

Melt Pressure Measuring Chain

Type 4021A...

with 1/2" 20 UNF Thread, for Pressures up to 3 000 bar

Industrial measuring chain consisting of a melt pressure sensor with integral or removable cable, and amplifier designed to match the sensor.

Operating range 0 ... 3 000 bar and 0 ... 350 °C

- Melt temperature up to 350 °C
- Melt pressure up to 3 000 bar
- Records even extremely short duration pressure peaks
- Does not contain any transmission medium
- Abrasion-resistant diaphragm
- Measuring chain with pressure and temperature measurement

Description

This measuring chain can be used to measure pressure and temperature simultaneously. It consists of a factory-calibrated sensor, cable and amplifier. The sensor has a very stable, high temperature resistant, piezoresistive, silicon measuring element immediately behind a robust steel (mat. No. 1.4542) or alloy (2.4692) diaphragm.

Application

The measuring chain is designed to record the melt pressure in injection molding machines and hot-runner systems. It is also suitable for static pressure measurements in polymer pumps or other applications. The sensor can be mounted directly in the flow of material. This has the advantage of eliminating the time lag characterizing indirect measuring systems and enabling direct measurement of the process parameters determining product quality. Integration of the measurement signals into the machine's control system to record or control production processes provides a practical means of enhancing production efficiency.



Technical Data

Amplifier

Supply voltage	V	18 ... 30
Current consumption	mA	<50
Frequency range of amplifier (-3 dB)	kHz	1
Offset correction range	%FSO	50
Output signal, pressure (depending on measuring range)		
Voltage output	V	-10 ... 10
Current output (option)	mA	4 ... 20
Output signal, temperature		
Voltage 0 ... 350° = 0 ... 3,5 V	mV/°K	10
Current output 0 ... 350 °C = 4 ... 9,4 mA (option)	µA/°K	20

Measuring Chain

Measuring range (high-pressure sensors >1 000 bar)	bar	0 ... 3 000
Measuring range (low-pressure sensors ≤1 000 bar)	bar	0 ... 1 000
Overload (high-pressure sensors >1 000 bar)	bar	3 500
Overload (low-pressure sensors ≤1 000 bar)	bar	1 500
Fatigue life	load change	>2,5 · 10 ⁶

4021A_000-768e-12.09

Operating Temperature Range

Sensor	°C	0 ... 350
Cable	°C	0 ... 300
Extension cable	°C	0 ... 80
Amplifier	°C	0 ... 60
Compensation temperature range	°C	25 ... 350

Material

Sensor diaphragm (high-pressure sensors >1 000 bar)	W-No.	1.4542
Sensor diaphragm (low-pressure sensors ≤1 000 bar)	W-No.	2.4692
Sensor case	W-No.	1.4542

Accuracy Measuring Chain

Repeatability	%FSO	<0,1
Linearity	%FSO	±0,5
Pressure hysteresis	%FSO	<0,8
Thermal zero shift	%FSO	<±0,5
Natural frequency (EMPA 161745)	kHz	>165
Acceleration sensitivity	bar/g	<0,1
Degree of protection of measuring chain		IP65

Amplifier

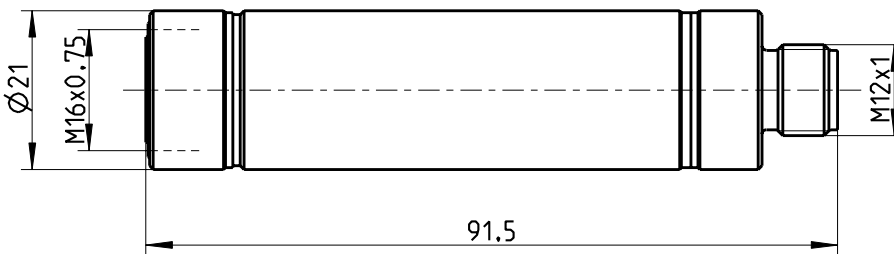
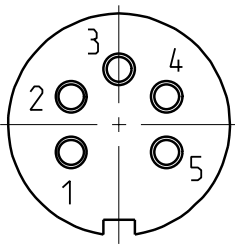


