

Operating Instructions Melt Temperature Sensor

TF





Please study these operating instructions carefully before connecting or operating the equipment.



Contents:

- 1. Application and designated area of application
- 2. Identification data
- 3. Safety and disposal
- 4. Electrical connection
- 5. Dimensions
- 6. Fitting and removal
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1. Application and designated area of operation

Gneuss melt temperature sensors are designed for temperature measurement of liquid, doughy or paste-like melts up to a temperature of 450°C (PT100 350°C). They do not have any negative influence on the production process. The media must be homogeneous. Further, the measuring tip length has to be selected in accordance with the melt viscosity and the channel diameter.

Any application deviating from this area of operation is designated unsuitable. Should the use of the sensor for unsuitable applications result in any damage, the manufacturer cannot be held responsible. This is exclusively the responsibility of the operator.

2. Identification data

Sensor:	insulated thermocouple or RTD
Material in contact with media:	Steel grade 1.4305, optional Steel grade 1.4542 or 2.4610
Thermal conductivity values:	Shaft and measuring tip: $15 \text{ W} / \text{m x K}$ Insulating sleeve: 2,5 W / m x K (version TF-CX)
Insulation resistance of the Measuring element:350° C:	20° C: Approx. 200 MOhm at 100 V 20 - 40 MOhm at 100 V
Max. melt pressure:	2000 bar / 29000 PSI
Accuracy class:	Thermocouple: Class 2 (optional 1) according to DIN EN 60584 PT100: Class B (optional A) according to DIN EN 60751

3. Safety and disposal

The unit is built according to the latest state of technology and is therefore reliable in operation. There is, however, a permanent danger of burns due to hot components. The unit does not contain toxic or water-polluting materials and therefore does not need to be disposed of as special waste. Further, no materials harmful to the ozone layer are used for the manufacture of these sensors.



4. Electrical connection

4.1 Goldcontact version 2G or 4G

Thermocouple



Resistance thermometer PT 100





2- and 3 wire

4 wire

Connecting socket: Lemosa ERA 2S 302 CLL, 2-pole or Lemosa ERA 2S 304 CLL, 4-pole

Cable plug: Lemosa FFA 2S 302 CLAL 52 Z, 2-pole or Lemosa FFA 2S 304 CLAL 52 Z, 4-pole

4.2 Thermocouple connector version

Thermocouple





Resistance thermometer PT 100









4.3 Version with 4...20 mA output TF-XX-XXX-XXX-XX-2MA-2G-XXX

Technical data of integrated amplifier:

Measuring range:	0350 °C							
Output signal:	420 mA 2-wire							
Supply:	1535 VDC, max. ripple <10	0%						
Max. working resistance:	250 Ohm at 15 V supply							
	750 Ohm at 25 V supply							
	1250 Ohm at 35 V supply							
Malfunction:	Sensing element fracture ou	utput > 20mA						
	Sensor short circuit output <	4mA						
EMC emission:	According to EN 61000-6-3:	2001						
EMC stability:	According to EN 61000-6-2:2001							
	2							
	2	Connecting socket:						
	+	Lemosa ERA 2S 302 CLL, 2-pole						
	(mA)	, _ p						
+		Cable plug:						
24VDC								
		Lemosa FFA 23 302 GLAE 32 Z, 2						

4.4 Version with 0...10 V output

TF-XX-XXX-XXX-XX-VDC-4G-XXX

Technical data of integrated amplifier:

Measuring range:	0350 °C									
Output signal:	010V 3/4-wi	010V 3/4-wire								
Supply:	1535 VDC, m	ax. ripple <10%								
Max. consumption:	10 mA	10 mA								
Malfunction:	Sensing eleme	nt fracture output > 10V								
	Sensor short ci	rcuit output = 0 V								
EMC emission:	According to El	According to EN 61000-6-3:2001								
EMC stability:	According to El	N 61000-6-2:2001								
	\ ⁴									
)	Connecting socket:								
	′ ³ _+	Lemosa ERA 2S 304 CLL, 4-pole								
	(v)									
	\sim	Ochla churc								
+		Cable plug:								
24VDC		Lemosa FFA 2S 304 CLAL 52 Z, 4-pole								
	l									

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2-pole



Measurement Technology for Extrusion

Melt Temperature Sensor TF

5. Dimensions



D1	D2	D3	D4	D5	А	В	С	SW	L1
M18x1,5	10 -0,05	16 ^{-0,1}	16 ^{-0,5}	16	6 -0,25	14	20	17	0/5/10/
1/2"20UNF	7,8 ^{–0,5}	10,5 -	10,5 -	12,5	5,6 ^{-0,1}	10,8	17	17	15/20/2
2A		0,05	0,5						5

For available shaft length see order specification

6. Fitting and removal

Fitting of the melt temperature sensor

Before fitting the unit, please make sure that the installation dimensions of the sensor drilling are absolutely in accordance with the given specification. Further, it is important that there are no melt residues or dirt in the drilling. To ensure that the sensor can easily be screwed in, we recommend to apply heat-resistant grease to the sensor before fitting it and to check the sensor drilling by means of a test bolt. This bolt (which can be provided by Gneuß) is made of stainless steel, so that it can also be used as blanking plug. The melt temperature sensor should be screwed in by hand until the sealing surfaces (45° surfaces) make contact. The max. permissible tightening torque is 30 Nm for 1/2" threads.

