

Temperature Sensor and Build-In System

Application

- remove the sensor without opening the process and without disconnecting
- temperature measurement, especially in pipes with very small diameters
- suitable for pipes DN10... DN100



Examples of use

- process monitoring
- monitoring of CIP-/ SIP-cleaning
- temperature monitoring in hot steam- and pressurepipes

Hygienic Design / Process Connection

- by using Negele build-in system ESP-... will result a measure point which is hygienic and easy to sterilize
- CIP-/ SIP-cleaning up to 140°C
- food compatible materials according to FDA
- short mounting time with orbital-welder
- sensor completely made of stainless steel

Features

- short reaction time, very compact measure point
- available with and without integrated transducer
- electrical connection by M12 plug-in (TFP-168p)
- material stainless steel (1.4435), material certificate 3.1.B for all mounting accessories inclusive

Options / Accessories

- readymade connecting cable for M12 plug-in
- integrated transducer with different ranges, output 4-20mA
- programable integrated transducer mpu-4p for TFP-58p
- adapter for programming mpu-p (only for mpu-4p)
- integr. transducer Profibus PA mpu-10, HART-protocol mpu-H (TFP-58p)
- integrated transducer for EX-zone
- external indicator of stainless steel without power supply doh-VA
- build-in system ESP: pipes acc. to ISO, ask for others if needed
- Pt100-Chip with other classes of accuracy, e.g. 1/3 DIN B, 1/10 DIN B



Important information: Use only Negele weld-in systems, to guarantee a safety function of the measurement point!

Specification

Process connection	immersion sleeve	G3/8" external thread	Sensing resistor	acc. to ITS 90	1xPt100 class A
Insertion length	standard	37, 59, 83, 160mm	Electr. connection	TFP-58p	PG (M16x1,5) or M12 plug-in SS
Materials	head	stainless steel SS (1.4305)		TFP-168p	M12 plug-in SS
	protection tube	SS (1.4404)		TFP-188p	cable (teflon)
	nut	SS (1.4571)	Intergrated transducer mpu-m		standard: 2,5m
	neck tube	SS (1.4301) 10mm dia.	Temperatur ranges	standard	-10...+40, 0...100°C, 0...150°C
Temperatur ranges	ambient	-50...+80°C	Accuracy		<±0,2% of full value
	sensor tip	-50...+250°C	Temperature drift	zero point, slope	<0,02% o. f. s. /K
Operating pressure		40 bar max.	Electr. connection	supply voltage	12...36VDC
Type of protection		IP69K	Output	analog	4-20mA

Order Designation

Temperature sensor	Model	Insertion length [mm]	Transducer	Ranges mpu-m	Electr. connection
TFP-58p	head 55mm dia.	037 / 059 / 083 / 160	without*	-10...+40°C	PG* or M12 plug-in
TFP-168p	M12-connector	037 / 059 / 083 / 160	.m with mpu-m	0...100°C	M12 plug-in*
TFP-188p	fixed cable	037 / 059 / 083 / 160	mpu-4; mpu-4p mpu-4-ex: ...-H-ex mpu-H (HART) mpu-10 (Profibus)	0...150°C	cable*

