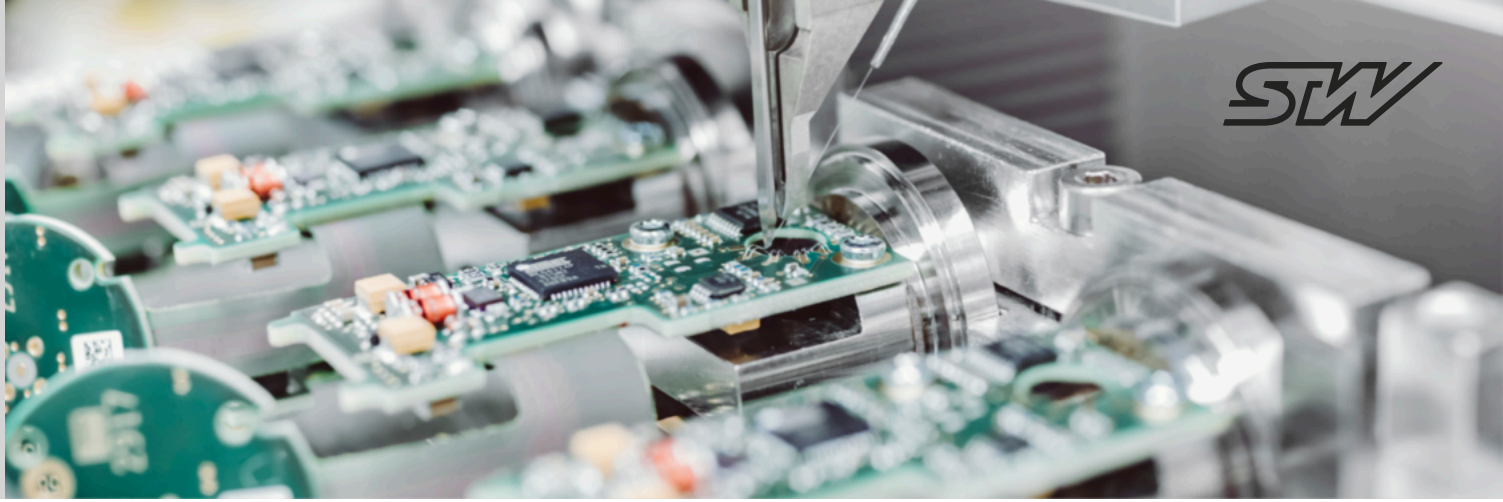


SMX.pt-ma1

Pressure sensors

KEY FEATURES

- Compact and robust design for use in harsh environments
- Fully welded stainless steel construction without internal seals
- Modular design, customization and individualization possible
- Designed for OEM needs
- High media compatibility

TECHNICAL DATA

- Nominal pressure from 100 to 800 bar (relative)
- Welded stainless steel measurement cell
- Overload pressure at least twice the nominal pressure
- Media temperatures up to +125 °C / +257 °F
- Protection class IP67
- Analog output (current/voltage)

Sensor-Technik Wiedemann GmbH

Am Bärenwald 6
87600 Kaufbeuren
Germany
+49 8341 9505-0
info.stw@wiedemann-group.com
www.stw-mm.com

TECHNICAL DATA

Available standard pressure ranges and sensor parameters

Component	Description/value				
Pressure reference	Relative R (gauge G)				
Standard pressure range	100 bar	250 bar	400 bar	600 bar	800 bar
Overload pressure (per DIN EN 60770-1)	200 bar	500 bar	800 bar	1200 bar	1600 bar
Bursting pressure (per DIN EN 60770-1)	1000 bar	1000 bar	2400 bar	2400 bar	3200 bar
Media temperature	–40 ... +125 °C / –40 ... +257 °F				
Operating and storage temperature	–40 ... +125 °C / –40 ... +257 °F				
Material with medium contact	CrNi Stainless Steel (17-4PH, AISI 630) or equivalent, FKM O-ring				
Accuracy	0.5 %FS (includes non-linearity, hysteresis and non-repeatability)				
Total probable error at operating temperature (BFSL definition)	≤ 1 %FS	(0 ... +85 °C) / (+32 ... +176 °F)			
	≤ 1.5 %FS	(-20 ... 0 °C and +85 ... +105 °C) / (–4 ... +32 °F and +176 ... +212 °F)			
	≤ 2.5 %FS	(-40 ... -20 °C and +105 ... +125 °C) / (-40 ... -4 °F and +221 ... +257 °F)			
Response time	1 ms				

