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Diagtronics

The STAUFF Diagtronics programme provides components and services for monitoring and analysing hydraulic fluids in mobile and industrial hydraulic systems.

The range includes analogue and digital pressure gauges and hydraulic testers to high-precision laser particle counters.

A versatile range is essential for different customer needs. The innovative STAUFF Diagtronics programme addresses these decisive factors in the market and offers a wide range of state-of-the-art products with the highest quality.

Competent and fast service is a matter of course in our company. Due to the extensive inventory, both customized special parts and special product combinations are available.

Monitoring the essential parameters in mobile and industrial hydraulics:

- Pressure
- Differential pressure
- Temperature
- Flow
- Fluid level
- Contamination
- and much more

Please contact STAUFF for further details.

www.stauff.com

Pressure Gauges (analogue / digital) and Accessories

Hydraulic Testers of the PPC Series

Laser Particle Counters and Accessories

Sensors and Switches

Pressure Gauges (analogue/digital) and Accessories

Measuring pressure on equipment is indispensable for monitoring and ensuring the smooth functioning and operating safety of these systems.

STAUFF offers a variety of simple pressure measuring devices for liquid and gaseous media. These pressure gauges can be used as both stationary or portable devices. STAUFF addresses the very extensive width of possible system pressures and the strict requirements for precision with a variety of pressure gauge types with different measuring ranges.

The glycerine filled gauge range is available with various connection ports to fit many different installation needs. The pressure gauges can be purchased alone or in a test kit. The kits can be supplied with gauges with different pressure ranges and adaptors to satisfy any requirement.

The analog pressure gauges are primarily designed for permanent installations. STAUFF also offers a digital line for analytical troubleshooting.

These digital pressure gauges are also available as a pressure test kit and also make it possible to perform the many different measurement tasks with the help of adaptors and the measuring hose. An important advantage is the possibility to measure pressure peaks with the device, to save them short term and to display them in the display as MIN and MAX values.

In addtion to the individual products, the STAUFF measuring devices are also available as kit.

Information on the Pressure Equipment Directive (PED) 97/23/EC
Pressure Equipment Directive (PED)

Our pressure gauges (SPG) conform to the European Standard EN 837-1 and are manufactured and tested according to appropriate requirements. Pressure gauges with a full scale value between 0,5 bar and 200 bar / 7.25 PSI and 2900 PSI come under „Good Engineering Practice“ and must not carry a CE mark (section 3, paragraph 3).

Pressure gauges (SPG) with a full scale value of less than 0,5 bar / 7.25 PSI and loose diaphragm sealings do not come under the PED and must not carry a CE mark. Our pressure gauges (SPG) with a full scale value of > 200 bar / 2900 PSI receive a CE mark according to the conformity procedure.

The CE mark is attached to the outside of the housing (type designation plate).
We are not authorised to CE mark pressure gauges without a company name or a company logo.

Pressure Gauges ▪ Accessories

Single Station Gauge Isolator Valve
(see on page F90, Valves section)

Multi Station Gauge Isolator Valve
(see on page F90, Valves section)

Gauge Isolator Needle Valves
(see on page F91, see Valves section)

Test Hoses - Gauge Adaptor
(see pages B36 ff., STAUFF Test section)

Gauge Adaptor
(see pages B11/B21/B27/B29, STAUFF Test section)

Direct Gauge Adaptor
(see on pages B11/B21/B27, STAUFF Test section)

Adjustable Gauge Fitting
(see on page B34, STAUFF Test section)

Pressure Gauge (analogue) ▪ Type SPG

Pressure Gauge (Analogue) Type SPG (Stem Mounting)

Pressure Gauge (Analogue) Type SPG (Panel Mounting)

Product Description

Area of Application
- Mechanical pressure measurement

Features

- Suitable for hydraulic oil and gaseous media compatible with copper based alloys
- Available in nominal sizes 63 and 100 mm / 2.5 and 4 in
- Thread form: for BSP (G1/4 and G1/2), NPT (1/4 NPT and 1/2 NPT), SAE (7/16–20 UNF)
- Stainless Steel (1.4301) housing
- Acrylic sight glass
- Glycerine filled
- Standard dual scales with pressure indication in bar and PSI
- U-bolt or flange mounting kit on request

Note: Please consult STAUFF before you use SPG with other media.

Options

- Protective rubber cap
- Additional scale readings including personilisation
- U-bolt and flange mounting kits are available separately as spare parts

Technical Data

- Pressure gauge according to EN 837-1
- Subject to technical modifications

Accuracies

SPG-063:	1.6 (± 1.6 % FS* as per EN 837-1)
SPG-100:	1.0 (± 1.0 % FS* as per EN 837-1)

Permissible Temperatures

▪ Ambient:	-20 °C ... +60 °C / -4 °F ... +140 °F
▪ Media:	max. +60 °C / max. +140 °F

Protection Ratings

▪ IP 65:	for all manometer SPG 100 and SPG 063 > 16 bar / 232 PSI IP 65 protection rating: Dust tight and protected against water jets
▪ IP 54	for all manometer SPG 063 ≤ 16 bar / 232 PSI due to pressure compensation opening IP 54 protection rating: Dust protected and protected against splashing water

For further information on page B34, STAUFF Test section.

Order Codes

SPG 063 - 000160 - 01 - P - B04 - U

① ② ③ ④ ⑤ ⑥ ⑦

① Series and Type

Stainless Steel Pressure Gauge	**SPG**

② Size

Ø 63 mm, with G1/4 or 1/4 NPT connection	**063**
Ø 100 mm, with G1/2 or 1/2 NPT connection	**100**

③ Pressure Ranges (only for type 01 - bar/PSI)

-1 ... 1,5 bar / -14.5 ... 21 PSI	**(-1)-(1,5)**
-1 ... 3 bar / -14.5 ... 43 PSI	**(-1)-00003**
0 ... 10 bar / 0 ... 145 PSI	**00010**
0 ... 16 bar / 0 ... 232 PSI	**00016**
0 ... 25 bar / 0 ... 362 PSI	**00025**
0 ... 40 bar / 0 ... 580 PSI	**00040**
0 ... 60 bar / 0 ... 870 PSI	**00060**
0 ... 100 bar / 0 ... 1450 PSI	**00100**
0 ... 160 bar / 0 ... 2320 PSI	**00160**
0 ... 250 bar / 0 ... 3625 PSI	**00250**
0 ... 400 bar / 0 ... 5801 PSI	**00400**
0 ... 600 bar / 0 ... 8702 PSI	**00600**
0 ... 680 bar / 0 ... 9862 PSI	**00680**
0 ... 700 bar / 0 ... 10152 PSI	**00700**
0 ... 1000 bar / 0 ... 14503 PSI	**01000**

Note: Others on request. Information always refer to the pressure setting of the outside scale.

④ Styles of Scales

bar / PSI (bar outside/PSI inside - standard option)	**01**
bar	**02**
PSI	**03**
PSI / bar (PSI outside/ bar inside)	**05**
kPa / PSI (kPa outside/ PSI inside)	**10**

Note: Others on request.

⑤ Adaption

Stem mounting	**S**
Panel mounting	**P**

⑥ Process Connection

G1/4 (only SPG 063)	**B04**
G1/2 (only SPG 100)	**B08**
1/4 NPT (only SPG 063)	**N04**
1/2 NPT (only SPG 100)	**N08**
7/16–20 UNF (only SPG 063)	**U04**

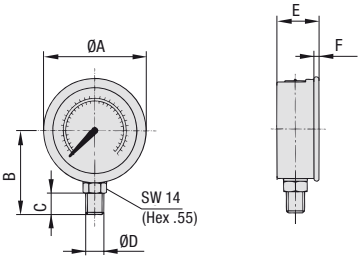
Note: Others on request.

⑦ Accessories

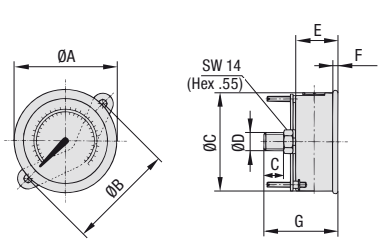
No accessory	**(none)**
U-bolt assembly	**U**
Front flange assembly (for panel mount only)	**F**
Rear flange assembly	**R**
U-bolt and front flange assembly (for panel mount only)	**UF**
Protective rubber cap (for stem mount only)	**G**

* FS = Full Scale

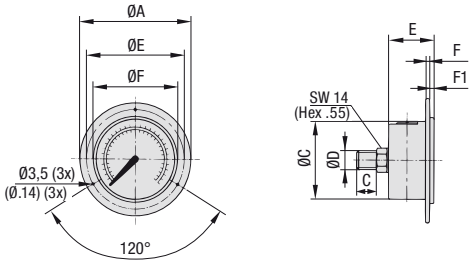
Pressure Gauge (analogue) ▪ Type SPG



SPG 063 ... S ...



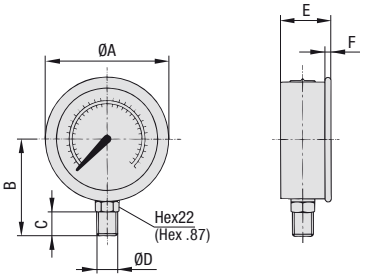
SPG 063 ... P ... U



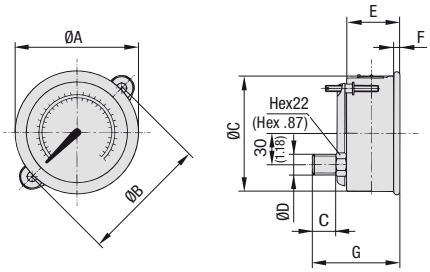
SPG 063 ... P ... F

Dimensions SPG 063

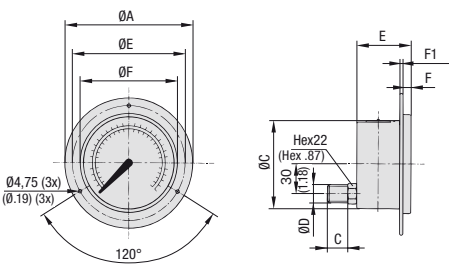
Version	Dimension (mm/in)											
Pressure Gauge	ØA	ØB	ØC	ØD	ØE	ØF	B	C	E	F	F1	G
SPG-063	69	-	-	G1/4	-	-	54	15	32	6,5	-	-
	2.72			1/4 NPT			2.13	.59	1.26	.26		
				7/16–20 UNF								
SPG-063 ... U	69	72	62	G1/4	-	-	-	15	32	6,5	-	56
	2.72	2.83	2.44	1/4 NPT				.59	1.26	.26		2.20
				7/16–20 UNF								
SPG-063 ... F	85	-	62	G1/4	75	68	-	15	32	2	2	-
	3.35		2.44	1/4 NPT	2.95	2.68		.59	1.26	.008	.008	
				7/16–20 UNF								



SPG 100 ... S ...



SPG 100 ... P ... U



SPG 100 ... P ... F

Dimensions SPG 100

Version	Dimension (mm/in)											
Pressure Gauge	ØA	ØB	ØC	ØD	ØE	ØF	B	C	E	F	F1	G
SPG-100	107	-	-	G1/2	-	-	87	23	48	8	-	-
	4.21			1/2 NPT			3.43	.91	1.89	.31		
SPG-100 ... U	107	107	100	G1/2	-	-	-	23	48	8	-	81,5
	4.21	4.21	3.94	1/2 NPT				.91	1.89	.31		3.21
SPG-100 ... F	132	-	100	G1/2	116	107	-	23	48	8	1,25	-
	5.20		3.94	1/2 NPT	4.57	4.21		.91	1.89	.31	.05	

* FS = Full Scale
Dimensional drawings: All dimensions in mm (in).

Pressure Test Kit (analogue) ▪ Type SMB20 / SMB15

Pressure test kit (analogue) with SPG 063 (1x)

Pressure test kit (analogue) with SPG 063 (2x)

Pressure test kit (analogue) with SPG 063 (3x)

Pressure test kit (analogue) with SPG 100 (1x)

Product Description

In addition to the individual SPG gauges, the STAUFF Pressure Gauges are also available as part of a pressure test kit.

The SMB Pressure Test Kits are assembled in various versions, in accordance with customer wishes.
All pressure test kits are supplied in a handy case with custom-designed foam inserts.

Please see on page D9 for standard options.

Order Codes

SMB20 - 1 - xxx / xxx / xxx - C6F

① ② ③ ④

① Series and Type

Pressure Test Kit, analogue (STAUFF Test 20)	**SMB20**
Pressure Test Kit, analogue (STAUFF Test 15)	**SMB15**

② Number of Pressure Gauges

1 pressure gauge SPG 063	**1**
2 pressure gauges SPG 063	**2**
3 pressure gauges SPG 063	**3**
1 pressure gauge SPG 100	**/100-1**

③ Pressure Ranges

-1 ... 3 bar / -14.5 ... 43 PSI	**(-1)0003**
0 ... 10 bar / 0 ... 145 PSI	**010**
0 ... 16 bar / 0 ... 232 PSI	**016**
0 ... 25 bar / 0 ... 362 PSI	**025**
0 ... 40 bar / 0 ... 580 PSI	**040**
0 ... 60 bar / 0 ... 870 PSI	**060**
0 ... 100 bar / 0 ... 1450 PSI	**100**
0 ... 160 bar / 0 ... 2320 PSI	**160**
0 ... 250 bar / 0 ... 3625 PSI	**250**
0 ... 400 bar / 0 ... 5801 PSI	**400**

Note: Please indicate pressure ranges in bar.
For one pressure gauge please replace xxx.
For two pressure gauges please replace xxx/xxx.
For three pressure gauges please replace xxx/xxx/xxx.

④ Material Surface

Steel, zinc/nickel plated	**C6F**

For further information on page B35, STAUFF Test section.

Standard Option for Pressure Test Kits (analogue) ▪ Type SMB20 / SMB15

Series	Components	Order Codes	Series	Components	Order Codes
SMB20-1-xxx-C6F	1x Test hose (2000 mm length)	SMS-20-2000-B-C6F	SMB15-1-xxx-C6F	1x Test hose (2000 mm length)	SMS-15-2000-B-C6F
	1x Pressure gauge Ø 63 mm	SPG 063-xxx-...		1x Pressure gauge Ø 63 mm	SPG 063-xxx-...
	1x Gauge adaptor G1/4	SMA20-G1/4-P-OR-C6F		1x Gauge adaptor G1/4	SMA15-G1/4-P-OR-C6F
	1x Direct gauge adaptor G1/4	SMD20-G1/4-P-OR-C6F		1x Direct gauge adaptor G1/4	SMD15-G1/4-P-OR-C6F
	1x Test coupling G1/4	SMK20-G1/4-PC-C6F		1x Test coupling G1/4	SMK15-G1/4-PB-C6F
	1x Test coupling M10 x 1	SMK20-M10x1-PA-C6F		1x Test coupling M14 x 1,5	SMK15-M14x1,5-PB-C6F
	1x Thread adaptor G3/8	SRS20-G3/8-B-C6F		1x Thread adaptor G3/8	SRS15-G3/8-B-C6F
	1x Thread adaptor G1/2	SRS20-G1/2-B-C6F		1x Thread adaptor G1/2	SRS15-G1/2-B-C6F
	1x Dust cloth	-		1x Dust cloth	-

xxx/xxx/xxx = pressure ranges see on page D8 (please indicate pressure ranges in bar)
Custom kits available upon request. Please consult STAUFF.

Series	Components	Order Codes	Series	Components	Order Codes
SMB20-2-xxx/xxx-C6F	1x Test hose (2000 mm length)	SMS-20-2000-B-C6F	SMB15-2-xxx/xxx-C6F	1x Test hose (2000 mm length)	SMS-15-2000-B-C6F
	2x Pressure gauges Ø 63 mm	SPG 063-xxx-...		2x Pressure gauges Ø 63 mm	SPG 063-xxx-...
	1x Gauge adaptor G1/4	SMA20-G1/4-P-OR-C6F		1x Gauge adaptor G1/4	SMA15-G1/4-P-OR-C6F
	1x Direct gauge adaptor G1/4	SMD20-G1/4-P-OR-C6F		1x Direct gauge adaptor G1/4	SMD15-G1/4-P-OR-C6F
	1x Test coupling G1/4	SMK20-G1/4-PC-C6F		1x Test coupling G1/4	SMK15-G1/4-PB-C6F
	1x Test coupling M10 x 1	SMK20-M10x1-PA-C6F		1x Test coupling M14 x 1,5	SMK15-M14x1,5-PB-C6F
	1x Thread adaptor G3/8	SRS20-G3/8-B-C6F		1x Thread adaptor G3/8	SRS15-G3/8-B-C6F
	1x Thread adaptor G1/2	SRS20-G1/2-B-C6F		1x Thread adaptor G1/2	SRS15-G1/2-B-C6F
	1x Dust cloth	-		1x Dust cloth	-

xxx/xxx/xxx = pressure ranges see on page D8 (please indicate pressure ranges in bar)
Custom kits available upon request. Please consult STAUFF.

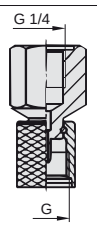
Series	Components	Order Codes	Series	Components	Order Codes
SMB20-3-xxx/xxx/xxx-C6F	2x Test hoses (2000 mm length)	SMS-20-2000-B-C6F	SMB15-3-xxx/xxx/xxx-C6F	2x Test hoses (2000 mm length)	SMS-15-2000-B-C6F
	3x Pressure gauges Ø 63 mm	SPG 063-xxx-...		3x Pressure gauges Ø 63 mm	SPG 063-xxx-...
	1x Gauge adaptor G1/4	SMA20-G1/4-P-OR-C6F		1x Gauge adaptor G1/4	SMA15-G1/4-P-OR-C6F
	2x Direct gauge adaptors G1/4	SMD20-G1/4-P-OR-C6F		2x Direct gauge adaptors G1/4	SMD15-G1/4-P-OR-C6F
	3x Test couplings G1/4	SMK20-G1/4-PC-C6F		3x Test couplings G1/4	SMK15-G1/4-PB-C6F
	3x Test couplings M10 x 1	SMK20-M10x1-PA-C6F		3x Test couplings M14 x 1,5	SMK15-M14x1,5-PB-C6F
	1x Thread adaptor G3/8	SRS20-G3/8-B-C6F		1x Thread adaptor G3/8	SRS15-G3/8-B-C6F
	1x Thread adaptor G1/2	SRS20-G1/2-B-C6F		1x Thread adaptor G1/2	SRS15-G1/2-B-C6F
	1x Dust cloth	-		1x Dust cloth	-

xxx/xxx/xxx = pressure ranges see on page D8 (please indicate pressure ranges in bar)
Custom kits available upon request. Please consult STAUFF.

Series	Components	Order Codes	Series	Components	Order Codes
SMB20/100-1-xxx-C6F	1x Test hose (2000 mm length)	SMS-20-2000-B-C6F	SMB15/100-1-xxx-C6F	1x Test hose (2000 mm length)	SMS-15-2000-B-C6F
	1x Pressure gauge Ø 100 mm	SPG 100-xxx-...		1x Pressure gauge Ø 100 mm	SPG 100-xxx-...
	1x Gauge adaptor G1/4	SMA20-G1/4-P-OR-C6F		1x Gauge adaptor G1/4	SMA15-G1/4-P-OR-C6F
	1x Direct gauge adaptor G1/4	SMD20-G1/4-P-OR-C6F		1x Direct gauge adaptor G1/4	SMD15-G1/4-P-OR-C6F
	1x Test coupling G1/4	SMK20-G1/4-PC-C6F		1x Test coupling G1/4	SMK15-G1/4-PB-C6F
	1x Test coupling M10 x 1	SMK20-M10x1-PA-C6F		1x Test coupling M14 x 1,5	SMK15-M14x1,5-PB-C6F
	1x Thread adaptor G3/8	SRS20-G3/8-B-C6F		1x Thread adaptor G3/8	SRS15-G3/8-B-C6F
	1x Thread adaptor G1/2	SRS20-G1/2-B-C6F		1x Thread adaptor G1/2	SRS15-G1/2-B-C6F
	1x Dust cloth	-		1x Dust cloth	-

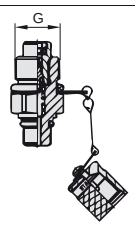
xxx/xxx/xxx = pressure ranges see on page D8 (please indicate pressure ranges in bar)
Custom kits available upon request. Please consult STAUFF.

Accessories (Connection Adaptors)



SDA adaptor
Connects the pressure gauge to a test coupling

SAD adaptor
Only in conjunction with the SDA20-G1/4-C6F adaptor, connects to other test coupling sizes



Test coupling
STAUFF Test or comparable

Adaptor	Adaption from	to Dimension G
SDA20-G1/4-C6F	G1/4	M16 x 2
SDA15-G1/4-C6F	G1/4	M16 x 1,5
SDA12-G1/4-C6F	G1/4	S12,65 x 1,5
SAD20/15-P-C6F	M16 x 2	M16 x 1,5
SAD20/12-P-C6F	M16 x 2	S12,65 x 1,5
SAD20/10-P-C6F	M16 x 2	Plug-in system

Other adaptors are available.

Digital Pressure Gauge ▪ Type SPG-DIGI

Product Description

The SPG-DIGI Digital Pressure Gauges are intended to measure and display pressures in hydraulic systems, particularly for oils, lubricants and water. They can display the current measured values, as well as minimum and maximum values, with an accuracy of 0,5 % of full scale.

The SPG-DIGI Digital Pressure Gauges are available individually, or as part of a complete pressure test kit. They are very sturdy, reliable, easy to use and come with the CE mark (evidence of conformity compliance).

Features

- Bar graph display (drag indicator)
- Background lighting
- Zero correction
- Battery charge display

Order Codes

SPG-DIGI - B0016 - B - CAL

① ② ③ ④

① Series and Type

Digital Pressure Gauge	**SPG-DIGI**

② Pressure Ranges

-1 ... 16 bar / -14.5 ... 232 PSI	**B0016**
0 ... 100 bar / 0 ... 1450 PSI	**B0100**
0 ... 400 bar / 0 ... 5801 PSI	**B0400**
0 ... 600 bar / 0 ... 8702 PSI	**B0600**

③ Process Connection

G1/4	**B**
7/16–20 UNF	**U**

④ Calibration

Without calibration certificate	**(none)**
With calibration certificate	**CAL**

Pressure Ranges

Version	Pressure Range (bar/PSI)	Maximum Pressure (bar/PSI)	Burst Pressure (bar/PSI)
B0016	-1 ... 16	40	50
	-14.5 ... 232	580	725
B0100	0 ... 100	200	800
	0 ... 1450	2900	11603
B0400	0 ... 400	800	1700
	0 ... 5801	11603	24656
B0600	0 ... 600	1200	2200
	0 ... 8702	17404	31908

Technical Data

Materials
- Housing made of die-cast Zinc with TPE rubber protective covering
- Wetted parts: Stainless Steel 1.4404, NBR, ceramic
- Gaskets: NBR (Buna-N®)
  FPM (Viton®) or EPDM upon request

Dimensions and Weight
- Diameter: 79 mm / 3.11 in
- Depth: 33 mm / 1.30 in
- Weight: 540 g / 1.19 lbs

Display
- Text display 4 1/2-digit
- Size: 50 x 34 mm / 1.97 x 1.34 in
- Actual value display: 15 mm / .59 in
- MIN-/MAX or FS* display: 8 mm / .31 in
- Units: bar, PSI, Mpa, kPa, mbar
- Peak pressure measurement with 10 ms sampling rate
- Lighted measured value display

Accuracy
- ±0,25 % FS* typ. / ±0,5 % FS* max.
- Resolution: 4096 steps

Permissible Temperatures
- Ambient: -10 °C ... +50 °C / +14 °F ... +122 °F
- Media: -20 °C ... +80 °C / -4 °F ... +176 °F
- Storage: -20 °C ... +60 °C / -4 °F ... +140 °F

- Relative humidity: < 85 %
- Battery life: max. 1500 hours
  (operating without lighting, 2 x 1,5 V DC AA (LR6-AA) Alkaline Mignon)

Process Connections
- G1/4 or 7/16–20 UNF made of 1.4404 Stainless Steel

- Vibration: IEC 60068-2-6 / 10 ... 500 Hz / 5 g
- Shock: IEC 60068-2-27 / 11 ms / 25 g
- Load cycles (10^6): 100

Protection Rating
- IP 67 protection rating: Dust tight and protected against powerful water jets; even immersion (up to 1 m / 3.28 ft) in water is possible under defined conditions of pressure and time

* FS = Full Scale

Pressure Test Kit (digital) ▪ Type SMB-DIGI

Pressure Test Kit (Digital) Type SMB-DIGI

Order Codes

SMB-DIGI - 20 - B0016 - B - CAL

① ② ③ ④ ⑤

① Series and Type

Pressure Test Kit, digital pressure gauge	**SMB-DIGI**

② Adaptor Version

Adapts to STAUFF Test 20 (M16 x 2)	**20**

③ Pressure Ranges

-1 ... 16 bar / -14.5 ... 232 PSI	**B0016**
0 ... 100 bar / 0 ... 1450 PSI	**B0100**
0 ... 400 bar / 0 ... 5801 PSI	**B0400**
0 ... 600 bar / 0 ... 8702 PSI	**B0600**

④ Process Connection

G1/4	**B**
7/16–20 UNF	**U**

⑤ Calibration

Without calibration certificate	**(none)**
With calibration certificate	**CAL**

Pressure Ranges

Version	Pressure Range (bar/PSI)	Maximum Pressure (bar/PSI)	Burst Pressure (bar/PSI)
B0016	-1 ... 16	40	50
	-14.5 ... 232	580	725
B0100	0 ... 100	200	800
	0 ... 1450	2900	11603
B0400	0 ... 400	800	1700
	0 ... 5801	11603	24656
B0600	0 ... 600	1200	2200
	0 ... 8702	17404	31908

Product Description

In addition to the individual SPG-DIGI devices, the STAUFF Digital Pressure Gauges are also available as part of a pressure test kit.

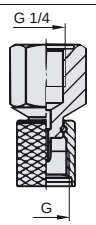
The SMB-DIGI pressure test kits are assembled in various versions, in accordance with customer wishes. All pressure test kits are supplied in a handy case with custom-designed foam inserts.

Components

Standard Option SMB-DIGI-20

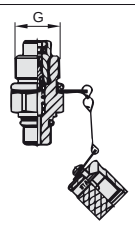
- Digital Pressure Gauge SPG-DIGI
- Test Hose (2 m / 6.56 ft), M16 x 2, pressure-resistant 600 bar (8702 PSI) SMS-20-2000-B-C6F
- Adaptor SDA (G1/4 to M16 x 2) SDA-20-G1/4-C6F
- Hose Connector SSV20-C6F
- Test Coupling SMK20-G1/4-PC-C6F
- Test Coupling SMK20-M10x1-PA-C6F
- Thread Adaptor SRS20-G3/8-B-C6F
- Thread Adaptor SRS20-G1/2-B-C6F
- Operating manual (multilingual) on CD
- Dust cloth

Accessories (Connection Adaptors)



SDA adaptor
Connects the pressure gauge to a test coupling

SAD adaptor
Only in conjunction with the SDA20-G1/4-C6F adaptor, connects to other test coupling sizes



Test coupling
STAUFF Test or comparable

Adaptor	Adaption from	to Dimension G
SDA20-G1/4-C6F	G1/4	M16 x 2
SDA15-G1/4-C6F	G1/4	M16 x 1,5
SDA12-G1/4-C6F	G1/4	S12,65 x 1,5
SAD20/15-P-C6F	M16 x 2	M16 x 1,5
SAD20/12-P-C6F	M16 x 2	S12,65 x 1,5
SAD20/10-P-C6F	M16 x 2	Plug-in system

Other adaptors are available.

Hydraulic Testers of the PPC Series

The STAUFF measuring and test equipment of the PPC series are perfectly suited for measuring all relevant parameters in fluid power systems, including pressure, differential pressure, temperature, flow and rotational speed.

Depending on the type, they allow evaluation, storage and further processing in PCs or notebooks. They have been especially developed for the growing needs of system monitoring, troubleshooting and determining measured values in hydraulic and pneumatic systems.

The application areas are broad:

- Industrial hydraulics
- Mobile, agricultural and forestry hydraulics
- Marine and offshore hydraulics
- Chemical and petrochemical industries
- Energy and air conditioning industries
- Heating and sanitary industries

Among other things, the latest generation of Hydraulic Tester PPC-04-plus is characterised by a simple operation. Even in low-light situations, measured values can be read quickly and reliably from the multi-line, backlit LCD display. The new Hydraulic Tester is available in two versions, either with two inputs for analogue sensors or with a CAN interface for connecting up to three digital sensors. Both versions are equipped with an internal data memory and an USB port. They are driven by an internal power supply (Lithium-Ion pack).

The Hydraulic Testers of the PPC-06/08-plus series, depending on the type, provide the potential of connecting three or four analogue sensors. Even older sensors of the STAUFF Diagtronics product program or third-party sensors can be used with these units without any problems.
Both Hydraulic Testers are equipped with a large data memory and an integrated USB port, they can be used for several hours in battery operation. The included PC software allows to show the measured values as numerical values or as curve graphs on PCs or notebooks.

The PPC Pad is the highest-performance unit of the PPC series. This portable multi-function hand-held measuring instrument has been especially developed for the increasing fluid technology requirements. STAUFF's CAN bus sensors take advantage of the bus system's automatic sensor recognition to provide an easy-to-install Plug & Play solution. The measured values can be displayed in various presentation styles and make effective solutions-orientated analysis possible.

The Hydraulic Testers of the PPC series and their corresponding sensors are also available as calibrated version, they are delivered with a calibration certificate.
A subsequent calibration can be ordered by using a special order code.

Hydraulic Testers of the PPC Series ▪ Product Overview

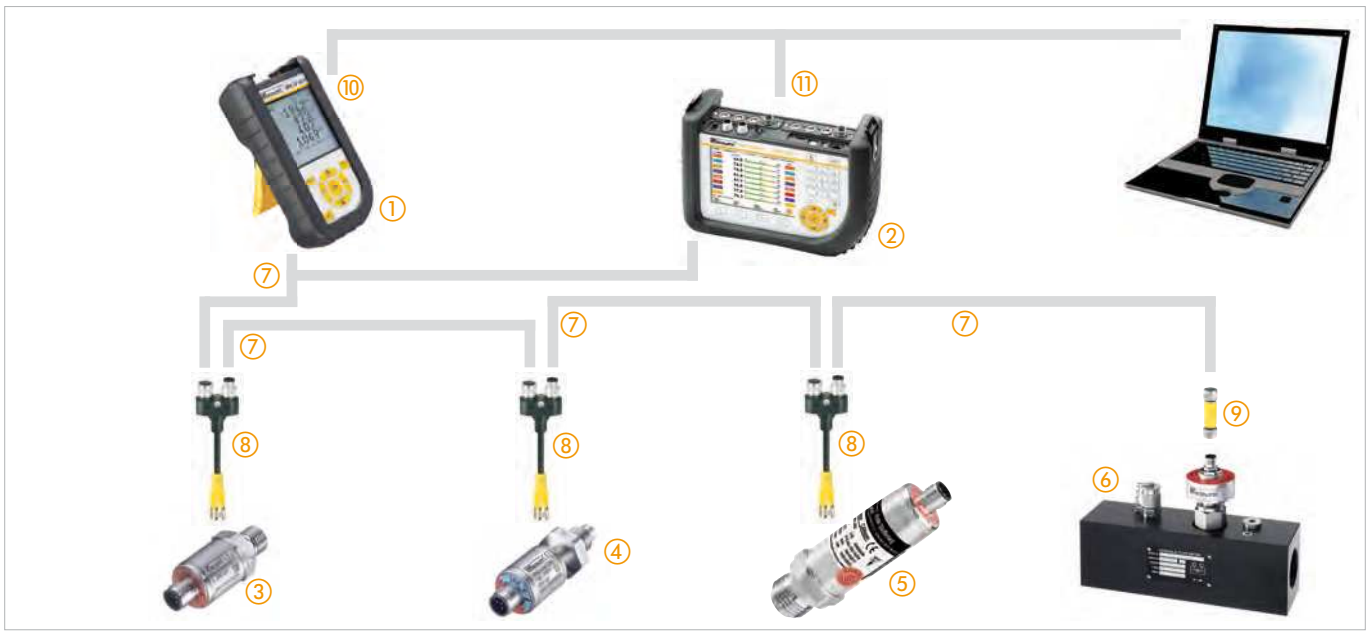
Hydraulic Testers					
Options	**PPC-04-plus**	**PPC-04-plus-CAN**	**PPC-06-plus**	**PPC-08-plus**	**PPC-Pad**
Rechargeable Battery	●	●	●	●	●
Number of Sensor Inputs	2 (max. 2 analogue sensors)	1x CAN (max. 3 CAN sensors)	3	4	max. 6 + 2 x CAN (each 8 sensors)
PC Interface	USB	USB	USB	USB	USB / Ethernet
Online Function	●	●	●	●	●
Internal Memory	●	●	●	●	●
Programming of Automatic Measuring Tasks	–	–	●	●	●
Internal Trigger Function	–	–	●	●	●
Data Display	●	●	●	●	●
Display Lightning	●	●	●	●	●
Curve Printout on Display	–	–	–	–	●
PC Software Kit	●	●	●	●	●
Pressure Measurement	●	●	●	●	●
Temperature Measurement	●	●	●	●	●
Flow Measurement	●	●	●	●	●
Rotational Speed Measurement	●	–	●	●	●
Frequency Measurement	●	●	●	●	●
Third-Party Sensors	●	●	●	●	●
Current / Voltage Adaptor	●	●	●	●	●
STAUFF CAN Sensor	–	●	–	–	●

● = standard, – = not available

Hydraulic Testers of the PPC Series

① Hydraulic Tester **PPC-04-plus**
max. two analogue sensors can be connected at the same time
② Hydraulic Tester **PPC-06-plus**
max. three analogue sensors can be connected at the same time
③ Hydraulic Tester **PPC-08-plus**
max. four analogue sensors can be connected at the same time
④ Hydraulic Tester **PPC-Pad**
max. six analogue sensors can be connected at the same time
⑤ Pressure Sensor **PPC-04/12-P**
⑥ Pressure / Temperature Sensor **PPC-04/12-PT**
⑦ Rotational Speed Sensor **PPC-04/12-SDS-CAB** with integrated connection cable, optionally with Contact Adaptor **PPC-04/12-SKA-Contact** or Focusing Adaptor **PPC-04/12-SKA-Focus**
⑧ Screw-in Temperature Sensor **PPC-04/12-T** / Manual Temperature Sensor **PPC-04/12-TSH**
⑨ Flow Turbine **PPC-04/12-SFM** with integrated signal converter, for connecting pressure and temperature sensor
⑩ 5-pin Connection Cable for sensors **PPC-04/12-CAB3** (3 m / 9.84 ft), optionally with Extension Cable **PPC-04/12-CAB5-EXT** (5 m / 16.40 ft)
⑪ PPC Connection Cable as a component of the PC Sets **PC-SET-06/08-plus-SW-CAB** (USB)
⑫ PPC Connection Cable as a component of the PC Sets **PC-SET-04-plus-SW-CAB** (USB)
⑬ PPC Connection Cable as a component of the PC Sets **LAN-** or **USB 2.0-Kabel**

Hydraulic Testers PPC Series (CAN Version)



① Hydraulic Tester **PPC-04-plus-CAN** with CAN interface (1x)
② Hydraulic Tester **PPC-Pad** with two CAN interfaces
③ CAN Pressure Sensor **PPC-CAN-P**
④ CAN Temperature Sensor **PPC-CAN-T**
⑤ CAN Pressure / Temperature Sensor **PPC-CAN-PT**
⑥ CAN Flow Turbine **PPC-CAN-SFM** with integrated signal converter, for connecting pressure and temperature sensors
⑦ CAN Connection Cable **PPC-CAN-CABX**
⑧ CAN Y-Splitter Cable **PPC-CAN-CAB-Y**
⑨ CAN Terminating Resistor **PPC-CAN-R**
⑩ PPC Connection Cable as a component of the PC Sets **PC-SET-04-plus-SW-CAB** (USB)
⑪ PPC Connection Cable as a component of the PC Sets **LAN-** or **USB 2.0-Kabel**

Hydraulic Testers ▪ Type PPC-04-plus / PPC-04-plus-CAN

PPC-04-plus with 2 sensor inputs
for max. 2 analogue sensors

PPC-04-plus-CAN with CAN interface for
max. 3 sensors (max. 50 m / 164 ft cable length)

Product Description

The PPC-04-plus and PPC-04-plus-CAN Hydraulic Testers have been developed for the growing demands in mobile and industrial hydraulic systems. They are perfectly suited for the precise determination of pressure, temperature, volume flow and rotational speed.