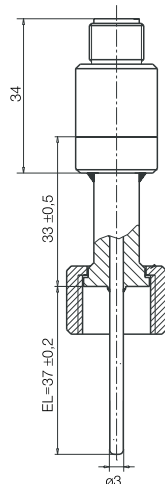
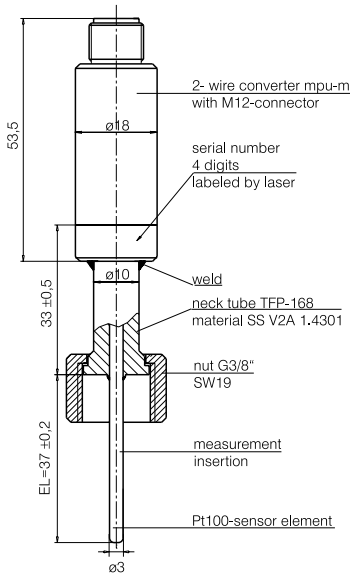
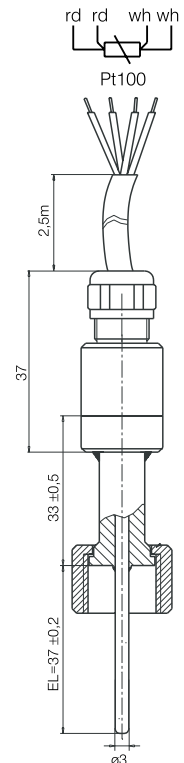
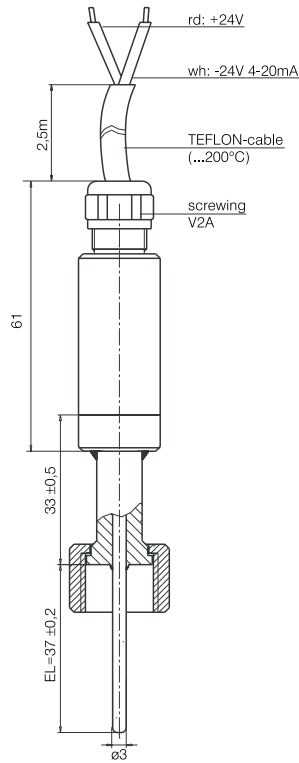
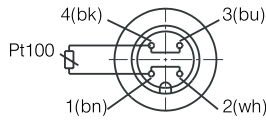
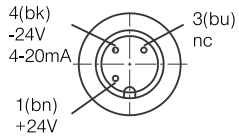
Order example: TFP-58p / 083.m / 0...150°C / M12 *Standard, no declaration needed.



Product Info TFP-58p, -168p, -188p, ESP

Electrical Connection and Dimensioned Drawing

Connecting Plan with M12 plug-in



TFP-168p/037.m with integrated transmitter mpu-m

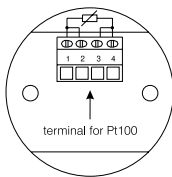
TFP-168p/037

TFP-188p/037.m with integrated transmitter mpu-m

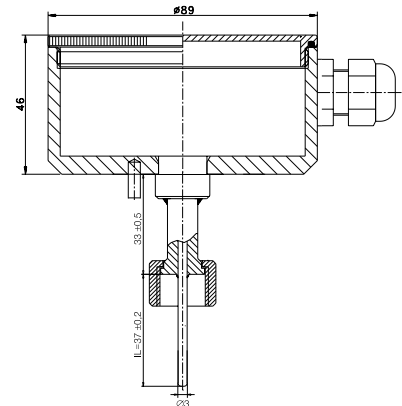
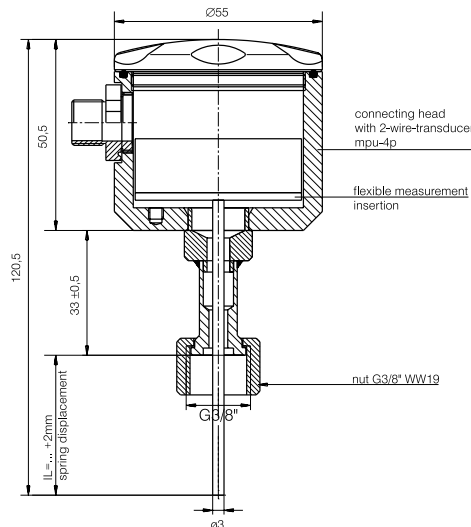
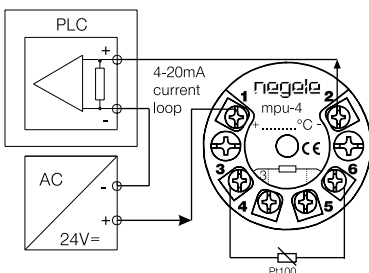
TFP-188p/037

Connecting Plan TFP58p/...