Fig. 1: Dimensions

Pin Allocation

Sensor Connection

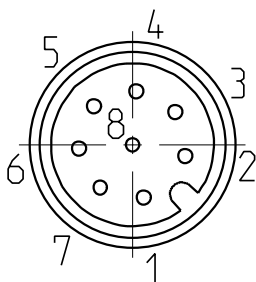
Binder series 723/Amphenol series C091D/Lumberg series 0306, 5 pole female



Pin	Signal	Wire color at cable ducts
1	+IN	black
2	-IN	white
3	n.c.	yellow
4	-OUT	blue
5	+OUT	red

Connection of supply and output signals

M12x1 industrial connector, 8 pole male



#	Signal	Cable Type 1787A5 wire color
1	Exct. GND	white
2	Signal GND	brown
3	Tare	green
4	Pressure signal 0 ... 10 V, option of 4 ... 20 mA	yellow
5	Temp. signal 10 mV/K, option of 20 µA/K	grey
6	RS-232C_Rx	pink
7	RS-232C_Tx	blue
8	+Exct. (18 ... 30 V)	red

4021A_000-768e-12.09

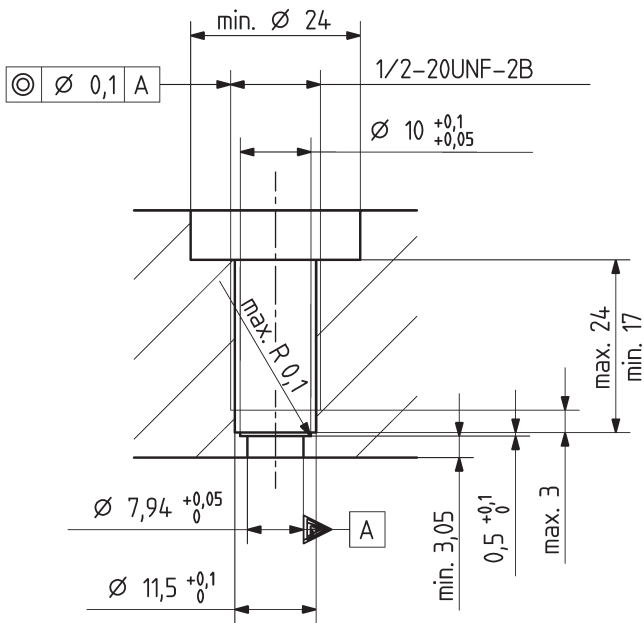


Fig. 2: Dimensions of mounting hole

Sensor Versions

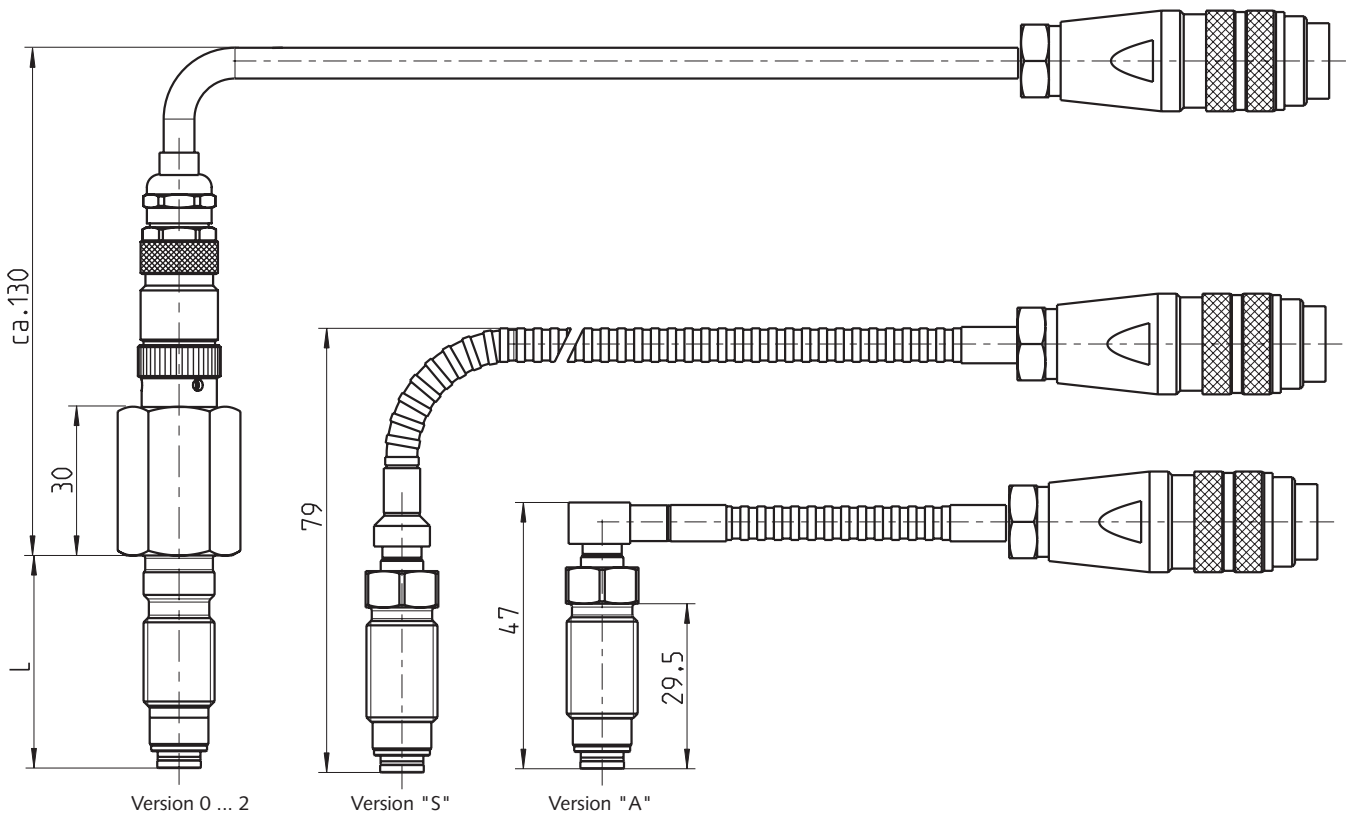


Fig. 3: Versions

4021A_000-768e-12.09

Included Accessories

- Sensor as ordered with factory-fitted seal ring
- Amplifier matched to sensor

Optional Accessories

- Seal ring (spare part) **Type** 1100A13
- Connecting cable, measuring chain/machine 1787A...
- Extension cable between sensor and amplifier 4757A...
- Amplifier fixing element 4187A1
- Transmission cable for using a measuring chain with amplifier Type 4618A... 4775A0,5
- Dummy sensor for sensor hole 4181
- Torque wrench 1300A11
- Fork wrench insert, 13 mm A/F (Type 1300A61) 1300A137
- Fork wrench insert, 19 mm A/F 1300A45
- Service kit for forming and cleaning hole 4193

Ordering Key

		Type 4021A		H		
Measuring range 0 ... 200 bar	02	↑	↑	↑	↑	↑
Measuring range 0 ... 500 bar	05					
Measuring range 0 ... 1 000 bar	10					
Measuring range 0 ... 2 000 bar	20					
Measuring range 0 ... 3 000 bar	30					
Connector, pole L = 38 mm, cable 1 m	0	↑	↑	↑	↑	↑
Connector, pole L = 94 mm, cable 1 m	1					
Connector, pole L = 152 mm, cable 1 m	2					
Straight, integral cable 1 m	S					
Angular, integral cable 1 m	A					
Digital Amplifier Prima	P1					