

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

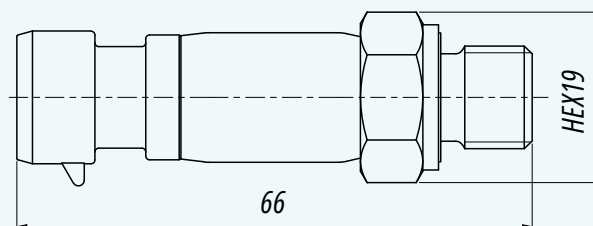
1,5 %FS @ -10...80 °C

Pressure ranges

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



Series 21Y



Series 21Y – Specifications

Standard pressure ranges

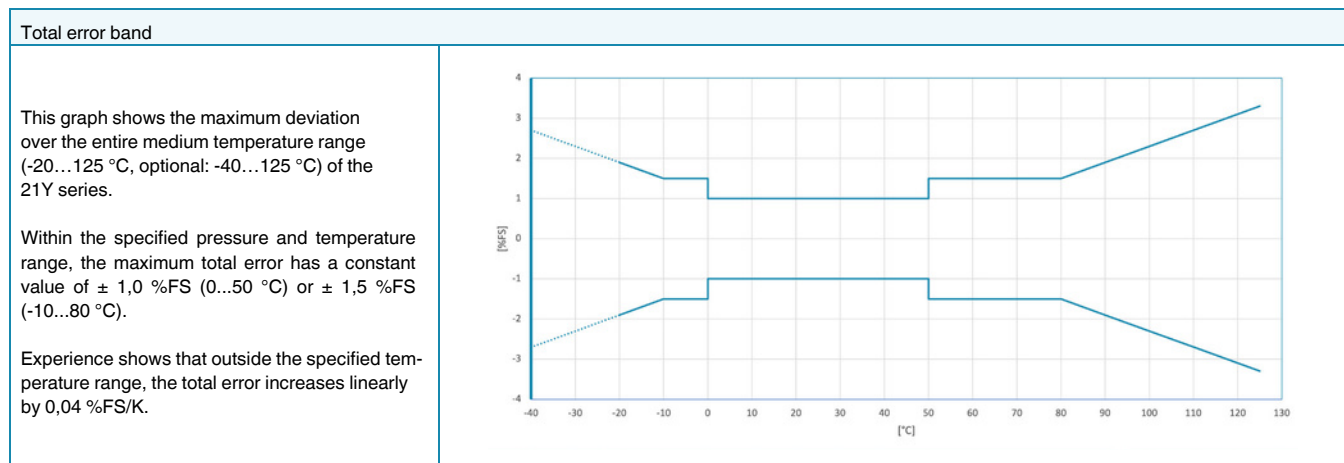
Relative pressure PR	Relative pressure PR	Proof pressure
0...2,5	-1...2,5	9
0...4	-1...4	12
0...6	-1...6	18
0...10	-1...10	30
0...16	-1...16	48
0...25	-1...25	75
bar rel.		bar
Reference pressure at atmospheric pressure		Based on reference pressure

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 specified 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



Series 21Y – Specifications

Electrical data

Connectivity	2-wire	3-wire	
Analog interface	4...20 mA	0...10 V	0,5...4,5 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	M12x1	DIN EN 61076-2-101, A-coded, 4-pin
	mPm-393	DIN EN 175301-803 CI
	Packard plug	Compatible with Metri Pack Series 150 P2S, 3-pin
	GSP	EN 175301-803-A (DIN 43650)
Cable	ø 3.3 mm, PUR sheath	3-pin / 2-pin

Electromagnetic compatibility

CE conformity as per 2014/30/EU (EMC)	EN 61326-1 / EN 61326-2-3 / EN 61000-6-1 / EN 61000-6-2 / EN 61000-6-3 / EN 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 FKM (75 Shore, -20...
Pressure connection seal (external)	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	

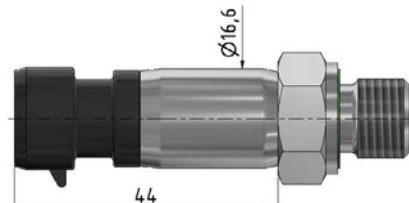
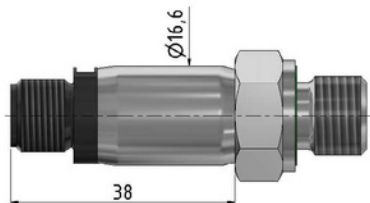
Series 21Y – Specifications