- Multi-line, backlit LCD display
- Max. two analogue sensors can be connected at the same time
- With CAN interface, max. three digital sensors can be connected at the same time
- Integrated data memory for 15000 data records
- External storage by using a USB memory stick
- Max. CAN bus length: 50 m / 164 ft (CAN version)

The Hydraulic Testers are available in two versions. The PPC-04-plus, analogue version, comes with two inputs for connecting up to two analogue sensors at the same time. The PPC-04-plus-CAN comes with an CAN interface for connecting up to three digital sensors at the same time. Both versions provide automatic sensor recognition, thus making the tedious and often time-consuming parameterization of sensors redundant.
The units can be easily operated via the keyboard and the individual device configurations can be viewed and managed.

Due to its extremely robust construction and oil-resistant rubber coating, the Hydraulic Testers can withstand impacts, vibrations, dust and moisture (protection class up to IP 67) and is designed for use in particularly harsh conditions.

The internal battery (Lithium Ion pack) can be charged via an micro USB connection, this connection can be also used to transfer the internally stored datas to a PC or notebook. Furthermore, this connection is also provided for real-time presentation of the measured values on the PC.

The PPC-04-plus devices can store up to 15000 data records and 270000 measured values. The included PPC software is compatible with popular PC operating systems (Windows 95®, Windows 98®, Windows 2000®, Windows NT®, Windows XP®, Windows Vista® and Windows 7®) and permits various evaluation methods.

It is also possible to connect the Pressure Sensors under load, with the equipment switched on. The temperature and volume flow sensors are to be installed in the pipelines. The Rotational Speed Sensor is a non-contacting sensor and uses an optical mark on the rotating parts.
Measuring the differential pressure requires two Pressure Sensors with identical measuring ranges.

The units are also available as a complete set.
See pages D34 / D35 for further information.

Order Codes

PPC-04-plus - **CAN** - **CAL**
① ② ③

① Series and Type

Hydraulic Tester	**PPC-04-plus**

② Version

Analogue version	**(none)**
CAN version	**CAN**

③ Calibration

Without calibration certificate	**(none)**
With calibration certificate	**CAL**

Note:
Calibration certificate is only available for the analogue Hydraulic Tester PPC-04-plus.

Technical Data

Materials
- Housing made of ABS in a rubber protective

Dimensions and Weight
- W x H x D: 96 x 172 x 54 mm / 3.78 x 6.77 x 2.13 in
- Weight: ca. 540 g / 1.19 lbs

Measurements / Display
- Pressure: in bar, PSI, mbar, kPa, MPa
- Temperature: in °C und °F
- Volume flow: in l/min and US GPM
- Rotational speed: in 1/min and RPM
- Display: FSTN-LCD, graphic, LED backlit
- Visible area: 62 x 62 mm / 2.44 x 2.44 in
- Resolution: 130 x 130 Pixel

Power Supply
- External: Micro USB socket, type B +5V DC, max. 1000 mA
- Battery: Lithium Ion pack 3,7 V DC / 2250 mAh or 3,7 V DC / 4500 mAh CAN version
- Operating time with the rechargeable battery: approx. 8 hours

Sensor Inputs
- Push-in connection: 5-pol., push-pull or 5-pol., M12x1, SPEEDCON, connector (CAN version)
- Automatic sensor recognition
- Sampling rate: 1 ms
- Accuracy: < ±0,2 % FS* ±1 Digit

Permissible Temperatures
- Ambient: 0 °C ... +50 °C / +32 °F ... +122 °F
- Storage: -25 °C ... +60 °C / -13 °F ... +140 °F
- Relative humidity: < 80 %
- CE certified

Interfaces
- USB device: Online transmission between unit and PC via PPC-Soft-plus (software)
  Measured value transmission: ACT/MIN/MAX, min. 5 ms
  USB standard: 2.0, fullspeed
  Push-in connection: Micro USB socket, shielded, type A
- USB host: Connection for USB stick, max. 4 GB
  USB standard: 2.0, fullspeed, max. 100 mA
  Push-on connection: Micro USB socket, shielded, type B

Protection Rating
- IP 54 protection rating: Dust protected and protected against splashing water
- (CAN version)
  IP 67 protection rating: Dust tight and protected against splashing water

Software

A PC set, consisting of a USB connection lead, length 1 m / 3.28 ft and the corresponding PC software, is included in the scope of delivery.
The measured data and curves can be easiliy transferred and processed by using PPC-Soft-plus software as well as exported to Microsoft Excel®.

SPEEDCON is a trademark of PHOENIX CONTACT GmbH & Co. KG
Dimensional drawings: All dimensions in mm (in).

Hydraulic Testers ▪ Type PPC-06-plus / PPC-08-plus

PPC-08-plus with 4 sensor inputs

Order Codes

PPC - 06-plus - CAL

① ② ③

① Series and Type

Hydraulic Tester	**PPC**

② Version

With 3 sensor inputs	**06-plus**
With 4 sensor inputs	**08-plus**

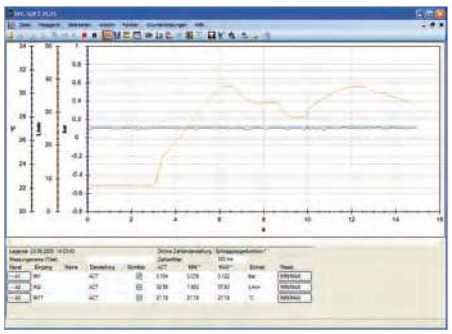
③ Calibration

Without calibration certificate	**(none)**
With calibration certificate	**CAL**

Version	No. Sensor Inputs	Integrated Data Memory for Measured Value Points	Memory Curves
06-plus	3	1000000 Points	240000 Points
08-plus	4		

Software

A PC set, consisting of a USB connection lead, length 1,5 m / 4.9 ft and the corresponding PC software, is included in the scope of delivery.
The measured data and curves can be easiliy transferred and processed by using PPC-Soft-plus software as well as exported to Microsoft Excel®.



Technical Data

Material
- Housing made of fibreglass-reinforced PA

Dimensions and Weight
- W x H x D: 106 x 235 x 53 mm / 4.17 x 9.25 x 2.09 in
- Weight: 530 g / 1.17 lbs

Measurements / Display
- Pressure: in bar, PSI, mbar, kPa, MPa
- Temperature: in °C and °F
- Volumen flow: in l/min and US GPM
- Rotational speed: in 1/min and RPM
- Digital LCD display: 128 x 64 Pixel
- Visible area: 72 x 40 mm / 2.84 x 1.58 in
- Automatic numeral height adjustment
  Numeral height: 6 mm / .24 in with eight-line display
- Data output for connection to neotebook or PC
- 12-key membrane keyboard
- Electromagnetic compatibility (EMC):
  Emitted interference: DIN EN 50081, Part 1
  Interference immunity: DIN EN 50082, Part 2
- Auto power off (after 20 minutes)
- Battery charge display

Measured Data Memory
- Variable memory interval (1 ms ... 10 s) or variable memory time (2 s ... 100 h)
- Manual and automatic triggering

Power Supply
- Power supply: 110/230 V AC (50/60 Hz)
- Rechargeable battery charging unit
- Internal nickel metal hydride (NiMh) battery 7,2 V / 700 mAh
- Operating time with the rechargeable battery: approx. 8 hours

Sensor Inputs (5-Pin)
- Automatic sensor detection
- Input signal: 0 ... 3 V DC (R = 470 kΩ)
- Frequency range: 0,5 Hz ... 30 kHz
- Sampling rate: 1 ms
- Accuracy: < ±0,25 % FS*

Data Output
- Integrated USB port (USB 2.0)
- Online data transmission to a PC
  Speed individually eligible (5 ms ... 60 s)

Permissible Temperature
- Ambient: 0 °C ... +50 °C / +32 °F ... +122 °F
- Storage: -25 °C ... +60 °C / -13 °F ... +140 °F
- Temperature error: < 0,02 % / °C

- Relative humidity: < 80 %
- CE certified
- IP 54 protection rating: Dust protected and protected against splashing water

Product Description

The PPC-06/08-plus Hydraulic Testers have been especially developed for the growing demands of system monitoring and troubleshooting in hydraulic and pneumatic systems.

- Automatic sensor recognition
- Larger data memory
- Possible to record MIN-/MAX values over long periods
- Internal trigger function
- External trigger function
- Online data transmission
- Display lighting
- Programming by PC and notebook
- Integrated USB interface

The ergonomically designed housing and the LCD display, which sets automatically to the appropriate line size, now allows problem free use even under difficult enviromental conditions.
The individual PPC-06-plus and PPC-08-plus Hydraulic Testers differ in the number of sensor inputs (3-channel or 4-channel technology).
Both Hydraulic Testers can measure, store and process all relevant hydraulic parameters such as pressure, differential pressure, temperature, rotational speed and flow.
The comprehensive programmer options, and the internal memory capacity in particular, allow for diverse measurements, trigger functions or measuring data from third-party sensors.

The PPC-06/08-plus devices can store up to 1000000 measuring value points and 240000 curve memory points. The stored values can be transferred using the built-in USB interface to a PC or notebook. The included PPC software is compatible with popular PC operating systems (Windows 95®, Windows 98®, Windows 2000®, Windows NT®, Windows XP®, Windows Vista® and Windows 7®) and permits various evaluation methods.

The automatic sensor recognition feature makes the PPC-06-plus and the PPC-08-plus Hydraulic Testers easy to operate, and the testers can be individually configured to meet customer requirements without a great programming effort. Both Hydraulic Testers allow the data from third-party sensors to be measured and processed.

The units are also available as a complete set.
See page D34 for further information.

* FS = Full Scale

Hydraulic Tester ▪ Type PPC Pad

Product Description

The application possibilities for hydraulics have recently increased throughout all areas of drive and control systems. This trend has been particularly noticeable in the sectors of machine, plant and automotive construction. At the same time, hydraulics and electronics have become increasingly intertwined.

STAUFF's hand-held measuring instrument PPC Pad helps you to deal with these new trends. It has never been so easy to follow the complex processes in these sectors with measurement, display and analysis. Potential uses include preventative maintenance, commissioning, troubleshooting and machine optimization.
The expanded requirements of these modern applications (such as the increased number of measurement points, longer cable lengths and high noise immunity) have driven further development of the CAN bus.

STAUFF's CAN bus sensors now take advantage of the bus system's automatic sensor recognition to provide an easy-to-install Plug & Play solution (max. CAN bus length 100 m / 328 ft). Compatibility with existing diagnostic sensors is also provided.

Our proven storage strategy is focused on MIN and MAX value measurements. Combined with a wide variety of value presentation styles, these features make effective solutions oriented analysis possible.

The PPC-Soft-plus PC software offers additional methods for analysis, control and remote maintenance using LAN and USB connections. Together with this software, the PPC Pad is a truly user-friendly measuring instrument that can be used for any type of diagnostics application.

Features

- Portable multi-function hand-held measuring instrument
- Pressure, temperature, flow and speed can be measured, monitored and analysed
- Measurement and display of over 50 channels
- Measured value display: numerical, bar graph, pointer, curve graph
- Project templates can be saved and loaded
- Interfaces: CAN, LAN, USB
- Total memory with up to 1 billion measured values
- Measured data can be (automatically) recorded, saved and analysed with the PPC-Soft-plus PC software and a LAN or USB connection
- Max. CAN bus length: 100 m / 328 ft

Scope of Delivery

- Hydraulic Tester PPC Pad
- Installed handle
- 24 V DC / 2,5 A Power Supply incl. country-specific Adaptor
- M8 x 1 / 4-pin (digital in/out)
- USB 2.0 cable (2 m / 6.56 ft)
- LAN cable (5 m / 16.40 ft)
- Operating instructions
- PC software
- MicroSD memory card
- M12 cable socket for 4 ... 20 mA / 0 ... 10 V aux. sensors

Technical Data

See page D19 for technical information.

Order Codes

PPC-Pad - **102** - **CAL**
① ② ③

① Series and Type

Hydraulic Tester	**PPC-Pad**

② Version

PPC-Pad-101	**101**
PPC-Pad-102	**102**
PPC-Pad-103	**103**

③ Calibration (only -102 / -103)

Without calibration certificate	**(none)**
With calibration certificate	**CAL**

Hydraulic Tester Version

Version	CAN Sensor Inputs	Sensor Inputs with Sensor Recognition STAUFF (Analogue)	Aux. Sensor Input (Analogue)
PPC-Pad-101	2 networks each with 8 sensors max.	-	-
PPC-Pad-102		3	2
PPC-Pad-103		6	4

Hydraulic Tester ▪ Type PPC Pad

Technical Data (General)

Materials
- Housing: ABS/PC (Thermoplastic)
- Protective Sleeve: TPE (Thermoplastic Elastomer)

Dimensions and Weight
- W x H x D: 257 x 181 x 75 mm / 10.12 x 7.13 x 2.95 in
- Weight: 1550 g / 3.4 lbs (basic model)

Inputs / Outputs

CAN sensor inputs: 2 CAN bus networks each with 8 sensors and max. 16 channels (for STAUFF CAN bus sensors) Scanning rate: 1 ms = 1000 measured values/sec. M12x1 push-in connector, 5-pin with SPEEDCON

- 1 digital trigger input: Scanning rate: 1 ms Input impedance: 1 kΩ Active high: >+7 … +24 V DC Active low: <1 V DC isolated
- 1 digital trigger output: Scanning rate: 1 ms Max.switching signal: +24 V DC/max. 20 mA isolated
- Push-in connector for digital input and output: M8 x 1 / 4-pin, push-in connector

Module Slots
- 2, for input module, flexible placement possible
- Slot 1 = IN1, IN2, IN3, IN4/5
- Slot 2 = IN6, IN7, IN8, IN9/10 (expandable only by STAUFF)

Display
- FT-LCD colour graphic display
- Visible area: 115 x 86 mm/ 4.53 x 3.39 in
- Resolution: 640 x 480 Pixel

Interface
- USB device: Online data transmission between unit and PC via PPC-Soft-plus Measured value transmission: ACT/MIN/MAX USB standard: 2.0, fullspeed Push-in connection: USB socket, shielded, type B
- USB host: Connection for mass storage devices such as USB memory stick or removeable hard disc standard: 2.0, fullspeed, 100 mA max. Push-in connection: USB socket, shielded, type A
- Ethernet: Online data transmission between unit and PC via PPC-Soft-plus and remote control Measured value transmission: ACT/MIN/MAX standard: 10, 100 Mbit/s, IEEE 802.3 (10/100 base T) Push-in connection: RJ45, socket, shielded

Functions
- Measurement: ACT/MIN/MAX avlues
- Measured value display: Numerical, bar graph, pointer, curve graph
- Measuring functions: Start/stop, points, trigger
- Trigger: Slope, manual, level, window, time, logic (interconnection of up to two events for the measurement start and stop)
- Pre-trigger
- Remote operation via the Ethernet
- Acoustic notification at any incident

Measured Data Memory
- For storing measured values, project data and screenshots
- Memory capacity: ≤4 million measured values per measurement Total measured value memory >1 billion measued values
- Memory format: ACT/MIN/MAX
- Memory interval: 1 ms to 24 h
- Memory duration: 1 ms to 300 h (trigger measurement)
- Internal: 64 MB (approx. 32 million measured values)
- External SD memory: MicroSD memory card incl. in standard shipment Slot: MicroSD memory card
- External USB mass memory device: up to 40 GB

Ambient Conditions
- Operating temperature: 0 °C … +50 °C / +32 °F ... +122 °F
- Storage temperature: -25 °C … +60 °C / -13 °F ... +140 °F
- Relative humidity: < 80 %
- Environmental test: IEC60068-2-32 (1 m, free fall)

Power Supply
- Internal: Lithium Ion pack, +7.4 V DC / 4500 mAh Battery charging circuit/operating time with 3 CAN sensors: > 8 h

Protection Rating

IP 64 protection rating: Dust tight and protected against splashing water

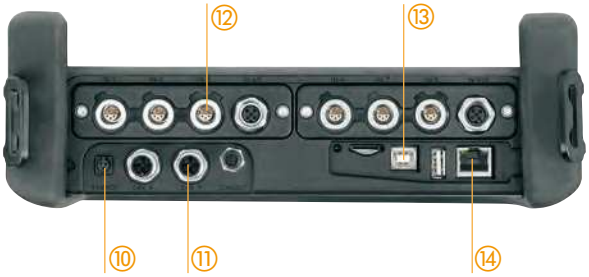
Technical Data (for PPC-Pad-102 and 103)

Input with Sensor Recognition
- 3 or 6 sensor inputs (up to 6 or 12 analogue measurement channels) with sensor recognition (p/T/Q/n) for PPC sensors
- Push-in connection: 5-pin, push-pull, combination panel plug/socket
- Scanning rate: 1 ms = 1000 measured values/sec.
- For the PPC-04/12-PT combined Pressure/Temperature Sensor, there is an additional temperature channel for each sensor input
- Temperature scanning: 1 s

Inputs for Auxiliary Sensors
- 2 analogue sensor inputs:for measuring current and voltage Scanning rate: 1 ms = 1000 measured values/sec. Voltage measuring range: -10 … +10 V DC (freely configurable) Current measuring range: 0/4…20 mA Supply external sensors: +18 … +24 V DC/max. 100 mA Push-in connection: M12x1, 5-pin socket
- FAST mode: Scanning rate: 0.1 ms = 10000 measured values/sec. only one auxiliary sensor input is useable

Accuracy
- +0,02 % per °C

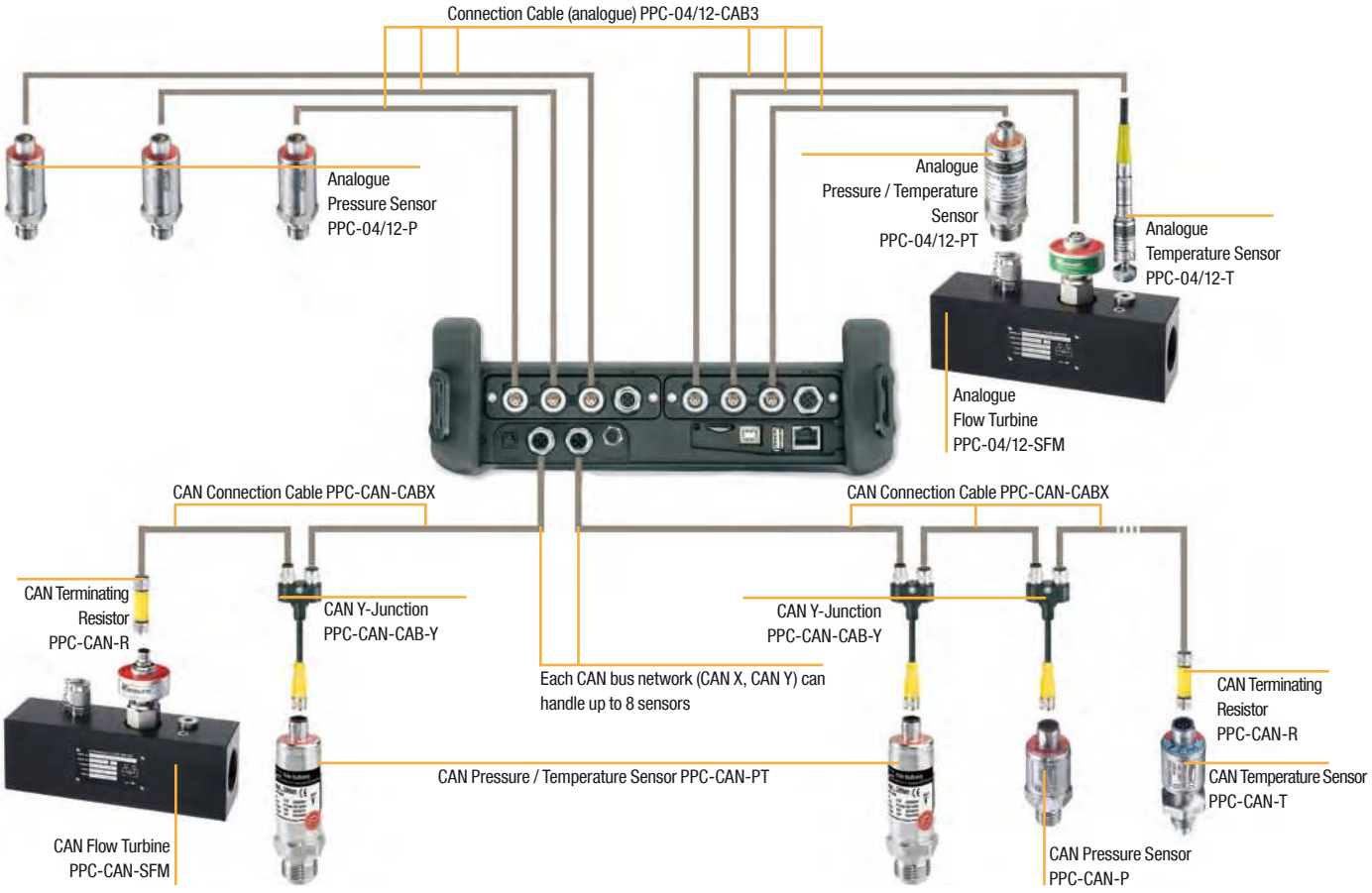
Hydraulic Tester ▪ Type PPC Pad



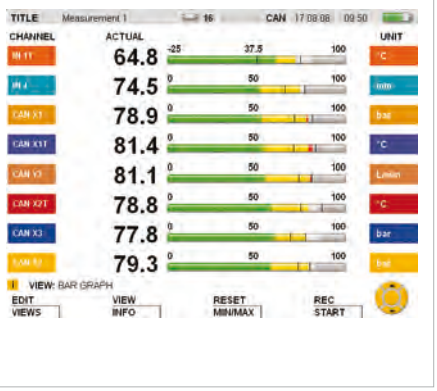
Functional Description

① High protection from moisture and dirt due to cover caps and a rubber protective sleeve, protection class IP 64
② Illuminated display for good readability in any situation
③ Protection of the housing, affording usage in tough enviroments and absorption of shocks
④ Big 5.7 in colour display for clearly viewing the extensive information
⑤ Intuitive operation due to clear-cut control elements and function-oriented keys
⑥ Ergonomic housing shape ensures convenient portability and long operating times
⑦ Large keyboard and fonts for easy operation and readability
⑧ Portabel multi-function hand-held measuring instrument - strong in design and tough in operation
⑨ Easy to carry and hang up with carrying strip
⑩ 110 / 240 V AC power supply, battery life 8 hours, recharging time 3 hours
⑪ 2 x CAN bus networks with each 16 channels
⑫ Modular design for up to 6 analogue sensors or 2 highspeed channels (0,1 ms) automatic sensor recognition
⑬ PC interface (USB 2.0); ACT/MIN/MAX measured value transmission to the PPC-Soft-plus software, terminal for USB mass storage devices
⑭ LAN interface for remote monitoring, MicroSD memory card for storage enlargement

Connection of Analogue Sensors / CAN Sensors



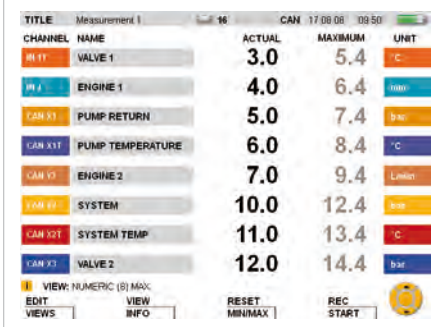
Hydraulic Tester ▪ PPC Pad Display



- Display of measured values as figures and bars
- Fixing of alarm ranges in green, yellow and red
- Trailing pointer function with MIN and MAX values

- Up to 4 channels in one large-format display
- Simultaneous display of ACT, MIN and MAX values
- Information lines of current settings, events and views
- Individual measurement channel identifier

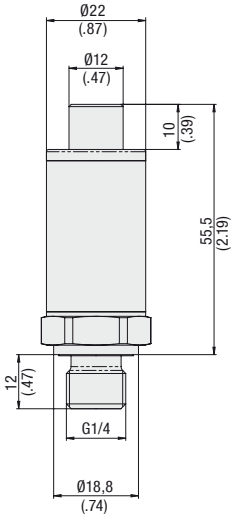
- Large-area pointer display of measured values
- Trailing pointer for MIN and MAX values
- Alarm range in green, yellow and red
- Further channels can be called up with the arrow keys

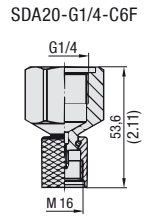


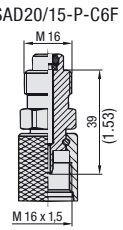
- Up to 8 channels in one display
- Colour allocation of the individual channels
- Uniform headings with measurement titels, sensors connected, interfaces, date, time and battery condition indicator
- Display can be changed between MIN and MAX values and full scale

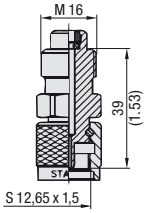
- Up to 8 channels in one graph display
- Fine, precise graph image thanks to high definition display
- Choice between ACT and MIN/MAX value display
- Automatic and manual scaling of the time axis for optimum measured value display

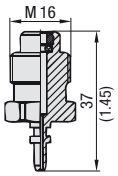
Pressure Sensor ▪ Type PPC-04/12-P











Product Description

The Pressure Sensors PPC-04/12-P can be used with all analogue Hydraulic Testers of the PPC series, due to their 5-pin connection.
Due their sturdy Stainless Steel design, the quick response times (< 1 ms) and the high accuracy (±0,25% FS* typ.) with automatic sensor recognition, the Pressure Sensors are a reliable and flexible solution for the Hydraulic Testers of the PPC series.

Note: A Connection Cable PPC-04/12-CAB3 (3 m / 9.84 ft) is needed to connect the Pressure Sensor PPC-04/12-P to the current Hydraulic Testers. An Extension Cable PPC-04/12-CAB5-EXT (5 m / 16.40 ft) is also available as an option.
See page D32 for further information.

PPC-04/12-P	
Pressure Measurement	yes
Temperature Measurement	no
Process Connection	G1/4
Type	analogue 5-pin connection

Technical Data

- Sturdy Stainless Steel housing (1.4301)
- FPM (Viton®) gasket
- Weight: 85 g / .19 lbs
- Suitable for gases and liquids (in the case of aggressive media, only after consultation)
- 5-pin connection
- Pressure connection G1/4 (without adaptor)

Ambient Conditions

- Media temperature: -25 °C ... +105 °C /-13 °F ... +221 °F
- Ambient temperature: -25 °C ... +85 °C / -13 °F ... +185 °F
- Storage temperature: -25 °C ... +85 °C / -13 °F ... +185 °F
- Load cycles (10^6): 100

Electrical Data

- Input voltage: 9 ... 36 V DC
- Output signal: 0 ... 3 V DC
- Response time: 1 ms
- Long-term stability: < 0,2 % FS* /a
- Vibration loading: acc. to IEC 60068-2-6 (20 g)
- Shock loading: acc. to IEC 60068-2-27 (50 g)

Order Codes

PPC-04/12-P - **015** - **CAL**
① ② ③

① Series and Type

Pressure Sensor	**PPC-04/12-P**

② Version

See table

③ Calibration

Without calibration certificate	**(none)**
With calibration certificate	**CAL**

Pressure Range and Accuracies

Version	Pressure Range and Accuracies					
Sensor PPC-04/12-P-	Pressure Measuring Range ($^{bar}/_{PSI}$)	Type of Measurement	Maximum Pressure ($^{bar}/_{PSI}$)	Burst Pressure ($^{bar}/_{PSI}$)	Accuracy (±% FS*) typ.	Accuracy (±% FS*) max.
015	-1 ... 15 -14.5 ... 217	Relative pressure	30 435	150 2175	0,25	0,5
060	0 ... 60 0 ... 870	Absolute pressure	120 1740	500 7251	0,25	0,5
150	0 ... 150 0 ... 2175	Absolute pressure	300 4351	900 13053	0,25	0,5
400	0 ... 400 0 ... 5801	Absolute pressure	800 11603	1200 17404	0,25	0,5
600	0 ... 600 0 ... 8702	Absolute pressure	1200 17404	1800 26106	0,25	0,5
601	0 ... 600 ** 0 ... 8702	Absolute pressure	1200 17404	2500 36259	0,25	0,5

* FS = Full Scale

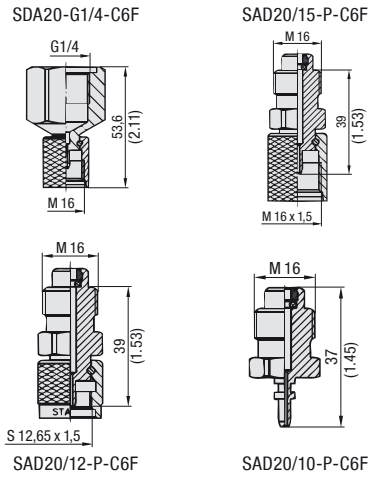
** Pressure peaks up to 1000 bar / 14503 PSI

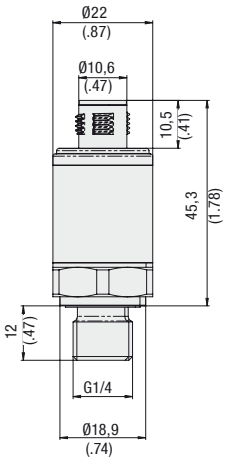
Connection Adaptors for PPC Sensors

In addition to the Pressure Sensors, different adaptors and adaptor sets are available that not only connect to the STAUFF Test 20 (SDA20-G1/4-C6F), but also to the Test Couplings of the STAUFF Test 15/12/10 series (SAD20/15-P-C6F, SAD20/12-P-C6F, SAD20/10-P-C6F).
For further information please see STAUFF Test section.

Dimensional drawings: All dimensions in mm (in).

CAN Pressure Sensor ▪ Type PPC-CAN-P





Order Codes

PPC-CAN-P - **016** - **CAL**

① ② ③

① Series and Type

CAN Pressure Sensor	**PPC-CAN-P**

② Version

See table

③ Calibration

Without calibration certificate	**(none)**
With calibration certificate	**CAL**

Pressure Range and Accuracies

Version	Pressure Range and Accuracies					
Sensor PPC-CAN-P-	Pressure Measuring Range ($^{bar}/_{PSI}$)	Type of Measurement	Maximum Pressure ($^{bar}/_{PSI}$)	Burst Pressure ($^{bar}/_{PSI}$)	Accuracy (±% FS*) typ.	Accuracy (±% FS*) max.
016	-1 ... 16 -14.5 ... 232	Relative pressure	32 464	150 2175	0,25	0,5
060	0 ... 60 0 ... 870	Absolute pressure	120 1740	500 7251	0,25	0,5
160	0 ... 160 0 ... 2320	Absolute pressure	320 4641	900 13053	0,25	0,5
400	0 ... 400 0 ... 5801	Absolute pressure	800 11603	1200 17404	0,25	0,5
600	0 ... 600 0 ... 8702	Absolute pressure	1200 17404	1800 26106	0,25	0,5
601	0 ... 600 ** 0 ... 8702	Absolute pressure	1200 17404	2500 36259	0,25	0,5

* FS = Full Scale

**Pressure peaks up to 1000 bar / 14503 PSI

Connection Adaptors for PPC Sensors

In addition to the CAN Pressure Sensors, different adaptors and adaptor sets are available that not only connect to the STAUFF Test 20 (SDA20-G1/4-C6F), but also to the Test Couplings of the STAUFF Test 15/12/10 series (SAD20/15-P-C6F, SAD20/12-P-C6F, SAD20/10-P-C6F). For further information please see STAUFF Test section.

