

Series 21Y

Piezoresistive pressure transmitters in a compact design

Features

- Compensated over the entire temperature range
- Compact design for space-critical applications
- Robust stainless steel housing
- High long term stability

Technology

- Insulated and encapsulated piezoresistive pressure sensor
- Fully welded design with no internal seals
- Direct analog signal path with high bandwidth

Typical applications

- Industrial applications
- Heat pumps
- Air-conditioning technology
- Food industry

Accuracy

± 0,5 %FS

Total error band

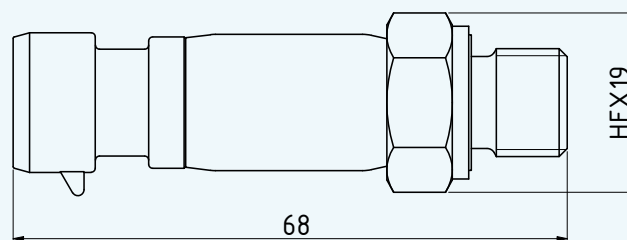
1,5 %FS @ -10...80 °C

Pressure ranges

0...2,5 to 0...1000 bar



Series 21Y



Series 21Y – Specifications

Standard pressure ranges

Relative pressure PR	Relative pressure PR	Proof pressure
0...2,5	-1...2,5	9
0...4	-1...4	12
0...6	-1...6	18
0...10	-1...10	30
0...16	-1...16	48
0...25	-1...25	75
bar rel.		bar
Reference pressure at atmospheric pressure		Based on reference pressure

Absolute pressure PAA	Absolute pressure PA	Proof pressure
0...2,5		9
0...4	0...4	12
0...6	0...6	18
0...10	0...10	30
0...16	0...16	48
0...25	0...25	75
0...40	0...40	120
0...60	0...60	180
0...100	0...100	300
0...160	0...160	
0...250	0...250	500
0...400	0...400	800
0...600	0...600	1200
0...1000	0...1000	
bar abs.	bar	bar
Reference pressure at 0 bar abs. (vacuum)	Reference pressure at 1 bar abs.	Based on reference pressure

Performance

Pressure

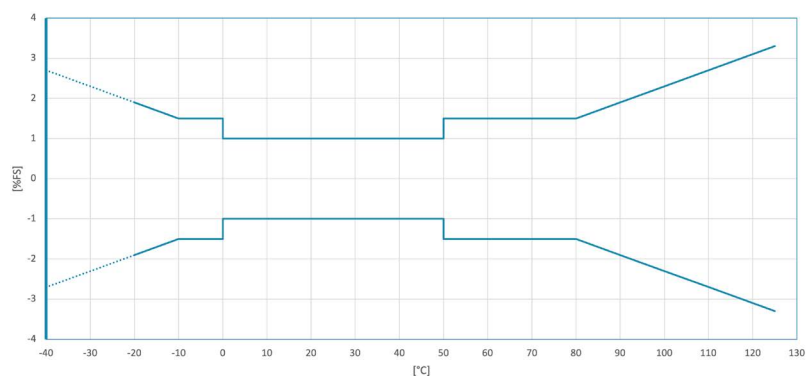
Accuracy	$\leq \pm 0,5$ %FS	Non-linearity (best fitted straight line BFSL), pressure hysteresis, non-repeatability
Total error band 0...50 °C	$\leq \pm 1,0$ %FS	Maximum deviation within the compensated pressure and temperature range
Total error band -10...80 °C	$\leq \pm 1,5$ %FS	
Compensated temperature range	-10...80 °C	
Long term stability	$\leq \pm 0,3$ %FS	Per year under reference conditions
Position dependency	$\leq \pm 1,5$ mbar	Calibrated in vertical installation position with pressure connection facing downwards

Total error band

This graph shows the maximum deviation over the entire medium temperature range (-20...125 °C, optional: -40...125 °C) of the 21Y series.

Within the compensated pressure and temperature range, the maximum total error has a constant value of $\pm 1,0$ %FS (0...50 °C) or $\pm 1,5$ %FS (-10...80 °C).

Experience shows that outside the compensated temperature range, the total error increases linearly by 0,04 %FS/K.



