Series 35X

Piezoresistive pressure transmitters with front-flush metal diaphragm and excellent accuracy

Features

- RS485 interface can be combined with analog interface
- Analog interface rangeable by RS485 interface (turn-down)
- Modbus RTU protocol for process values and configuration
- Excellent long-term stability

Technology

- Piezoresistive pressure sensor chip, insulated encapsulated
- Front-flush, seamless design with no internal seals
- High-quality pressure transducers and tried-and-tested mathematical compensation

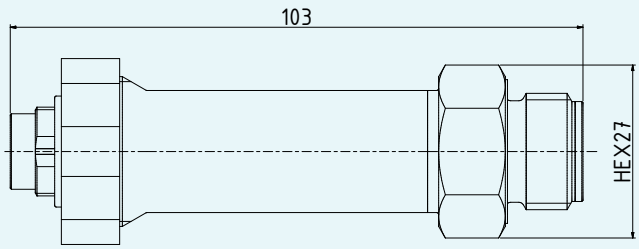
Typical applications

- Dosing systems
- Mixing systems
- Viscous media
- Chemical industry
- Industrial applications

Accuracy
± 0,05 %FS
Total Error Band
± 0,1 %FS @ -10…80 °C
Pressure ranges
0…0,3 to 0…1000 bar

Modbus RTU

Series 35X



Edition 07/2025
Subject to alterations
info@keller-pressure.com

Series 35X – Specifications

Standard pressure ranges

Relative pressure PR		Proof pressure
0…0,3	-0,3…0,3	3
0…1	-1…1	
0…3	-1…3	9
0…6	-1…6	18
0…10	-1…10	30
0…16	-1…16	48
0…30	-1…30	90
bar rel.		bar
Reference pressure at ambient pressure		Based on reference pressure

Absolute pressure PAA	Absolute pressure PA	Proof pressure
0,8…1,2		3
0…1	0…1	
0…3	0…3	9
0…6	0…6	18
0…10	0…10	30
0…16	0…16	48
0…30	0…30	90
0…60	0…60	180
0…100	0…100	300
0…300	0…300	600
0…700	0…700	1100
0…1000	0…1000	1100
bar abs.	bar	bar
Reference pressure at 0 bar abs. (vacuum)	Reference pressure at 1 bar abs.	Based on reference pressure

Performance

Pressure

Digital nonlinearity	≤ ± 0,02 %FS	Best fitted straight line (BFSL)
Accuracy @ RT (20…25 °C)	≤ ± 0,05 %FS	Nonlinearity (best fitted straight line BFSL), pressure hysteresis, non-repeatability, zero point deviation and amplification deviation
Total Error Band (-10…80 °C)	≤ ± 0,1 %FS	Max. deviation within the compensated pressure and temperature range Experience shows that, outside the compensated temperature range, the total error band in the ambient temperature range is expanded by 0,1 %FS
Compensated temperature ranges	-10…80 °C	
Analog interface additional deviation	≤ ± 0,05 %FS	With reference to accuracy @ RT and the total error band
Long-term stability	≤ ± 0,1 %FS	Per year under reference conditions, yearly recalibration recommended
Position dependency	≤ ± 2 mbar	Calibrated in vertical installation position with pressure connection facing downwards
Resolution	0,0005 %FS	Digital
Signal stability	0,0025 %FS	Digital noise-free
Internal measurement rate	≥ 1800 Hz	For version «3-wire + digital (0…10 V. 0…5 V)» > 6000 Hz
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	
Note	For pressure ranges < 1 bar, all data apply with reference to a full-range signal (FS) of 1 bar	

Temperature

Accuracy	≤ ± 2 °C	The temperature is measured on the pressure sensor chip that sits behind the metallic separating diaphragm The data applies within the compensated temperature range
Resolution	≤ 0,01 °C	
Internal measurement rate	> 10 Hz	

Series 35X – Specifications

Electrical data

Connectivity	digital	2-wire + digital	3-wire + digital		
Analog interface		4…20 mA	0…10 V	0…5 V	0,1…2,5 V
Digital interface	RS485	RS485	RS485	RS485	RS485
Power supply	3,2…32 VDC	8…32 VDC	13…32 VDC	8…32 VDC	3,2…32 VDC
Power consumption (without communication)	< 8 mA	3,5…22,5 mA	< 8 mA	< 8 mA	< 8 mA
RS485 voltage insulation	± 32 VDC	± 18 VDC	± 32 VDC	± 32 VDC	± 32 VDC
Note	Disturbance of the 4…20 mA signal occurs during communication via the digital interface. 3-wire types are suitable for simultaneous operation of the analog and digital interface.				

Start-up time (power supply ON)	< 250 ms
Overvoltage protection and reverse polarity	± 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	≥ 300 Hz	2-wire
		3-wire (0,1…2,5 V)
	≥ 1000 Hz	3-wire (0…10 V, 0…5 V)
Note	Filter properties can be adjusted by the customer.	