Product Description

The CAN Pressure Sensors PPC-CAN-P are specially designed for use with the CAN Hydraulic Testers. These sensors are using the CANopen protocol to transfer the measurement values to the CAN Hydraulic Testers. Most technical details are the same as with the Pressure Sensors.
Due their sturdy Stainless Steel design, the quick response times (< 1 ms) and the high accuracy (±0,25% FS* typ.) with automatic sensor recognition, the CAN Pressure Sensors are a reliable and flexible solution for the CAN Hydraulic Tester.
The status of the sensor is indicated via LED.

Connecting the CAN Pressure Sensor to the CAN Hydraulic Tester a CAN Connection Cable and a CAN Terminating Resistor is needed. See page D33 for further information.

PPC-CAN-P	
Pressure Measurement	yes
Temperature Measurement	no
Process Connection	G1/4
Type	CAN connection 5-pin, M12x1

Technical Data

- Sturdy Stainless Steel housing (1.4301)
- FPM (Viton®) gasket)
- Sensor identification LED
- Weight: 85 g / .19 lbs
- Suitable for gases and liquids (in the case of aggressive media, only after consultation)
- 5-pin SPEEDCON connection plug
- Pressure connection G1/4 (without adaptor)

Ambient Conditions

- Media temperature: -25 °C ... +105 °C /-13 °F ... +221 °F
- Ambient temperature: -25 °C ... +85 °C / -13 °F ... +185 °F
- Storage temperature: -25 °C ... +85 °C / -13 °F ... +185 °F
- Load cycles (10^6): 100

CANopen Interface

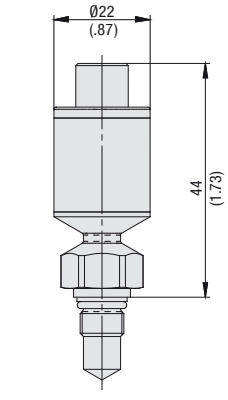
- CANopen protocol profile DS406 v3.2 with manufacturer-specific additions
- LSS service DS305 v2.0

Electrical Data

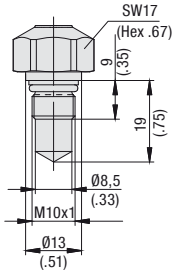
- Response time: 1 ms
- Long-term stability: < 0,2 % FS* /a
- Vibration loading: acc. to IEC 60068-2-6 (20 g)
- Shock loading: acc. to IEC 60068-2-27 (50 g)

SPEEDCON is a trademark of PHOENIX CONTACT GmbH & Co. KG
Dimensional drawings: All dimensions in mm (in).

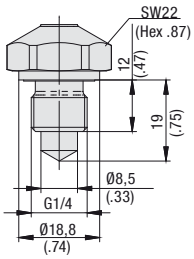
Temperature Sensor ▪ Type PPC-04/12-T



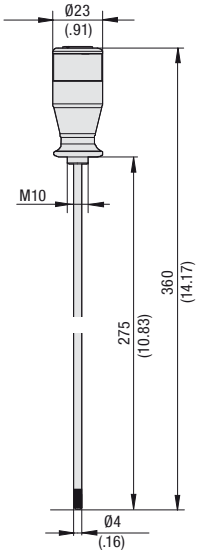
Screw-in Temperature Sensor (T)



Process Connection M10x1



Process Connection G1/4



Rod-type Temperature Sensor (TSH)

Product Description

The Screw-in Temperature Sensors PPC-04/12-T measure current temperature directly in the pipeline and are compatible with the Flow Turbine PPC-04/12-SFM and the Straight Threaded Joint SGV-16S-G-C6F (only process connection M10x1, see figure below).
See product information of Flow Turbine on page D28.

The Rod-type Temperature Sensor PPC-04/12-TSH is especially designed to determine the media temperatures in tanks and containers.

Note: A Connection Cable PPC-04/12-CAB3 (3 m / 9.84 ft) is needed to connect the Temperature Sensor PPC-04/12-T or -TSH to the current Hydraulic Testers. An Extension Cable PPC-04/12-CAB5-EXT (5 m / 16.40 ft) is also available as an option. See page D32 for further information.

PPC-04/12-T	
Pressure Measurement	no
Temperature Measurement	yes
Process Connection	M10x1 or G1/4
Type	analogue 5-pin connection

PPC-04/12-T-M02 with SGV-16S-G-C6F

For further information please see STAUFF Test section.

Order Codes

PPC-04/12 - T - M02 - CAL
① ② ③ ④

① Series and Type

Temperature Sensor	**PPC-04/12**

② Version

Screw-in	**T**
Rod-type	**TSH**

③ Process Connection (only for Version T)

M10x1	**M02**
G1/4	**B04**

④ Calibration

Without calibration certificate	**(none)**
With calibration certificate	**CAL**

Technical Data

- Suitable for liquids (in the case of aggressive media only after consultation)
- 5-pin connection

Materials
- Housing (T): Stainless Steel
- Gaskets (T): FPM (Viton®)
- Rod (TSH): Stainless Steel 1.4304
- Handle (TSH): Delrin

Weight
- Screw-in (T)
  M02 (M10x1): 70 g / .15 lbs
  B04 (G1/4): 55 g / .12 lbs
- Rod-type (TSH): 120 g / .26 lbs

Connection
- STAUFF Test connection SGV-16S-G-C6F in the pipeline (only M10x1)
- Screw-in thread (T): M10x1 or G1/4 (see figure)
- Screw-in thread (TSH): M10

Ambient Conditions (Screw-in Temperature Sensor)
- Media temperature: -40 °C ...+150 °C / -40 °F ... +302 °F
- Ambient temperature: -40 °C ... +85 °C / -40 °F ... +185 °F
- Storage temperature: -40 °C ... +85 °C / -40 °F ... +185 °F

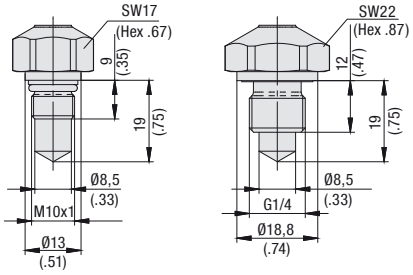
Ambient Conditions (Rod-type Temperature Sensor)
- Media temperature: -25 °C ... +125 °C / -13 °F ... +257 °F
- Ambient temperature: -25 °C ... +70 °C / -13 °F ... +158 °F
- Storage temperature: -25 °C ... +80 °C / -13 °F ... +176 °F

Measuring Range
- Measuring range (T): -40 °C ...+150 °C / -40 °F ... +302 °F
- Measuring range (TSH): -25 °C ... +125 °C / -13 °F ... +257 °F
- Operating pressure (T): 630 bar / 9137 PSI
- Maximum pressure (T): 800 bar / 11603 PSI
- Burst pressure (T): 2150 bar / 31183 PSI
- Accuracy: ±1 % FS

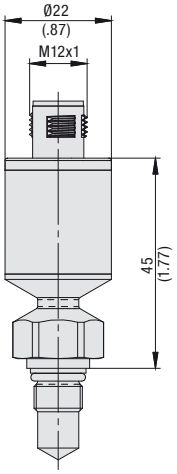
Electrical Data
- Input signal: 7 ...12 V DC
- Output signal: 0 ...3 V DC
- Response time (T)
  M02 (M10x1): $T_{50} \leq 4$ s, $T_{90} \leq 14$ s
  B04 (G1/4): $T_{50} \leq 4$ s, $T_{90} \leq 12$ s
- Response time (TSH): $T_{90} \leq 9{,}1$ s
- Long-term stability: ±0,01 % FS* a/Span
- Vibration loading: acc. to IEC 60068-2-6 (20 g)
- Shock loading: acc. to IEC 60068-2-27 (50 g)

* FS = Full Scale
Dimensional drawings: All dimensions in mm (in).

CAN Temperature Sensor ▪ Type PPC-CAN-T



Process Connection M10x1 Process Connection G1/4



Order Codes

PPC-CAN - T - M02 - CAL

① ② ③ ④

① Series and Type

CAN Temperature Sensor	**PPC-CAN**

② Version

Screw-in	**T**

③ Process Connection (only for Version T)

M10x1	**M02**
G1/4	**B04**

④ Calibration

Without calibration certificate	**(none)**
With calibration certificate	**CAL**

Technical Data

- Suitable for liquids (in the case of aggressive media only after consultation)
- 5-pin SPEEDCON connection plug
- Sensor identification LED

Materials
- Housing: Stainless Steel
- Gaskets: FPM (Viton®)

Weight
- M02 (M10x1): 70 g / .15 lbs
- B04 (G1/4): 55 g / .12 lbs

Ambient Conditions
- Media temperature: -40 °C ...+150 °C / -40 °F ... +302 °F
- Ambient temperature: -40 °C ... +85 °C / -40 °F ... +185 °F
- Storage temperature: -40 °C ... +85 °C / -40 °F ... +185 °F

Measuring Range
- Measuring range: -40 °C ...+150 °C / -40 °F ... +302 °F
- Operating pressure: 630 bar / 9137 PSI
- Maximum pressure: 800 bar / 11603 PSI
- Burst pressure: 2150 bar / 31183 PSI
- Accuracy: ±0,66 % FS

CANopen Interface
- CANopen protocol profile DS301, Typ 2.0A with manufacturer-specific additions
- LSS service DS305 v2.0

Electrical Data
- Output signal: CAN bus
- Response time
  M02 (M10x1): $T_{50} \leq 4$ s, $T_{90} \leq 12$ s
  B04 (G1/4): $T_{50} \leq 4$ s, $T_{90} \leq 14$ s
- Long-term stability: ±0,01 % FS* a/Span
- Vibration loading: acc. to IEC 60068-2-6 (20 g)
- Shock loading: acc. to IEC 60068-2-27 (50 g)

Product Description

The CAN Temperature Sensor PPC-CAN-T are specially designed for use with the CAN Hydraulic Testers. This sensor is using the CANopen protocol to transfer the measurement values to the CAN Hydraulic Testers. The PPC-CAN-T is compatible with the CAN Flow Turbine PPC-CAN-SFM and the Straight Threaded Joint SGV-16S-G-C6F (only process connection M10x1, see figure below). See product information of CAN Flow Turbine on page D29.
Most technical details are the same as with the Temperature Sensor PPC-04/12-T.
Due their sturdy Stainless Steel design with automatic sensor recognition, the CAN Temperature Sensor is a reliable and flexible solution for the CAN Hydraulic Tester. The status of the sensor is indicated via LED.

Connecting the CAN Temperature Sensor to the CAN Hydraulic Tester a CAN Connection Cable and a CAN Terminating Resistor is needed. See page D33 for further information.

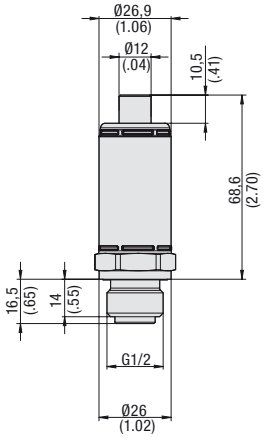
PPC-CAN-T	
Pressure Measurement	no
Temperature Measurement	yes
Process Connection	M10x1 or G1/4
Type	CAN connection 5-Pin, M12x1

PPC-CAN-T-M02 with SGV-16S-G-C6F

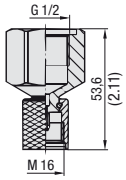
For further information please see STAUFF Test section.

* FS = Full Scale
SPEEDCON is a trademark of PHOENIX CONTACT GmbH & Co. KG
Dimensional drawings: All dimensions in mm (in).

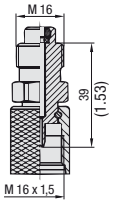
Pressure / Temperature Sensor ▪ Type PPC-04/12-PT

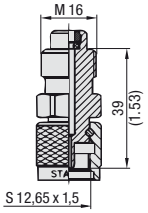


SDA20-G1/2-C6F

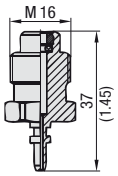


SAD20/15-P-C6F





SAD20/12-P-C6F



SAD20/10-P-C6F

Product Description

The Pressure / Temperature Sensor PPC-04/12-PT can be used with all Hydraulic Testers of the PPC series, due to the 5-pin connection. This sensor is able to measure and display temperatures on the Hydraulic Testers.

Due the sturdy Stainless Steel design, the quick response time (< 1 ms) and the high accuracy (±0,25% FS* typ.) with automatic sensor recognition, the Pressure / Temperature Sensor is a reliable and flexible solution for the Hydraulic Testers of the PPC series.

Note: A Connection Cable PPC-04/12-CAB3 (3 m / 9.84 ft) is needed to connect the Pressure / Temperature Sensor to the current Hydraulic Testers. An Extension Cable PPC-04/12-CAB5-EXT (5 m / 16.40 ft) is also available as an option.
See page D32 for further information.

PPC-04/12-PT-	
Pressure Measurement	yes
Temperature Measurement	yes
Process Connection	G1/2
Type	analogue 5-pin connection

Technical Data

- Sturdy Stainless Steel housing (1.4301)
- FPM (Viton®) gasket
- Weight: 200 g / .44 lbs
- Suitable for gases and liquids (in the case of aggressive media, only after consultation)
- 5-Pin connection
- Pressure connection G1/2 (without adaptor)

Ambient Conditions

- Media temperature: -25 °C ... +105 °C /-13 °F ... +221 °F
- Ambient temperature: -25 °C ... +85 °C / -13 °F ... +185 °F
- Storage temperature: -25 °C ... +85 °C / -13 °F ... +185 °F
- Compensated range: 0 °C ... +85 °C / +32 °F ... +285 °F
- Load cycles (10^6): 100

Electrical Data

- Input voltage: 7 ... 12 V DC
- Output signal: 0 ... 3 V DC
- Response time: 1 ms
- Long-term stability: < 0,2 % FS* /a
- Vibration loading: acc. to IEC 60068-2-6 (20g)
- Shock loading: acc. to IEC 60068-2-27 (50g)

Order Codes

PPC-04/12-PT - **015** - **CAL** - **/2**

① ② ③

① Series and Type

Pressure / Temperature Sensor	**PPC-04/12-PT**

② Version

See table

③ Calibration

Without calibration certificate	**(none)**
With calibration certificate	**CAL**

Pressure Range and Accuracies

Version	Pressure Range and Accuracies							
Sensor PPC-04/12-PT-	Pressure Measuring Range (bar/PSI)	Type of Measure-ment	Maximum Pressure (bar/PSI)	Burst Pressure (bar/PSI)	Accuracy (±% FS*) typ.	Accuracy (±% FS*) max.	Temperature Measuring Range (°C/°F)	Accuracy (±% FS*)
015 /2	-1 ... 15 -14.5 ... 217	Relative pressure	30 435	150 2175	0,25	0,5	-25 ... 105 -13 ... 221	1,5
060 /2	0 ... 60 0 ... 870	Absolute pressure	120 1740	500 7251	0,25	0,5	-25 ... 105 -13 ... 221	1,5
150 /2	0 ... 150 0 ... 2175	Absolute pressure	300 4351	900 13053	0,25	0,5	-25 ... 105 -13 ... 221	1,5
400 /2	0 ... 400 0 ... 5801	Absolute pressure	800 11603	1200 17404	0,25	0,5	-25 ... 105 -13 ... 221	1,5
600 /2	0 ... 600 0 ... 8702	Absolute pressure	1200 17404	1800 26106	0,25	0,5	-25 ... 105 -13 ... 221	1,5
601 /2	0 ... 600 ** 0 ... 8702	Absolute pressure	1200 17404	2500 36259	0,25	0,5	-25 ... 105 -13 ... 221	1,5

* FS = Full Scale

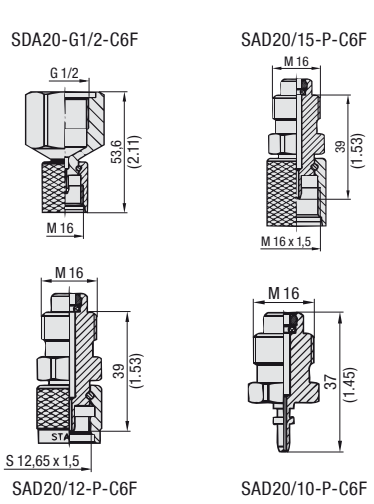
** Pressure peaks up to 1000 bar / 14503 PSI

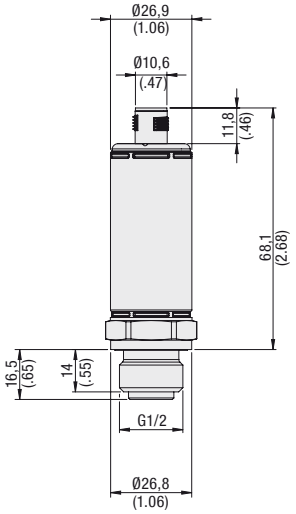
Connection Adaptors for PPC Sensors

In addition to the Pressure / Temperature Sensors, different adaptors and adaptor sets are available that not only connect to the STAUFF Test 20 (SDA20-G1/2-C6F), but also to the Test Couplings of the STAUFF Test 15/12/10 series (SAD20/15-P-C6F, SAD20/12-P-C6F, SAD20/10-P-C6F). For further information please see STAUFF Test section.

Dimensional drawings: All dimensions in mm (in).

CAN Pressure / Temperature Sensor ▪ Typ PPC-CAN-PT





Order Codes

PPC-CAN-PT - 016 - CAL

① ② ③

① Series and Type

CAN Pressure / Temperature Sensor	**PPC-CAN-PT**

② Version

See table

③ Calibration

Without calibration certificate	**(none)**
With calibration certificate	**CAL**

Pressure Range and Accuracies

Version	Pressure Range and Accuracies							
Sensor PPC-CAN-PT-	Pressure Measuring Range (bar/PSI)	Type of Measure-ment	Maximum Pressure (bar/PSI)	Burst Pressure (bar/PSI)	Accuracy (±% FS*) typ.	Accuracy (±% FS*) max.	Temperature Measuring Range (°C/°F)	Accuracy (±% FS*)
016	-1 ... 16	Relative pressure	32	150	0,25	0,5	-25 ... 105	±2K typ./ ±3K max.
	-14.5 ... 232		464	2175			-13 ... 221	
060	0 ... 60	Absolute pressure	120	500	0,25	0,5	-25 ... 105	±2K typ./ ±3K max.
	0 ... 870		1740	7251			-13 ... 221	
160	0 ... 160	Absolute pressure	320	900	0,25	0,5	-25 ... 105	±2K typ./ ±3K max.
	0 ... 2320		4641	13053			-13 ... 221	
400	0 ... 400	Absolute pressure	800	1200	0,25	0,5	-25 ... 105	±2K typ./ ±3K max.
	0 ... 5801		11603	17404			-13 ... 221	
600	0 ... 600	Absolute pressure	1200	1800	0,25	0,5	-25 ... 105	±2K typ./ ±3K max.
	0 ... 8702		17404	26106			-13 ... 221	
601	0 ... 600 **	Absolute pressure	1200	2500	0,25	0,5	-25 ... 105	±2K typ./ ±3K max.
	0 ... 8702		17404	36259			-13 ... 221	

* FS = Full Scale

** Pressure peaks up to 1000 bar / 14503 PSI

Connection Adaptors for PPC Sensors

In addition to the CAN Pressure / Temperature Sensors, different adaptors and adaptor sets are available that not only connect to the STAUFF Test 20 (SDA20-G1/2-C6F), but also to the Test Couplings of the STAUFF Test 15/12/10 series (SAD20/15-P-C6F, SAD20/12-P-C6F, SAD20/10-P-C6F). For further information please see the STAUFF Test section in our general product catalogue STAUFF ONE.

Product Description

The CAN Pressure / Temperature Sensors PPC-CAN-PT are specially designed for use with the CAN Hydraulic Testers. This sensor is using the CANopen protocol to transfer the measurement values to the CAN Hydraulic Testers.
Most technical details are the same as with the Pressure / Temperature Sensor PPC-04/12-PT. The CAN sensor is able to measure and display temperatures on the CAN Hydraulic Testers.

Due the sturdy Stainless Steel design, the quick response time (< 1 ms) and the high accuracy (±0,25% FS* typ.) with automatic sensor recognition, the pressure / temperature sensor is a reliable and flexible solution for the CAN Hydraulic Tester. The status of the sensor is indicated via LED.

Connecting the CAN Pressure / Temperature Sensor to the CAN Hydraulic Tester a CAN Connection Cable and a CAN Terminating Resistor is needed. See page D33 for further information.

PPC-CAN-PT	
Pressure Measurement	yes
Temperature Measurement	yes
Process Connection	G1/2
Type	CAN connection 5-pin, M12x1

Technical Data

- Sturdy Stainless Steel housing (1.4301)
- FPM (Viton®) gasket
- Sensor identification LED
- Weight: 200 g / .44 lbs
- Suitable for gases and liquids (in the case of aggressive media, only after consultation)
- 5-pin SPEEDCON connection plug
- Pressure connection G1/2 (without adaptor)

Ambient Conditions

- Media temperature: -25 °C ... +105 °C /-13 °F ... +221 °F
- Ambient temperature: -25 °C ... +85 °C / -13 °F ... +185 °F
- Storage temperature: -25 °C ... +85 °C / -13 °F ... +185 °F
- Compensated range: 0 °C ... +85 °C / +32 °F ... +185 °F
- Load cycles (10^6): 100

CANopen Interfaces

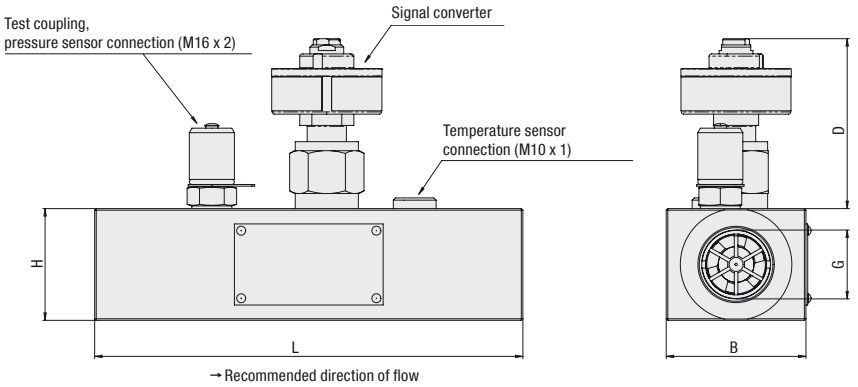
- CANopen protocol profile DS406 v3.2 with manufacturer-specific additions
- LSS service DS305 v2.0

Electrical Data

- Response time: 1 ms
- Vibration loading: acc. to IEC 60068-2-6 (20g)
- Shock loading: acc. to IEC 60068-2-27 (50g)

SPEEDCON is a trademark of PHOENIX CONTACT GmbH & Co. KG
Dimensional drawings: All dimensions in mm (in).

Flow Turbine ▪ Type PPC-04/12-SFM



Product Description

The PPC-04/12-SFM Flow Turbine is permanently installed in the pipeline. The oil flow rotates the internal axial turnine. The frequencies generated are processed by digital electronics (a signal converter). Interferences caused by flow effects are compensated by this process.
The signal converter is now directly integrated into the Flow Turbine. This allows even simpler operation and supports permanent coupling of the turbine and signal converter components that are matched to one another.

The Flow Turbine also improves the response time (from previously 400 ms to 50 ms) and increases the measuring accuray.

The PPC-04/12-SFM is available in five versions for various flow speeds. A Pressure Sensor PPC-04/12-P (see page D22) can be connected in parallel to the Flow Turbine by way of the integrated test coupling. In addition, the oil temperature can also be measured using the connection of the Temperature Sensor PPC-04/12-T (see page D24).

In general, the Flow Turbine can handle flows in either direction. The specified technical data and the calibration (available as an option) apply only when the flow through the Flow Turbine matches the recommended flow direction. A double-headed arrow is shown on the nameplate of the PPC-04/12-SFM. The thicker end of the double-headed arrow specifies the recommended direction of flow.

Note: A Connection Cable PPC-04/12-CAB3 (3 m / 9.84 ft) is needed to connect the Flow Turbine to the current Hydraulic Testers.
An Extension Cable PPC-04/12-CAB5-EXT (5 m / 16.40 ft) is also available as an option.
See page D32 for further information.

Technical Data

Materials
- Housing: Aluminium (black anodised)
- Gaskets: FPM (Viton®)
- 5-pin connection
- Pressure measurement connection: SMK20 (M16 x 2)
- Temperature measurement connection: M10 x 1 (standard screw plug)

Ambient Conditions
- Media temperature: -20 °C ... +90 °C / -4 °F ... +194 °F
- Ambient temperature: -10 °C ... +50 °C / +14 °F ... +122 °F
- Storage temperature: -20 °C ... +80 °C / -4 °F ... +176 °F
- Permissible particle size: <10 Micron for SFM-015, <25 Micron for others
- Viscosity range: 10 ... 100 cSt

Electrical Data
- Response time: 50 ms

Process Connection
- Please see table below

Order Codes

PPC-04/12 - SFM-015 - CAL
① ② ③

① Series and Type

Flow Turbine	**PPC-04/12**

② Version

1 ... 15 l/min / .27 ... 3.90 US GPM	**SFM-015**
3 ... 60 l/min / .79 ... 15.90 US GPM	**SFM-060**
5 ... 150 l/min / 1.32 ... 39.60 US GPM	**SFM-150**
8 ... 300 l/min / 2.11 ... 79.00 US GPM	**SFM-300**
15 ... 600 l/min / 3.96 ... 158.00 US GPM	**SFM-600**

③ Calibration

Without calibration certificate	**(none)**
With calibration certificate	**CAL**

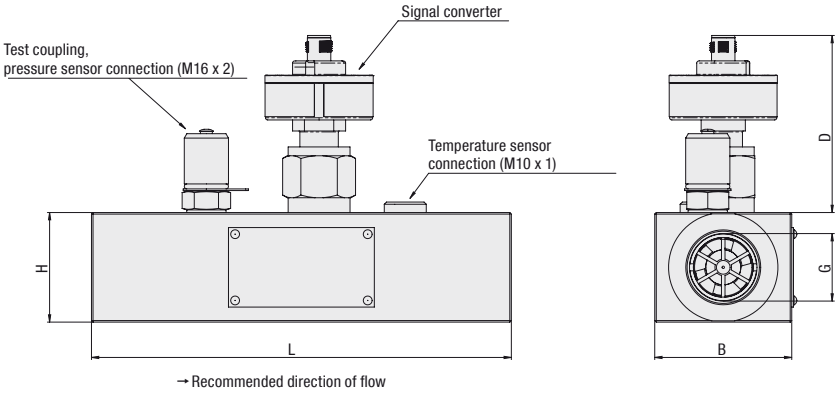
UNF version available on request.

Dimensions and Measuring Range

Version	Measuring Range						Dimensions (mm/in)						
Flow Turbine PPC-04/12-	Measuring Range (l/min / US GPM)	Max. Flow (l/min / US GPM)	Operating Pressure (bar / PSI)	Max. Pressure (bar / PSI)	Accuracy (at 21 cSt)	Max. Pressure Drop (at FS*) (bar / PSI)	G ** (BSP)	G (UNF)	B	D	L	H	Weight (g / lbs)
SFM-015	1 ... 15	16,5	350	420	±1 (% FS*)	1,5	G1/2	3/4–16	37	71	136	37	650
	.27 ... 3.90	4.4	5076	6091		21.8			1.46	2.80	5.35	1.46	1.4
SFM-060	3 ... 60	66	350	420	±1 (% of the displayed value)	1,5	G3/4	1-1/16–16	62	72	190	50	750
	.79 ... 15.90	17.4	5076	6091		21.8			2.44	2.83	7.48	1.97	1.6
SFM-150	5 ... 150	165	350	420	±1 (% of the displayed value)	1,5	G3/4	1-1/16–16	62	72	190	50	750
	1.32 ... 39.60	43.6	5076	6091		21.8			2.44	2.83	7.48	1.97	1.6
SFM-300	8 ... 300	330	350	420	±1 (% of the displayed value)	4	G1	1-5/16–16	62	76	190	50	1200
	2.11 ... 79.00	87.2	5076	6091		58			2.44	2.99	7.48	1.97	2.6
SFM-600	15 ... 600	660	290	348	±1 (% of the displayed value)	5	G1-1/4	1-5/8–12	62	66	212	75	1800
	3.96 ... 158.00	174.4	4206	5047		72.5			2.44	2.60	8.35	2.95	4

* FS = Full Scale
** Standard option
Dimensional drawings: All dimensions in mm (in).

CAN Flow Turbine ▪ Type PPC-CAN-SFM



Order Codes

PPC-CAN - SFM-015 - CAL

① ② ③

① Series and Type

CAN Flow Turbine	**PPC-CAN**

② Version

1 ... 15 l/min / .27 ... 3.90 US GPM	**SFM-015**
3 ... 60 l/min / .79 ... 15.90 US GPM	**SFM-060**
5 ... 150 l/min / 1.32 ... 39.60 US GPM	**SFM-150**
8 ... 300 l/min / 2.11 ... 79.00 US GPM	**SFM-300**
15 ... 600 l/min / 3.96 ... 158.00 US GPM	**SFM-600**

③ Calibration

Without calibration certificate	**(none)**
With calibration certificate	**CAL**

UNF version available on request.

Technical Data

Materials

- Housing: Aluminium (black anodised)
- Gaskets: FPM (Viton®)
- 5-pin SPEEDCON connection plug
- Pressure measurement connection: SMK20 (M16 x 2)
- Temperature measurement connection: M10 x 1 (standard screw plug)

Ambient Conditions

- Media temperature: -20 °C ... +90 °C / -4 °F ... +176 °F
- Ambient temperature: -10 °C ... +50 °C / +14 °F ... +122 °F
- Storage temperature: -20 °C ... +80 °C / -4 °F ... +176 °F
- Permissible particle size: <10 Micron for SFM-015 (CAN), <25 Micron for others
- Viscosity range: 10 ... 100 cSt

Electrical Data

- Response time: 50 ms

Process Connection

- Please see table below

Product Description

The CAN Flow Turbine PPC-CAN-SFM is specially designed for the use with the CAN Hydraulic Testers and has to be installed permanently in the pipeline where the oil flow rotates the internal axial turbine. The generated frequencies are processed by digital electronics (a signal converter).
Interferences caused by flow effects are compensated by this process. The signal converter is now directly integrated into the CAN Flow Turbine. This allows even simpler operation and supports permanent coupling of the turbine and signal converter components that are matched to one another.

The CAN Flow Turbine also improves the response times/ reaction times (from a previous 400 ms to 50 ms) and increases measurement accuracy.
The CAN Flow Turbine is available in five versions for various flow speeds. A CAN Pressure Sensor PPC-CAN-P (see page D23) can be connected parallel to the CAN Flow Turbine by the way of the integrated test coupling. In addition, the oil temperature can also be measured using the connection of the Temperature Sensor PPC-CAN-T (see page D25).

In general, the CAN Flow Turbine can handle flows in either direction. The specified technical data an the calibration (available as an option) apply only when the flow through the CAN Flow Turbine matched the recommended flow direction. A double-headed arrow is shown on the nameplate of the PPC-CAN-SFM. The thicker end of the double-headed arrow specifies the recommended direction of the flow.

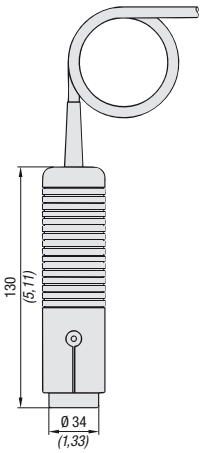
Connecting the CAN Flow Turbine to the CAN Hydraulic Tester a CAN Connection Cable and a CAN Terminating Resistor is needed. See page D33 for further information.

Dimensions and Measuring Range

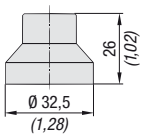
Version	Measuring Range						Dimensions (mm/in)						
Flow Turbine PPC-CAN-	Measuring Range (l/min / US GPM)	Max. Flow (l/min / US GPM)	Operating Pressure (bar / PSI)	Max. Pressure (bar / PSI)	Accuracy (at 21 cSt)	Max. Pressure Drop (at FS*) (bar / PSI)	G ** (BSP)	G (UNF)	B	D	L	H	Weight (g / lbs)
SFM-015	1 ... 15	16,5	350	420	±1 (% FS*)	1,5	G1/2	3/4–16	37	78,8	136	37	650
	.26 ... 3.90	4.4	5076	6091		21.8			1.46	3.10	5.35	1.46	1.43
SFM-060	3 ... 60	66	350	420	±1 (% of the displayed value)	1,5	G3/4	1-1/16–16	62	79,4	190	50	750
	.79 ... 15.90	17.4	5076	6091		21.8			2.44	3.13	7.48	1.97	1.65
SFM-150	5 ... 150	165	350	420	±1 (% of the displayed value)	1,5	G3/4	1-1/16–16	62	79,4	190	50	750
	1.32 ... 39.60	43.6	5076	6091		21.8			2.44	3.13	7.48	1.97	1.65
SFM-300	8 ... 300	330	350	420	±1 (% of the displayed value)	4	G1	1-5/16–16	62	81,3	190	50	1200
	2.11 ... 79.00	87.2	5076	6091		58			2.44	3.20	7.48	1.97	2.65
SFM-600	15 ... 600	660	290	348	±1 (% of the displayed value)	5	G1-1/4	1-5/8–12	62	76,2	212	75	1800
	3.96 ... 158.00	174.4	4206	5047		72.5			2.44	3	8.35	2.95	3.97

* FS = Full Scale
** Standard option
SPEEDCON is a trademark of PHOENIX CONTACT GmbH & Co. KG
Dimensional drawings: All dimensions in mm (in).

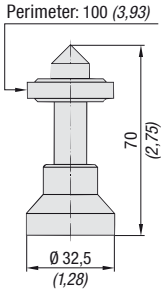
Rotational Speed Sensor ▪ Type PPC-04/12-SDS-CAB



PPC-04/12-SDS-CAB



PPC-04/12-SFA-Focus Adaptor



PPC-04/12-SKA-Contact Adaptor

Product Description

The PPC-04/12-SDS-CAB Rotational Speed Sensor allows non-contact speed measurement of rotating components. The sensor is based on a opto-electrical measurement principle that determines the rotational speed with high-accuracy using a reflecting strip on the shaft.

The contact rotational speed measurement is obtained by using a Contact Adaptor that is mounted to the sensor, and which makes contact with the rotating component during measurement.

This also produces high-accuracy measurement results. In the case of espacially small areas, using the focusing adaptor facilities measurement.