Series 21Y – Specifications

Electrical data

Connectivity	2-wire	3-wire	
	Analog interface	4...20 mA	0...10 V
Signal output limitation	3,2...22,3 mA	-1,2...11,2 V	0,1...4,9 V
Voltage supply	8...32 VDC	13...32 VDC	8...32 VDC
Power consumption		< 5 mA	< 4 mA

Start-up time (power supply ON)	< 5 ms (0...99 %)
Overvoltage and reverse polarity protection	± 32 VDC
GND-CASE insulation	> 10 MΩ @ 300 VDC

Analog interface

Load resistance	< (U - 8 V) / 25 mA	2-wire
	> 5 kΩ	3-wire
Limiting frequency	1 kHz	

Electrical connection

Plug	Round plug	M12 x 1	DIN EN 61076-2-101, A-coded, 4-pole
	Valve connector	Form Ci (9,4mm)	DIN EN 175301-803 Ci (formerly mpm-393)
	Packard plug	Metri Pack Series 150 P2S, 3-pin	
	Valve connector	Form A (18mm)	DIN EN 175301-803-A (formerly DIN 43650)
Cable	ø 3.3 mm, PUR sheath	3-pin / 2-pin	

Electromagnetic compatibility

CE conformity as per 2014/30/EU (EMC)	EN IEC 61326-1 / EN IEC 61326-2-3 / EN IEC 61000-6-1 / EN IEC 61000-6-2 / EN IEC 61000-6-3 / EN IEC 61000-6-4
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Mechanical data

Materials in contact with media

Pressure connection	Stainless steel AISI 316L
Pressure transducer separating diaphragm	Stainless steel AISI 316L
Pressure transducer seal (internal)	None
Pressure connection seal (external)	FKM (75 Shore, -20...200 °C)

Other materials

Pressure transducer oil filling	Silicone oil	Others on request
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Further details

Pressure connection	G1/4 male	See Dimensions and options
	G1/8 male	
	7/16-20UNF female	
	7/16-20UNF male	
	1/4-18NPT	
Diameter × length	ø 16,6 mm × approx. 60 mm	
Weight (excluding cable)	approx. 50 g	

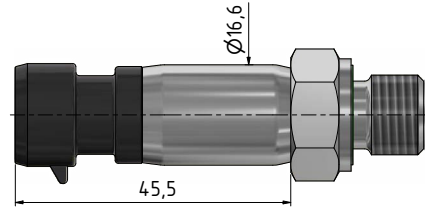
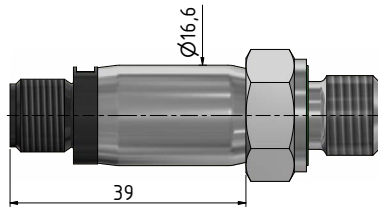
Series 21Y – Specifications

Environmental conditions

Medium temperature range	-20...125 °C	Optional: -40...125 °C	Icing not permitted
Ambient temperature range	-20...85 °C	Optional: -40...100 °C	
Storage temperature range	-20...85 °C		
Protection	IP67	Round plug, M12x1	For relative pressure IP54
	IP67	Packard plug	For relative pressure IP54
	IP65	Valve connector, Form Ci (9,4mm)	For relative pressure, use a cable with integrated capillary
	IP65	Valve connector, Form A (18 mm)	For relative pressure, use a cable with integrated capillary
	IP67	Cable	For relative pressure IP54
Notes	• Degrees of protection are only valid with the corresponding mating plug in the connected state		
Vibration resistance	10 g, 10...2000 Hz, ± 10 mm	IEC 60068-2-6	
Shock resistance	50 g, 11 ms	IEC 60068-2-27	
Load cycles @ RT (20...25 °C)	> 10 mn. pressure cycles	0...100 %FS	

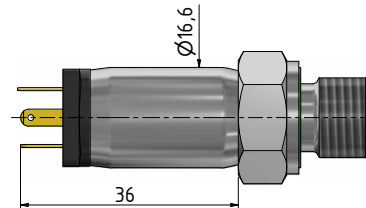
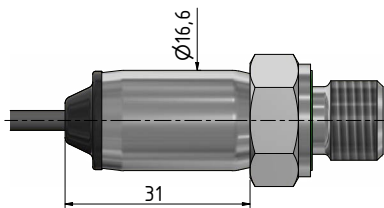
Series 21Y – Dimensions and options