without transmitter



with transmitter mpu-4



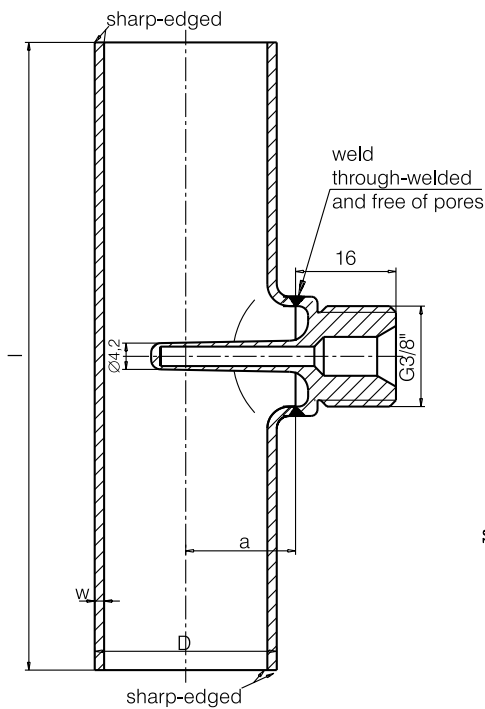
Option integrated LCD-Indicator doh-VA

TFP-58p/037.m/M12 with integrated transmitter mpu-4p

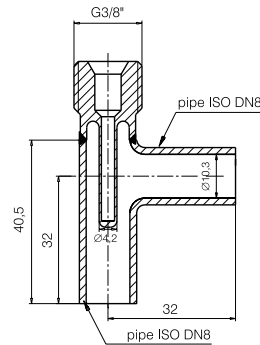


Product Info TFP-58p, -168p, -188p, ESP

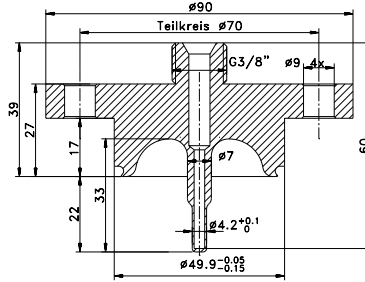
Dimensioned Drawings



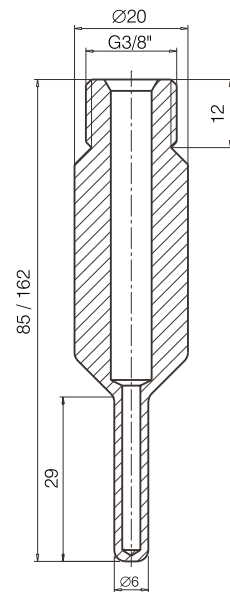
Build-in system ESP-G-DIN2-25



Build-in system ESP-W-ISO-8



Adapter ESP-B-50-059



Weld-in sleeve ESP-E-083-00

Table of Response Time ESP-10 medium temperature 150,0°C

Measurement	Value
T ₅₀	4,4s
T ₉₀	13,1s
medium temperature	149,4°C

Table of Dimensions ESP-G-DIN1-... (DIN 11850 Reihe 1)

Designation	DN	l [mm]	a [mm]	Pipe Dxw
ESP-G-DIN1-10	10	70	7,0	12x1,0
ESP-G-DIN1-15	15	70	10,0	18x1,0
(ESP-G-DIN1-20)*	20	80	12,5	22x1,0
ESP-G-DIN1-25	25	100	15,5	28x1,5
(ESP-G-DIN1-32)*	32	110	18,5	34x1,5
ESP-G-DIN1-40	40	120	21,5	40x1,5
ESP-G-DIN1-50	50	140	28,0	52x1,5
ESP-G-DIN1-65	65	160	38,0	70x1,5
ESP-G-DIN1-80	80	180	46,0	85x2,0
ESP-G-DIN1-100	100	200	55,0	104x2,0
ESP-G-DIN1-125	125	375	67,5	129x2,0
ESP-G-DIN1-150	150	450	80,0	154x2,0

Table of Dimensions ESP-G-ISO-... (Rohr ISO 1127)

Designation	DN	l [mm]	a [mm]	Pipe Dxw
ESP-G-ISO-8	ISO8	64	8,6	13,5x1,6
ESP-G-ISO-10	ISO10	68	10,5	17,2x1,6
ESP-G-ISO-15	ISO15	72	12,5	21,3x1,6
ESP-G-ISO-20	ISO20	110	17,0	26,9x1,6
ESP-G-ISO-25	ISO25	120	18,5	33,7x2,0
ESP-G-ISO-32	ISO32	130	24,0	42,4x2,0
ESP-G-ISO-40	ISO40	130	27,0	48,3x2,0
ESP-G-ISO-50	ISO50	180	33,0	60,3x2,0
ESP-G-ISO-65	ISO65	220	41,0	76,1x2,0

* This articles are not standard.