Note: The analogue Rotational Speed Sensor PPC-04/12-SDS-CAB can only be used with analogue Hydraulic Testers.

Technical Data

- Material: ABS
- Weight: 230 g / .51 lbs
- 5-pin connection
- Both contacting and non-contacting measurement possible
- Type of measurement: optical, red LED

Ambient Conditions
- Ambien temperature: 0 °C ... +70 °C / +32 °F ... +158 °F

Measuring Range
- Measuring range: 20 ... 10000 1/min
- Measuring distance: 25 ... 500 mm (1 ... 20 in)
- Measuring angle: ±45 °C
- Accuracy: ≤ ±0,5 % FS*
- Resolution: ±5 1/min

Electrical Data
- Output signal: 0 ... 3 V DC
- Input signal: 7 ...12 V DC

Note: We recommended not extending the 2 m / 6.56 ft permanent cable connection provided on the sensor!

Applications Examples

Fig. 1 -
Contacting rotational speed measurement with the contact adaptor

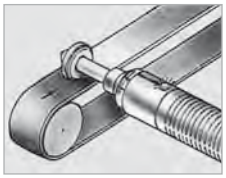


Fig. 2 -
End face rotational speed measurement with the contact adaptor

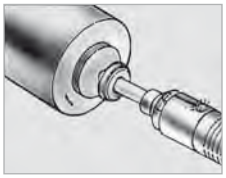
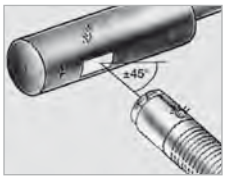


Fig. 3 -
Rotating shaft / non-contacting rotational speed measurement using the focusing adaptor and marking strip



Order Codes

PPC-04/12-SDS-CAB - CAL
① ②

① Series and Type

Rotational Speed Sensor	**PPC-04/12-SDS-CAB**

② Calibration

Without calibration certificate	**(none)**
With calibration certificate	**CAL**

Order Codes

Focus Adaptor

PPC-04/12-SFA-focus adaptor
①

① Series and Type

Focus Adaptor	**PPC-04/12-SFA-focus adaptor**

Contact Adaptor

PPC-04/12-SKA-contact adaptor
①

① Series and Type

Contact Adaptor	**PPC-04/12-SKA-contact adaptor**

Dimensional drawings: All dimensions in mm (in).

Current / Voltage Adaptor ▪ Type PPC-06/12-A/V-A

Order Code

PPC - 06/12 - A/V- A adaptor

①

① Series and Type

Current / Voltage Adaptor	**PPC-06/12-A/V-A adaptor**

Product Description

In addition to pressure, temperature, rotational speed and flow measurements, the Hydraulic Testers can measure and evaluate different signals from other or third-party sensors.

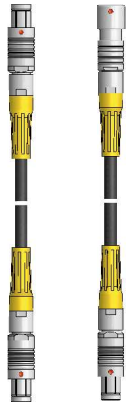
Measuring electrical signals from third-party sensor (e.g. 4 ... 20 mA, 0 ... 10 V, ...) with the PPC-06/12-A/V-A Adaptor.

The PPC-06/12-A/V-A Current/ Voltage Adaptor is used, for example, for measuring current at proportional valves or for determining the switching states of motors or pumps and to evaluate and process measurements from third-party sensors. Typical applications are the generation and measurement of a force-distance graph or torque-flow characteristics curves. The following input signals can be processed by this adaptor:

- Electrical currents up to 4 A DC
- Electrical voltages up to 48 V DC

The measured data are transmitted directly to the Hydraulic Testers by a permanent cable connection.

Connection and Extension Cables (analogue)



Connection Cable PPC-04/12-CAB3
Extension Cable PPC-04/12-CAB5-EXT

PC Connection Cable as a component
of the PPC-SET PPC-04-plus-SW-CAB

PC Connection Cable as a component
of the PPC-SET PPC-06/08-plus-SW-CAB

Product Description

Different Connection and Extension Cables for all Hydraulic Testers of the PPC series are available. These cables on the one hand, connect the sensors to the Hydraulic Testers and on the other hand connect the Hydraulic Testers with a PC or laptop. The following items are available:

Connection and Extension Cables

A PPC-04/12-CAB3 Connection Cable is required to connect the sensors to the current Hydraulic Testers PPC-04/06/08-plus or PPC Pad. The cable comes with a 5-pin push/pull connection at each end and has a length of 3 m / 9.84 ft.

Note: This cable cannot be used with older Hydraulic Testers and/or sensors (with 4-pin connection)!
The PPC-04/12-CAB5-EXT Exentsion Cable has a length of 5 m/16 ft.
Note: Please keep in mind that it is generally recommended not to exceed a total cable length of 8 m / 26.25 ft!

PC Connection Cable and PC Software

A PC set, consisting of a USB connecting lead (1 m / 3.28 ft) and the corresponding PC software.

Note: The appropriate PC set is included when purchasing a PPC-04-plus and /or PPC-04-plus-CAN Hydraulic Tester.

PC Connection Cable and PC Software

A PC set, consisting of a USB connecting lead (1,5 m / 4.92 ft) and the corresponding PC software.

Note: The appropriate PC set is included when purchasing a PPC-06/08-plus and/or PPC-Pad Hydraulic Testers.

Order Codes

PPC-04/12-CAB3

① Series and Type

Standard Connection Cable for Sensors	**PPC-04/12-CAB3**
Extension Cable	**PPC-04/12-CAB5-EXT**

Order Code

PC-SET PPC-04-plus-SW-CAB

① Series and Type

PC Set	**PC-SET PPC-04-plus-SW-CAB**

Order Code

PC-SET PPC-06/08-plus-SW-CAB

① Series and Type

PC Set	**PPC-SET PPC-06/08-plus-SW-CAB**

CAN Accessories

CAN Connection Cable PPC-CAN-CAB

CAN Y-Splitter Cable PPC-CAN-CAB-Y

CAN Terminating Resistor PPC-CAN-R

Product Description

To connect the CAN bus sensors to the CAN Hydraulic Testers are different cable lengths are available, depending on customers requirements. The CAN sensors work on a bus system as displayed in the connection overview on page D20. All connections are 5-pin SPEEDCON connection plugs. The following items are available:

CAN Connection Cable

The CAN Connection Cable is available in different lengths between 0,5 m / 1.64 ft and 20 m / 65.65 ft.

CAN Y-Splitter Cable

To connect a new sensor to the CAN bus, a CAN Y-Splitter Cable is necessary.

CAN Terminating Resistor

Each sensor on the end of a CAN bus has to be closed with a CAN Terminating Resistor. The resistor is also necessary when only one sensor is used.

Order Codes

PPC-CAN - CAB2

① ②

① Series and Type

CAN Connection Cable	**PPC-CAN**

② Length

0,5 m / 1.64 ft	**CAB0.5**
2 m / 6.65 ft	**CAB2**
5 m / 16.40 ft	**CAB5**
10 m / 32.81 ft	**CAB10**
20 m / 65.62 ft	**CAB20**

Order Code

PPC-CAN-CAB-Y

①

① Series and Type

CAN Y-Splitter Cable 0,3 m / .98 ft	**PPC-CAN-CAB-Y**

Order Code

PPC-CAN-R

①

① Series and Type

CAN Terminating Resistor	**PPC-CAN-R**

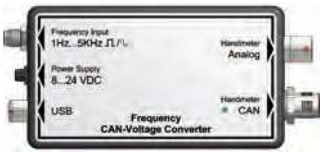
Product Description

Measuring Frequency with PPC-CAN-FR
The PPC-CAN-FR can be used to connect frequency signals (e.g. from turbines, flow counters or tachometers) to the PPC-Pad or PPC-04-plus-CAN. The instruments can process sinus and rectangle signals from 1 Hz to 5 KHz with signal amplitude from 20 mV to 10 V. Configuration is possible via USB and PC software.

Power Supply for External Sensors
An external sensor can be supplied with 24 V using the PPC-CAN-FR.

Analogue or CAN Output
The PPC-CAN-FR can be connected either to an analogue input or CAN input.

CAN Frequency Converter



CAN Frequency Converter PPC-CAN-FR

Order Code

PPC-CAN-FR

①

① Series and Type

CAN Frequency Converter	**PPC-CAN-FR**

Technical Data

Dimensions
- 114 x 64 x 26 mm / 4.49 x 2.52 x 1.02 in

Ambient Conditions
- Operating temperature: 0 °C ... +60°C / +32 °F ... +140 °F
- Storage temperaure: -25 °C ... +70 °C / -13 °F ... +158 °F
- Relaltive humidity: < 80 %

Electrical Data
- Measuring range: 1 Hz ... 5 KHz
  Sinus and rectangle signals
  40 m V pp ... 10 V pp
- Sensor power supply: 24 V DC ± 0,5 V DC
- $I_{Out (Max.)}$ without power supply: 50 mA
- $I_{Out (Max.)}$ power supply at 24 V DC: 100 mA
- Accuracy: ±1 % FS* ± 0,05 %/ °C

Power Supply
- Power supply (external): 8 ... 24 V DC

Electrical Connection
- Sensor: 4-pin, M8, plug
  (Female with screw-in connections included with standard option)
- External power supply: 3-pin, female
- USB: 4-pin, female
- Analogue: 5-pin, female
- CAN: 5-pin, M12

* FS = Full Scale
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Complete Systems for analogue Hydraulic Testers PPC-04/06/08-plus

Complete Systems PPC-06/08-plus

Complete Systems PPC-04-plus

Product Description

Complete systems for analogue Hydraulic Testers are assembled in different versions according to customer wishes. The complete systems are supplied in a handy case with individually designed pockets/sections and have space for the components listed below.

Components

Standard Options for Complete Systems PPC-04-plus

- 1x Hydraulic Tester PPC-04-plus
- 1x Power supply incl. country-specific adaptor
- Up to 3 Pressure Sensors PPC-04/12-P with installed adaptors for STAUFF Test 20 (M16 x 2)
- Up to 2 Connection Cables (3 m / 9.84 ft)
- 1x Temperature Sensor PPC-04/12-T-M02 with installed SGV-16S-G-C6F (optional)
- 3x Adaptors SAD for the STAUFF Test 15/12/10 series (standard for all PPC complete systems)
- 1x Operating instructions (multilingual) on CD
- 1x PC software for PPC-04-plus
- 1x PC connection cable

Standard Options for Complete Systems PPC-06/08-plus

- 1x Hydraulic Tester PPC-06-plus or PPC-08-plus
- 1x Power supply incl. country-specific adaptor
- Up to 3 Pressure Sensors with installed adaptors STAUFF Test 20 (M16 x 2)
- Up to 3 Connection Cables (3 m / 9.84 ft)
- 1x Temperature Sensor PPC-04/12-T-M02 with installed SGV-16S-G-C6F (optional)
- 3x Adaptors SAD for the STAUFF Test 15/12/10 series (standard for all PPC complete systems)
- 1x Printed operating instructions (German and English)
- 1x Operating instructions (multilingual) on CD
- 1x PC software for PPC-06/08-plus
- 1x PC connection cable

Note: Please consult STAUFF for calibrated version.

Order Codes

PPC - 04-SET - 2 - T - 015 / 150 / 000

① ② ③ ④ ⑤ ⑥ ⑦

① Series and Type

Hydraulic Tester	**PPC**

② Version

2 sensor inputs, incl. PC software and PC connection cable	**04-SET**
3 sensor inputs, incl. PC software and PC connection cable	**06-SET**
4 sensor inputs, incl. PC software and PC connection cable	**08-SET**

③ Number of Pressure Sensors

With 1 Pressure Sensor	**1**
With 2 Pressure Sensors	**2**
With 3 Pressure Sensors	**3**

④ Temperature Sensor

Without Temperature Sensor T and SGV	**(none)**
With Temperature Sensor T and SGV	**T**

⑤ Pressure Range and Pressure Sensor

1. Pressure Sensor	**see table**

⑥ Pressure Range and Pressure Sensor

2. Pressure Sensor	**see table**

⑦ Pressure Range and Pressure Sensor

3. Pressure Sensor	**see table**

Pressure Range and Pressure Sensor

Pressure Range	Pressure Sensor		
000	When ordering a complete system with one or two pressure sensors, specify „000“ for the pressure range of the 2. and / or 3. pressure sensors.		
015 060 150 400 600 601	Pressure Range 1. Pressure Sensor	Pressure Range 2. Pressure Sensor	Pressure Range 3. Pressure Sensor
e.g.	**015** (15 bar)	**060** (60 bar)	**000** (0 bar)
Please keep in mind that two pressure sensors with identical measuring ranges are necessary for differential pressure measurements.			

Complete Systems ▪ Type PPC-04-CAN-SET

Complete Systems PPC-04-CAN-SET

Order Codes

PPC - 04-CAN-SET - 2 - T - 016 / 060 / 000

① ② ③ ④ ⑤ ⑥ ⑦

① Series and Type

Hydraulic Tester	**PPC**

② Version

CAN version with CAN interface	**04-CAN-SET**

③ Number of CAN Pressure Sensors

With one CAN Pressure Sensor	**1**
With two CAN Pressure Sensors	**2**
With three CAN Pressure Sensors	**3**

④ CAN-Temperature Sensor

Without CAN-Temperature Sensor T and SGV	**(none)**
With CAN-Temperature Sensor T and SGV	**T**

④ Pressure Range and Pressure Sensors

1. CAN Pressure Sensor	**see table**

⑤ Pressure Range and Pressure Sensors

2. CAN Pressure Sensor	**see table**

⑥ Pressure Range and Pressure Sensors

3. CAN Pressure Sensor	**see table**

Pressure Range and CAN Pressure Sensor

Pressure Range	CAN Pressure Sensor		
000	When ordering a complete system with one or two CAN pressure sensors, specify „000“ for the pressure range of the 2. and / or 3. CAN pressure sensors.		
016	Pressure Range 1. CAN Pressure Sensor	Pressure Range 2. CAN Pressure Sensor	Pressure Range 3. CAN Pressure Sensor
060			
160			
400			
600			
601			
e.g.	**016** (16 bar)	**060** (60 bar)	**000** (0 bar)
Please keep in mind that two CAN pressure sensors with identical measuring ranges are necessary for differential pressure measurements.			

Product Description

Complete Systems for Hydraulic Testers PPC-04-plus-CAN are assembled in different versions according to customer wishes. The complete systems are supplied in a handy case with individually designed pockets/sections and have space for the components listed below.

Components

Standard Options for Complete Systems PPC-04-plus-CAN

- 1x Hydraulic Tester PPC-04-plus-CAN
- 1x Power Supply incl. country-specific Adaptor
- Up to 3 CAN Pressure Sensors PPC-CAN-P with installed Adaptors for STAUFF Test 20 (M16 x 2)
- 1x CAN Temperature Sensor PPC-CAN-T-M02 with installed SGV-16S-G-C6F (optional)
- 3x Adaptors SAD for the STAUFF Test 15/12/10 series (standard for all PPC complete systems)
- Up to 3 CAN Connecting Cables
- Up to 2 CAN Y-Splitter Cables
- 1x CAN Terminating Resistor
- 1x Operating instructions (multilingual) on CD
- 1x PC software
- 1x PC connection cable

Note: Please consult STAUFF for calibrated version.

Complete Systems ▪ Type PPC-Pad-SET

Complete Systems PPC-Pad-SET

Product Description

The PPC Pad is also available in a special designed case to store your unit and your accessories. The case is robust, lightweight and can be carried directly to your machine.

It has individually designed inserts that can hold up to 4 Pressure Sensors, 1 CAN Flow Turbine, 1 Flow Turbine, 1 Frequency- and 1 Aux.-Adaptor. Cable and additional equipment also have their own place inside.

PPC Pad case is the best way to store and protect your equipment.

Standard PPC-Pad-SET kits have been put together to equip an user with the basic equipment needed for basic measurement.

Components

Standard Options for Complete Systems PPC-Pad-SET

- Hydraulic Tester PPC Pad
- Installed Handle
- 24 V DC / 2,5 A Power supply incl. country-specific adaptor
- M8 x 1 / 4-pin (digital in/out)
- USB 2.0 cable (2 m / 6.56 ft)
- LAN cable (5 m / 16.40 ft)
- Operating Instructions
- PC software
- MicroSD memory card
- Equipment case
- Neck strap
- CAN Connection Cable (5 m / 16.40 ft)
- 2x CAN Terminating Resistor
- Analogue Connection Cable (3 m / 9.84 ft)
- M12 cable socket Aux. output

Order Codes

PPC-Pad - **SET-101** - **CAL**

① ② ③

① Series and Type

Hydraulic Tester	**PPC-Pad**

② Version

PPC-Pad-SET-101	**SET-101**
PPC-Pad-SET-102	**SET-102**
PPC-Pad-SET-103	**SET-103**

③ Calibration (only -102 / -103)

Without calibration certificate	**(none)**
With calibration certificate	**CAL**

Version PPC-Pad-Set

Version	Hydraulic Tester	CAN Sensor Inputs	Sensor Inputs with Sensor Recognition STAUFF (Analogue)	Aux. Sensor Inputs (Analogue)	Case	Neck Strap	CAN Connection Cable 5m / 16.40 ft	CAN Terminating Resistor	Analogue Connection Cable 3m / 9.84 ft	Aux. Sensor Inputs - Cable Adaptor
PPC-Pad-SET-101	**PPC-Pad-101**	2 networks each with max. 8 sensors	-	-	1	1	2	2	-	-
PPC-Pad-SET-102	**PPC-Pad-102**		3	2	1	1	2	2	2	1
PPC-Pad-SET-103	**PPC-Pad-103**		6	4	1	1	2	2	3	2

Ordering Table for analogue Hydraulic Test Equipment

All available individual components for analogue Hydraulic Testers PPC-04-plus, PPC-06-plus and PPC-08-plus, with their order codes, are listed below. They can be configured by the customer using this form.

In the list, the components are sorted according to application areas/tasks to provide a better overview. For custom kits, please contact STAUFF.

* Pressure peaks up to 1000 bar / 14500 PSI

All hydraulic testers and sensors are available in calibrated version. Please add -CAL to the order code.

Series	Descriptions	Order Codes	Pages
1. Hydraulic Testers	Hydraulic Tester PPC-04-plus with 2 sensor inputs, incl. accessories	**PPC-04-plus**	D16
	Hydraulic Tester PPC-06-plus with 3 sensor inputs, incl. accessories	**PPC-06-plus**	D17
	Hydraulic Tester PPC-08-plus with 4 sensor inputs, incl. accessories	**PPC-08-plus**	
2. Pressure Measurement	**Pressure Sensors G1/4** (without Adaptor)		
	Pressure range from -1 ... 15 bar / -14.5 ... 217 PSI relative pressure	**PPC-04/12-P-015**	D22
	Pressure range from 0 ... 60 bar / 0 ... 870 PSI absolute pressure	**PPC-04/12-P-060**	
	Pressure range from 0 ... 150 bar / 0 ... 2175 PSI absolute pressure	**PPC-04/12-P-150**	
	Pressure range from 0 ... 400 bar / 0 ... 5801 PSI absolute pressure	**PPC-04/12-P-400**	
	Pressure range from 0 ... 600 bar / 0 ... 8702 PSI absolute pressure	**PPC-04/12-P-600**	
	Pressure range from 0 ... 600 bar / 0 ... 8702 PSI absolute pressure *	**PPC-04/12-P-601**	
3. Temperature Measurement	**Temperature Sensors (-40 °C ... +150 °C / -40 °F ... +302 °F)**		
	Screw-in Temperature Sensor for pipeline installation (M10x1)	**PPC-04/12-T-M02**	D24
	Screw-in Temperature Sensor for pipeline installation (G1/4)	**PPC-04/12-T-B02**	
	Rod-type Temperature Sensor for tank / container measurements	**PPC-04/12-TSH**	
	Straight threaded Adaptor with M10 x 1 connection (for PPC-04/12-T-M02)	**SGV-16S-G-C6F**	
4. Pressure/ Temperature Measurement	**Pressure/ Temperature Sensors G1/2** (without Adaptor)		
	Pressure range from -1 ... 15 bar / -14.5 ... 217 PSI relative pressure	**PPC-04/12-PT-015**	D26
	Pressure range from 0 ... 60 bar / 0 ... 870 PSI absolute pressure	**PPC-04/12-PT-060**	
	Pressure range from 0 ... 150 bar / 0 ... 2175 PSI absolute pressure	**PPC-04/12-PT-150**	
	Pressure range from 0 ... 400 bar / 0 ... 5801 PSI absolute pressure	**PPC-04/12-PT-400**	
	Pressure range from 0 ... 600 bar / 0 ... 8702 PSI absolute pressure	**PPC-04/12-PT-600**	
	Pressure range from 0 ... 600 bar / 0 ... 8702 PSI absolute pressure *	**PPC-04/12-PT-601**	
5. Connection Adaptors for PPC Sensors	**Connection Adaptors**		
	Adaptor G1/4 to M16 x 2 (STAUFF Test 20)	**SDA20-G1/4-C6F**	D22 / D26
	Adaptor G1/2 to M16 x 2 (STAUFF Test 20)	**SDA20-G1/2-C6F**	
	Adaptor M16 x 2 to M16 x 1,5 (STAUFF Test 20 to STAUFF Test 15)	**SAD20/15-P-C6F**	
	Adaptor M16 x 2 to S12,65 x 1,5 (STAUFF Test 20 to STAUFF Test 12)	**SAD20/12-P-C6F**	
	Adaptor M16 x 2 to plug-in (STAUFF Test 20 to STAUFF Test 10)	**SAD20/10-P-C6F**	
6. Flow Measurement	**Flow Turbines with integrated Signal Converter**		
	Measuring range from 1 ... 15 l/min / .3 ... 3.9 US GPM	**PPC-04/12-SFM-015**	D28
	Measuring range from 4 ... 60 l/min / 1 ... 15.9 US GPM	**PPC-04/12-SFM-060**	
	Measuring range from 6 ... 150 l/min / 1.6 ... 39.6 US GPM	**PPC-04/12-SFM-150**	
	Measuring range from 10 ... 300 l/min / 2.7 ... 79 US GPM	**PPC-04/12-SFM-300**	
	Measuring range from 20 ... 600 l/min / 5.3 ... 158 US GPM	**PPC-04/12-SFM-600**	
7. Rotational Speed Measurement	Rotational Speed Sensor with integrated Connection Cable 2 m / 6.56 ft	**PPC-04/12-SDS-CAB**	D30
	Contact Adaptor	**PPC-04/12-SKA-contact adaptor**	
	Focus Adaptor	**PPC-04/12-SFA-focus adaptor**	
8. Current / Voltage Adaptor / Third-party Sensors	Current / Voltage Adaptor / Third-party Sensor (up to 4 A DC / 48 V DC)	**PPC-06/12-A/V-A adaptor**	D31
9. Accessories (Connection / Extension Cables and Software)	Connection Cable 3 m / 9.84 ft (5-pin push/pull connection on both sides)	**PPC-04/12-CAB3**	D32
	Extension Cable 5 m / 16.40 ft 5-pin push/pull connection on both sides)	**PPC-04/12-CAB5-EXT**	
	PC Connection Cable and PC Software for PPC-04-plus	**PC-SET PPC-04-plus-SW-CAB**	
	PC Connection Cable and PC Software for PPC-06/08-plus	**PC-SET PPC-06/08-plus-SW-CAB**	
10. Ersatzteile / Komplettsysteme	Case PPC-04-plus (with foam insert)	**PPC-04-plus case**	D34
	Case PPC-06/08-plus (with foam insert)	**PPC-06/12 case**	
	Power Supply (110/230 V AC) for PPC-04-plus with USB connections, incl. country-specific adaptor	**PPC-04-plus-110V/230V-USB**	
	Power Supply (110/230 V AC) for PPC-06/08-plus, incl. country-specific adaptor	**PPC-04/12-110V/230V**	
	Complete Systems for Analogue Hydraulic Testers PPC-04/06/08-plus, Order Codes on page D34		

Ordering Table for CAN Hydraulic Test Equipment

Series	Descriptions	Order Codes	Pages
1. CAN Hydraulic Testers	CAN Hydraulic Tester PPC-04-plus-CAN with CAN interface, incl. accessories	PPC-04-plus-CAN	D16
	CAN Hydraulic Tester PPC-Pad-101 with 2 CAN networks, incl. accessories	PPC-Pad-101	D18
	CAN Hydraulic Tester PPC-Pad-102 with 2 CAN networks and 3 analogue sensor inputs, incl. accessories	PPC-Pad-102	
	CAN Hydraulic Tester PPC-Pad-103 with 2 CAN networks and 6 analogue sensor inputs, incl. accessories	PPC-Pad-103	
2. Pressure Measurement	**CAN Pressure Sensors G1/4** (without Adaptor)		
	Pressure range from -1 ... 16 bar / -14.5 ... 232 PSI relative pressure	PPC-CAN-P-016	D23
	Pressure range from 0 ... 60 bar / 0 ... 870 PSI absolute pressure	PPC-CAN-P-060	
	Pressure range from 0 ... 160 bar / 0 ... 2321 PSI absolute pressure	PPC-CAN-P-160	
	Pressure range from 0 ... 400 bar / 0 ... 5801 PSI absolute pressure	PPC-CAN-P-400	
	Pressure range from 0 ... 600 bar / 0 ... 8702 PSI absolute pressure	PPC-CAN-P-600	
	Pressure range from 0 ... 600 bar / 0 ... 8702 PSI absolute pressure *	PPC-CAN-P-601	
3. Temperature Measurement	**CAN-Temperature Sensors (-40 °C ... +150 °C / -40 °F ... +302 °F)**		
	Screw-in Temperature Sensor for pipeline installation (M10x1)	PPC-CAN-T-M02	D25
	Screw-in Temperature Sensor for pipeline installation (G1/4)	PPC-CAN-T-B02	
	Straight threaded Adaptor with M10 x 1 connection (for PPC-CAN-T-M02)	SGV-16S-G-C6F	
4. Pressure/ Temperature Measurement	**CAN Pressure/ Temperature Sensors G1/2** (without Adaptor)		
	Pressure range from -1 ... 16 bar / -14.5 ... 232 PSI relative pressure	PPC-CAN-PT-016	D27
	Pressure range from 0 ... 60 bar / 0 ... 870 PSI absolute pressure	PPC-CAN-PT-060	
	Pressure range from 0 ... 160 bar / 0 ... 2321 PSI absolute pressure	PPC-CAN-PT-160	
	Pressure range from 0 ... 400 bar / 0 ... 5801 PSI absolute pressure	PPC-CAN-PT-400	
	Pressure range from 0 ... 600 bar / 0 ... 8702 PSI absolute pressure	PPC-CAN-PT-600	
	Pressure range from 0 ... 600 bar / 0 ... 8702 PSI absolute pressure *	PPC-CAN-PT-601	
5. Connection Adaptors for PPC Sensors	**Connection Adaptors**		
	Adaptor G1/4 to M16 x 2 (STAUFF Test 20)	SDA20-G1/4-C6F	D23 / D27
	Adaptor G1/2 to M16 x 2 (STAUFF Test 20)	SDA20-G1/2-C6F	
	Adaptor M16 x 2 to M16 x 1,5 (STAUFF Test 20 to STAUFF Test 15)	SAD20/15-P-C6F	
	Adaptor M16 x 2 to S12,65 x 1,5 (STAUFF Test 20 to STAUFF Test 12)	SAD20/12-P-C6F	
	Adaptor M16 x 2 to plug-in (STAUFF Test 20 to STAUFF Test 10)	SAD20/10-P-C6F	
6. Flow Measurement	**CAN Flow Turbines with integrated Signal Converter**		
	Measuring range from 1 ... 15 l/min / .3 ... 3.9 US GPM	PPC-CAN-SFM-015	D29
	Measuring range from 4 ... 60 l/min / 1 ... 15.9 US GPM	PPC-CAN-SFM-060	
	Measuring range from 6 ... 150 l/min / 1.6 ... 39.6 US GPM	PPC-CAN-SFM-150	
	Measuring range from 10 ... 300 l/min / 2.7 ... 79 US GPM	PPC-CAN-SFM-300	
	Measuring range from 20 ... 600 l/min / 5.3 ... 158 US GPM	PPC-CAN-SFM-600	
7. CAN Accessories	CAN Connection Cable 0,5 m / 1.64 ft	PPC-CAN-CAB0.5	D33
	CAN Connection Cable 2 m / 6.65 ft	PPC-CAN-CAB2	
	CAN Connection Cable 5 m / 16.40 ft	PPC-CAN-CAB5	
	CAN Connection Cable 10 m / 32.81 ft	PPC-CAN-CAB10	
	CAN Connection Cable 10 m / 65.62 ft	PPC-CAN-CAB20	
	CAN Y-Splitter Cable 0,3 m / .98 ft	PPC-CAN-CAB-Y	
	CAN Terminating Resistor	PPC-CAN-R	
8. Connection Cable and Accessories	PC Connection Cable and PC Software for PPC-04-plus-CAN	PC-SET PPC-04-plus-SW-CAB	D32
9. CAN Frequency Converter	CAN Frequency Converter	PPC-CAN-FR	D33
10. Spare Parts and Complete Systems	Complete Systems for CAN Hydraulic Tester PPC-04-plus-CAN, Order Codes on page D35		D35
	Case PPC-04-plus-CAN (with foam insert)	PPC-04-plus case	
	Power Supply (110/230 V AC) for PPC-04-plus-CAN with USB connection, incl. country-specific Adaptor	PPC-04-plus-110V/230V-USB	
	Case PPC-Pad Koffer (with foam insert)	PPC-Pad case	D36
	Complete System PPC-Pad-SET-101 with 2 CAN networks, incl. accessories, case, CAN Connection Cable	PPC-Pad-SET-101	
	Complete System PPC-Pad-102 with 2 CAN networks and 3 analogue sensor inputs, incl. accessories, case, CAN Connection Cable	PPC-Pad-SET-102	
	Complete System PPC-Pad-SET-103 with 2 CAN networks and 6 analogue sensor inputs, incl. accessories, case, CAN Connection Cable	PPC-Pad-SET-103	

All available components for CAN Hydraulic Testers, with their order codes, are listed below. They can be configured by the customer using this form.

In the list, the components are sorted according to application areas/tasks to provide a better overview.

For custom kits, please contact STAUFF.

* Pressure peaks up to 1000 bar / 14500 PSI

All CAN Hydraulic Testers (except PPC-04-plus-CAN and PPC-Pad-101) and sensors are available as calibrated versions. Please add -CAL to the order code.

Laser Particle Counter ▪ Type LasPaC II

Fluid analysis is a crucial component of any oil management program. Early detection of potential problems can prevent costly repairs and downtime. The LasPaC II makes it possible to detect the ISO Cleanness levels of the hydraulic media.

Characteristics

The LasPaC II devices feature a twin laser system and eight channels for different particle sizes in order to gurantee high accuracy and repeatability. These compact unit are easy to handle for mobile and inline applications for systems with pressures up to 400 bar / 5801 PSI.
The LasPaC II is available in three different versions:

LasPaC II-P: Portable Laser Particle Counter
The LasPaC II-P is a fully equipped portable laser particle counter.
The LasPaC II-P features a complete QWERTY keyboard, an integrated thermal printer, an internal rechargeable battery and a large LCD display.

LasPaC II-M: Mobile Laser Particle Counter
The LasPaC II-M is a highly accurate laser particle counter. With a competitive price, the LasPaC II-M is the best compromise between lower cost and briliant accuracy/reliability.

LasPaC II-I: Inline Laser Particle Counter
The LasPaC II-I is an laser particle counter, which is suitable for all applications where continuous monitoring is required.

All LasPaC II devices have an internal data memory and are available within the accompanying Windows® based software package for reports and data downloads.

Overview

					
Options	**LasPaC II-P (Portable)**	**LasPaC II-M (Mobile)**	**LasPaC II-I (Inline)**	**Bottle Sampler 110**	**Bottle Sampler 500**
Laser Type	Twin-Laser	Twin-Laser	Twin-Laser	-	-
Analysis Range	8 channels (4,6,14,21,25,38,50,68 µm$_{(c)}$)	8 channels (4,6,14,21,25,38,50,68 µm$_{(c)}$)	8 channels (4,6,14,21,25,38,50,68 µm$_{(c)}$)	-	-
Power Supply	External	External	External	-	-
Battery Option	Internal	Internal (optional)	-	-	-
Display	Integrated (large)	Integrated (small)	External (optional)	-	-
Keyboard	Integrated	-	-	-	-
Printer	Integrated	-	-	-	-
Data Storage	Internal (for approximately 600 tests)	Internal (for approximately 600 tests)	Internal (for approximately 600 tests)	-	-
Computer Interface	RS-232	RS-232	RS-232 (RS 485 on request)	-	-
Fluid Preparation	-	-	-	Integrated vacuum/pressure pump	Integrated vacuum/pressure pump
Maximal Bottle Size	-	-	-	110 ml	500 ml
Compatible with	-	-	-	Mineral oil and petroleum based fluids	Mineral oil and petroleum based fluids or phosphate ester
Sample-taking Equipment	-	-	-	Fluid sample pump with hoses	-

Laser Particle Counter ▪ Type LasPaC II

Features & Options: LasPaC II (General)

Mobile - Compact and Convenient
The LasPaC II-P (Portable), the LasPaC II-M (Mobile) and all its accessories are supplied in a light-weight rugged industrial case.

This user-friendly portable case is waterproof and resistant against all common fluids.

Accuracy - Twin-laser, 100% Coverage
In all STAUFF laser particle counting devices, the fluid passes through the measuring cell and through a laser beam. The light from the laser is evaluated by a photo diode.

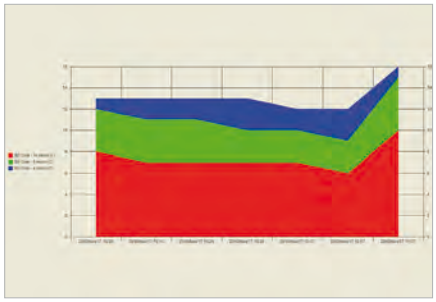
As the fluid passes through the laser beam the amount of light changes. These changes are directly proportional to size of the particles, and the total volume of particles. In many other particle counters only part of the measuring cell is lighted by the laser, thus only a part of the total amount of particles are registered, and the result is projected.

