

Temperature sensors

Temperature is an important measurand especially for exact determination of viscosity and density of the fluid, and therefore the reproducibility of measuring results. Hydrotechnik offers several models for the fast and reliable capture of the medium temperature:

- TE 110
- TE 118
- TP 180

Connector version

The second digit of the model name indicates the connector type:

0	6 pole device connector, M16 x 0.75
1	5 pole device connector, M16 x 0.75
2	5 pole device connector, M12 x 1
3	4 pole device connector, M12 x 1
4	4 pole device connector, EN 175301-803 type A, Pg9
5	4 pole device connector, EN 175301-803 type C, Pg7
8	other connector versions
9	open cable ends

HySense TE 110

Screw-in sensor for temperature measurement



This sensor is qualified by some specific characteristics. It can be installed in any orientation and achieves highly accurate values, as it is measuring in the medium directly. It can be installed and dismantled easily by screwing it into a 1620 series p/T-test point.

Qualities	
Screw series	1620
Measuring principle	Pt 100 (platinum measuring resistor acc. to DIN 43760, class B)
Measuring range	-50 ... +200 °C
Output signal	0 ... 20 mA / 4 ... 20 mA
Signal type	three wires (0 ... 20 mA) / two wires (4 ... 20 mA)
Supply voltage U_b	10 ... 30 VDC
Overvoltage protection	36 VDC
Error limit	< $\pm 1\%$ of final value
Temperature error	< $\pm 0.3\%$ / 10 °C
Pressure load capacity	max. 630 bar / 63 MPa
Environmental temperature	-20 ... +80 °C (related to electronics)
Storage temperature	-20 ... +85 °C
Electrical measuring connector	5 pole device connector, M16 x 0.75
Mechanical measuring connector	see drawing
Protection type (EN 60529 / IEC 529)	IP 67
Material	1.4104
Suitable measuring cable	MK 01

Pin assignment	0 ... 20 mA	4 ... 20 mA
		Pin 1 = signal +
Pin 2 = signal - / GND		Pin 2 = free
Pin 3 = + U_b		Pin 3 = + U_b / signal +
Pin 4 = free		Pin 4 = free
Pin 5 = free		Pin 5 = free

Output signal	Weight	Order number
	g	
0 ... 20 mA	230	3973-04-01.00S
4 ... 20 mA	230	3969-04-01.00S
4 ... 20 mA	200	3354-10-02.00S

Dimensions see page 57

HySense TE 118

Screw-in temperature sensor

This sensor is qualified by some specific characteristics. It can be installed in any orientation and achieves highly accurate values, as it is measuring within the medium. It has IP 69 and can be installed and dismantled easily by screwing it into a 1620 series p/T-test point.



Qualities	
Screw series	1620
Measuring principle	Pt 100 (platinum measuring resistor in acc. to DIN 43760, class B)
Measuring range	-50 ... +200 °C
Output signal	4 ... 20 mA
Signal type	two wires
Supply voltage U_b	10 ... 30 VDC
Oversvoltage protection	36 VDC
Error limit	< $\pm 1\%$ of final value
Temperature error	< $\pm 0.3\%$ / 10 °C
Pressure load capacity	max. 630 bar / 63 MPa
Environmental temperature	-20 ... +80 °C (related to electronics)
Storage temperature	-20 ... +85 °C
Electrical measuring connector	device connector AMP 3 pole, acc. to DIN 72585
Mechanical measuring connector	see drawing
Protection type (EN 60529 / IEC 529)	IP 69
Material	1.4104
Suitable measuring cable	customer-specific

Pin assignment	4 ... 20 mA
	Pin 1 = - U_b / signal -
	Pin 2 = free
	Pin 3 = + U_b / signal +