Table of Dimensions ESP-G-DIN2-... (DIN 11850 Reihe 2)

Designation	DN	l [mm]	a [mm]	Pipe Dxw
ESP-G-DIN2-10	10	70	8,5	13x1,5
ESP-G-DIN2-15	15	70	11,5	19x1,5
ESP-G-DIN2-25	25	100	15,0	29x1,5
ESP-G-DIN2-40	40	120	22,0	41x1,5
ESP-G-DIN2-50	50	140	29,0	53x1,5
ESP-G-DIN2-65	65	160	38,0	70x2,0
ESP-G-DIN2-80	80	180	46,0	85x2,0
ESP-G-DIN2-100	100	200	55,0	104x2,0

Table of Dimensions ESP-G-ASME-... (ASME BPE2002)

Designation	DN	l [mm]	a [mm]	Pipe Dxw
ESP-G-ASME-0,5"	0,5"	95,0	8,5	12,7x1,65
ESP-G-ASME-0,75"	0,75"	102,0	11,5	19,05x1,65
ESP-G-ASME-1"	1"	108,0	15,5	25,4x1,65
ESP-G-ASME-1,5"	1,5"	120,5	21,5	38,1x1,65
ESP-G-ASME-2"	2"	146,0	28,0	50,8x1,65
ESP-G-ASME-2,5"	2,5"	160,0	34,5	63,5x1,65
ESP-G-ASME-3"	3"	170,0	40,5	76,2x1,65
ESP-G-ASME-4"	4"	210,0	53,0	101,6x2,11



Product Info TFP-58p, -168p, -188p, ESP

Specification

Style pipe	standard	DIN 11850 Reihe 2	Nominal diameter	standard	DN10, 15, 25, 40, 50,
	optional	ISO, ASME		DIN 11850 Reihe 2	65, 80,
Material	pipes and sleeves	DIN 11850 Reihe 1	Tolerances	DN10...DN40	DN:±0,3; L:±1,0mm
		stainless steel SS (1.4435, 316L) with 3.1.B		DN50...	DN:±0,5; L:±1,0mm
Surfaces pipe and turning workpiece	in- and outside	Ra≤0,8µm, electro-polished	Sensor connection	thread	G3/8"
	option	Ra≤0,6µm; Ra≤0,4µm	Sealing principle		immersing sleeve
			Operating pressure		40bar max.

Order Designation

Model	Type	Pipes	Diameter	Surface	suitable for TFP with insertion length (EL) ...
Build-in system straight line	ESP-G-	DIN1 (DIN11850 Reihe1)	10...100	Ra≤0,8µm*	...37mm, ≥ DN80: ...83mm
		DIN2 (DIN11850 Reihe2)	10...100	Ra≤0,6µm	...37mm, ≥ DN80: ...83mm
		ISO (ISO-pipe)	8...50	Ra≤0,4µm	...37mm
		ASME (BPE 2002)	0,5...4"		...37mm, ≥ DN80 / 4": ...83mm
Build-in system angled	ESP-W-	DIN1 (DIN11850 Reihe1)	10...15		...37mm
		DIN2 (DIN11850 Reihe2)	10...15		...37mm
		ISO (ISO-Rohr)	8		...37mm
BioControl	ESP-B-		25, 50, 65		59mm
			Length [mm]		
Weld-in sleeve	ESP-E-083-00		85		...83mm
	ESP-E-160-00		162		...160mm

Order example: **ESP - G - DIN2 - 10 / 0,6**

*Standard, no declaration needed.

Accessories

For specification: look at separate product information



Simulator hsg-3



doh-VA
view from top



Calibration device htr



Precision-temperature-device htm-p