In contrast, the measuring cell of the LasPaC II is completely examined, and all particles are registered. In addition to this, a second laser is used to analyze all particles sizes smaller than 6 $\mu m_{(c)}$.

Additionally, the integrated booster cylinder allows very precisely dosage of the test fluids. This ensures a very high accuracy with excellent repeatability.

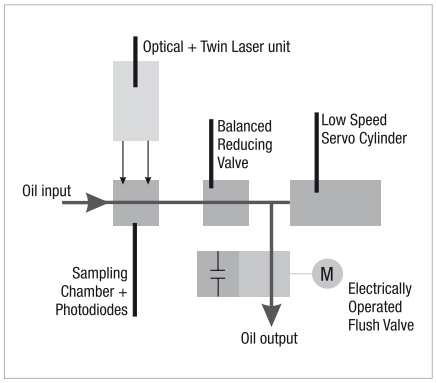
Functional - Calibration to ISO 11 171
The LasPaC II devices are calibrated with ISO Medium Test Dust (MTD) based on the ISO 11 171:1999 calibration standard.

STAUFF particle counters meet the new ISO 4406 cleanliness classification codes and provide results in the NAS 1638 and the SAE 4059 codes.



For any Type of Application - Large Pressure Range
A big advantage of the LasPaC II devices is the wide pressure range: Low pressure measurements starting with 2 bar / 29 PSI and high pressure tests up to 400 bar / 5801 PSI result in reliable readings. Many other products available today require special add-on devices or pressure cartridges which need to be recharged for this.

The test hoses, which are provided with the device, allow an easy connection to common test couplings M16 x 2 (STAUFF TEST 20 or comparable).



Global Use - Variable Voltage Supply
The external power supply unit provides most variable voltage ranges of 110 ... 240 V AC. European, UK and US plug adaptors ensure a worldwide applicability of the LasPaC II.

Always Secure - External Alarms
The LasPaC II-P and LasPaC II-I devices offer the opportunity to define different alarm levels.

It is possible to configure two separate contamination alarm levels (e.g. clean alarm level and dirt alarm level). When set, an alarm indicator is given to external devices (e.g. indicator light, offline-filter) if the alarm level is reached.

Making the Connection - Downloading with RS-232 Interface and USB Adaptor
The measured data can be downloaded onto any PC or laptop computer via the RS-232 interface or alternativley via a USB adaptor.

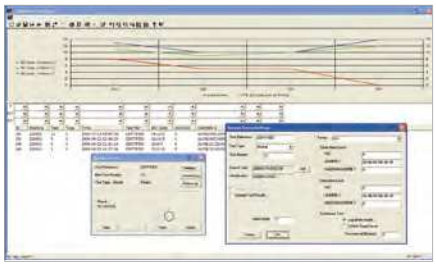
The LasPaC II software supports an easy download for data processing of the recorded measurements.

Several diagrams are available and are automatically generated to offer a very clear arrangement of all data for analysis. Data can also be easily exported to Microsoft Excel®.

Always up-to-date - Integrated Clock
An integrated rechargeable battery-operated clock provides the exact date and time which are shown on every printout.

In addition, every download of measured data is marked with date and time as well. The precise time of measurement is documented on all printouts and for all data stored.

Adaptable - Software Updates
The RS-232 (or USB) interface ensures flexibility for future developments in terms of calibration, evaluation and output. Software updates can easily be installed onto the LasPaC II devices.



Cleanliness - High-Speed Flush Valve
To ensure an accurate measurement is taken, the sensor must be cleaned before each test.

The LasPaC II achieves this by means of an electric operated flush valve. This valve can be opened on demand and between tests by simply depressing the flushing valve push button. The optimized design of the flush valve reduces the rinsing process to the minimum requirement, and ensures a quick restart of the next measurement.

For all Applications - High Compatibility
The LasPaC II units are compatible with all Mineral Oil and Petroleum based fluids.
Phosphate Ester (e.g. Skydrol®) and Water Glycol compatible devices are available upon request.
Please contact STAUFF for details.

More Oil Information - The Moisture/ Temperature Sensor
The LasPaC II also offers the option of adding an integral moisture / temperature sensor.

This sensor measures the moisture content of the test fluids (displayed as relative humidity in RH %) and also indicates the current fluid temperature (in °C).

Please note that the moisture/ temperature sensor is not compatible with Phosphate Ester (e.g. Skydrol®) and Water Glycol fluids.
For further information please see on page D50.

Optional - Bottle Sampling Unit
Highly aerated fluids may lead to inaccurate results.

Therefore a de-aeration facility has been incorporated into the optional bottle sampling units.

Both sizes (110 ml and 500 ml) of the bottle sampling unit are delivered with an external power supply, and allow the user to properly condition the sample fluid prior to any measurements taken. For further information please see on page D49.

Please note that the moisture/ temperature sensor as mentioned above does not work in conjunction with the bottle sampling unit.

Scope of Delivery

Each kit of a laser particle counter STAUFF LasPaC II includes:

- 1x Laser particle counter STAUFF LasPaC II
- 1x LasPaC II-M / LasPaC II-P: Waste hose 2 m / 3.65 ft
  LasPaC II-I: Waste hose 1,5 m / 2.67 ft
- 1x Pressure hose: 1,5 m / 2.67 ft
- 1x Waste bottle (not with LasPaC II-I)
- 1x External power supply including cable with European, UK and USA plug adaptors
- 1x RS-232 connecting cable, 1 m / 1.78 ft including RS-232 to USB converter
- 1x Software CD "LasPaC II View"
- 1x User guide LasPaC II
- 1x User guide LasPaC II View
- 3x Thermal printer paper (only with LasPaC II-P)

Laser Particle Counter ▪ Type LasPaC II-P (Portable)

Light-Weight Rugged Industrial Case

Integrated Printer

Product Description

The LasPaC II-P (Portable) is the most complete way to measure the contamination level of your system.
With the LasPaC II-P you have the ability to measure, analyze and document your results immediately without the need of any additional equipment.

Features

Quick Results - Fast Results and Easy Operation
The integrated complete QWERTY keyboard, a large LCD display and intuitive handling all lead to the easy and quick operation of the LasPaC II Portable.
The optimized flushing process of the LasPaC II-P is quick and effective, and allows for continuously accurate measurements.

Black and White - Integrated Printer
The integrated printer in the LasPaC II-P supports print-outs in the field, thus providing immediate documentation. Every printout confirms date and time of your measurement.

Independent Use - Rechargeable Battery Mode
The integrated rechargeable battery of the LasPaC II-P allows the use of on site measurements, even in the event where access of an external power source is not available. The measurement data is stored in the internal memory of the unit and can be transferred to a computer when required.

Once charged the LasPaC II-P can run approximately 100 tests before recharging is needed again.

Options

- Moisture / Temperature Sensor
  This sensor measures the moisture content of the test fluids (displayed as relative humidity in RH %) and also indicates the current fluid temperature (in °C).
  For further information please see on page D50.

- Phosphate Ester (e.g. Skydrol®) or specific Water Glycol fluids units on request

Order Codes

LasPaC II - P - M - O
① ② ③ ④

① Series and Types

Laser Particle Counter	**LasPaC II**

② Version

Portable	**P**

③ Fluid Compability

Mineral Oil, Petroleum based fluids (standard option)	**M**
Phosphate Ester (e.g. Skydrol®)	**E**
Specific Water Glycol fluids	**G**

④ Moisture/ Temperature Sensor

Without moisture/ temperature sensor	**O**
With moisture/ temperature sensor	**W**

Please note: The moisture/ temperature sensor is not suitable for Phosphate Ester (e.g. Skydrol®) and Water Glycol fluids.

Laser Particle Counter ▪ Type LasPaC II-P (Portable)

Highspeed Flush Valve


Computer Interfaces of the LasPaC II-P


Easy Connection to common Test Couplings

Technical Data

Dimensions and Weight
- L/W/H: 551 x 358 x 226 mm / 21.69 x 14.09 x 8.90 in
- Weight: 13 kg / 28.66 lbs

Keyboard / Printer
- Keyboard: QWERTY keyboard
- Printer: Integrated thermal printer (384 dots per line)

Power Supply
- Voltage range: 110 ... 240 V AC 12 ... 24 V DC
- European, UK and US power plug adaptors included
- Number of tests before recharging is required: 100

Calibration
- Calibration: ISO Medium Test Dust (MTD) according to ISO 11 171:1999
- Analysis range: ISO 8-24, ISO 4406 Code, NAS 1638 Code 2-12, SAE AS 4059 Code 2-12

Pressure / Viscosity
- Pressure range: 2 ... 400 bar / 29 ... 5801 PSI
- Viscosity range: 1 ... 400 cSt

Laser Sensors
- High accuracy laser: 4 ... 6 µm(c)
- Standard accuracy laser: 6 ... 68 µm(c)
- Measured channels: 4, 6, 14, 21, 25, 38, 50, 68 µm(c)
- The orifice of the sensor has a cross section of 0,9 x 0,9 mm / .04 x .04 in
- The maximum concentration is ISO 4406 Code 24 (160.000 p/ml)

Accessories
- Bottle Sampling Unit 110 ml (for Mineral Oil and Petroleum based fluids)
- Bottle Sampling Unit 500 ml (for Mineral Oil and Petroleum based fluids)
- Bottle Sampling Unit 500 ml (Version E) (for Phosphate Ester (e.g. Skydrol®) available on request) For further information please see on page D49.
- Screen filter: 500 µm (see on page D50)

Hose Connections
- Test coupling STAUFF Test 20 or comparable (M16 x 2)

Sample Volume
- 8 ml (short)
- 15 ml (normal)
- 30 ml (dynamic)
- 24 ml (bottle sampler)
- 15 ml (continuous)

Permissible Temperature
- Operating: +5 °C ... +80 °C / +41 °F ...+176 °F

Data Output
- Cumulative particle counts, as well as cleanliness classes according to ISO 4406 (1999) / SAE AS 4059 Rev.D (2001) and ISO 4406 (1191) / NAS 1638 (1964)

Max. Concentration
- ISO 24

Accumulator
- Internal rechargeable battery

Data Storage
- 600 tests

Fluid Compability
- Mineral Oil, Petroleum based fluids
- Phosphate Ester and Water Glycol compatible devices on request

Computer Interface
- RS-232 communication port as standard
- USB adaptors included

External Alarm
- External alarm socket with switching outputs max. 24 V DC/AC, 1 A

Software
- Downloading and storage of the data with included “LasPaC II View” software. Further processing with Microsoft Excel® possible.

Laser Particle Counter ▪ Type LasPaC II-M (Mobile)

LasPaC II-M with integrated battery (standard option)

LasPaC II-M also available without integrated battery

Product Description

The LasPaC II-M is a highly accurate laser particle counter. With a competitive price, the LasPaC II-M is the best compromise between lower cost and briliant accuracy/reliability.

Features

Versatile - Lightweight and Convenient
The LasPaC II-M (Mobile) is designed for applications where it is necessary to have a small, light and robust service unit.

Low Cost - Same Functions for a Budget Price
Without losing the quality in measurement accuracy, reliability and repeatability the LasPaC II-M is a cost effective alternative to the fully equipped LasPaC II-P.

Options

- Moisture / Temperature Sensor
  This sensor measures the moisture content of the test fluids (displayed as relative humidity in RH %) and also
  emperature (in °C).
  se see on page D50.

- ol®) or specific Water
  st
- without integrated battery

Order Codes

LasPaC II - M - M - 0 - B

① ② ③ ④ ⑤

① Type and Series

Laser Particle Counter	**LasPaC II**

② Version

Mobile	**M**

③ Fluid Compability

Mineral Oil, Petroleum based fluids (standard option)	**M**
Phosphate Ester (e.g. Skydrol®)	**E**
Specific Water Glycol fluids	**G**

④ Moisture/ Temperature Sensor

Without moisture/ temperature sensor	**0**
With moisture/ temperature sensor	**W**

Please note: The moisture/ temperature sensor is not suitable for Phosphate Ester (e.g. Skydrol®) and Water Glycol fluids.

⑤ Battery

With internal rechargeable battery (standard option)	**B**
Without internal rechargeable battery	**0**

Laser Particle Counter ▪ Type LasPaC II-M (Mobile)

LasPaC II-M with small Bottle Sampler

Display and Buttons

Technical Data

Dimensions and Weight
- L/W/H: 340 x 295 x 152 mm / 13.40 x 11.61 x 5.98 in
- Weight: 4,75 kg / 10.47 lbs

Power Supply
- Voltage range: 110 ... 240 V AC, 12 ... 24 V DC
- European, UK and US power plug adaptors included
- Number of tests before recharging is required: 60

Calibration
- Calibration: ISO Medium Test Dust (MTD) according to ISO 11 171:1999
- Analysis range: ISO 8-24, ISO 4406 Code, NAS 1638 Code 2-12, SAE AS 4059 Code 2-12

Pressure / Viscosity
- Pressure range: 2 ... 400 bar / 29 ... 5801 PSI
- Viscosity range: 1 ... 400 cSt

Laser Sensors
- High accuracy laser: 4 ... 6 µm(c)
- Standard accuracy laser: 6 ... 68 µm(c)
- Measured channels: 4, 6, 14, 21, 25, 38, 50, 68 µm(c)
- The orifice of the sensor has a cross section of 0,9 x 0,9 mm / .04 x .04 in
- The maximum concentration is ISO 4406 Code 24 (160.000 p/ml)

Accessories
- Bottle Sampling Unit 110 ml (for Mineral Oil and Petroleum based fluids)
- Bottle Sampling Unit 500 ml (for Mineral Oil and Petroleum based fluids)
- Bottle Sampling Unit 500 ml (Version E) (for Phosphate Ester (e.g. Skydrol®) available on request) For further information please see on page D49.
- Screen filter: 500 µm (see on page D50)

Hose Connections
- Test coupling STAUFF Test 20 or comparable (M16 x 2)

Sample Volume
- 8 ml (short)
- 15 ml (normal)
- 30 ml (dynamic)
- 24 ml (bottle sampler)
- 15 ml (continuous)

Permissible Temperature
- Operating: +5 °C ... +80 °C / +41 °F ...+176 °F

Data Output
- Cumulative particle counts, as well as cleanliness classes according to ISO 4406 (1999) / SAE AS 4059 Rev.D (2001) and ISO 4406 (1191) / NAS 1638 (1964)

Max. Concentration
- ISO 24

Data Storage
- 600 tests

Fluid Compability
- Mineral Oil, Petroleum based fluids
- Phosphate Ester and Water Glycol compatible devices on request

Computer Interface
- RS-232 communication port as standard
- USB adaptors included

Software
- Downloading and storage of the data with included “LasPaC II View” software. Further processing with Microsoft Excel® possible.

Internal Rechargeable Battery
- Standard option with internal rechargeable battery

Laser Particle Counter ▪ Type LasPaC II-I (Inline)

Front / Bottom View of the STAUFF LasPaC II-I

Product Description

The LasPaC II-I (Inline) unit is designed for hydraulic applications, where continuous monitoring is essential. It is installed permanently in a hydraulic system.

Please note that the LasPaC II-I needs a minimum working pressure of 2 bar / 29 PSI for reliable particle counting.

The LasPaC II-I does not have the QWERTY keyboard, the LCD display, and an internal rechargeable battery.

All test results are saved in the integrated memory and can be downloaded to a PC or laptop computer with the RS-232 interface or USB adaptor.

Also, the configuration of the LasPaC II-I has to be done with a PC or laptop computer.

Features

Accessory - Remote Display
For a direct display of the measured data an optional remote display is available for the LasPaC II-I.

This device also offers the opportunity to flush the LasPaC II-I and to start and stop the measurement by use of the three push buttons.

The standard cable length of the remote display is 2 m / 6.56 ft.
A cable with a length of 5 m / 16.40 ft is available on request.

Hazard Conditions - Rugged Aluminium Case
The LasPaC II-I inline unit has a rugged, powder coated Aluminum case which can be easily installed, even in hazardous conditions.

Options

- Moisture / Temperature Sensor
  This sensor measures the moisture content of the test fluids (displayed as relative humidity in RH %) and also indicates the current fluid temperature (in °C).
  For further information please see on page D50.
- Phosphate Ester (e.g. Skydrol®) or specific Water Glycol fluids units on request
- ATEX (Zone II Category 3G rating) is available.
  For further information please see on page D48 or contact STAUFF.

Order Codes

LasPaC II	-	I	-	M	-	232	-	D3	-	W	-	30
①		②		③		④		⑤		⑥		⑦

① Series and Type

Laser Particle Counter	**LasPaC II**

② Version

Inline	**I**

③ Fluid Compability

Mineral Oil, Petroleum based fluids (standard option)	**M**
Phosphate Ester (e.g. Skydrol®)	**E**
Specific Water Glycol fluids	**G**

④ Computer Interface

RS-232 computer interface (standard option)	**232**
RS-485 computer interface	**485**

⑤ Display Mode

PC driven (standard option)	**D3**
Remote module + PC driven	**D2**
Remote visual indicator (red/green) + PC driven	**D5**
Customer-specific display (e.g. Modbus)	**X**

⑥ Moisture/ Temperature Sensor

Without moisture/ temperature sensor	**0**
With moisture/ temperature sensor	**W**

Please note: The moisture/ temperature sensor is not suitable for Phosphate Ester (e.g. Skydrol®) and Water Glycol fluids.

⑦ Design Code

Inlet pressure: 2 ... 400 bar / 29 ... 5801 PSI Drain reservoir/system: Atmospheric, zero back pressure	**30**
Inlet pressure: 10 ... 400 bar / 145 ... 5801 PSI Drain reservoir/system: Back pressure not exceeding 1 bar / 14 PSI	**31**

Laser Particle Counter ▪ Type LasPaC II-I (Inline)

Rear / Top View of the STAUFF LasPaC II-I

Remote Display for the STAUFF LasPaC II-I

Technical Data

Dimensions and Weight
- LxWxH: 120 x 275 x 250 mm / 4.72 x 10.83 x 9.84 in
- Weight: 4,80 kg / 10.58 lbs

Power Supply
- Voltage range: 110 ... 240 V AC, 12 ... 24 V DC
- European, UK and US power plug adaptors included

Calibration
- Calibration: ISO Medium Test Dust (MTD) according to ISO 11 171:1999
- Analysis range: ISO 8-24, ISO 4406 Code, NAS 1638 Code 2-12, SAE AS 4059 Code 2-12

Pressure / Viscosity
- Pressure range: Series 30: 2 ... 400 bar/ 29 ... 5801 PSI; Series 31: 10 ... 400 bar/ 145 ... 5801 PSI
- Viscosity range: 1 ... 400 cSt

Laser Sensors
- High accuracy laser: 4 ... 6 µm(c)
- Standard accuracy laser: 6 ... 68 µm(c)
- Measured channels: 4, 6, 14, 21, 25, 38, 50, 68 µm(c)
- The orifice of the sensor has a cross section of 0,9 x 0,9 mm / .04 x .04 in
- The maximum concentration is ISO 4406 Code 24 (160.000 p/ml)

Accessories
- Bottle Sampling Unit 110 ml (for Mineral Oil and Petroleum based fluids)
- Bottle Sampling Unit 500 ml (for Mineral Oil and Petroleum based fluids)
- Bottle Sampling Unit 500 ml (Version E) (for Phosphate Ester (e.g. Skydrol®) available on request) For further information please see on page D49.
- Screen filter: 500 µm (see on page D50)

Hose Connections
- Test coupling STAUFF Test 20 or comparable (M16 x 2)

Sample Volume
- 8 ml (short)
- 15 ml (normal)
- 30 ml (dynamic)
- 24 ml (bottle sampler)
- 15 ml (continuous)

Permissible Temperature
- Operating: +5 °C ... +80 °C / +41 °F ...+176 °F

Data Output
- Cumulative particle counts, as well as cleanliness classes according to ISO 4406 (1999) / SAE AS 4059 Rev.D (2001) and ISO 4406 (1191) / NAS 1638 (1964)

Max. Concentration
- ISO 24

Data Storage
- 600 tests

Fluid Compability
- Mineral Oil / Petroleum based fluids
- Phosphate Ester and Water Glycol compatible devices on request

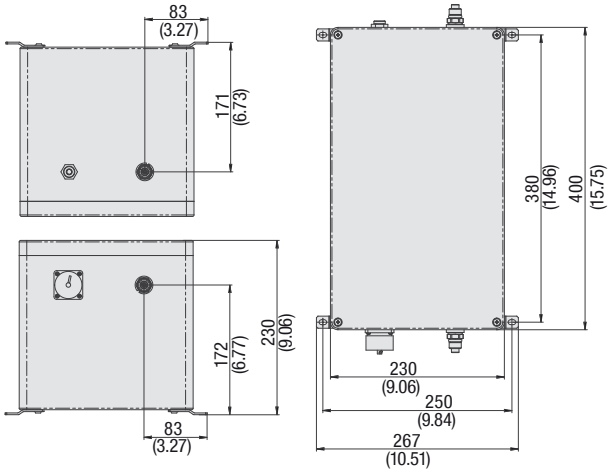
Computer Interface
- RS-232 communication port as standard
- RS-485 on request
- USB adaptors included

Software
- Downloading and storage of the data with included “LasPaC II View” software. Further processing with Microsoft Excel® possible.

External Alarm
- seperate wires in connector cable (max. 24 V DC/AC, 1A)

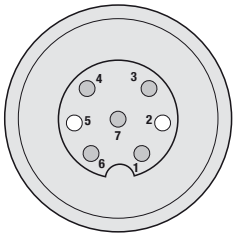
Protection Rating
- IP 55 protection rating: Dust protected and protected against water jets

Laser Particle Counter ▪ Type LasPaC II-I-ATEX2



Wiring Diagram

Note: Please note that an ATEX approved connecting cable is not included in the scope of delivery of LasPaC II-I...-ATEX2. A corresponding ATEX plug is included.



1 Power 0V
3 Data-
4 Data+
6 Power +24V DC
7 Screen of cable

Product Description

The ATEX version of the Laser Particle Counter LasPaC II-I is approved for use in hazardous areas (zone 2 / category 3G). The device thus meets the conditions to be used in e.g. oil and gas industry or chemical and process industry.

Product Features

- Determines contamination level of measured fluids in 8 size channels
- Precise and complete determination of particel sizes in accordance with international standards
- Integrated data storage for up to 600 measuring results
- Integrated Modbus interface can be used to connect the device to existing machine control, and data acquisition systems
- Option to specify different alarm thresholds
- Software on CD (included)
- ATEX certificated (Zone 2 / Category 3G)

Order Codes

LasPaC II - I - M - 232 - D3 - 0 - 30 - ATEX2

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① Series and Type

Laser Particle Counter	**LasPaC II**

② Version

Inline	**I**

③ Fluid Compatibility

Fluids based on Mineral Oil and Petroleum (standard)	**M**
Phosphate Ester (e.g. Skydrol®)	**E**
Specific Water Glycols	**G**

④ Computer Interface

RS-232 interface (standard)	**232**
RS-485 interface (Modbus)	**485**

⑤ Display Mode

PC driven (standard)	**D3**

⑥ Moisture Sensor / Temperature Sensor

Without moisture sensor / temperature sensor	**0**
With moisture sensor / temperature sensor	**W**

Please note: The moisture/ temperature sensor is not suitable for Phosphate Ester (e.g. Skydrol®) and Water Glycol fluids.

⑦ Design Code

Inlet pressure: 2 ... 400 bar / 29 ... 5801 PSI Drain reservoir/system: atmospheric, zero back pressure	**30**

⑧ Version according to ATEX 94/9/EG

ATEX certification (Zone 2 / Cat. 3)	**ATEX2**

Technical Data

Channels
- >4, 6, 14, 21, 25, 38, 50, 70 µm(c) acc. to ISO 4406:1999

Measuring Range / Purity Classes
- ISO 4406:1999 code (NAS 1638 code 2 to 12) (SAE AS 4059 code 2 to 12)

Calibration
- Each device is individually calibrated using ISO Medium Test Dust (MTD) in accordance with ISO 11171 (1999)

Viscosity Range
- 1 ... 400 cSt

Temperature Range
- Media: +5 °C ... + 80 °C / +41 °F ... +176 °F
- Ambient: +5 °C ... +80 °C / +41 °F ... +176 °F

Weight
- 14 kg / 30.87 lbs

Fluid Compatibility
- M: suitable for Synthetic and Mineral Oil based fluids, Diesel and Petroleum
- G: Austenitic Stainless Steel, FPM (Viton®): suitable for offshore and aqueous fluids
- E: Austenitic Stainless Steel, Perfluorinated Rubber (FFKM): suitable for Phosphate Ester and aggressive media

Max. Permissible Operating Pressure
- 2 bar ... 400 bar / 29 PSI ... 5801 PSI

Moisture Sensor / Temperature Sensor
- % RH (relative humidity) ±3 %
- ±3 °C / ±32 °F

Hose Connections
- Test coupling STAUFF Test 20 or comparable (M16 x 2)

Data Storage
- Max. 600 measuring results

Interfaces
- RS485, RS232, Modbus

Power Supply
- 24 V DC

Current Consumption
- Max. 1 Amp

Power
- Max. 24 W

Housing Surface Treatment
- Polyester vinyl (light grey)

Wetted Parts
- M: Steel, 303 St.St, Aluminium Alloy, Brass, Sapphire, NBR (Buna-N®), Nylon
- G: 303 St.St, NBR (Buna-N®), Sapphire, Brass, Alumnium Alloy, Nylon
- E: 303 St.St, Perfluorinated Rubber, Brass, Sapphire, Alumnium Alloy

ATEX Directive 94/9/EG

Harmonises legal provisions of memberstates for devices and protection systemsfor designated use in potentially explosive areas.

ATEX Classification
- CE Ex II 3G Ex nR IIB T6 X

ATEX Rating
- Zone 2 / Cat. 3G

Bottle Sampling Unit ▪ Typ LasPaC II-Bottle Sampler

Bottle Sampling Unit 110 ml and Accessories

Bottle Sampling Unit 110 ml

Bottle Sampling Unit 500 ml

Order Codes

LasPaC II - Bottle Sampler 110

① ②

① Type and Series

Laser Particle Counter	**LasPaC II**

② Bottle Sampling Unit

110 ml Bottle Sampling Unit suitable for Mineral Oil and Petroleum based fluids only	**Bottle Sampler 110**
500 ml Bottle Sampling Unit suitable for Mineral Oil and Petroleum based fluids only	**Bottle Sampler 500**
500 ml Bottle Sampling Unit suitable Phosphate Ester (e.g. Skydrol®)	**Bottle Sampler 500-E**

Product Description

Analysis Everywhere - Bottle Sampling Unit
If a direct particle count on your system is not possible, the LasPaC II bottle sampler units allow you to take measurement samples for analysis at a later time.

Conditioning - The De-aeration Facility
A highly aerated fluid may lead to inaccurate results; therefore a de-aeration process has been incorporated into the bottle sampling units.
By evacuating the air from the sampling chamber, aeration within the fluid is removed, and the fluid is properly conditioned prior to sampling.

Your Choice - 110 ml or 500 ml Size
STAUFF offers two sizes of bottle sampling units for the LasPaC II devices: the 110 ml and the 500 ml units.

The 110 ml unit is supplied in an extra case including various accessories such as power supply, sampling hoses, pressure hoses, bottles (sample and waste) and adaptors. It is designed for mobile applications and is only compatible with Mineral Oil and Petroleum based fluids.

The standard version of the 500 ml unit is compatible with Mineral Oil and Petroleum based fluids; a Phosphate Ester (e.g. Skydrol®) compatible version of the 500 ml unit is available on request. Please contact STAUFF for details.

The 500 ml bottle sampling unit is delivered with the required power supply.

Please note that the moisture / temperature sensor does not work in combination with bottle sampler devices.

Moisture / Temperature Sensor

Product Description

More Oil Analysis - Oil Saturation and Temperature
In Mineral Oils and non-aqueous fire resistant fluids, water is undesirable. Once the water exceeds a saturation level (about 500 ppm for Mineral Oils) the fluid starts to appear hazy. Above this level there is a danger of free water accumulating in the system. This can lead to corrosion and accelerated wear.

As an option, all LasPaC II devices provide accurate and repeatable measurement of the saturation level of water in oil with the moisture / temperature sensor. The sensor is located internally in a specially designed housing and is positioned in the low pressure constant flow line.

Additional Information - Oil Temperature Readings
Beside the saturation level the optional moisture / temperature sensor of the LasPaC II units has the ability to measure the fluid temperature. This allows to provide a reference temperature for the RH (relative humidity / % saturation of water in oil) readings.

Both results, RH % and °C, are displayed on the main / test progress screen and on the printed analysis.

Please note: Due to the temperature gradient existing between the system tapping point and the RH / temperature module, the temperature reading can be 5° to 10° less than the actual system temperature, depending on operating conditions. The moisture / temperature sensor is not suitable for bottle sampling.

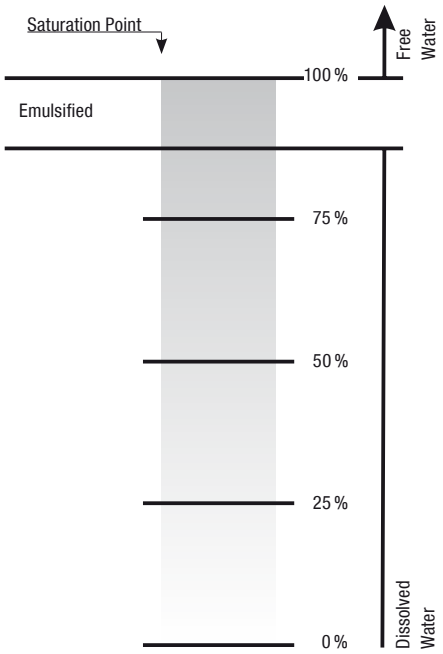
Saturation Levels
Since the effects of free (also emulsified) water are more harmful than those of dissolved water, water levels should remain always well below the saturation point.

However, even water in solution can cause damage, and therefore every reasonable effort should be made to keep saturation levels as low as possible.

There is no such thing as too little water.
As a guideline, we recommend maintaining saturation levels below 50 % in all equipment.

Different oils have different saturation levels, and % saturation is the best and most practical measurement.

These results can be converted to ppm (parts per million), if the oil type saturation / temperature characteristic is known.



Laser Particle Counter ▪ Accessories

Product Description: Screen Filter

An optional Screen Filter is available for heavily contaminated systems. The filter device is assembled directly to the supply line and allows particle counts in ambient conditions where normally the contamination is too high for a reliable test.

The Stainless Steel Filter has a mesh of 500 µm and is cleanable.

Order Codes

Accessories / Spare Parts

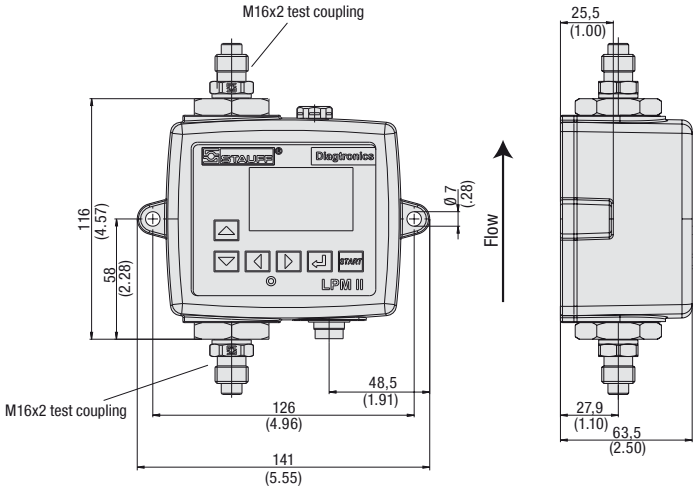
① Type of Accessories / Spare Parts

Waste hose 2 m / 6.56 ft	**LasPaC II - Waste hose 2m**
Pressure hose 1,5 m / 4.92 ft	**SMS-20-1500-A-C6F**
100 ml certified clean bottle (5 pieces)	**LasPaC II - Bottle 100-C Set**
250 ml certified clean bottle (5 pieces)	**LasPaC II - Bottle 250-C Set**
500 ml certified clean bottle (5 pieces)	**LasPaC II - Bottle 500-C Set**
100 ml glass sample bottle (5 pieces)	**LasPaC II - Bottle 100 Set**
250 ml glass sample bottle (5 pieces)	**LasPaC II - Bottle 250 Set**
500 ml glass sample bottle (5 pieces)	**LasPaC II - Bottle 500 Set**
Printer paper LasPaC II-P (5 pieces)	**LasPaC II - P-Printer Paper Set**
RS 232 to USB converter	**Adaptor PPC-04/12-RS232-to-USB-CAB**
Screen filter	**LasPaC II - Screen Filter**

Laser Particle Counter ▪ Technical Data

			
Type	**LasPaC II-P (Portable)**	**LasPaC II-M (Mobile)**	**LasPaC II-I (Inline)**
Dimensions (mm/in) (W x D x H)	551 x 358 x 226 21.69 x 14.09 x 8.90	340 x 295 x 152 13.40 x 11.61 x 5.98	120 x 275 x 250 4.72 x 10.83 x 9.84
Weight (kg/lbs)	13 28.66	4,75 10.47	4,80 10.58
Keyboard	QWERTY keyboard integrated	-	-
Printer	Thermal printer integrated (384 dots per line)	-	-
Viscosity Range	1 ... 400 cSt	1 ... 400 cSt	1 ... 400 cSt
Calibration	MTD, ISO 11 171:1999	MTD, ISO 11 171:1999	MTD, ISO 11 171:1999
Analysis Range	ISO 8-24, ISO 4406 Code, NAS 1638 Code 2-12, SAE AS 4059 Code 2-12	ISO 8-24, ISO 4406 Code, NAS 1638 Code 2-12, SAE AS 4059 Code 2-12	ISO 8-24, ISO 4406 Code, NAS 1638 Code 2-12, SAE AS 4059 Code 2-12
Sensitivity	4, 6, 14, 21, 25, 38, 50, 68 µm(c)	4, 6, 14, 21, 25, 38, 50, 68 µm(c)	4, 6, 14, 21, 25, 38, 50, 68 µm(c)
Sample Volume	8 ml (short) 15 ml (normal) 30 ml (dynamic) 24 ml (bottle sampler) 15 ml (continuous)	8 ml (short) 15 ml (normal) 30 ml (dynamic) 24 ml (bottle sampler) 15 ml (continuous)	8 ml (short) 15 ml (normal) 30 ml (dynamic) 24 ml (bottle sampler) 15 ml (continuous)
Pressure Range (bar/PSI)	2 ... 400 29 ... 5801	2 ... 400 29 ... 5801	Series 30: 2 ... 400 29 ... 5801 Series 31: 10 ... 400 145 ... 5801
Operating Temperature (°C/°F)	+5 ... +80 +41 ... +176	+5 ... +80 +41 ... +176	+5 ... +80 +41 ... +176
Max. Concentration	ISO 24	ISO 24	ISO 24
Power Supply	110 ... 240 V AC 12 ... 24 V DC	110 ... 240 V AC 12 ... 24 V DC	110 ... 240 V AC 12 ... 24 V DC
Accumulator	Internal rechargeable battery	Internal rechargeable battery	-
Data Storage	600 tests	600 tests	600 tests
Fluid Compability	Mineral Oil / Petroleum based fluids; Phosphate Ester and water glycol compatible devices on request	Mineral Oil / Petroleum based fluids; Phosphate Ester and Water Glycol compatible devices on request	Mineral Oil / Petroleum based fluids; Phosphate Ester and Water Glycol compatible devices on request
Computer Interface	RS-232	RS-232	RS-232
External Alarm	External alarm socket	-	Signal in connector cable
Hose Connections	Test coupling STAUFF Test 20 or comparable (M16 x 2)	Test coupling STAUFF Test 20 or comparable (M16 x 2)	Test coupling STAUFF Test 20 or comparable (M16 x 2)
Accessories	Moisture/temperature sensor Bottle sampling unit (110 ml / 500 ml) Screen filter (500 µm)	Moisture/temperature sensor Bottle sampling unit (110 ml / 500 ml) Screen filter (500 µm)	Moisture/temperature sensor Bottle sampling unit (110 ml / 500 ml) Screen filter (500 µm)

Particle Monitor ▪ LPM II



Product Description

The LPM II Particle Monitor determines the contamination level of the measured fluid on eight size channels and offers precise and complete determination of particle sizes in accordance with international standards.