Digital interface

Type	RS485	Half-duplex
Communication protocols	Modbus RTU	
	KELLER bus protocol	Proprietary
Identification	Class.Group: 5.24	Standard settings: bus address 1, baud rate 9600 bit/s Other default settings available on request. Can be reconfigured via software by the customer later.
Unit of pressure	bar	
Unit of temperature	°C	
Data type	Float32 and Int32	
Baud rates	9600 and 115'200 bit/s	
Lines	Up to 1,2 km	

Electrical connection

Plug type	Round plug 423 - 723 - 425	M16 x 0,75	DIN EN 61076-2-106, 5-pin
	Round plug	M12 x 1	DIN EN 61076-2-101, A-coded, 5-pin
	Bayonet connector	Souriau series 8525	MIL-STD-1669
	Valve plug (without RS485)	Form A (18 mm)	EN 175301-803-A (DIN 43650)
Cable	Cable	ø 5,8 mm, PE sheath	5-wire, cable gland
	Standard cable lengths	2 m, 5 m	Others on request

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

Series 35X – Specifications

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)	Copper

Other materials

Pressure transducer oil filling	Silicone oil

Further details

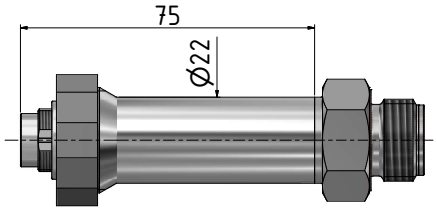
Pressure connection	G1/2 front-flush	For additional pressure connections, see dimensions and variants
Weight	approx. 180 g	

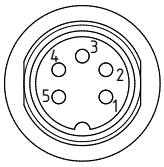
Ambient conditions

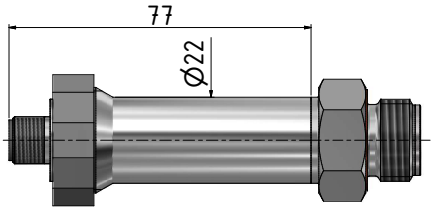
Media temperature range	-40…125 °C		Icing not permitted
Ambient temperature range	-30…85 °C		
Storage temperature range	-20…85 °C		
Protection	IP67	Round plug 423 - 723 - 425, M16 x 0,75	For relative pressure, use a cable with integrated capillary
	IP65	Valve plug, Form A, DIN EN175301-803-A (formerly DIN 43650)	
	IP65	Bayonet connector, Souriau series 8525	
	IP67	Round plug, M12 x 1	For relative pressure IP54
	IP68	Cable gland	For relative pressure, a cable with integrated capillary is used
Notes	• Degrees of protection are valid with the corresponding mating plug. • 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, 6 ms	IEC 60068-2-27	
Pressure endurance @ RT (20…25 °C)	> 10 million pressure cycles	0…100 %FS	

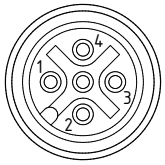
Series 35X – Dimensions and variants

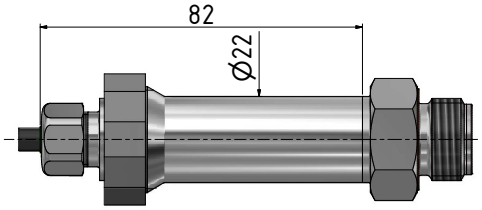
Electrical connections

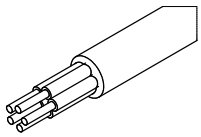


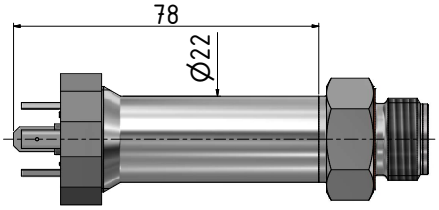
Round plug **423 - 723 - 425**	2-wire		3-wire	
M16 × 0,75	4…20 mA		0…max. 10 V	
	1	OUT/GND	1	GND
	2	n.c.	2	+OUT
	3	+Vs	3	+Vs
	4	RS485A	4	RS485A
	5	RS485B	5	RS485B

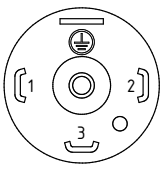


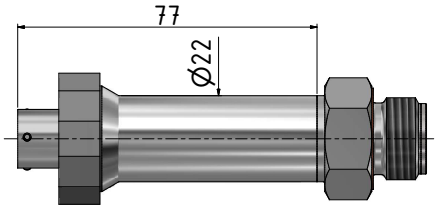
Round plug	2-wire		3-wire	
M12 × 1	4…20 mA		0…max. 10 V	
	1	OUT/GND	1	GND
	2	n.c.	2	+OUT
	3	+Vs	3	+Vs
	4	RS485A	4	RS485A
	5	RS485B	5	RS485B