Available outputs

Component	Description/value
Analog current	4 ... 20 mA (2-wire technique)
Analog voltage	0 ... 5 V, 0 ... 10 V

Mechanical data

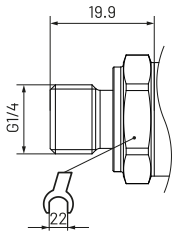
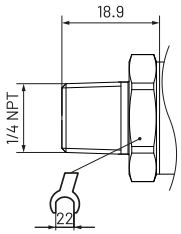
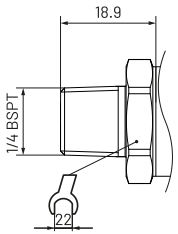
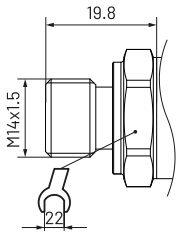
Component	Description/value
Pressure connection	G 1/4", 1/4" NPT, 1/4" BSPT, 1/4" NPT, G 3/8", SAE04 (7/16-20UNF), SAE06 (9/16-18UNF), M14 x 1.5. Standard pressure connections are designed with a reduced diameter (0.6 mm) of the pressure channel to dampen pressure peaks.
Material housing	SS304 or equivalent
Material connector	Glass-fiber reinforced plastic (PBT) or metal (only M12)
Installation torque	Typically 20 Nm, depending on e.g. thread type, lubrication, seal, pressure and installation situation, max. 35 Nm
Protection class	IP67 (with mating connector)

Power supply, cable connection

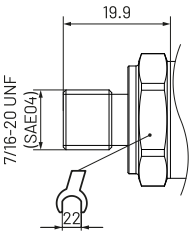
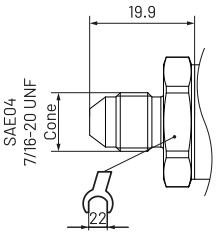
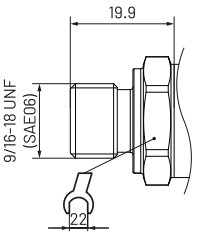
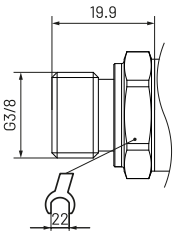
Parameter	Description
Voltage supply (DC)	U_{VCC}: 9 ... 36 V (for transmitters with 4 ... 20 mA or 0 ...5 V output) U_{VCC}: 12 ... 36 V (for transmitters with 0 ... 10 V voltage output)
Electrical protection	Reverse polarity protection, power supply pins only Short circuit protected, voltage output pin only
Maximum cable length	For CE conformity (EMC), the maximum overall cable length must not exceed 30 m

TECHNICAL DRAWINGS AND PIN ASSIGNMENTS

Available Standard Pressure Connections

Connection	Drawing
G1/4", DIN EN ISO 1179-2:2014-03 (formerly DIN 3869:1994-05)	
1/4" NPT per „Nominal width for US-standard bevelled pipe thread NPT“	
1/4" BSPT	
M14 x 1.5, DIN EN ISO 9974-2:2000-09	

Available Standard Pressure Connections

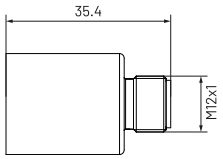
Connection	Drawing
SAE04 (7/16-20UNF) - O-Ring	
SAE04 (7/16-20UNF) - Cone	
SAE06 (9/16-18UNF) - O-Ring	
G3/8"	

TECHNICAL DRAWINGS AND PIN ASSIGNMENTS

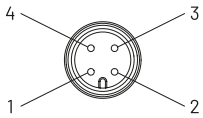
Available Electrical Connections

Connection: Circular plug-in connector M12x1

Drawing



Pins



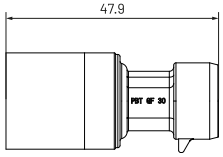
Pin Assignment

Pin	Current output	Voltage output
1	VCC	VCC
2	–	SIG
3	SIG	GND
4	PE	PE

Do not connect the pins marked with „–"!

