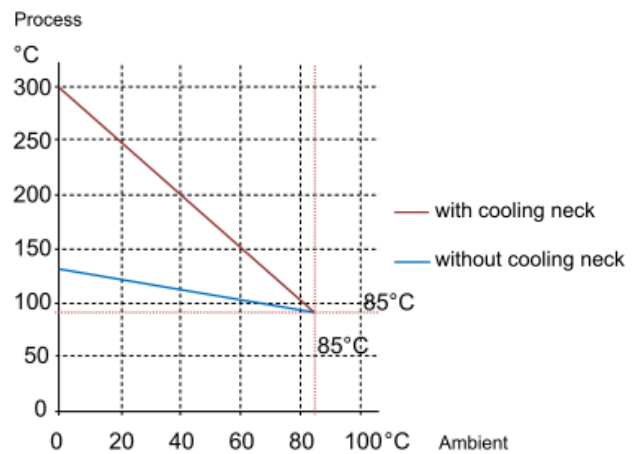
Connection of FlexProgrammer - M12 cable (incl. in 9701 kit)



External mounted cable for TE2



Max. process temperature / ambient temperature





Installation in hazardous area

Hazardous area (ATEX)

The TE2 can be supplied for hazardous area, as a Simple Apparatus with RDT output.

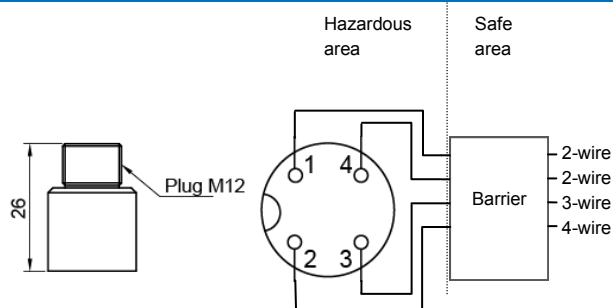
A TE2 with Pt100 output have ATEX approval, Ex ia (zone 0, 1 or 2).

Ex ia IIC T5/T6 Ga simple apparatus

Ex ia IIIC T135°C Da simple apparatus

The TE2 with Ex ia must be installed in accordance with prevailing guidelines for zone 0, 1 and zone2 and a certified intrinsically safe zener barrier with the listed maximum values must be used. Electrical connection for the temperature transmitter as per below diagram.

Electrical connection ATEX ia



Ex-data for Simple Apparatus with Pt100 output (no transmitter)

Approval	Ex ia IIC T5/T6 Ga simple apparatus Ex ia IIIC T135°C Da simple apparatus	
Internal inductivity	L_i	$\leq 0 \mu H$
Internal capacity	C_i	$\leq 0 nF$
Temperature class	T1...T5:	$-40 < T_{amb} < 85^\circ C$
	T6:	$-40 < T_{amb} < 55^\circ C$
Barrier data	U_i :	$\leq 15 VDC$
	I_i :	$\leq 50 mA$
	P_i :	$\leq 25 mW$

Type code

Allowed type code for ATEX	TE2-x.x.xx19.xxxx.x
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Temperature sensor TE2

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EU-Konformitätserklärung EU Declaration of Conformity Déclaration UE de Conformité

Wir erklären in alleiniger Verantwortung, dass die Produkte, auf die sich diese Erklärung bezieht, die grundlegenden Anforderungen der angegebenen Richtlinie(n) erfüllen und basierend auf den aufgeführten Norm(en) bewertet wurden.

We declare under our sole responsibility that the products to which the present declaration relates comply with the essential requirements of the given directive(s) and have been evaluated on the basis of the listed standard(s).

Nous déclarons sous notre seule responsabilité que les produits auxquels se réfère la présente déclaration sont conformes aux exigences essentielles de la directive/ des directives mentionnée(s) et ont été évalués sur la base de la norme/ des normes listée(s).

Hersteller

Manufacturer
Fabricant

Baumer A/S

Bezeichnung

Description
Description

Elektronische Temperaturmessung

Electronic temperature measurement
Electronique mesure de température

Typ(en) / Type(s) / Type(s)

TE2-x.x.xxxx.xxxx.x

x = beliebige Zahl oder Buchstabe / any figure or letter / n'importe quel nombre ou lettre

Richtlinie(n)

Directive(s)
Directive(s)

2014/30/EU, 2011/65/EU

Norm(en)

Standard(s)
Norme(s)

EN 61326-1:2013

Ort und Datum

Place and date
Lieu et date

Aarhus, 06.07.2016

Unterschrift/Name/Funktion

Signature/name/function
Signature/nom/fonction



Ib V. Pedersen
Managing Director

Baumer_TE2_DE-EN-FR_CoC_81081692.docx/BRAA

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