The LPM II is an automatic, optical particle counter with high-performance LEDs that work on the light obscuration principle.
STAUFF recommends recalibrating the measuring equipment at regular intervals.

Options

- Moisture sensor / temperature sensor:
  RH in % (relative humidity) and temperatures in °C
- Phosphate Ester- (e.g. Skydrol®) and Water Glycol-compatible devices are available on request

Order Codes

LPM II - D - M - W

① ② ③ ④

① Series and Type

Particle Monitor (Incl. LPM II-CAB-P-FL-3 connecting cable)	**LPM II**

② Version

With display and keypad	**D**
Without display and keypad	**O**

③ Fluid Compatibility

Fluids based on Mineral Oil and Petroleum (standard)	**M**
Phosphate Ester (e.g. Skydrol®)	**E**
Specific Water Glycols	**G**

Note: If you have any queries on fluid compatibility, please contact STAUFF.

④ Moisture Sensor / Temperature Sensor

Without moisture sensor / temperature sensor	**O**
With moisture sensor / temperature sensor	**W**

Note: In the case applications with extreme pressure peaks, please contact STAUFF.

Note: Versions “E” and “G” can only be supplied without moisture sensor / temperature sensor

Note: You need an interface module with either a USB or an Ethernet interface for exporting and programming.

Technical Data

Channels
- >4, 6, 14, 21, 25, 38, 50, 70 µm(c) according to ISO 4406:1999

Measuring Range / Purity Classes
- ISO 4406:1999 Code 0 to 25, NAS 1638 Class 00 to 12, AS4059 Rev. E. Tables 1 and 2 Sizes A-F: Classes 000 to 12, ISO 11218 Classes 00 to 12
  (lower codes or classes are test time-dependent)

Precision
- ±1/2 Code for 4, 6, 14 µm(c)
- ±1 Code for larger particles

Calibration
- Each device is individually calibrated using ISO Medium Test Dust (MTD) in accordance with ISO 11171 (1999);

Flow
- 20 ... 400 ml/min / 0.005 ... 0.11 US GPM

Viscosity Range
- ≤ 1000 mm²/s

Medium Temperature
- -25 °C ... +80 °C / -13 °F ... +176 °F *pressure-dependent

Ambient Temperature
- LMP II-O: -25 °C ... +80 °C / -13 °F ... +176 °F
- LMP II-D: -25 °C ... +55 °C / -13 °F ... +131 °F

Weight
- 1.15 kg / 2.53 lbs

Fluid Compatibility
- M: suitable for Synthetic and Mineral Oil based fluids, Diesel and Petroleum
- G: Austenitic Stainless Steel, FPM (Viton®): suitable for offshore and aqueous fluids
- E: Austenitic Stainless Steel, Perfluorinated Rubber (FFKM): suitable for Phosphate Ester and aggressive media

Max. Permissible Operating Pressure
- 400 bar / 5801 PSI static *temperature-dependent
  (Note: In systems with extreme pressure peaks, please contact STAUFF)

Test Duration
- Settable between 10 ... 3600 sec., set ex-works to 120 sec.
- As standard with start delay and freely programmable test intervals

Moisture Sensor / Temperature Sensor
- % RH (relative humidity) ±3 %
- ±3 °C / ±32 °F

Volumetric Flow Measurement
- As display only

Hose Connections
- Test coupling STAUFF Test 20 or comparable (M16 x 2)

Data Storage
- Max. 4000 measuring results

Interfaces
- RS485, RS232, Modbus, CAN Bus

International Protection Rating
- IP 65: Dust-proof and protected from spray
- Impact resistance rating IK04

Power Supply
- 9 ... 36 V DC

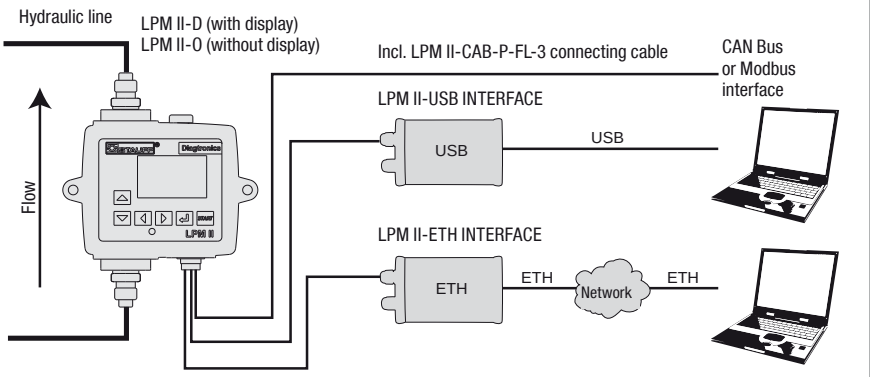
Current Consumption
- 12 V: 70 mA (LPM II-O), 150 mA (LPM II-D)
- 24 V: 40 mA (LPM II-O), 80 mA (LPM II-D)
- 36 V: 30 mA (LPM II-O), 60 mA (LPM II-D)

Power
- <2.2 W

Housing Surface Treatment
- Painted, Polyurethane based paint, according to BSX34 colour BS381-638 (dark grey)
- Tested according to: BS2X34A and BS2X34B, MM0114 and SP-J-513-083 Part II. Cl. A
- The unit meets: MIL-PRF-85285

Wetted parts
- M: C46400 Cu Alloy, 316 Stainless Steel, FPM (Viton®), FR4, Sapphire
- G: 316 Stainless Steel, FPM (Viton®), Sapphire
- E: 316 Stainless Steel, Perfluorinated Rubber (FFKM), Sapphire, EPDM

Interface Module with USB or Ethernet Interface ▪ LPM II-USB/ETH INTERFACE



Connection diagram: PC connection of the LPM II Particle Monitor

Order Code

LPM II - USB INTERFACE

①

① Series and Type

Interface module with USB interface	**LPM II-USB INTERFACE**

Scope of supply:
- Power supply unit
- Interface module with USB interface
- Connecting cable (3 m / 9.84 ft)
- USB cable

Order Code

LPM II - ETH INTERFACE

①

① Series and Type

Interface module with Ethernet interface	**LPM II-ETH INTERFACE**

Scope of supply:
- Power supply unit
- Interface module with Ethernet interface
- Connecting cable (3 m / 9.84 ft)

Note: An Ethernet cable is not supplied.

Product Description

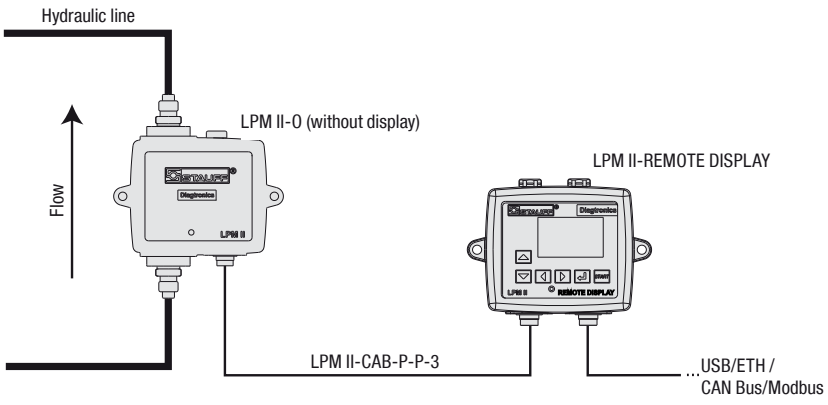
The LPM II is connected to an EDP system or a laptop/PC using an interface module with a USB or an Ethernet interface.

Either interface module is connected to the LPM II using a connecting cable (3 m / 9.84 ft). With the power supply unit connected, the LPM II is supplied with current via the connecting cable.

The interface modules allow you to evaluate the measured data and to carry out programming using the supplied software.

In USB operation, the LPM II can be supplied with current via the USB cable too.

Remote Display Unit ▪ LPM II-REMOTE DISPLAY



Connection diagram: Remote display

Order Code

LPM II-REMOTE DISPLAY

①

① Series and Type

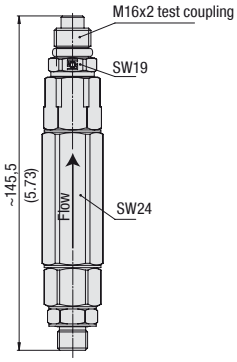
LPM II-REMOTE DISPLAY

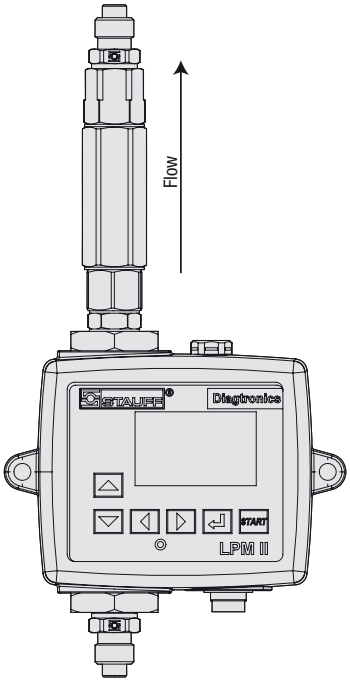
Scope of supply:
- Remote Display
- LPM II-CAB-P-P-3 connecting cable

Product Description

In the case of applications outside the operator's field of view or in locations that are difficult to access, it is possible to display via a remote display the values that the LPM II measured.

Flow Control Valve ▪ LPM II-DAV





LPM II with flow control valve LPM II-DAV

Product Description

In systems in which the volumetric flow or the pressure is too high, the optimum flow is achieved with the use of a flow control valve.
It can process pressures from 4 bar ... 400 bar / 58 PSI ... 5801 PSI.

The LPM II-DAV, flow control valve is connected to the hydraulic outlet of the LPM II via the connection fittings.

Max. Permissible Operating Pressure

- 400 bar / 5801 PSI
  (Note: Note that a minimum operating pressure of 4 bar / 58 PSI must be maintained for the proper function of the flow control valve.)

Order Code

LPM II - DAV - M

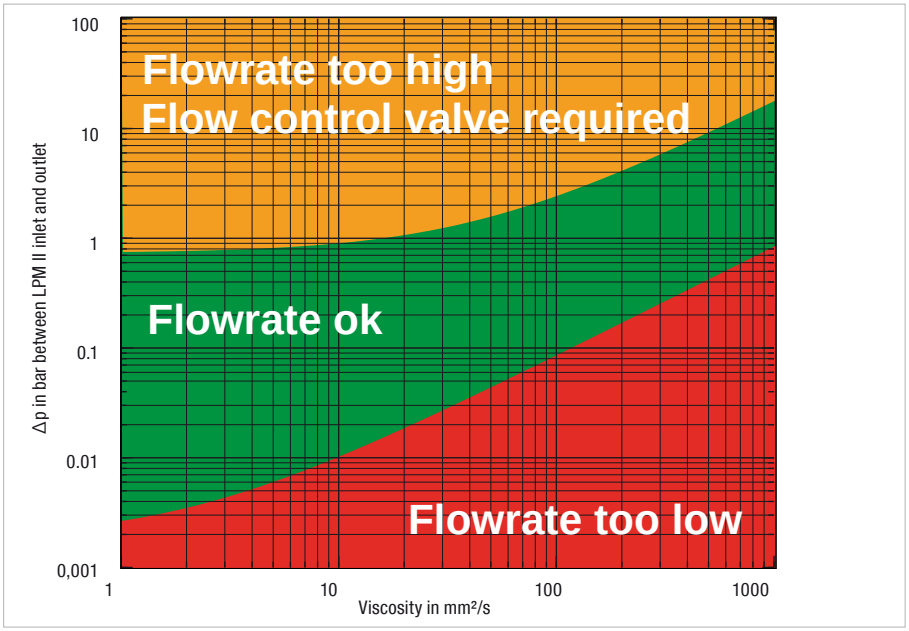
① ②

① Series and Type

Flow Control Valve	**LPM II-DAV**

② Fluid Compatibility

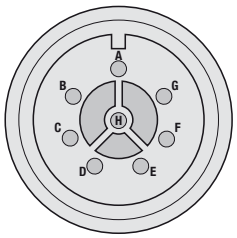
Fluids based on Mineral Oil and Petroleum (standard)	**M**
Phosphate Ester (e.g. Skydrol®)	**E**
Specific Water Glycols	**G**



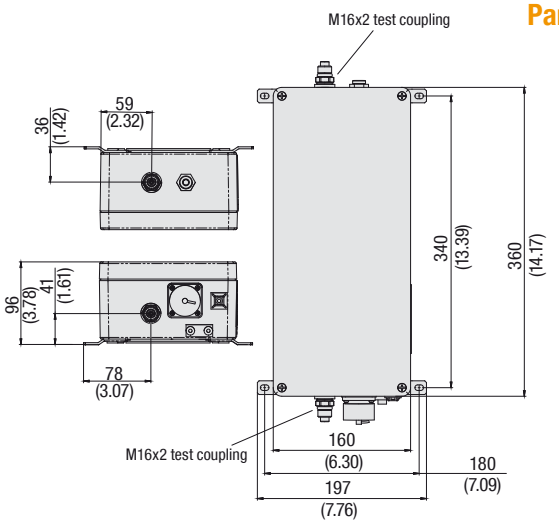
Particle Monitor ▪ LPM II-...-ATEX2

Wiring Diagram

Note: Please note that an ATEX approved connecting cable is not included in the scope of delivery of LPM II-0-...-ATEX2.
A corresponding ATEX plug is included.



A Data+
B Test start
C Data-
D Output
E I/C Common
F Output 2
G Power 0V
H Power +12-24V DC



Order Codes

LPM II - 0 - M - 0 - ATEX2

① ② ③ ④ ⑤

① Series and Type

Particle Monitor	**LPM II**

② Version

Without display and keypad	**0**

③ Fluid Compatibility

Fluids based on Mineral Oil and Petroleum (standard)	**M**
Phosphate Ester (e.g. Skydrol®)	**E**
Specific Water Glycols	**G**

Note: If you have any queries on fluid compatibility, please contact STAUFF.

④ Moisture Sensor / Temperature Sensor

Without moisture sensor / temperature sensor	**0**
With moisture sensor / temperature sensor	**W**

⑤ Version according to ATEX 94/9/EG

ATEX certification (Zone 2 / Cat. 3)	**ATEX2**

Note: Versions „E“ and „G“ can not be supplied with moisture sensor / temperature sensor.

Note: You need an interface module with either USB or an ethernet interface for exporting and programming.

Product Description

The ATEX version of the Particle Monitor LPM II is approved for use in hazardous areas (zone 2 / category 3G).
The device thus meets the conditions to be used in e.g. oil and gas industry or chemical and process industry.

Product Features

- Determines contamination level of measured fluids in 8 size channels
- Precise and complete determination of particel sizes in accordance with international standards
- Integrated data storage for up to 4000 measuring results
- Integrated Modbus and CAN Bus interfaces can be used to connect the device to existing machine control, and data acquisition systems
- Option to specify different alarm thresholds
- Software on CD (included)
- ATEX certificated (Zone 2 / Category 3G)

Technical Data

Channels
- >4, 6, 14, 21, 25, 38, 50, 70 µm(c) acc. to ISO 4406:1999

Measuring Range / Purity Classes
- ISO 4406:1999 Code 0 to 25, NAS 1638 Klasse 00 to 12, AS4059 Rev. E. tables 1 and 2 sizes A-F: classes 000 to 12, ISO 11218 classes 00 to 12
  (lower codes or classes are test time-dependent)

Accurancy
- ±1/2 code for 4, 6, 14 µm(c)
- ±1 code for larger particles

Calibration
- Each device is individually calibrated using ISO Medium Test Dust (MTD) in accordance with ISO 11171 (1999)

Flow
- 20 ... 400 ml/min / .005 ... .11 US GPM

Viscosity Range
- ≤ 1000 mm²/s

Temperature Range
- Media: -25 °C ... + 80 °C / -13 °F ... +176 °F
- Ambient: -5 °C ... +80 °C / +23 °F ... +176 °F

Weight
- 5,5 kg / 12.16 lbs

Power Supply
- 9 ... 36 V DC

Fluid Compatibility
- M: suitable for Synthetic and Mineral Oil based fluids, Diesel and Petroleum
- G: Austenitic Stainless Steel, FPM (Viton®): suitable for offshore and aqueous fluids
- E: Austenitic Stainless Steel, Perfluorinated Rubber (FFKM): suitable for Phosphate Ester and aggressive media

Max. Permissible Operating Pressure
- 400 bar / 5801 PSI
  (Note: In systems with extreme pressure peaks, please contact STAUFF)

Test Duration
- Settable between 10 ... 3600 sec., set ex-works to 120 sec.
- As standard with start delay and freely programmable test intervals

Moisture Sensor / Temperature Sensor
- % RH (relative humidity) ±3 %
- ±3 °C / ±32 °F

Volumetric Flow Measurement
- As display only

Hose Connections
- Test coupling STAUFF Test 20 or comparable (M16 x 2)

Data Storage
- Max. 4000 measuring results

Interfaces
- RS485, RS232, Modbus, CAN Bus

Current Consumption
- 12 V: 70 mA
- 24 V: 40 mA
- 36 V: 30 mA

Power
- <2,2 W

Housing Surface Treatment
- Polyester vinyl paint (light grey)

Wetted Parts
- M: C46400 Cu Alloy, 316 Stainless Steel, FPM (Viton®), FR4, Sapphire
- G: 316 Stainless Steel, FPM (Viton®), Sapphire
- E: 316 Stainless Steel, Perfluorinated Rubber (FFKM), Sapphire, EPDM

ATEX Directive 94/9/EG

Harmonises legal provisions of memberstates for devices and protection systemsfor designated use in potentially explosive areas.

ATEX Classification
- CE Ex II 3G Ex nR IIB T6 X

ATEX Rating
- Zone 2 / Cat. 3G

Oil Sampling Kit ▪ Type SFSK-1/ -2

Product Description

Fluid analysis is a crucial component of any oil management program. Early detection of potential problems can prevent costly repairs and downtime. STAUFF SFSK oil analysis kits provide the tools to take a sample from a STAUFF test coupling or directly from a reservoir or sump.

For this the supplied hose is directly connected to the test coupling with an adaptor and the fluid is filled into the supplied vials.

But there is also the possibility to draw up the sample directly from a tank with the hand pump and fill it into the vial.

This sample set is available in two versions with BSP and NPT test couplings.

Scope of Delivery

- Contains vacuum pump for drawing samples of oil equipment
- 1 m / 3.28 ft hose for insertion into tank
- Two sample bottles
- STAUFF test points and adaptor allows oil sample to be taken from STAUFF Test 20 test points

Components

SFSK-1
- 1x Fluid Sample Pump FSP-38
- 1x Hose adaptor SHA-20-5,5mm
- 1 m / 3.28 ft Push on 1/4" hose
- 1x SMK20-1/4NPT-VD-C6F
- 1x SMK20-7/16UNF-VE-C6F
- Sample bottles

SFSK-2
- 1x Fluid Sample Pump FSP-38
- 1x Hose adaptor SHA-20-5,5mm
- 1 m / 3.28 ft Push on 1/4" hose
- 1x SMK20-G1/4-PC-C6F
- 1x SMK20-M10x1-PA-C6F
- Sample bottles

Order Codes

SFSK-1

① Series and Type

NPT type	**SFSK-1**
BSP type	**SFSK-2**

Sensors and Switches

The continuous monitoring of critical hydraulic systems has become normal in today's market. The automatic and timely detection of problems in hydraulic systems can predict component failure and thereby eliminate catastrophic system failures. The advent of automated processes systems have made continuous monitoring and control components indispensible.

With the STAUFF line of industrial and mobile sensor, it is possible to continuously monitor and control your machine and process.
The wide range of STAUFF transmitters and switches available, enables proper fit to any application need.

The STAUFF line of simple pressure and temperature switches are factory set, or adjustable via a screw.
The switches can be ordered normally open, normally closed, or SPDT.

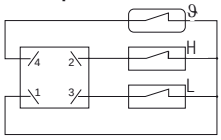
The STAUFF transmitters are available in many pressure and temperature ranges. Output signals are available in 4 ... 20 mA and 0 ... 10 V. Other signals are available on many items. The process connections are available in NPT, SAE, BSP for international use.

All sensors can be ordered with flying leads, DIN connectors or other options to fit the environment.

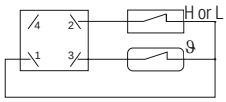
Level-Temperature Switch ▪ Type SLTS

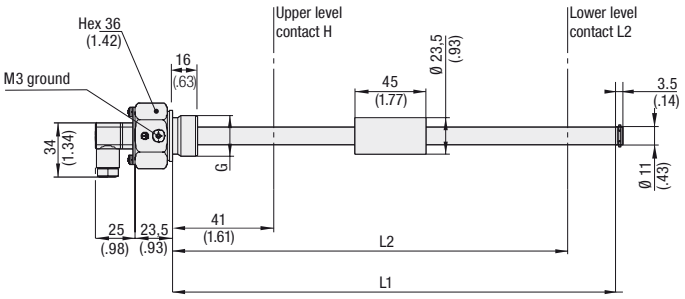
Wiring Scheme

two level contacts
one temperature contact



one level contact
one temperature contact





Order Codes

SLTS	12	-	0	-	H41	-	L251	-	B12	-	G048	-	M12
①	②		③		④		⑤		⑥		⑦		⑧

① Series and Type

Level-Temperature Switch	**SLTS**

② Stem Length

L1: 305 mm / 12 in L2: 251 mm / 9.88 in	**12**
L1: 457 mm / 18 in L2: 403 mm / 15.87 in	**18**

③ Switching Temperature

Without temperature switch	**0**
+60 °C / +140 °F	**140**
+70 °C / +158 °F	**158**

④ H (Upper Level Contact)

Without upper level contact	**0**
41 mm / 1.61 in	**H41**

⑤ L2 (Lower Level Contact)

Without lower level contact	**0**
251 mm / 9.88 in (SLTS 12 only)	**L251**
403 mm / 15.87 in (SLTS 18 only)	**L403**

⑥ Process Connection

G3/4 (standard option)	**B12**
1 NPT	**N16**

Note: Others on request

⑦ Voltage (Volt AC/DC)

48 Volt max. (standard option)	**G048**
115 Volt max. (for thread N16 only)	**G115**

⑧ Electrical Connection

similar DIN VDE 0627 / IEV 61984	**CB**
M12 pin terminal	**M12**

Product Description

The STAUFF Level-Temperature Switches (SLTS Series) are unique in their design and modularity. One of the greatest advantages is the ability of the end-user to adjust the switching level. The internal support wire carrying the level and temperature switches makes it a simple and quick job to change the level switch position.

Level contact positions (L2, H) are set as given in the order code. They can be adjusted individually later on. Please consider a minimum distance of 40 mm / 1.57 in between the switching points.

Features

- Suitable for Mineral Oil and HFC fluids, other fluids on request
- Either 1 or 2 level contacts available
- 1 integrated temperature sensor (optional)
- Standard electrical function:
  Level contacts: Normally closed, opens with falling level
  Temperature contacts: Normally closed, opens with rising temperature

STAUFF Level-Temperature Switches SLTS are available with other electrical functions on request.

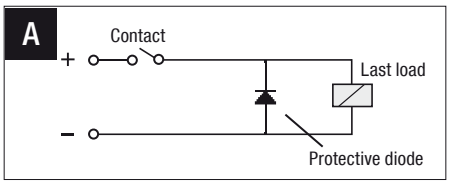
Contact Life Time

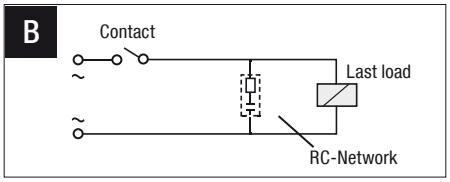
Due to their design Reed contacts have a very high life expectancy. However, it is worthwhile to note the following information.

Contact Protection

To reduce the high reverse voltage produced when a reed switch opens, the following contact protection can be applied.

- DC voltage: a diode parallel to the load, see figure A
- AC voltage: a RC-network parallel to the load, see figure B and table below





Open contact voltage V	10 VA		25 VA		50 VA		75 VA		100 VA	
	R (Ω)	C (µF)	R (Ω)	C (µF)	R (Ω)	C (µF)	R (Ω)	C (µF)	R (Ω)	C (µF)
24	22	0,022	1	0,1	1	0,47	1	1	1	1
48	120	0,0047	22	0,022	1	0,1	1	0,47	1	0,47
110	470	0,001	120	0,0047	22	22	22	0,047	22	0,1

Options

- 1 NPT and others availble on request
- max. 115 Volt switching (for thread N16 only)

Technical Data

Materials

- Stem: Brass
- Float/Sealing: NBR (Buna-N®)

- Max. operating temp.: +80 °C / +176 °F

Electrical Data and Output

- Max. current level contact: 0.5 A
- Max. current temp. contact: 2.0 A
- Contact load level contact: 10 VA
- Max. operating voltage: (See ordering code)

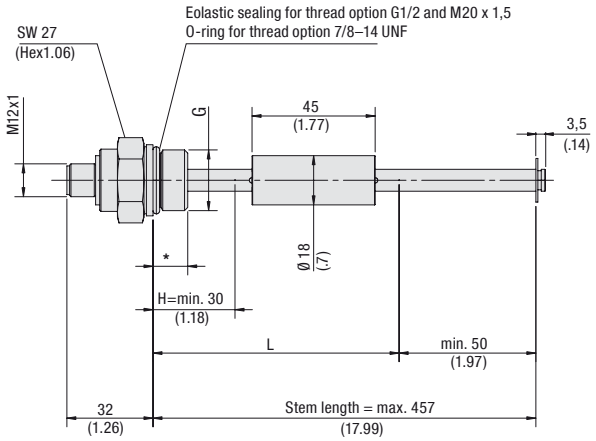
- Specific gravity of fluid: ≥0,8 kg/dm³
- Hysteresis: +18 °C / +64.4 °F

Protection Rating

- IP 65 protection rating: Dust tight and protected against water jets

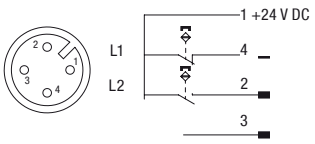
Dimensional drawings: All dimensions in mm (in).

Level-Temperature Switch Aluminium ▪ Type SLTSA



* 14 (.55) for thread option G1/2 and M20 x 1,5
13 (.51) for thread option 7/8–14 UNF

Wiring Scheme



Product Description

Efficient and inexpensive indication of level and temperature.

Level contact positions (L2, H) are set as given in the order code. They can be adjusted individually later on. Please consider a minimum distance of 50 mm / 1.97 in between the switching points.

Features

- Threads: G1/2, 7/8–14 UNF, M20 x 1,5
- Stem length available from 140 ... 457 mm / 5.5 ... 18.00 in
- Electrical connection M12 / 4-Pin terminal

Technical Data

Materials

- Connector: Anodized Aluminium
- Stem: Brass
- Float: Polyurethane
- Sealing: NBR (Buna-N®)

Electrical Connection

- Connector type: M12 x 1 / 4-Pin

- Max. operating pressure: 1 bar / 14.5 PSI

Permissible Temperature

- Operating: -20 °C ... +80 °C / -4 °F ... +176 °F

- Specific gravity of fluid: ≥0,8 kg/dm³

Electrical Data and Output

- Level contact type: K40
- Max. operating voltage: 36 V
- Max. current: 0.5 A
- Contact load: 5 VA

Protection Rating

- IP 67 protection rating: Dust tight and protected against powerful water jets; even immersion (up to 1 m / 3.28 ft) in water is possible under defined conditions of pressure and time

Order Codes

SLTSA 12 - 0 - H60 - L255 - B08 - G036 - M12

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① Series and Type

Level-Temperature Switch Aluminium	**SLTSA**

② Stem Lengths

140 mm / 5.51 in	**55**
170 mm / 6.69 in	**67**
215 mm / 8.46 in	**85**
280 mm / 11.02 in	**11**
305 mm / 12.01 in	**12**
370 mm / 14.57 in	**146**
457 mm / 18.00 in	**18**

③ Switching Temperature

Without temperature switch	**0**

④ H (Upper Level Contact)

30 mm / 1.18 in (only for stem length code 55)	**H30**
50 mm / 1.97 in (only for stem length code 67)	**H50**
60 mm / 2.36 in (only for stem length codes 55, 12, 18)	**H60**
85 mm / 3.35 in (only for stem length code 85)	**H85**
90 mm / 3.54 in (only for stem length codes 67, 12, 18)	**H90**
135 mm / 5.31 in (only for stem length code 85)	**H135**
200 mm / 7.87 in (only for stem length code11)	**H200**
290 mm / 11.42 in (only for stem length code 146)	**H290**

⑤ L (Lower Level Contact)

90 mm / 3.54 in (only for stem length code 55)	**L90**
120 mm / 4.72 in (only for stem length code 67)	**L120**
165 mm / 6.50 in (only for stem length code 85)	**L165**
230 mm / 9.06 in (only for stem length code 11)	**L230**
255 mm / 10.04 in (only for stem length code 12)	**L255**
320 mm / 12.60 in (only for stem length code 146)	**L320**
407 mm / 16.02 in (only for stem length code 18)	**L407**

⑥ Process Connection

G1/2 (standard option)	**B08**
7/8–14 UNF	**U10**
M20 x 1,5	**M20**

⑦ Voltage

36 Volt max.	**G036**

⑧ Electrical Connection

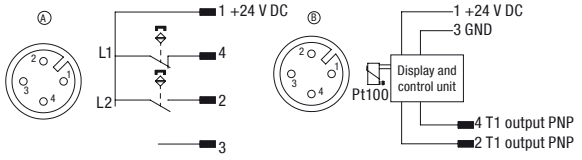
M12 / 4-Pin terminal	**M12**

Dimensional drawings: All dimensions in mm (in).

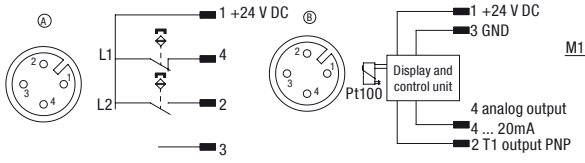
Level-Temperature Switch Display ▪ Type SLTSD

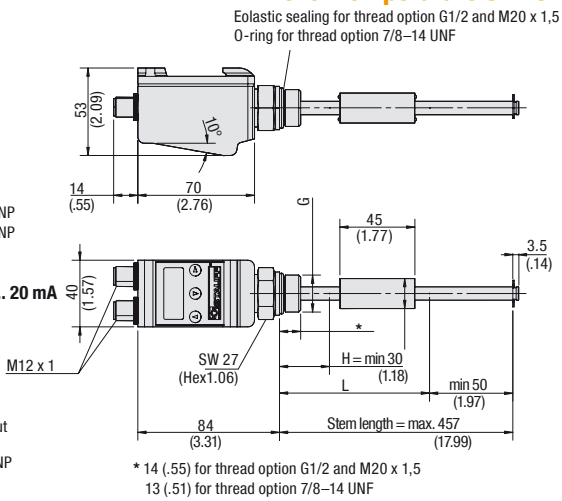
Wiring Scheme

for SLTSD...-1-... :
2 Level contacts + 2 temperature PNP switch outputs



for SLTSD...-2-... :
2 Level contacts + 1 temperature PNP switch output + 1 Analog Output 4 ... 20 mA





Order Codes

SLTSD 12 - 1 - H60 - L255 - B08 - G036 - M12

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① Series and Type

Level-Temperature Switch Display	**SLTSD**

② Stem Length

140 mm / 5.51 in	**55**
170 mm / 6.69 in	**67**
215 mm / 8.46 in	**85**
280 mm / 11.02 in	**11**
305 mm / 12.01 in	**12**
370 mm / 14.57 in	**146**
457 mm / 18.00 in	**18**

③ Temperature Output Options

2x PNP switch outputs	**1**
1x PNP switch outputs + 1x analog 4 ... 20mA	**2**

④ H (Upper Level Contact)

30 mm / 1.18 in (only for stem length code 55)	**H30**
50 mm / 1.97 in (only for stem length code 67)	**H50**
60 mm / 2.36 in (only for stem length codes 55, 12, 18)	**H60**
85 mm / 3.35 in (only for stem length code 85)	**H85**
90 mm / 3.54 in (only for stem length codes 67, 12, 18)	**H90**
135 mm / 5.31 in (only for stem length code 85)	**H135**
200 mm / 7.87 in (only for stem length code 11)	**H200**
290 mm / 11.42 in (only for stem length code 146)	**H290**

⑤ L (Lower Level Contact)

90 mm / 3.54 in (only for stem length code 55)	**L90**
120 mm / 4.72 in (only for stem length code 67)	**L120**
165 mm / 6.50 in (only for stem length code 85)	**L165**
230 mm / 9.06 in (only for stem length code 11)	**L230**
255 mm / 10.04 in (only for stem length code 12)	**L255**
320 mm / 12.60 in (only for stem length code 146)	**L320**
407 mm / 16.02 in (only for stem length code 18)	**L407**

⑥ Process Connection

G1/2 (standard option)	**B08**
7/8–14 UNF	**U10**
M20 x 1,5	**M20**

⑦ Voltage

36 Volt max.	**G036**

⑧ Electrical Connection

M12 / 4-Pin terminal	**M12**

Product Description

Combination of a temperature controller with level indication in a small inexpensive package.