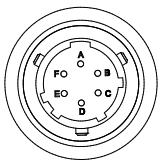


Cable gland	2-wire		3-wire	
Cable ø 5,8	4…20 mA		0…max. 10 V	
	WH	OUT/GND	WH	GND
	RD	n.c.	RD	+OUT
	BK	+Vs	BK	+Vs
	BU	RS485A	BU	RS485A
	YE	RS485B	YE	RS485B
	Shield on CASE		Shield on CASE	



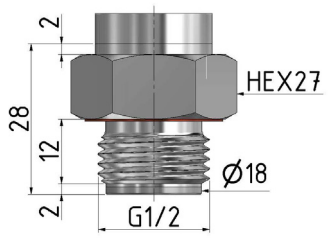
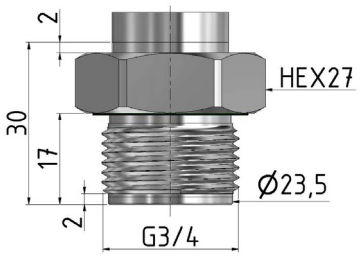
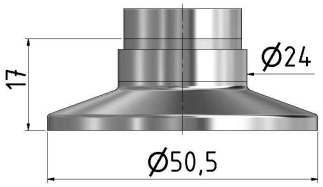
Valve plug	2-wire		3-wire	
Form A (18 mm)	4…20 mA		0…max. 10 V	
	1	OUT/GND	1	GND
	2	n.c.	2	+OUT
	3	+Vs	3	+Vs
	⏚	CASE	⏚	CASE



Bayonet connector	2-wire		3-wire	
Souriau series 8525	4…20 mA		0…max. 10 V	
	C	OUT/GND	C	GND
	B	n.c.	B	+OUT
	A	+Vs	A	+Vs
	D	RS485A	D	RS485A
	F	RS485B	F	RS485B
	Shield on CASE		Shield on CASE	

Series 35X – Dimensions and variants

Available pressure connections

G1/2 front-flush	G3/4 front-flush	Tri-Clamp DN25-40/1”-1,5"
		
ISO 228-1	ISO 228-1	similar to DIN 32676, pressure ranges limited

Customised configurations on request

- Other compensated pressure ranges
- Other compensated temperature ranges within -40…125 °C are possible
- Other electrical connections
- Parts that come into contact with media made from Hastelloy C-276
- O-rings made of other materials
- Other oil filling types for pressure transducers
- Integration of application-specific calculations
- Modifications to customer-specific options

Examples of similar products

- Series 35HTX: Pressure transmitters with front-flush metal diaphragm for use in high temperatures
- Series 35Xc: Pressure transmitters with front-flush metal diaphragm and CANopen interface
- Series 33X: Pressure transmitters with excellent accuracy 0,01 %FS
- Series PD-33X: Differential pressure transmitters with a very high level of accuracy
- Pressure transmitter modules: Pressure transducers with electronics (e.g. series 10LX or 15SX with thread) for integration in one’s own systems

Series 35X – Software, scope of delivery and accessories

Modbus interface

The X-line products have a digital interface (RS485 half-duplex), which supports the MODBUS RTU and KELLER bus protocols. Details of the communication protocols can be found at www.keller-pressure.com. Documentation, a Dynamic Link Library (DLL) and various programming examples are available for integrating the communication protocol into your own software.

Interface converters

The connection to a computer is established via an RS485-USB interface converter To ensure smooth operation, we recommend the K-114 with the corresponding mating plug, robust driver module, fast RX/TX switching and connectable bias and terminating resistors.

«CCS30» software

The licence-free CCS30 software is used to carry out configurations and record measured values.

Measurement collection
- Live visualisation
- Adjustable measuring and storage interval
- Export function
- Parallel recording in bus operation
- Up to 100 measured values per second

Configuration
- Call up of information (pressure and temperature range, software version, serial number etc.)
- Readjustment of zero point and amplification
- Rescaling of analog output (unit, pressure range)
- Adjustment of low-pass filter
- Selection of instrument address and baud rate

Scope of delivery

Test report	Mating plug to round plug 423 - 723 - 425, IP67	Mating plug to valve plug form A
		

Accessories

Calibration certificate	Interface converter		Mating plug to M12	Mating plug to bayonet plug
				
Issued by the external calibration laboratory of the German accreditation body DAkkS or the Swiss accreditation body SAS	K-114 • Analog measurement 0…10 V and 4…20 mA • 12 V measuring device supply via USB • USB interface electrically isolated • Bias and terminating resistors can be activated	Connection options • E.g. K-114-B with cable outlet instead of screw-type terminals for Binder series 723 (5-pin)≠ • Various adapter cables available	• Angled socket, cable 5 m PN 602515.0093 • Angled socket, cable 2 m PN 602515.0094 • Female connector, cable 5 m PN 602515.0095 • Female connector, cable 2 m PN 602515.0096	