Series 21Zio

Piezoresistive pressure transmitter in a compact design with IO-Link interface

Features

- IO-Link interface compliant with IEC 61131-9
- Various process data formats
- Can be used as a pressure switch
- Easy connection to the bus system via IO-Link master
- High long-term stability

Technology

- Insulated and encapsulated piezoresistive pressure sensor
- Fully welded design with no internal seals
- High-quality pressure transducer and tried-and-tested mathematical compensation

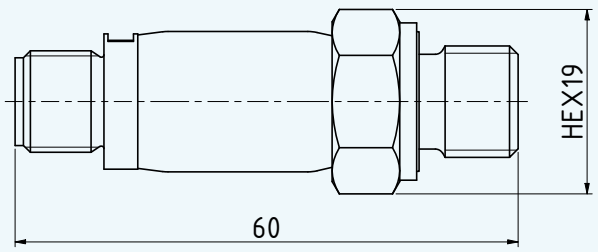
Typical applications

- Automation technology
- Hydraulics and pneumatics
- Food industry
- Industrial applications

Accuracy
± 0,5 %FS
Total error band
±1,5 %FS @ -10…80 °C
Pressure ranges
0…4 bar to 0…1000 bar

IO-Link CE

Series 21Zio



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Series 21Zio – Specifications

Standard pressure ranges

Relative pressure PR	Relative pressure PR	Proof pressure
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…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 @ RT (20…25 °C)	≤ ± 0,5 %FS	Non-linearity (best fitted straight line, BFSL), pressure hysteresis, non-repeatability, zero point deviation and amplification deviation
Total error band (-10…80 °C)	≤ ± 1,5 %FS	Maximum deviation within the specified pressure and temperature range
Compensated temperature range	-10…80 °C	Other temperature ranges between -40…125 °C are possible as an option
Long-term stability	± 0,2 %FS	Per year under reference conditions, yearly recalibration recommended
Position dependency	≤ ± 1.5 mbar	Calibrated in vertical installation position with pressure connection facing downwards
Resolution	0,01 %FS	
Signal stability	0,08 %FS	Noise-free
Internal measurement rate	2500 Hz	The maximum output rate is 1600 Hz (600 µs cycle time)
Pressure range reserve	± 10%	Outside the pressure range reserve, +Inf / -Inf is displayed If there is an error in the device, NaN is displayed
Vacuum resistance	For operating pressures ≤ 0,1 bar abs., a vacuum-optimised version is recommended	

Temperature

Accuracy (-10…80 °C)	≤ ± 5 °C	The temperature is measured on the pressure sensor (silicon chip) that sits behind the metallic separating diaphragm The data apply within the compensated temperature range
Resolution	≤ 0,01 °C	
Internal measurement rate	≥ 10 Hz	

Series 21Zio – Specifications

Electrical data

Connectivity	Digital
Digital interface	IO-Link or 1x switching signal
Voltage supply	8…32 VDC
Power consumption (without switching current)	< 15 mA
Voltage insulation	± 32 VDC

Start-up time (power supply ON)	< 300 ms
Overvoltage and reverse polarity protection	± 32 VDC
GND case insulation	> 10 MΩ @ 300 VDC

Switch output for use as pressure switch

Type	NPN, PNP, push-pull
Output current	Limited to < 200 mA
Output voltage	@ 200 mA load current High level: > (voltage supply -1,75 V) Low level: < 1,75 V
Switching functions	Hysteresis function Window function
Switch delay	Configurable switch-on and switch-off delay

Digital interfaces

Type	IO-Link V1.1	
Communication protocols	Smart Sensor Profile SSP 3.2	Pressure values and switching signal
	Extended process data	With pressure and temperature values and switching signal
	Switching signal channel	Switching signal available on the plug even without IO-Link
	Bootloader (FWUP)	For function upgrades at a later stage
	Identification & diagnosis (I&D)	
	Process data variable	
Identification	21Zio	Plain text identification
Pressure unit	Pa	
Unit of temperature	°C	
Data type	Fixed point/floating point	Switchable
Baud rates	COM3: 230,4 kBaud	
Cycle time	≥ 600 µs	Configurable
Cable length	≤ 20 m	

Electrical connection

Standard plug	M12	DIN EN 61076-2-101, A-coded, 5-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

Series 21Zio – Specifications

Mechanical data

Wetted parts

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

Further details

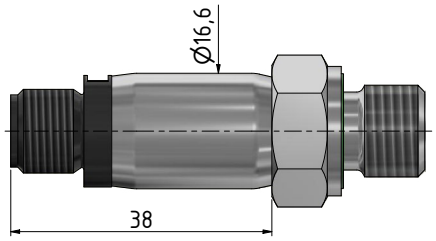
Pressure connection	G1/4 male	See Dimensions and options
	G1/8 male	
	1/4-18NPT	
Diameter × length	approx. ø 17 x 62 mm	
Weight	approx. ≈ 50 g	

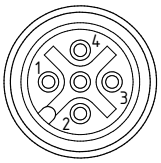
Environmental conditions

Medium temperature range	-40…125 °C		Icing not permitted
Ambient temperature range	-20…85 °C		
Storage temperature range	-20…85 °C		
Protection	IP67	M12	For relative pressure IP54
Notes	• Degrees of protection are only valid with the corresponding mating plug in the connected state • The design implementation of the ventilation for relative pressure versions can be found in the respective technical drawing		
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 m. pressure cycles	0…100 %FS	For pressures > 600 bar on request

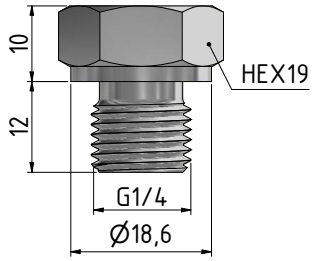
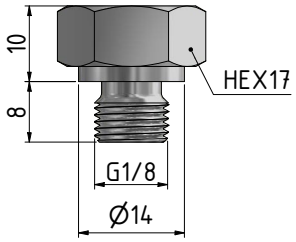
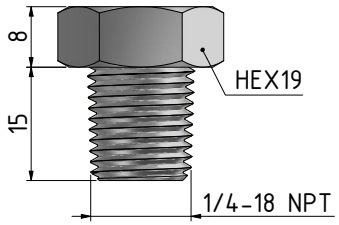
Series 21Zio – Dimensions and options

Electrical connections



M12		
M12 × 1	IO-Link	
	1	L+
	2	n.c.
	3	L-
	4	C/Q

Available pressure connections

G1/4	G1/8	1/4-18NPT
		
DIN EN ISO 1179-2	DIN EN ISO 1179-2	ASME/ANSI B 1.20.1

Other pressure connections available on request.

Other customer-specific options

- Other compensated pressure ranges
- Other compensated temperature ranges within -40...125 °C
- Preconfigured transmitter (e.g. for direct use as pressure switch)
- O-Rings made of other materials
- Other oil filling types for pressure transducers, e.g. special oils for oxygen applications
- Integration of application-specific calculations
- Modifications to customer-specific applications

Examples of related products

- Series 23SZio: Piezoresistive pressure transmitters for elevated requirements with IO-Link interface and pressure ranges from 0,1 bar
- Series 21Y: Piezoresistive pressure transmitters in a compact design with analog interface
- Series 23SY: Piezoresistive pressure transmitters for elevated requirements with analog interface and pressure ranges from 0,1 bar

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Series 21Zio – Accessories

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