Removal of the melt temperature sensor

In order to avoid damage to the sensor, it may not be removed during the melt being cold. We therefore recommend to remove the sensor while the machine is still warm.



Order specification TF-XX Melt temperature sensors

	Order execting	TE	Π					ТТ	П			П		П	
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	Standard version				ł						_				
	Statical d Vereicht	TF			r		r				_	т			
	Version				Ŀ						-				
	ceramically isolated measuring tip			сх	r						-	٠			
	Measuring tip in steel construction	-	۲	МŶ	t				Ŧ	-	-	Ŧ	_		
	Process connection				Ŀ							٠			
	1/2" UNF 2A		T		г	12 A			т			т			
	M18 x 1,5 A	-	T		t	18 A	Π.		T	_	_	T	_	-	
	Sensor tip length [mm]				Ŀ										
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	5mm		Π		T			05	T			T			
	10mm				Ι			10	Т			T			
	15mm				I			15							
	20mm	-			÷		-	20	÷	-		÷	_		
\vdash	23IIIII Special length	-	-		÷		÷	2.0	÷	-	-	÷			
	Seneor fin material				Ŀ		Ľ				-				
	Stainless steel (standard)				ľ				8			T			
	Staipless steel (marteositic)	-	۲		t		t	Ē	2	-	-	t			
	Alloy C4	-	f		t	_	t	-i	(T	-	-	Ť			
	Stainless steel/GX-Coating		Í		t		Ē	Ē	3			Ť	_		
	Special material		Í		T		T.)				Ť			
	Shaft length [rigid]														
	152 mm, 6" (Standard)									\$ 0					
	203 mm, 8,0*		I		F		E		T	\$1		I			
	254 mm, 10,0*	_	Į.		Į.				1	S 2	_	Į,			_
	318 mm, 12,5*	_			ų,				+	83	-	+			
	300 mm, 14,0"	-	-		÷				÷	34	-	÷	_		
	400 mm, 18,0*	-	÷		÷				÷	88	-	÷	-		
	76 mm. 3.0"	-	٠		÷				÷	58	-	÷			
	Special shaft length	-	Ŧ		t		Π.		T	<u>89</u>	-	T	_		
	Exit junction				Ŀ										
	no cable exit Plug connection	*2	I		г				т		F 0	1			
	Cable exit 100 mm, 4"	*10	Π		T				т		F 1	T			
	Cable exit 1016 mm, 400"	*10			Т				Т		F 2				
	Cable exit 3000 mm, 1181*	*10			I				1		F 3				
	BUZ-head	-7			Į.				4	_	F 4				
<u> </u>	Special length										P 9				
	Sensor element + output signal				ł				٠	_	-				
	Thermocounie Type J (almplex)	- 1	-		÷				÷	-	-	÷	+ + + + + +		
	Thermocouple Type K (aimplex)		۰		÷				÷	-	-	÷	t i k		
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	Thermocouple Type J (duplex)	'3	f		t		t		Ť	_	-	Ť	T2J		_
	Thermocouple Type L (duplex)	*3	Ĩ		T					_		Ť	T 2 L		
	Thermocouple Type K (duplex)	-3			Γ							T	T 2 K		
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	RTD PT100 2-Wire system	-1	Ļ		Į.		Į.		Ŧ			4	PIZ		
\vdash	PTD PT100 3-Wire System	15	۲		÷		÷		÷	-	-	÷	PTA		
	RTD P1100 www.re System	-3	÷		÷		÷		÷	-	-	÷	1.14		
	4-20mA 2-wire EX approved (BUZ)	*8+4	f		t		t		t	-	-	t	EXA		
	4-20mA 2-wire	*6+8	Í		t		t		Ť			Ť	2 M A		
	0-10V	*6+9			T							T	VDC		
					Γ							I			
	Special output signal		Ĩ						T			T	999		
	Electrical Connection														
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	4-pole, goldcontacts	_	1		Ļ.		Ļ.		+		-	÷		4 G	
	2-pole Thermosouple connector	-	÷		÷		÷		÷	_	-	÷	_	2.2	
	3-pole Thermosounia connector	-	÷		÷		÷		÷	-	-	÷		37	
\vdash	4-pole Thermocouple connector	-	f		t		÷		÷	-	-	t		41	
	- point interimental pre-contractor	-	f		t		t	_	Ť	-	-	Ť			
	open cable end		Í		t		t		Ť	_		Ť	_	LO	
	terminal screw	-5	Ť		Ť		Ē		Ť			Ť		SK	
	Special design														
	without											1			000
	Customer specific construction														XXX

- *1
- *2
- *3 •4
- *5 Only in conjunction with "F4 BUZ-head"
- Electrical connection "2G" or "2T" *6 Only with RTD PT 100 3-wine Electrical connection "2G" or "4G" 7 Only in conjunction with rigid shaft Electrical connection "4G" retrical connection "2G" Electrical connection "3K" *9 Electrical connection "4G"

 - *10 Electrical connection *2T", "3T*, *4T" or *LO*



Measurement Technology for Extrusion

Melt Temperature Sensor TF



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