Connection: Connector Packard Metri-pack

Drawing



Pins

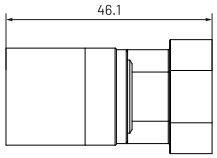
Pin Assignment

Pin	Current output	Voltage output
1	SIG	GND
2	VCC	VCC
3	–	SIG

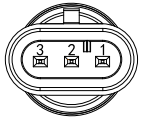
Do not connect the pins marked with „–"!

Connection: Connector for AMP Superseal 1,5 3-pole

Drawing



Pins



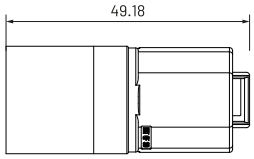
Pin Assignment

Pin	Current output	Voltage output
1	SIG	GND
2	–	SIG
3	VCC	VCC

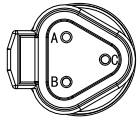
Do not connect the pins marked with „–"!

Connection: Connector DT04-3P 3-pole

Drawing



Pins



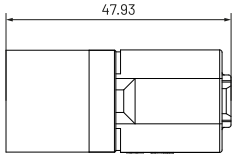
Pin Assignment

Pin	Current output	Voltage output
A	VCC	VCC
B	SIG	GND
C	–	SIG

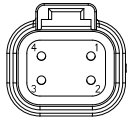
Do not connect the pins marked with „–"!

Connection: Connector DT04-4P, 4-pole

Drawing



Pins



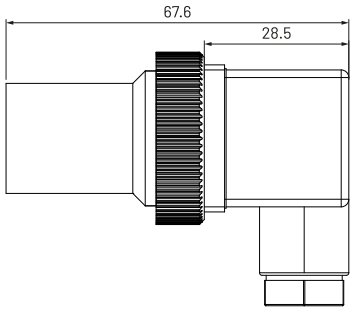
Pin Assignment

Pin	Current output	Voltage output
1	SIG	GND
2	VCC	VCC
3	PE	PE
4	–	SIG

Do not connect the pins marked with „–"!

TECHNICAL DRAWINGS AND PIN ASSIGNMENTS

Available Electrical Connections

Connection	Drawing	Pins	Pin Assignment
EN 175301-803 A			

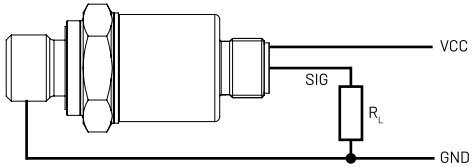
Pin	Current output	Voltage output
1	VCC	VCC
2	SIG	GND
3	–	SIG
4	PE	PE

Do not connect the pins marked with „–“!

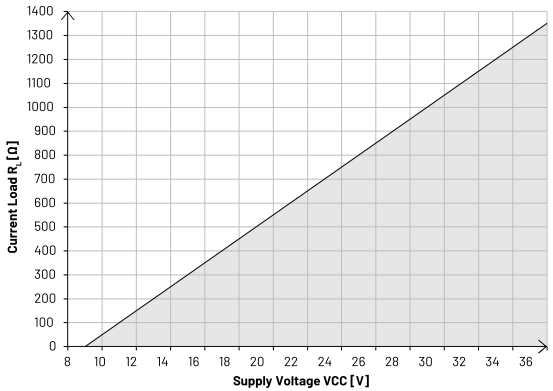
TERMINAL LAYOUTS

Recommended terminal layout

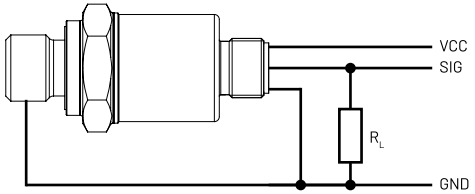
2-wire technique



Current output load: $R_L \leq (U_{VCC} - 9\ V) / 0.02\ A$ for $9 \leq U_{VCC} \leq 36\ V$