Electrical connections



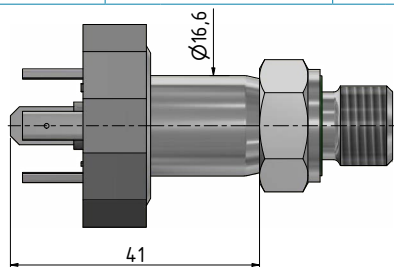
Round plug	2-wire	3-wire
M12 x 1	4...20 mA	0...max. 10 V
	1 +Vs	1 +Vs
	2 n.c.	2 n.c.
	3 OUT/GND	3 GND
	4 n.c.	4 +OUT

Packard plug	2-wire	3-wire
	4...20 mA	0...max. 10 V
	A n.c.	A GND
	B +Vs	B +Vs
	C OUT/GND	C +OUT



Cable outlet	2-wire	3-wire
Cable ø 3,3	4...20 mA	0...max. 10 V
	WH OUT/GND	WH +OUT
	GN n.c.	GN GND
	BN +Vs	BN +Vs

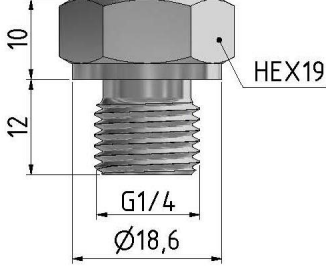
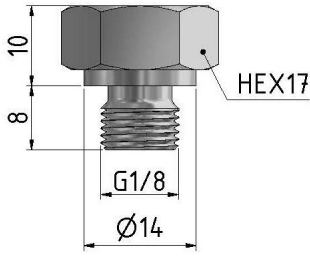
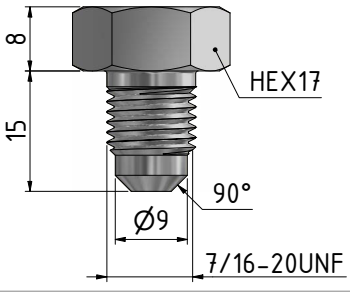
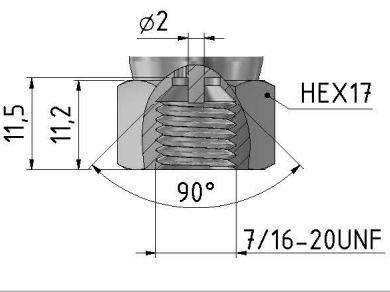
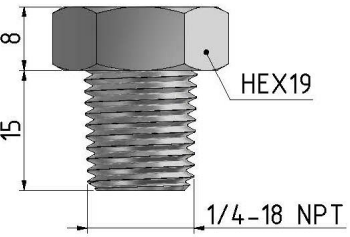
Valve connector	2-wire	3-wire
Form Ci (9,4mm)	4...20 mA	0...max. 10 V
	1 OUT/GND	1 GND
	2 n.c.	2 +OUT
	3 +Vs	3 +Vs
	4 n.c.	4 n.c.



Valve connector	2-wire	3-wire
Form A (18mm)	4...20 mA	0...max. 10 V
	1 OUT/GND	1 GND
	2 n.c.	2 +OUT
	3 +Vs	3 +Vs
	↓ n.c.	↓ n.c.

Series 21Y – Dimensions and options

Available pressure connections

<p>G1/4 male</p>  <p>DIN EN ISO 1179-2</p>	<p>G1/8 male</p>  <p>DIN EN ISO 1179-2</p>
<p>7/16-20UNF male</p>  <p>ANSI/ASME B1.1</p>	<p>7/16-20UNF female</p>  <p>ANSI/ASME B1.1</p>
<p>1/4-18NPT</p>  <p>ASME/ANSI B 1.20.1</p>	

Other pressure connections available on request.

Other customer-specific options

- Other compensated pressure ranges
- Other electrical connections
- Seal rings made of other materials
- Other oil filling types for pressure transducers
- Modifications to customer-specific applications

Series 21Y – Variants and accessories

Application-specific variants

Air-conditioning technology / HVAC



21Y with solder tube connection available for large-volume projects

Examples of similar products

- Series 23SY: Piezoresistive pressure transmitters for increased requirements and pressure ranges from 0,1 bar
- Series 25SY: Front-flush piezoresistive pressure transmitters for increased requirements
- OEM series: OEM Pressure transmitters (e.g. Series 9LY or 20Y with thread) for installation in own systems

Scope of delivery

Mating plug to valve connector form Ci



Mating plug to valve connector form A



Accessories

Mating plug to round plug M12x1



- Angled socket, cable 2 m
PN 602015.0018
- Female connector, cable 2 m
PN 602015.0017
- Female connector, cable 5 m
PN 602015.0035