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 IP67	M12x1	For relative pressure IP54 For relative
		Packard plug	pressure IP54
	IP65	mPm-393	For relative pressure, use a cable with inte- grated capillary
	IP65	GSP EN 175301-803 A	For relative pressure, use a cable with inte- grated capillary
	IP54	Cable	
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	For pressures > 600 bar on request

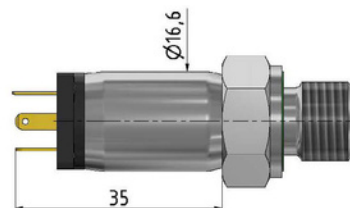
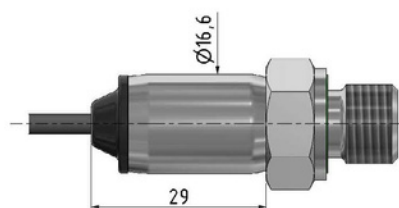
Series 21Y – Dimensions and options

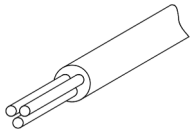
Electrical connections



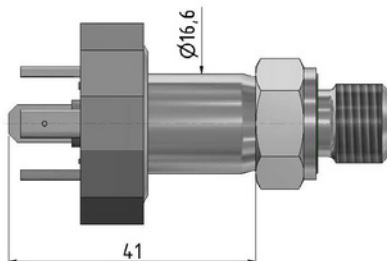
M12	2-wire	3-wire
M12 × 1	4...20 mA	0...max. 10 V
	1 +Vs	1 +Vs
	2 n.c.	2 n.c.
	3 OUT/GND	3 GND
	4 n.c.	4 +OUT

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

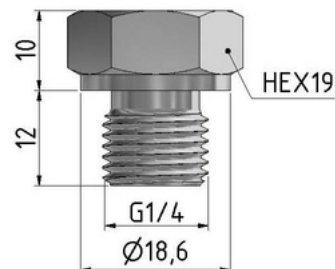
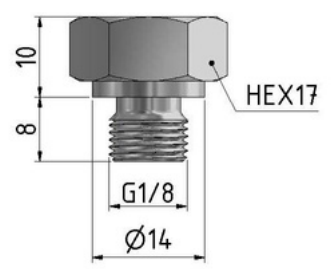
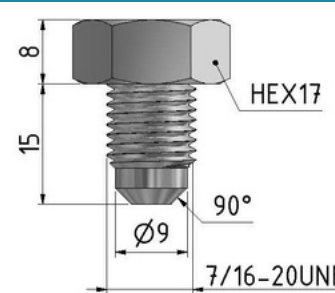
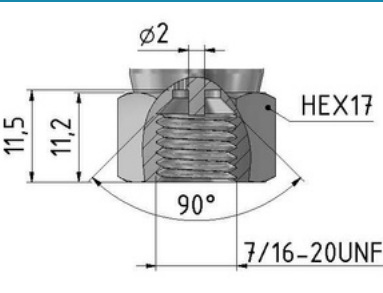
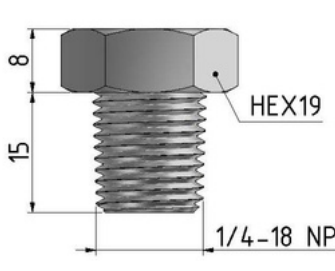
mPm-393	2-wire	3-wire
□ 9,4	4...20 mA	0...max. 10 V
	1 OUT/GND	1 GND
	2 n.c.	2 +OUT
	3 +Vs	3 +Vs
	4 n.c.	4 n.c.



GSP EN 175301-803-A	2-wire	3-wire
□ 18	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

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

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: e.g. special oils for oxygen applications
- Modifications to customer-specific applications

Series 21Y – Variants and accessories

Application-specific variants

Air-conditioning technology / HVAC	Oxygen
	
21Y with solder tube connection available for large-volume projects	21Y for oxygen application: • maximum nominal pressure 400 bar • maximum temperature 60 °C

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

Female connector to mPm-393	Female connector to GSP EN 175301-803 A
	

Accessories

Mating plug to M12

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