3-wire technique



Voltage output load: $R_L \geq 10\ k\Omega$

QUALIFICATION

Compliance Information

Standard	Description		Parameter
ISO/IEC 17050-1 REGULATION (EC) No 765/2008	CE	Conformity	
2011/65/EU 2015/863/EU	RoHS	Restriction of Hazardous Substances	
DIN EN IEC 61326-1:2022-11	EMC (industrial)		
DIN EN 60068-2-27:2010-02	Shock		100 g, 11 ms, 500 g, 2 ms
DIN EN 60068-2-6:2008-10	Vibration		20 g, 10-2 kHz Sinusoidal, X-, Y-, Z-axis

DETAILED QUALIFICATION

EMC industrial (CE)

Standard	Description	Parameter
EN IEC 61326-1:2021 Electrical equipment for measurement, control and laboratory use	Conducted Emission DIN EN 55011:2016 + A1:2017 + A2:2021 + A11:2020	150 kHz to 30 MHz
	Radiated Emission DIN EN 55011:2016 + A1:2017 + A2:2021 + A11:2020	30 MHz to 1000 MHz
	Electrostatic discharge immunity test DIN EN 61000-4-2:2009	330 Ω / 150 pF Contact discharge: ±4kV Air discharge: ±2kV, ±4kV, ±8kV
	Radiated, radio-frequency, electromagnetic field immunity test DIN EN 61000-4-3:2020	80 MHz to 1.0 GHz ->10 V/m 1.0 GHz to 6.0 GHz -> 3 V/m 3 m, horizontal and vertical AM 80 %, 1 kHz
	Electrical fast transient / burst immunity test DIN EN 61000-4-4:2012	Supply lines ±2 kV data lines ±2 kV waveform: 5/50 ns tr/th repetition frequency 5 kHz
	Surge immunity test DIN EN 61000-4-5:2014 + A1:2017	Supply lines (symmetrical) ±0.5kV, ±1kV Supply lines (asymmetrical) ±0.5kV, ±1kV, ±2kV
	Immunity to conducted disturbances induced by radio-frequency fields DIN EN 61000-4-6:2023	150 kHz to 80 MHz, 3V 80% AM, sine at 1 kHz
	Immunity power frequency magnetic field DIN EN 61000-4-8:2010	Frequency: 50 Hz Field strength: 30 A/m Test on all 3 axes

DETAILED QUALIFICATION

Environmental Qualification

Standard	Test	Parameter
Environmental Qualification as per various standards	Vibration (sinusoidal) with temperature superimposition DIN EN 60068-2-6:2007 and DIN EN 60068-2-14	Frequency: 5 Hz to 2000 Hz, double sweep, 1 oct/min., 20g 5h/axis, 3 axes Temperature superimposition: -40°C to +125°C, Duration time= 15 min., Change= 60 min. 2 Temp. cycles/axis
	Mechanical shock DIN EN 60068-2-27:2010	Test 1: Acceleration: 100g, half sine Time: 11 ms 3 Shocks/direction, 6 directions Test 2: Acceleration: 500g, half sine Time: 1-2 ms 3 Shocks/direction, 6 directions
	IP Protection grade DIN EN 60529:2014	IP67

ORDER CODES

Model											Pressure Range			Unit			Reference	Output		Pressure Connection		Electrical Connection	
S	M	X	.	p	t	-	m	a	1	-				-	b	a	r	-	R	-			-			-		

Pressure Range

1 0 0	0 ... 100 bar
2 5 0	0 ... 250 bar
4 0 0	0 ... 400 bar
6 0 0	0 ... 600 bar
8 0 0	0 ... 800 bar

Output

0 1	4 ... 20 mA (2-wire technique)
0 3	0 ... 10 V
0 4	0 ... 5 V

Pressure Connection

0 1	G¼"
0 4	¼" NPT
0 5	M14x1,5
0 9	SAE04 (7/16-20UNF) - Cone
1 0	SAE04 (7/16-20UNF) - O-Ring
1 1	SAE06 (9/16-18UNF) - O-Ring
1 4	¼" BSPT
1 5	G⅜"

Electrical Connection

0 2	EN 175301-803
0 5	AMP Superseal 1.5
0 9	DT04-4P
1 0	DT04-3P
1 1	M12 (stainless steel)
1 2	Packard Metri-pack

Minimum order quantity and shipment lot sizes may apply.