Level contact positions (L2, H) are set as given in the order code. They can be adjusted individually later on. Please consider a minimum distance of 50 mm / 1.97 in between the switching points.

Features

- Threads: G1/2, 7/8–14 UNF, M20 x 1,5
- Stem length available from 140 ... 457 mm / 5.5 ... 18.00 in
- Electrical connection M12 / 4-Pin terminal

Technical Data

Materials
- Housing: Polyamide
- Connector: Anodized Aluminium
- Stem: Brass
- Float: Polyurethane

Electrical Connection
- Connector type: M12 x 1 / 4-Pin
- Max. operating pressure: 1 bar / 14.5 PSI

Permissible Temperature
- Operating: -20 °C ... +80 °C / -4 °F ... +176 °F
- Specific gravity of fluid: ≥0,8 kg/dm³

Level Contacts (Connector A)
- Level contact type: K40
- Max. operating voltage: 36 V
- Max. current: 0.5 A
- Contact load: 5 VA

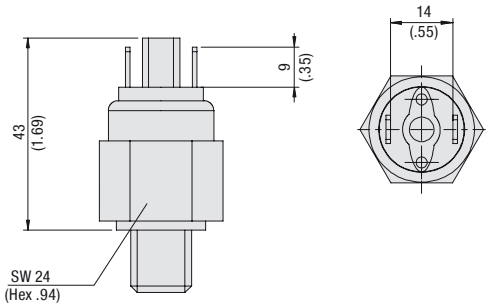
Temperature Outputs (Connector B)
- Output option 1: Two PNP programmable switching outputs
- Output option 2: One PNP switching output and one 4 ... 20 mA analog output (0 ... 10 V, 2 ... 10 V, 0 ... 5 V or 4 ... 20 mA settable via display)
- Max. current: 0.5 A
- Load resistance: 500 Ω

Display
- Display temp. range: -20 °C ... +120 °C / -4 °F ... +248 °F
- Alarm indication range: 0 °C ... +100 °C / +32 °F ... +212 °F
- LED display: 4 digit, 7 segment
- Resolution: 0,5 °C / 1 °F
- Current consumption at power up: 100 mA for 100ms
- Current consumption at operating: 50 mA
- Supply voltage: 10 ... 32 V DC
- Ambient temperature: -20 °C ... +70 °C / -4 °F ... +158 °F
- Accuracy: ±1 % FS*
- Sensor type: Temperature: PT100

Protection Rating
- IP 65 protection rating: Dust tight and protected against water jets (IP 67 with accordant connection plug)

*FS = Full Scale
Dimensional drawings: All dimensions in mm (in).

Pressure Switch ▪ Type SPW-...-NC/NO



Wiring Scheme

Wiring diagram normally open

Wiring diagram normally closed

Product Description

The SPW Mechanical Pressure Switch is available in a variety of pressure ranges. This durable unit has an adjustable set point that is easily changed by using the adjustment screw which is located under the protective cap.

Features

- Normally open, normally closed
- Pressure ranges available up to 206 bar / 3000 PSI
- G1/4 and 1/4 NPT process connection
- NBR (Buna-N®) sealings
- Steel, zinc plated
- Spade terminal connection

Options

- G1/8, 1/8 NPT and 7/16–20 UNF process connections
- FPM (Viton®) and EPDM sealings on request
- Flying leads with shrink tubing, flying leads, rubber boot, Deutsch connector, weather pack connector female/male and IP option on request
- 316 Stainless Steel

Technical Data

Materials

- Body: Steel, zinc plated or 316 Stainless Steel
- Connector: Polyamide

Electrical Data and Output

- Switching function: Normally open (NO), normally closed (NC)
- Cycle rate: 30 CPM
- Mechanical life: 2000000 operations
- Max. electrical rating: 100 VA

Permissible Temperatures

- NBR (Buna-N®): -9 °C ... +110 °C / +15 °F ... +230 °F
- FPM (Viton®) : -18 °C ... +110 °C / 0 °F ...+230 °F
- EPDM: -40 °C ... +110 °C / -40 °F ...+230 °F

Process Connection

- G1/8, G1/4, 1/8 NPT, 1/4 NPT and 7/16–20UNF

Electrical Connection

- Spade terminals

Protection Rating

- IP 00 protection rating

Order Codes

SPW - B0034 - B04 - NO - SP - W5

(1) (2) (3) (4) (5) (6)

① Series and Type

Mechanical Pressure Switch	**SPW**

② Version

1 ... 4 bar / 14.5 ... 60 PSI	**B0004**
3 ... 10 bar / 40 ... 150 PSI	**B0010**
6 ... 18 bar / 75 ... 275 PSI	**B0018**
11 ... 34 bar / 150 ... 500 PSI (standard option)	**B0034**
19 ... 55 bar / 275 ... 800 PSI	**B0055**
28 ... 75 bar / 400 ... 1100 PSI (standard option)	**B0075**
69 ... 206 bar / 1000 ... 3000 PSI (standard option)	**B0206**

③ Process Connection

G1/8	**B02**
G1/4 (standard option)	**B04**
1/8 NPT	**N02**
1/4 NPT (standard option)	**N04**
7/16–20 UNF	**U04**

④ Switching Outputs

Normally open (standard option)	**NO**
Normally closed	**NC**

⑤ Electrical Connection

Spade terminals (standard option)	**SP**
Flying leads	**F**
Flying leads with shrink tubing	**FL**
Deutsch DT04-3P / 3-Pin	**D**
Rubber boot	**RB**
Weather pack connector female	**WF**
Weather pack connector male	**WM**
IP Option (IP 66)	**IP**

Note: IP Option requires a fixed set point indicate at the end of part number.

⑥ Body Material

Steel, zinc plated (standard option)	**(none)**
316 Stainless Steel	**W5**

Pressure Ranges

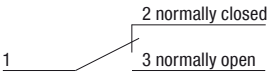
Version	Pressure Range (bar/PSI)	Maximum Pressure (bar/PSI)	Burst Pressure (bar/PSI)	Repeatability	Average Deadband
B0004	1 ... 4	410	600	±0,10 bar + 3 % of setting	0,21 bar + 5 % of setting
	14.5 ... 60	6000	9000	±1.5 PSI + 3 % of setting	3 PSI + 5 % of setting
B0010	3 ... 10	410	600	±0,17 bar + 3 % of setting	0,35 bar + 6 % of setting
	40 ... 150	6000	9000	±2.5 PSI + 3 % of setting	5 PSI + 6 % of setting
B0018	6 ... 18	410	600	±0,26 bar + 3 % of setting	0,48 bar + 8 % of setting
	75 ... 275	6000	9000	±3.75 PSI + 3 % of setting	7 PSI + 8 % of setting
B0034*	11 ... 34	410	600	±0,34 bar + 3 % of setting	0,69 bar + 10 % of setting
	150 ... 500	6000	9000	±5 PSI + 3 % of setting	10 PSI + 10 % of setting
B0055	19 ... 55	410	600	±0,55 bar + 3 % of setting	10,3 bar + 11 % of setting
	275... 800	6000	9000	±8 PSI + 3 % of setting	15 PSI + 11 % of setting
B0075*	28 ... 75	410	600	±0,90 bar + 3 % of setting	2,07 bar + 12 % of setting
	400 ... 1100	6000	9000	±13 PSI + 3 % of setting	30 PSI + 12 % of setting
B0206*	69 ... 206	410	600	±2,41 bar + 3 % of setting	4,83 bar + 14 % of setting
	1000 ... 3000	6000	9000	±35 PSI + 3 % of setting	70 PSI + 14 % of setting

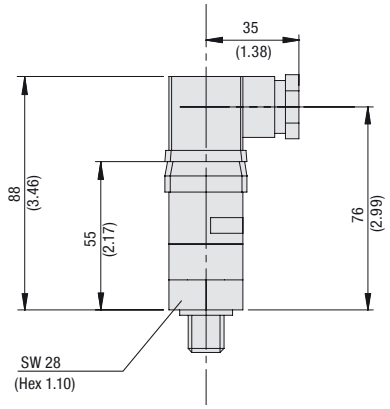
* Standard option

Dimensional drawings: All dimensions in mm (in).

Pressure Switch ▪ Type SPW-SD

Wiring Scheme





Order Codes

SPW - SD - B0020 - B04 - DIN - W5

① ② ③ ④ ⑤ ⑥

① Series and Type

Mechanical Pressure Switch	**SPW**

② Switching Function

SPDT	**SD**

③ Version

0,7 ... 2 bar / 10 ... 30 PSI	**B0002**
1,7 ... 5,2 bar / 25 ... 75 PSI	**B0005**
4,5 ... 20,7 bar / 65 ... 300 PSI (standard option)	**B0020**
17,2 ... 69 bar / 250 ... 1000 PSI (standard option)	**B0069**
69 ... 206 bar / 1000 ... 3000 PSI (standard option)	**B0206**
173 ... 344 bar / 2500 ... 5000 PSI	**B0344**

④ Process Connection

G1/8	**B02**
G1/4 (standard option)	**B04**
1/8 NPT	**N02**
1/4 NPT (standard option)	**N04**
7/16–20 UNF	**U04**

⑤ Electrical Connection

Flying leads	**F**
Flying leads with shrink tubing	**FL**
DIN EN 175301-803A (DIN 43650-A) (standard option)	**DIN**
Deutsch DT04-3P / 3-Pin	**D**
Weather pack connector female	**WF**
Weather pack connector male	**WM**
IP Option (IP 66)	**IP**

⑥ Body Material

Steel, zinc plated (standard option)	**(none)**
316 Stainless Steel	**W5**

Pressure Ranges

Version	Pressure Range (bar/PSI)	Maximum Pressure (bar/PSI)	Burst Pressure (bar/PSI)	Repeatability	Average Deadband
B0002	0,7 ... 2	410	600	±0,10 bar + 2 % of setting	0,24 bar + 11 % of setting
	10 ... 30	6000	9000	±1.5 PSI + 2 % of setting	3.5 PSI + 11 % of setting
B0005	1,7 ... 5,2	410	600	±0,17 bar + 2 % of setting	0,24 bar + 11 % of setting
	25 ... 75	6000	9000	±2.5 PSI + 2 % of setting	3.5 PSI + 11 % of setting
B0020*	4,5 ... 20,7	410	600	±0,34 bar + 2 % of setting	1,38 bar + 11 % of setting
	65 ... 300	6000	9000	±5 PSI + 2 % of setting	20 PSI + 11 % of setting
B0069*	17,2 ... 69	410	600	±1,03 bar + 2 % of setting	3,10 bar + 12 % of setting
	250 ... 1000	6000	9000	±15 PSI + 2 % of setting	45 PSI + 12 % of setting
B0206*	69 ... 206	410	600	±2,07 bar + 2 % of setting	4,83 bar + 12 % of setting
	1000... 3000	6000	9000	±30 PSI + 2 % of setting	70 PSI + 12 % of setting
B0344	173 ... 344	410	600	±3,45 bar + 2 % of setting	9,65 bar + 13 % of setting
	2500 ... 5000	6000	9000	±50 PSI + 2 % of setting	140 PSI + 13 % of setting

* Standard option

Dimensional drawings: All dimensions in mm (in).

Product Description

The SPW-SD Mechanical SPDT Pressure Switch is available in a variety of pressure ranges. This durable unit has an adjustable set point that is easily changed by using the adjustment screw which is located under the protective cap.

Features

- SPDT switching function
- Pressure ranges available up to 344 bar / 5000 PSI
- G1/4 and 1/4 NPT process connection
- NBR (Buna-N®) sealings
- Steel, zinc plated
- Spade terminal connection

Options

- G1/8, 1/8 NPT and 7/16–20 UNF process connections
- FPM (Viton®) and EPDM sealings on request
- Flying leads with shrink tubing, flying leads, Deutsch connector, weather pack connector female/male and IP option on request
- 316 Stainless Steel

Technical Data

Materials

- Body: Steel, zinc plated or 316 Stainless Steel
- Connector: Polyamide

Electrical Data and Output

- Switching function: SPDT
- Cycle rate: 20 CPM
- Mechanical life: 2000000 operations
- Max. electrical rating: 5 A at 125/250 V AC, 5 A resistive / 3 A inductive at 28 V DC

Permissible Temperatures

- NBR (Buna-N®): -9 °C ... +85 °C / +15 °F ... +185 °F
- FPM (Viton®): -18 °C ... +85 °C / 0 °F ... +185 °F
- EPDM: -23 °C ... +85 °C / -10 °F ... +185 °F

Process Connections

- G1/8, G1/4, 1/8 NPT, 1/4 NPT and 7/16–20UNF

Electrical Connection

- DIN EN 175301-803 form A (DIN 43650-A)

Protection Rating

- IP 65 protection rating: Dust tight and protected against water jets

Pressure Transmitters ▪ Type SPT

Product Description

The SPT Pressure Transmitter is designed for many industrial and OEM pressure measurement applications. The SPT pressure transmitters convert applied pressure from 1 bar up to 600 bar / 14.5 PSI up to 8702 PSI into the corresponding output signals. The SPT Series provides resistance to vibration, shock, wide temperature variations and many other extreme environmental conditions that are typical of industrial and OEM applications.

Features

- Stainless Steel housing construction
- L-plug DIN EN 175301-803A (DIN 43650-A) electrical connection
- Pressure ranges up to 600 bar / 8702 PSI
- G1/4 or 1/4 NPT process connection
- Output signal 4 ... 20 mA
- Non-linearity ≤ ±0.5 % BFSL
- Environmental protection of IP 65 (IP 65 protection rating: Dust tight and protected against water jets)
- Protection against incorrect polarity, short circuits and over-voltage
- Temperature compensated
- Long term stability

Options

- Mini L-plug DIN EN 175301-803C, M12 x 1 and flying lead electrical connections
- 1/2 NPT and 7/16–20 UNF process connections
- Output signals 0 ... 5 V, 0 ... 10 V, 1 ... 5 V and 0,5 ... 4,5 V ratiometric on request
- Non-linearity ≤ ± 0.25 % BFSL
- Environmental protection of IP 67 (IP 67 protection rating: Dust tight and protected against powerful water jets; even immersion (up to 1 m / 3.28 ft) in water is possible under defined conditions of pressure and time)
- Extended temperature option on request -30 °C ... +100 °C / -22 °F ... +212 °F

Order Codes

SPT - **B0400** - **B04** - **420A** - **DIN**

① ② ③ ④ ⑤

① Series and Type

Pressure Transmitter	**SPT**

② Version

0 ... 1 bar / 0 ... 14.5 PSI	**B0001**
0 ... 1,6 bar / 0 ... 23 PSI	**B001.6**
0 ... 2,5 bar / 0 ... 36 PSI	**B002.5**
0 ... 4 bar / 0 ... 58 PSI	**B0004**
0 ... 6 bar / 0 ... 87 PSI	**B0006**
0 ... 10 bar / 0 ... 145 PSI	**B0010**
0 ... 16 bar / 0 ... 232 PSI (standard option)	**B0016**
0 ... 25 bar / 0 ... 362 PSI	**B0025**
0 ... 40 bar / 0 ... 580 PSI (standard option)	**B0040**
0 ... 60 bar / 0 ... 870 PSI	**B0060**
0 ... 100 bar / 0 ... 1450 PSI (standard option)	**B0100**
0 ... 160 bar / 0 ... 2320 PSI (standard option)	**B0160**
0 ... 250 bar / 0 ... 3625 PSI	**B0250**
0 ... 400 bar / 0 ... 5801 PSI (standard option)	**B0400**
0 ... 500 bar / 0 ... 7251 PSI	**B0500**
0 ... 600 bar / 0 ... 8702 PSI (standard option)	**B0600**

③ Process Connection

G1/4 (standard option)	**B04**
1/4 NPT (standard option)	**N04**
1/2 NPT	**N08**
7/16–20 UNF	**U04**

④ Signal Output

4 ... 20 mA, 2-wire (standard option)	**420A**
0 ... 10 V, 3-wire	**010V**
0 ... 5 V, 3-wire	**05V**
1 ... 5 V, 3-wire	**15V**
0,5 ... 4,5 V, ratiometric	**0545V**

⑤ Electrical Connection

DIN EN 175301-803A (DIN 43650-A) (standard option)	**DIN**
DIN EN 175301-803C	**MD**
M12 x 1 / 4-Pin	**M12**
Flying leads with shrink tubing	**FL**

Pressure Transmitters ▪ Type SPT

Technical Data

Materials
- Body: 316 L Stainless Steel

Internal Transmission Fluid
- Silicone Oil (only pressure ranges up to 0 ... 10 bar / 0 ... 100 PSIG and 0 ... 25 bar / 0 ... 300 PSI absolute)

Fatique Life
- 10 million load cycles maximum

Signal Output and Maximum Load
- Signal 4 ... 20 mA, 2-wire:
  Power supply 8 ... 30 V DC
  Ra<= (UB-10 V)/ 0,02A
- Signal 0 ... 10 V, 3-wire:
  Power supply 14 ... 30 V DC
  Ra>10kΩ
- Signal 0 ... 5 V, 3-wire:
  Power supply 8 ... 30 V DC
  Ra>5kΩ
- Signal 1 ... 5 V, 3-wire:
  Power supply 8 ... 30 V DC
  Ra>5kΩ
- Signal 0,5 ... 4,5 V, ratiometric:
  Power supply 8 ... 30 V DC
  Ra>4,5kΩ

Isolation Voltage
- 500 V DC

Response Time
- <4 ms

Current Consumption
- Signal current:
  (max. 25 mA) for current output,
  (max. 8 mA) for voltage output

Non-linearity
- ≤ ± 0,5 % (BFSL) or optional ≤ ± 0,25 % (BFSL)

Accuracy
- ≤ ±1,0 % FS* (with non-linearity 0,5 %) *
- ≤ ±0,5 % FS* (with non-linearity 0,25 %) *
- ≤ ±0,6 % FS* (with non-linearity 0,25 % and signal output 0 ... 5 V) *
  * (Includes non-linearity, hysteresis, zero point and full scale error)

Zero Offset
- ≤ 0,15 typ. % FS*; ≤ 0,4 max. % of span (non-linearity 0,25 %)
- ≤ 0,5 typ. % FS*; ≤ 0,8 max. % of span (non-linearity 0,25 %)

Hysteresis
- ≤ 0,16 % FS*

Non-repeatability
- ≤ 0,1 % FS*

Long Term Drift
- ≤ 0,1 % FS*

Signal Noise
- ≤ 0,3 % FS*

Permissible Temperatures (Standard)
- Media: 0 °C ... +80 °C / +32 °F ... +176 °F
- Ambient: 0 °C ... +80 °C / +32 °F ... +176 °F
- Storage: -20 °C ... +80 °C / -4 °F ... +176 °F
- Operating temp. range: 0 °C ... +80 °C / +32 °F ... +176 °F

Permissible Temperatures (Extended Temperature Option)
- Media: -30 °C ... +100 °C / -22 °F ... +212 °F
- Ambient: -30 °C ... +100 °C / -22 °F ... +212 °F
- Storage: -30 °C ... +100 °C / -22 °F ... +212 °F

Electrical Connection
- DIN EN 175301-803A (DIN 43650-A), DIN EN 175301-803C M12 x 1 / 4-Pin, flying leads

Process Connection
- G1/4, 1/4 NPT, 1/2 NPT, 7/16–20 UNF

Temperature Error within Compensated Temperature Range
- ≤ 1,0 typ. % FS* ≤ 2,5 max. % FS*

CE Conformity

Pressure Equipment Directive
- 97/23/EC

EMC Directive
- 89/336/EWG emission (class B) and immunity according to EN 61 326

Shock Resistance
- 500g according to IEC 60068-2-27 (mechanical shock)

Vibration Resistance
- 10g according to IEC 60068-2-6 (vibration under resonance)

Wiring Protection
- Overvoltage protection: 32 V DC; 36 V DC with 4 ... 20 mA
- Short circuit protection: Sig+ to UB-
- Reverse polarity protection: UB+ to UB-

Test Reference Conditions
- Relative humidity: 45 ... 75 %
- Temperature: +15 °C ... +25 °C / +59 °F ... +77 °F
- Atmospheric pressure: 86 ... 106 kPa / 25.4 ... 31.3 inhg

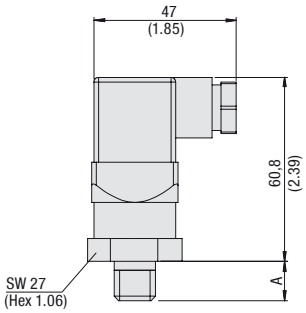
RoHS-conformity
- Yes

Weight
- Approximately 80g / 2.8 oz

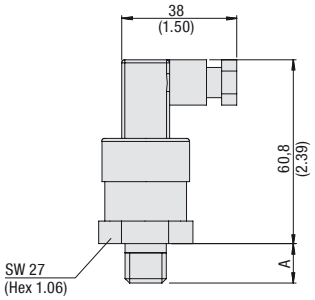
Protection Rating
- DIN EN 175301-803A: (DIN 43650-A) IP 65 protection rating: Dust tight and protected against water jets
- DIN EN 175301-803C: IP 65 protection rating: Dust tight and protected against water jets
- M 12 x 1: IP 67 protection rating: Dust tight and protected against powerful water jets; even immersion (up to 1 m / 3.28 ft) in water is possible under defined conditions of pressure and time
- Flying leads: IP 67 protection rating: Dust tight and protected against powerful water jets; even immersion (up to 1 m / 3.28 ft) in water is possible under defined conditions of pressure and time

* FS = Full Scale

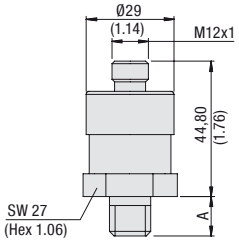
Pressure Transmitters ▪ Type SPT



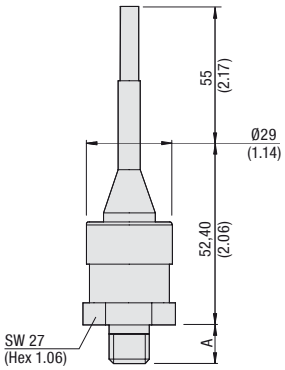
DIN 175301-803A (DIN 43650-A)



DIN 175301-803C



M12x1 / 4-Pin



Flying leads with shrink tubing

Dimensions

Version	A (mm/in)	Process Connection
B04	14,0	G1/4
	.55	
N04	13,0	1/4 NPT
	.51	
N08	19,0	1/2 NPT
	.75	
U04	9,1	7/16–20 UNF
	.36	

Pressure Ranges

Version	Pressure Range (bar/PSI)	Maximum Pressure ** (bar/PSI)	Burst Pressure *** (bar/PSI)
B0001	0 ... 1	2	5
	0 ... 14.5	29	72
B001.6	0 ... 1,6	3,2	10
	0 ... 23	46	145
B002.5	0 ... 2,5	5	10
	0 ... 36	72	145
B0004	0 ... 4	8	17
	0 ... 58	116	246
B0006	0 ... 6	12	34
	0 ... 87	174	493
B0010	0 ... 10	20	34
	0 ... 145	290	493
B0016*	0 ... 16	32	100
	0 ... 232	464	1450
B0025	0 ... 25	50	100
	0 ... 362	725	1450
B0040*	0 ... 40	80	400
	0 ... 580	1160	5801
B0060	0 ... 60	120	550
	0 ... 870	1740	7977
B0100*	0 ... 100	200	800
	0 ... 1450	2900	11603
B0160*	0 ... 160	320	1000
	0 ... 2320	4641	14503
B0250	0 ... 250	500	1200
	0 ... 3625	7251	17404
B0400*	0 ... 400	800	1700
	0 ... 5801	11603	24656
B0500	0 ... 500	1200	2400
	0 ... 7251	17404	34809
B0600*	0 ... 600	1200	2400
	0 ... 8702	17404	34809

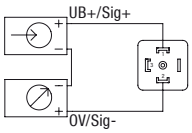
Note:
- Absolut pressure: 0 ... 1 bar up to 0 ... 25 bar
  0 ... 14.5 PSI up to 0 ... 362 PSI

* Standard option
** Maximum pressure, causing no perminate changes in specifications but may lead to zero point and span shifts
*** Burst pressure, leading to perminate changes in specifications or destruction of the transmitter

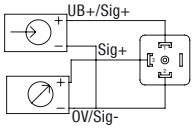
Dimensional drawings: All dimensions in mm (in).

Pressure Transmitters ▪ Type SPT

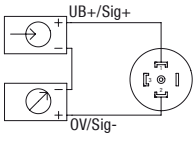
Electrical Connections



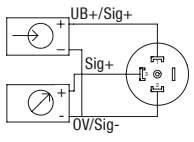
DIN EN 175301-803A /
2-wire 4... 20 mA



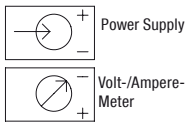
DIN EN 175301-803A /
3-wire 0 ... 10 V



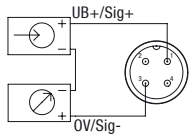
DIN EN 175301-803C /
2-wire (4 ... 20 mA)



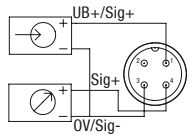
DIN EN 175301-803C /
3-wire (0 ... 10 V)



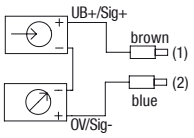
Sig+ output signal positive
UB+ power supply positive
0V power supply negative
Sig- output signal negative



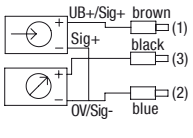
M12 x 1 / 2-wire 4 ... 20 mA



M12 x 1 / 3-wire 0 ... 10 V



Flying leads / 2-wire 4 ... 20 mA



Flying leads / 3-wire 0 ... 10 V

Pressure Transmitters ▪ Type PT

Product Description

The PT Pressure Transmitters features a durable fibre-glass reinforced PBT case, an internal metal sleeve for excellent EMI protection and an all welded thin film measuring cell for exceptional long term stability. This product is available with a flying lead option which is rated to IP69K for resistance to high pressure steam wash down. Produced on a high volume fully automated assembly line, the PT Pressure Transmitter is especially focused to provide a high number of transmitters to the end user while maintaining a consistent quality.

Features

- IP69K rated safety class (flying leads)
- Pressure ranges up to 600 bar / 8702 PSI
- G1/4, 7/16–20 UNF process connection
- Output signal 4 ... 20 mA
- Rugged PBT housing
- Internal metal sleeve
- Stainless Steel connection
- Protect against incorrect polarity, short circuits and overvoltage
- M12 x 1, Deutsch 3-Pin and flying leads with shrink tubing electrical connections

Options

- 0 ... 10 V, 1 ... 5 V, 0.5 ... 4.5 V ratiometric available outputs on request
- 1/4 NPT process connection on request

Order Codes

PT	-	B0400	-	B04	-	420A	-	M12
①		②		③		④		⑤

① Type

Pressure Transmitter	**PT**

② Version

0 ... 16 bar / 0 ... 232 PSI	**B0016**
0 ... 25 bar / 0 ... 362 PSI	**B0025**
0 ... 40 bar / 0 ... 580 PSI	**B0040**
0 ... 60 bar / 0 ... 870 PSI	**B0060**
0 ... 100 bar / 0 ... 1450 PSI	**B0100**
0 ... 160 bar / 0 ... 2320 PSI	**B0160**
0 ... 250 bar / 0 ... 3625 PSI	**B0250**
0 ... 400 bar / 0 ... 5801 PSI	**B0400**
0 ... 500 bar / 0 ... 7251 PSI	**B0500**
0 ... 600 bar / 0 ... 8702 PSI	**B0600**

③ Process Connection

G1/4 (standard option)	**B04**
1/4 NPT	**N04**
7/16–20 UNF (standard option)	**U04**

④ Signal Output

4 ... 20 mA, 2-wire (standard option)	**420A**
0 ... 10 V, 3-wire	**010V**
1 ... 5 V, 3-wire	**15V**
0,5 ... 4,5 V, ratiometric	**0545V**

⑤ Electrical Connection

M12 x 1 / 4-Pin	**M12**
Flying leads with shrink tubing	**FL**
Deutsch DT04-3P / 3-Pin	**D**

Pressure Transmitters ▪ Type PT

Technical Data

Materials
- Body: Stainless Steel
- Connector: Fiberglass-reinforced Polybutylene Terephthalate (PBT)

Signal Outputs and Maximum Load
- Signal 4 ... 20 mA, 2-wire:
  Power supply 10 ... 36 V DC
  Ra≤ (UB-10 V)/ 0,02A
- Signal 0 ... 10 V, 3-wire:
  Power supply 14 ... 36 V DC
  Ra>5kΩ
- Signal 1 ... 5 V, 3-wire:
  Power supply 8 ... 36 V DC
  Ra>2,5kΩ
- Signal 0,5 ... 4,5 V, ratiometric:
  Power supply 5 ... 30 V DC
  Ra>4,5kΩ

Response Time (10-90%)
- ≤2 ms

Isolation Voltage
- 500 V DC

Accuracy
- ≤ ±0.5 % FS*
- ≤ ±1.0 % FS*
  *(limit point calibration) (Includes linearity, hysteresis and repeatability)

Repeatability
- ≤ 0.2 % FS*

One Year Stability
- ≤ 0.3 % FS* (at reference conditions)

Permissible Temperatures
- Media*: -40 °C ... +125 °C / -40 °F ... +257 °F
- Ambient*: -40 °C ... +100 °C / -40 °F ... +212 °F
- Storage*: -40 °C ... +120 °C / -40 °F ... +248 °F
  * Also complies with EN 50178, Tab. 7,
  Operation (C) 4K4H, Storage (D) 1K4, Transport (E) 2K3
- Compensated temp. range: 0 °C ... +80 °C / +32 °F ... +176 °F

Temperature Coefficients (TC) within Compensated Temperature Range
- Mean TC of zero: ≤ 0,15 / 10k (special pressure ranges may have increased zero TC % FS*
- Mean TC of range: ≤ 0.15 / 10k % FS*

CE Conformity
- 89/336/EWG interference emission and immunity see EN 61 326 interference emission limit class A and B
  97/23/EG pressure equipment directive

Shock Resistance
- 500 g according to IEC 60068-2-27 (mechanical shock)

Vibration Resistance
- 20 g according to IEC 60068-2-6 (vibration under resonance)

Wiring Protection
- Protected against short circuiting signal+ to UB- / 0V
- Protected against reverse polarity except ratiometric output signals

Weight
- Approximately 59,53 g / 2.10 oz

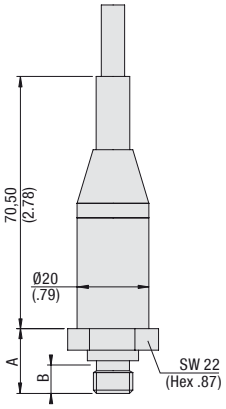
Electrical Connection
- Flying leads with shrink tubing, Deutsch DT04-3P, M12 x 1 / 4-Pin

Process Connection
- G1/4, 1/4 NPT, 7/16–20 UNF

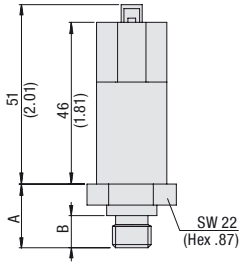
Protection Rating
- Flying leads: with shrink tubing: IP69K protection rating: Dust tight, for high-pressure, high-temperature wash down applications
- M 12 x 1: IP 67 protection rating: Dust tight and protected against powerful water jets; even immersion (up to 1 m / 3.28 ft) in water is possible under defined conditions of pressure and time
- Deutsch DT04-3P: IP 67 protection rating: Dust tight and protected against powerful water jets; even immersion (up to 1 m / 3.28 ft) in water is possible under defined conditions of pressure and time

* FS = Full Scale

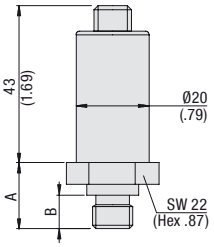
Pressure Transmitters ▪ Type PT



Flying Leads with shrink tubing



Deutsch DT04-3P / 3-Pin



M12 x 1 / 4-Pin

Dimensions

Version	A (mm/in)	B (mm/in)	Process Connection
B04	20,2	12,0	G1/4
	.80	.47	
N04	19,2	18,0	1/4 NPT
	.76	.71	
U04	17,6	9,14	7/16–20 UNF
	.69	.36	

Pressure Ranges

Version	Pressure Range (bar/PSI)	Maximum Pressure * (bar/PSI)	Burst Pressure ** (bar/PSI)
B0016	0 ... 16	32	160
	0 ... 232	464	2320
B0025	0 ... 25	50	250
	0 ... 362	725	3625
B0040	0 ... 40	80	400
	0 ... 580	1160	5801
B0060	0 ... 60	120	550
	0 ... 870	1740	7977
B0100	0 ... 100	200	800
	0 ... 1450	2900	11603
B0160	0 ... 160	320	1000
	0 ... 2320	4641	14503
B0250	0 ... 250	500	1200
	0 ... 3625	7251	17404
B0400	0 ... 400	800	1700
	0 ... 5801	11603	24656
B0500	0 ... 500	1200	2400
	0 ... 7251	17404	34809
B0600	0 ... 600	1200	2400
	0 ... 8702	17404	34809

Note:

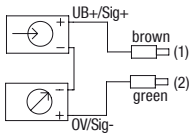
* Pressure applied up to the maximum rating will cause no permanent change in specifications but may lead to zero and span shifts.