Output signal	Weight	Order number
	g	
4 ... 20 mA	200	3969-04-05.00

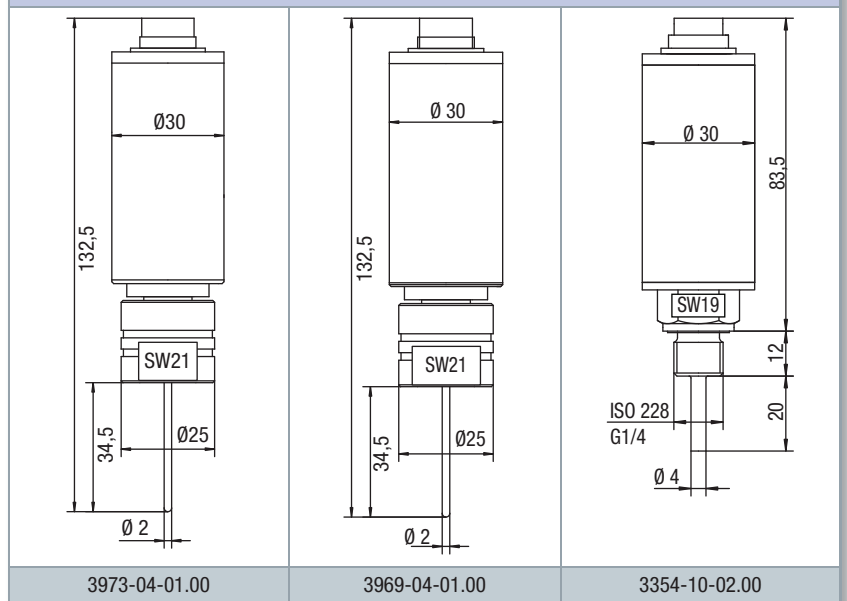
Dimensions see page 57



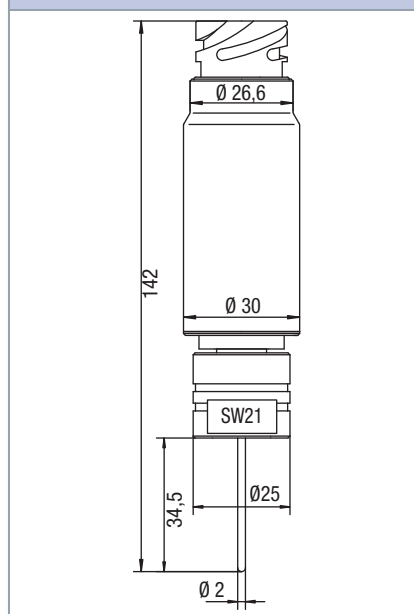
HySense TE 110 / TE 118

Dimensions

TE 110



TE 118



HySense TP 180

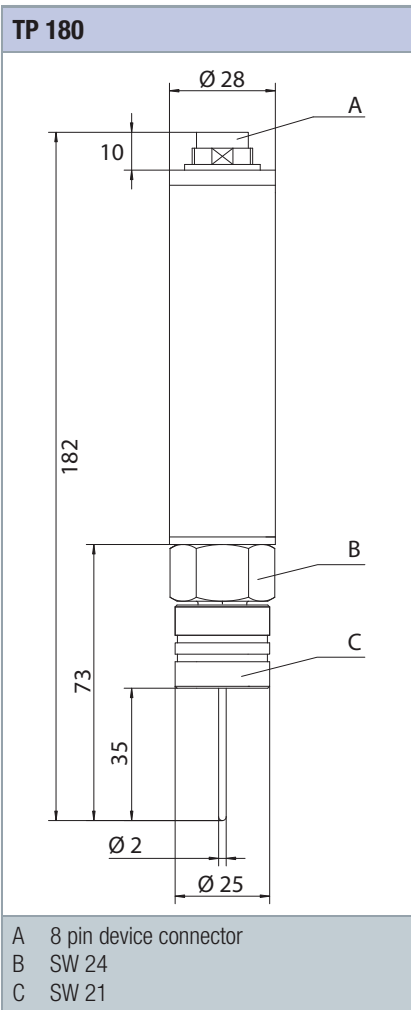
Dual sensor for temperature and pressure

This sensor is able to measure pressure and temperature simultaneously at a single test point. It can be installed in any orientation and achieves highly accurate values, as it is measuring within the medium. It can be installed and dismantled easily by screwing it into a 1620 series p/T-test point.



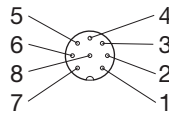
TP

Qualities	
Screw series	1620
Output signal	4 ... 20 mA
Signal type	two wires
Supply voltage U_b	10 ... 30 VDC
Overvoltage protection	36 VDC
Environmental temperature	-20 ... +80 °C
Storage temperature	-20 ... +85 °C
Electrical measuring connector	8 pin device connector
Mechanical measuring connector	see drawing
Load resistor	0 ... 1 kOhm
Protection type (EN 60529 / IEC 529)	IP 40
Materials	1.4435, 1.4571
Material sealings	NBR
Weight	est. 255 g
Qualities of the temperature sensor	
Measuring principle	Pt 100 (platinum measuring resistor acc. to DIN 43760, class B)
Measuring range	-50 ... +200 °C
Error limit	< ± 1 % of final value
Temperature error	< ± 0.3 % / 10 °C
Qualities of the pressure sensor	
Measuring principle	piezoresistive (poly-cristalline silicon thin film structure on a high-grade steel membrane)
Measuring range	0 ... 60 / 600 bar
Over load range	1.5-fold nominal pressure
Non-linearity (incl. hysteresis)	± 0.5 % of final value
Reproducibility	< ± 0.15 % of final value
Compensated temperature range	-10 ... +80 °C
Temperature coefficient	
... zero point	< 0.01 % / K of final value
... measuring span	< 0.01 % / K of final value
Membrane resonance frequency	> 30 kHz
Number of load cycles	> 10 x 10 ⁶



Pin assignment

4 ... 20 mA



Pin 1 = + Ub / signal + (pressure)
Pin 2 = - Ub / signal - (pressure)
Pin 3 = free
Pin 4 = + Ub / signal + (temperature)
Pin 5 = - Ub / signal - (temperature)
Pin 6 = free
Pin 7 = free
Pin 8 = shield

Measuring range pressure		Measuring range temperature	Order data
bar	MPa	°C	
0 ... 60	0 ... 6	-50 ... +200	3763-04-34.00
0 ... 600	0 ... 60	-50 ... +200	3763-03-34.00