** Exceeding the burst pressure may result in destruction of the transmitter and possible loss of media.

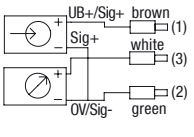
Dimensional drawings: All dimensions in mm (in).

Pressure Transmitters ▪ Type PT

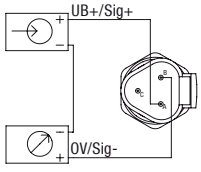
Electrical Connections



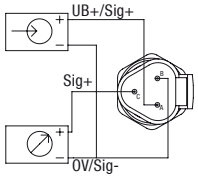
Flying leads / 2-wire 4 ... 20 mA



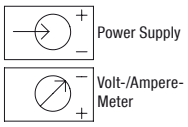
Flying leads / 3-wire 0 ... 10 V



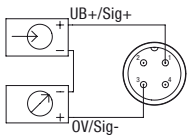
3-Pin Deutsch / 2-wire 4 ... 20 mA



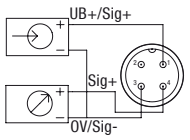
3-Pin Deutsch / 3-wire 0 ... 10 V



Sig+ output signal positive
UB+ power supply positive
0V power supply negative
Sig- output signal negative



M12 x 1 / 2-wire 4 ... 20 mA



M12 x 1 / 3-wire 0 ... 10 V

Pressure Switch and Transmitter ▪ Type SPWF

Product Description

The SPWF Pressure Switch and Transmitter features a LED display to provide continuous pressure monitoring and allows the operator to program the set points without having to pressurize the unit. The display can be rotated up to 330° to offer the best possible viewing position in any application.

Features

- Stainless Steel construction
- LED display and easy programming of set points
- Two switching outputs
- Adjustment ranges of: -1 ... 700 bar / -14.5 ... 10152 PSI
- G1/4 and 1/4 NPT process connections
- LED display rotates up to 330°

Options

- G1/2 and 1/2 NPT available process connections
- One switching output and one analog output
- Two switching outputs and one analog output

Order Codes

SPWF - B0100 - B04 - 1

① ② ③ ④

① Series and Type

Pressure Switch and Transmitter	**SPWF**

② Version

-1 ... 2 bar / -14.5 ... 29 PSI	**BN0002**
-1 ... 3 bar / -14.5 ... 43 PSI	**BN0003**
-1 ... 5 bar / -14.5 ... 72 PSI	**BN0005**
-1 ... 10 bar / -14.5 ... 145 PSI	**BN0010**
0 ... 2 bar / 0 ... 29 PSI	**B0002**
0 ... 5 bar / 0 ... 72 PSI	**B0005**
0 ... 10 bar / 0 ... 145 PSI	**B0010**
0 ... 20 bar / 0 ... 290 PSI	**B0020**
0 ... 50 bar / 0 ... 725 PSI (standard option)	**B0050**
0 ... 100 bar / 0 ... 1450 PSI (standard option)	**B0100**
0 ... 160 bar / 0 ... 2320 PSI (standard option)	**B0160**
0 ... 250 bar / 0 ... 3625 PSI (standard option)	**B0250**
0 ... 400 bar / 0 ... 5801 PSI (standard option)	**B0400**
0 ... 600 bar / 0 ... 8702 PSI (standard option)	**B0600**
0 ... 700 bar / 0 ... 10152 PSI	**B0700**

③ Process Connection

G1/4 (standard option)	**B04**
G1/2	**B08**
1/4 NPT (standard option)	**N04**
1/2 NPT	**N08**

④ Signal Output

Two switching outputs (standard option)	**1**
One switching output, one 4 ... 20 mA output	**2**
One switching output, one 0 ... 10 V output	**3**
Two switching outputs, one 4 ... 20 mA output	**4**

Pressure Switch and Transmitter ▪ Type SPWF

Technical Data

Materials
- Measuring Element: Stainless Steel for pressures above 103,42 bar /1500 PSI, Ceramic for below 103,42 bar / 1500 PSI
- Housing: Stainless Steel
- Process Connection: Stainless Steel

Supply Voltage
- 12 ... 30 V DC, protection from reverse polarity and overload

Power Consumption
- ≤ 50 mA, without load current

Switching Outputs
- Switching function: Normally Closed (NC) or normally Open (NO)
- Damping (option): 0 ... 2000 ms
- Delay (option): 0 ... 99,99 s
- Power rating: 0,5 A max.

Adjustment
- Set point: 1 ... 100 % FS*
- Reset point: 0 ... 99 % FS*

Analog Outputs
- Standard: 4 ... 20 mA, 3-wire
- Option: 0 ... 10 V, 3-wire
- Scaling: 20 ... 100 % FS*
- Load resistance: Current output <500, Voltage output >10 k
- Hysteresis: 0,3 % FS*
- Response time: ≤2 ms within 10 ... 90 % of FS*

Accuracy
- ±1 % FS* +1 digit

Repeatability
- ≤0.2 % FS*

Electrical Connection
- M12 x 1 / 4-Pin or M12 x 1 / 5-Pin

Process Connection
- G1/4, G1/2, 1/4 NPT, 1/2 NPT

Permissible Temperatures
- Media: -20 °C ... +80 °C / -4 °F ... +176 °F
- Ambient: -20 °C ... +70 °C / -4 °F ... +158 °F
- Storage: -30 °C ... +80 °C / -22 °F ... +176 °F
- Tk: 0.3 % per 10K

Display
- 7 segments, LED display, red, 7,6 mm / .30 in high
- 4 digits (-999 ... 9999)

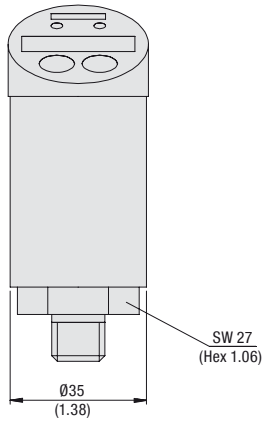
Load Capacity
- Shock resistance: 50 g according to IEC 60068-2-27
- Vibration resistance: 10 g according to IEC 60068-2-6

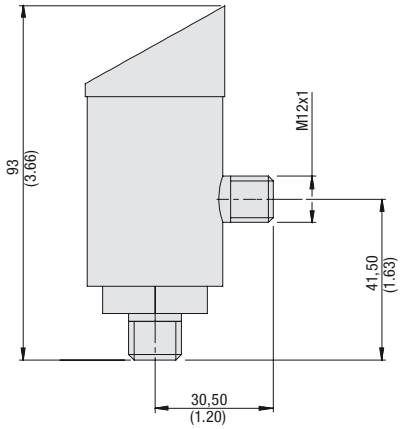
Weight
- Approximately 0.30 kg / .70 lbs

Protection Rating
- IP 65 protection rating: Dust tight and protected against water jets

* FS = Full Scale

Pressure Switch and Transmitter ▪ Type SPWF





Pressure Ranges

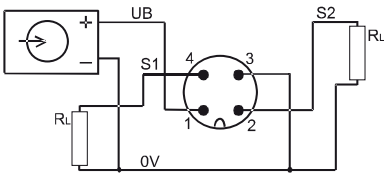
Version	Pressure Range (bar/PSI)	Maximum Pressure (bar/PSI)	Burst Pressure (bar/PSI)
BN0002	-1 ... 2	5	6
	-14.5 ... 29	72	87
BN0003	-1 ... 3	5	6
	-14.5 ... 43	72	87
BN0005	-1 ... 5	10	12
	-14.5 ... 72	145	174
BN0010	-1 ... 10	20	25
	-14.5 ... 145	290	362
B0002	0 ... 2	5	6
	0 ... 29	72	87
B0005	0 ... 5	10	12
	0 ... 72	145	174
B0010	0 ... 10	20	25
	0 ... 145	290	362
B0020	0 ... 20	40	50
	0 ... 290	580	725
B0050*	0 ... 50	100	120
	0 ... 725	1450	1740
B0100*	0 ... 100	200	800
	0 ... 1450	2900	11603
B0160*	0 ... 160	320	1000
	0 ... 2320	4641	14503
B0250*	0 ... 250	500	1200
	0 ... 3625	7251	17404
B0400*	0 ... 400	800	1700
	0 ... 5801	11603	24656
B0600*	0 ... 600	1200	2400
	0 ... 8702	17404	34809
B0700	0 ... 700	1200	2400
	0 ... 10152	17404	34809

Note:
* Standard option

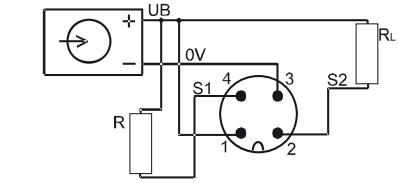
Dimensional drawings: All dimensions in mm (in).

Pressure Switch and Transmitter ▪ Type SPWF

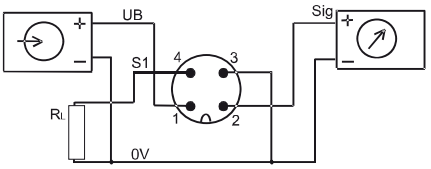
Electrical Connections



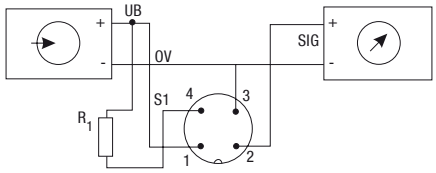
2 Switching outputs, p-type



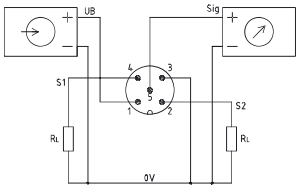
2 Switching outputs, n-type



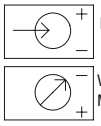
1 Switching output Pin-4-p-type, 1 analog output Pin 2



1 Switching output Pin-4-n-type, 1 analog output Pin 2



2 Switching outputs Pin 4 and Pin 2-p-type with 1 analog output Pin 5



Sig+	output signal positive
UB+	power supply positive
0V	power supply negative
Sig-	output signal negative

Temperature Switch and Transmitter ▪ Type STWE

Product Description

The STWE Temperature Switch and Transmitter features LED display to provide continuous temperature monitoring and allows the operator to easily adjust set and reset points by using the two programming buttons located on the display face on the unit. The display face can be rotated up to 330° to offer the best possible viewing position in any application.

Features

- Stainless Steel construction
- LED display and easy programming of set points
- Two switching outputs
- Temperature range: -50 °C ... +125 °C / -58 °F ... +257 °F
- G1/4 and 1/4 NPT process connections
- Different stem lengths
- LED display rotates up to 330°

Options

- G1/2 and 1/2 NPT available process connections
- Temperature range available from -200 °C ... +600 °C / -328 °F ... +1112 °F
- One switching output and one analog output

Order Codes

STWE	-	CN0125	-	B04	-	1	-	100
①		②		③		④		⑤

① Series and Type

Temperature Switch and Transmitter	**STWE**

② Temperature Ranges

-50 °C ... +125 °C / -58 °F ... +257 °F (standard option)	**CN0125**
-50 °C ... +200 °C / -58 °F ... +392 °F	**CN0200**
-200 °C ... +600 °C / -328 °F ... +1112 °F	**CN0600**
0 °C ... +400 °C / +32 °F ... +752 °F	**C0400**
0 °C ... +600 °C / +32 °F ... +1112 °F (standard option)	**C0600**

③ Process Connection

G1/4 (standard option)	**B04**
G1/2	**B08**
1/4 NPT (standard option)	**N04**
1/2 NPT	**N08**

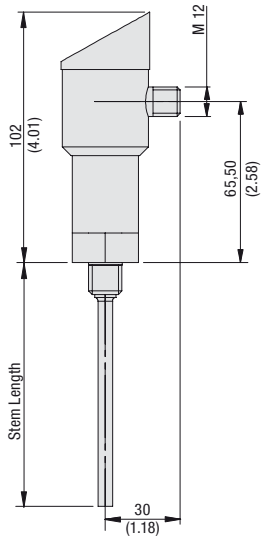
④ Signal Output

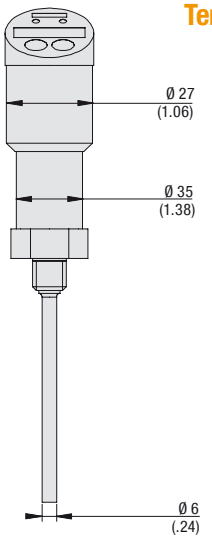
Two switching outputs (standard option)	**1**
One switching output, one 4 ... 20 mA Output	**2**

⑤ Stem Lengths

50 mm / 1.97 in	**50**
75 mm / 2.95 in	**75**
100 mm / 3.94 in	**100**
160 mm / 6.30 in	**160**
200 mm / 7.87 in	**200**
300 mm / 11.81 in	**300**

Temperature Switch and Transmitter ▪ Type STWE





Technical Data

Materials
- Housing: Stainless Steel
- Process connection: Stainless Steel

Supply Voltage
- 12...30 V DC, protection from reverse polarity and overload

Power Consumption
- ≤50 mA, without load current

Switching Outputs
- Switching function: Normally open (NO) or normally closed (NC)
- Power rating: 100 mA per switch output

Adjustment
- Setpoint 0.1 ° steps within temperature range
- Resetpoint 0.1 ° steps within temperature range up to (Setpoint -0.1°)

Analog Output
- Signal 4 ... 20 mA, 3-wire
- Load resistance Ra=Us-7 V / 0.022 A

Accuracy
- Accuracy of PT100 sensing element ±0.1 % of temperature range

Repeatabilty
- 0.05 %

Stem Length and Working Pressure (standard option)
- Ø 6 x 50 mm / .24 x 1.97 in stem length, up to 40 bar / 580 PSI
- Additional stem lengths available upon request

Process Connection
- G1/4, G1/2, 1/4 NPT, 1/2 NPT

Electrical Connection
- M12 x 1 / 4-Pin

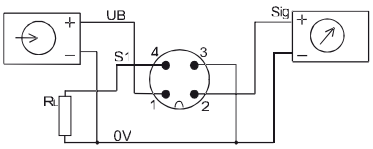
Permissible Temperatures
- Ambient: -30 °C ... +80 °C / -22 °F ... +176 °F
- Storage: -25 °C ... +70 °C / -13 °F ... +158 °F
- Tk: 0,1 % of measuring range per 10K

EMC to IEC / EN 61326
- IEC 61000/4/2 ESD: B
- IEC 61000/4/3 HF Radiated: A
- IEC 61000/4/4 Burst: A
- IEC 61000/4/5 Surge: A
- IEC 61000/4/6 HF Mains Borne: A

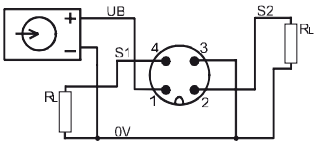
EMC to IEC / EN 61326
- Approx 0.30 kg / .70 lbs (dependent on stem length)

Protection Rating
- IP 65 protection rating: Dust tight and protected against water jets

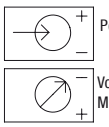
Electrical Connections



1 Switching output (Pin 4) with 1 analog output (Pin 2) (p-switching)



2 Switching output (p-switching) (Pin 4 switch 1; Pin 2 switch 2)



Sig+	output signal positive
UB+	power supply positive
0V	power supply negative
Sig-	output signal negative

Dimensional drawings: All dimensions in mm (in).

Temperature Transmitter ▪ Type STC

Product Description

The STC Temperature Transmitters is designed for process temperature measurement in low pressures. This unit features an all stainless steel construction up to 300 mm / 11.81 in stem length with G1/4 and 1/4 NPT process connection and a 4 ... 20 mA output. The user can select the exact temperature range they require at time of order.

Features

- Stainless Steel construction
- 4 ... 20 mA output
- 0 °C ... 50 °C, 0 °C ... 100 °C and 0 °C ... 120 °C measuring ranges available
- L-Plug DIN EN 175301-803A (DIN 43650-A) electrical connection
- G1/4 or 1/4 NPT process connection
- 50 and 100 mm stem lengths

Options

- 0 ... 10 V available output
- M12 x 1 electrical connection available
- G1/2 and 1/2 NPT available process connections
- 75, 160, 200 and 300 mm stem lengths available
- Available with an adjustable compression ring version for variable stem length

Order Codes

STC	-	C0050	-	B04	-	420A	-	1	-	50	F
①		②		③		④		⑤		⑥	⑦

① Series and Type

Temperature Transmitter	**STC**

② Temperature Ranges

0 °C ... +50 °C / +32 °F ... +122 °F	**C0050**
0 °C... +100 °C / +32 °F ... +212 °F	**C0100**
0 °C ... +120 °C / +32 °F ... +248 °F	**C0120**

Note: Please consult STAUFF for alternative temperature ranges.

③ Process Connection

G1/4	**B04**
G1/2 *	**B08**
1/4 NPT *	**N04**
1/2 NPT *	**N08**

* Threads only available with adjustable compression ring fitting.

④ Signal Output

4 ... 20 mA (standard option)	**420A**
0 ... 10 V	**010V**

⑤ Electrical Connection

L-Plug DIN EN 175301-803A (DIN 43650-A) (standard option)	**1**
M12 x 1 / 4-Pin	**2**

⑥ Stem Lengths

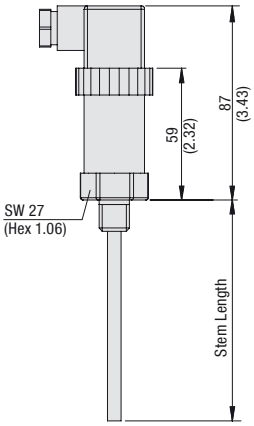
50 mm / 1.97 in (standard option) *	**50**
75 mm / 2.95 in *	**75**
100 mm / 3.94 in (standard option)	**100**
160 mm / 6.30 in	**160**
200 mm / 7.87 in	**200**
300 mm / 11.81 in	**300**

* Length only available with a fixed thread.

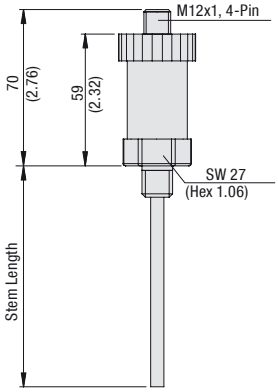
⑦ Style

Fixed thread (standard option)	**F**
Adjustable compression fitting	**A**

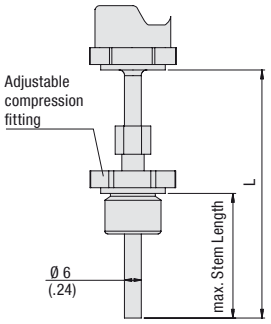
Temperature Transmitter ▪ Type STC



L-Plug DIN 175301-803A (DIN 43650-A)



M12 x 1 / 4-Pin



Adjustable Compression Fitting

Technical Data

Materials
- Housing: Stainless Steel 1.4571 (316 Ti)
- Process connection: Stainless Steel 1.4571 (316 Ti)
- Stem: Stainless Steel 1.4571 (316 Ti)

Signal Outputs and Supply Voltage
- 4 ... 20 mA, 2-wire,
  10 ... 30 V DC, ripple <10%
- 0 ... 10 V, 3-wire,
  12 ... 30 V DC, ripple <10%

Error Signals
- 23 mA sensor burnout
- 3.3 mA sensor short circuit

Accuracy
- ≤ ±5 % of FS*

Temperature Range
- -50 °C ... +200 °C / -58 °F ... +392 °F

Measuring Range
- Minimum range: 50 K
- Maximum range: 250 K

Process Connection
- G1/4, G1/2, 1/4 NPT, 1/2 NPT

Electrical Connection
- L-Plug according to DIN EN 175301-803A (DIN 43650-A)
- M12 x 1 / 4-Pin

Stem Length and Pressure Ranges
- 50 ... 500 mm / 1.97 x 19.67 in: up to 40 bar / 580 PSI
  (Pressure ranges refer to static pressure.)

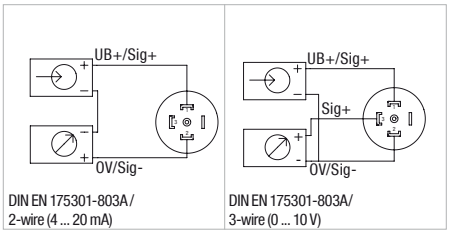
Permissible Temperatures
- Ambient: max. +85 °C / +185 °F
- Storage: -40 °C ... +85 °C / -40 °F ... +185 °F

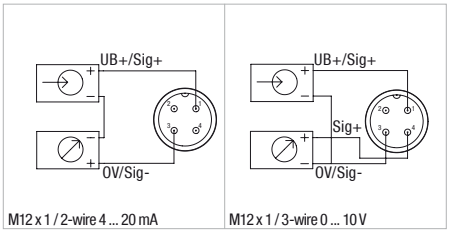
EMC-Resistance
- Emitted interference acc. to DIN EN 61326
- Breakdown effect acc. to DIN EN 61326

Weight
- Approx. 0.14 kg / .31 lbs (dependant on stem length)

Protection Rating
- L-Plug connection: IP 65 protection rating: Dust tight and protected against water jets
- M12 x 1 connection: IP 67 protection rating: Dust tight and protected against powerful water jets; even immersion (up to 1 m / 3.28 ft) in water is possible under defined conditions of pressure and time

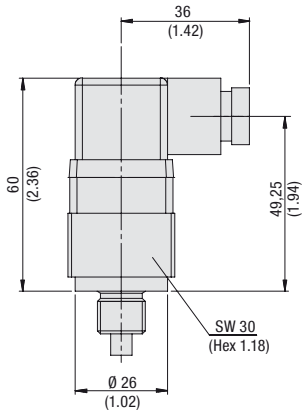
Wiring Scheme





* FS = Full Scale
Dimensional drawings: All dimensions in mm (in).

Temperature Switch ▪ Type STW



Wiring Scheme

Wiring diagram normally open

Wiring diagram normally closed

Product Description

The STW mechanical Temperature Switch is available in a variety of temperature ranges. This unit features a bimetallic fixed set point. The electrical connector of the SPW is designed to rotate in order to face the cable clamp into whatever position desired after installation.

Features

- Normally open and normally closed switching function
- Fixed set points from +60 °C ... +80 °C / +140 °F ... +176 °F
- G1/4 and 1/4 NPT process connections
- Brass body

Options

- Fixed set points from +30 °C ... +105 °C / +86 °F ... +221 °F
- G1/2 and 1/8 NPT process connections

Technical Data

Materials
- Body: Brass
- Connector: Polyamide

Signal Outputs
- Normally open (NO) or normally closed (NC)

Maximal Switching Values
- Maximal voltage: 250 V AC
- Maximal current: 10 A at 240 V AC
  5 A at 24 V AC
  10 A at 12 V AC

Accuracy
- ±5 °C / ±9 °F

Hysteresis
- max. +16 °C / +28.8 °F

Maximum Ratings
- Temperature: +130 °C / +266 °F
- Pressure: 150 bar / 2175 PSI

Electrical Connection
- DIN EN 175301-803 form A-PG09 (DIN 43650-A)

Process Connection
- G1/4, G1/2, 1/8 NPT, 1/4 NPT

Protection Rating
- IP 65 protection rating: Dust tight and protected against water jets

Order Codes

STW - C0060 - B08 - NO

① ② ③ ④

① Series and Type

Pressure Switch	**STW**

② Temperature Ranges (Fixed Set Point)

+30 °C / +86 °F	**C0030**
+40 °C / +104 °F	**C0040**
+50 °C / +122 °F	**C0050**
+60 °C / +140 °F (standard option)	**C0060**
+70 °C / +158 °F (standard option)	**C0070**
+80 °C / +176 °F (standard option)	**C0080**
+90 °C / +194 °F	**C0090**
+100 °C / +212 °F	**C0100**
+105 °C / +221 °F	**C0105**

③ Process Connection

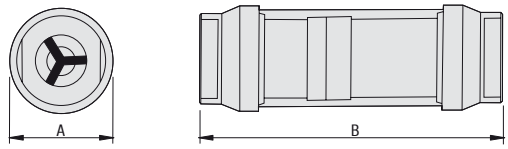
G1/4	**B04**
G1/2 (standard option)	**B08**
1/8 NPT	**N02**
1/4 NPT (standard option)	**N04**

④ Contacts

Normally open (standard option)	**NO**
Normally closed	**NC**

Dimensional drawings: All dimensions in mm (in).

Flowtell Inline Flow Meter ▪ Type SFF



Order Codes

SFF - L00005 - B08

① ② ③

① Series and Type

Flowtell Inline Flow Meter	**SFF**

② Flow Ranges

2 ... 18 l/min / 0.5 ... 5 US GPM	**L00005**
12 ... 113 l/min / 3 ... 30 US GPM	**L00030**
31 ... 283 l/min / 8 ... 75 US GPM	**L00075**

③ Process Connection

G1/2 (only L00005)	**B08**
G3/4 (only L00030)	**B09**
G1-1/4 (only L00075)	**B20**
1/2 NPT (only L00005)	**N08**
3/4 NPT (only L00030)	**N09**
1-1/4 NPT (only L00075)	**N20**

Dimensions

Codes	A (mm/in)	B (mm/in)
SFF-L00005-B08	48	167
	1.88	6.56
SFF-L00030-B09	60	182
	2.38	7.16
SFF-L00075-B20	90	258
	3.5	10.13
SFF-L00005-N08	48	167
	1.88	6.56
SFF-L00030-N09	60	182
	2.38	7.16
SFF-L00075-N20	90	258
	3.5	10.13

Product Description

The STAUFF Flowtell Inline Flow Meter is ideal for monitor case drain flows, pump performance and media flows through hydraulic circuits and sub-circuits. It allows the designer to install it in any orientation (horizontal, vertical or inverted) and is weather-tight for use outdoors and/or on systems where wash downs are required. It is also a reliable service tool that provides years of maintenance-free performance. Flows can be measured up to a value of 283 l/min / 75 GPM.

Features

- G1/2, G3/4, G1-1/4, 1/2 NPT, 3/4 NPT and 1-1/4 NPT process connection
- Flow ranges up to 283 l/min / 75 US GPM

Options

- Other process connection on request

Technical Data

Materials
- Aluminium end caps
- Polycarbonate Windows Tube
- NBR (Buna-N®) and Teflon sealings
- Suitable for Mineral-Based Hydraulic Fluid

Accuracy
- ±2.5 % of full scale in mid-third of flow range
- ±4.0 % over entire flow range

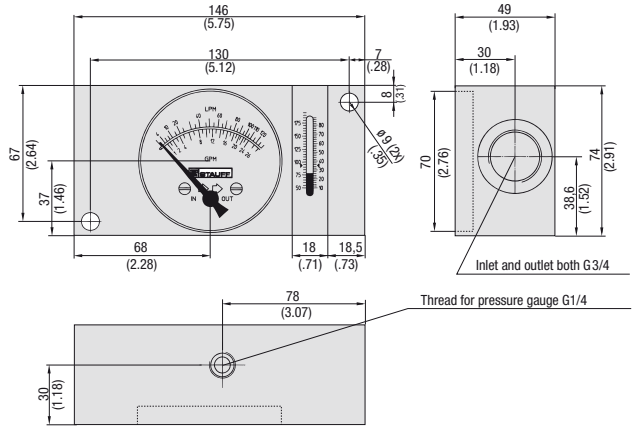
Repeatability
- ±1 % of full sale

Max. Operating Pressure
- 240 bar / 3500 PSI

Max. Operating Temperature
- +116 °C / +240 °F

Dimensional drawings: All dimensions in mm (in).

Flow Indicator ▪ Types SDM / SDMKR



Dimensions SDM-750

Product Description

Analogue flow indicators for measuring the flow rate of fluids in mobile and industrial hydraulics.
The SDMKR is designed with a loading valve for the strain test of the hydraulic system to facilitate precise control of the operating pressure. In addition, this product can also be subjected to a reverse flow direction (without flow rate determination).

Features

- Suitable for Mineral Oil (Aluminium), HFC Fluids and Water (Brass)
- Designed for in-line installation
- Mechanical flow measurement
- Controlling working pressure with a pressure control valve (only SDMKR)
- Flow indication in l/min and GPM for Aluminium units, Brass units have flow indication for Water and Oil both in l/min
- Aluminium unit: Dual scale
- Brass unit: Single scale
- Thread to connect with pressure gauge (only SDM)

Technical Data

Accuracy
(at a kinematic viscosity of 28cSt):

- Flow: ±4 % FSD
- Temperature: ±2,5 °C / ±5 °F
- Pressure (only SDMKR): ±1.6 % FS*
- Temp. measuring range: +20 °C ... +110 °C / +55 °F ... +245 °F
- Media temperature
  permanent: +80 °C / +176 °F
  temporary (<10 min.): +110 °C / +245 °F

Note: Other thread versions available on request.

Order Codes

SDM - 750 - A - 016 - T

① ② ③ ④ ⑤

① Series and Type

Flow Indicator Type SDM	**SDM**
Flow Indicator Type SDMKR	**SDMKR**

② Size

750	**750**
1500 (only SDM)	**1500**

③ Housing Material

Aluminium	**A**
Brass (only SDM)	**B**

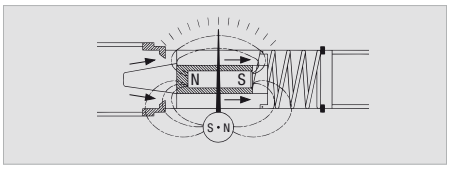
④ Flow Ranges

See table on page D83

⑤ Thermometer

With integrated thermometer (standard option)	**T**

Functional Principal Flow Measuring



The flow indicators SDM and SDMKR have a sharp-edged orifice and a tapered metering piston, which moves in proportion to changes of flow against a spring.
In no flow condition the piston closes the opening and the pointer indicates zero.

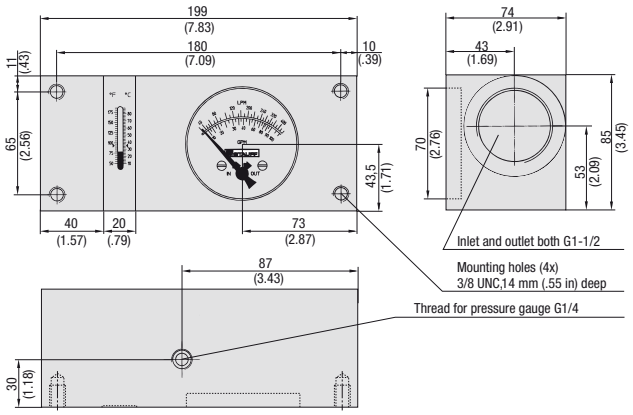
With increasing flow and differential pressure the piston moves against the calibrated spring. The piston movement is directly proportional to the flow rate and is magnetically coupled to the rotary pointer. During this function the sharp-edged orifice minimises the effects of viscosity.
The flow is shown on a calibrated scale in l/min and gal/min.

Controlling Working Pressure with SDMKR

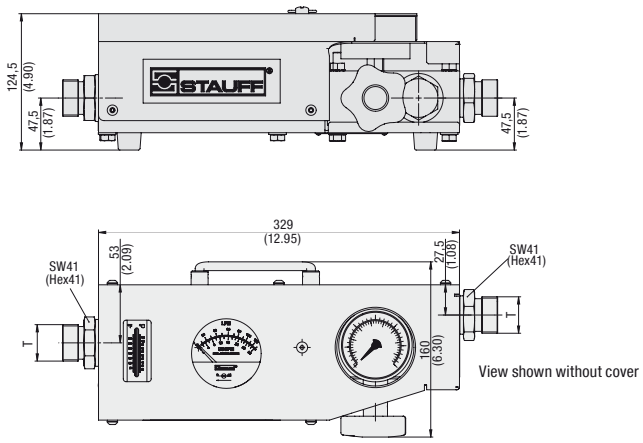
The pressure control valve of the SDMKR is directly connected to a flow-block and together with the integrated pressure gauge it allows an exact control of the working pressure in the maximum range.
For protection the SDMKR has two rupture disks. At a pressure >420 bar the disks burst and the fluid is by-passed around the valve. The rupture disks (other pressure ranges on request) can be replaced easily.
The SDMKR also permits flow in the reverse direction (without flow rate determination).

Dimensional drawings: All dimensions in mm (in).
*FS = Full Scale

Flow Indicators ▪ Types SDM / SDMKR



Dimensions SDM-1500



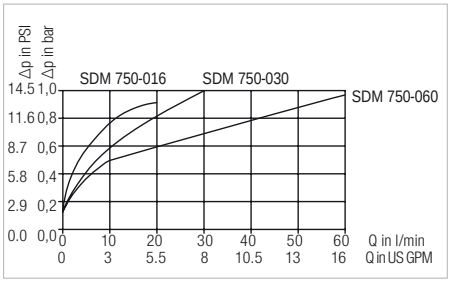
Dimensions SDMKR-750

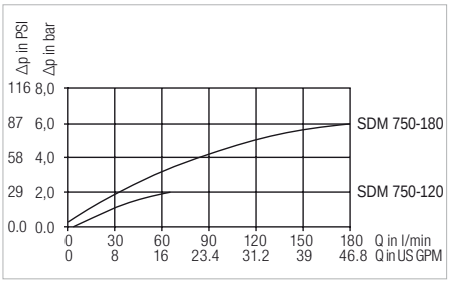
Technical Data

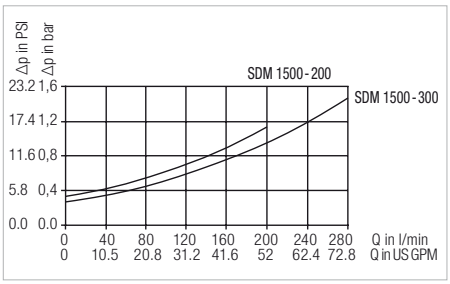
Order Codes	Max. Working Pressure (bar/PSI)	Flow Range (l/min / US GPM) Aluminum Units	Flow Range Brass Units (only SDM) *	Weight (kg/lbs)	Connection T
SDM-750-A-016-T	420	2 - 16	-	1,36	G3/4
	6091	0.5 - 4	-	3.0	
SDM-750-A-030-T	420	2 - 30	-	1,36	G3/4
	6091	0.5 - 8	-	3.0	
SDM-750-A-060-T	420	2 - 60	-	1,36	G3/4
	6091	0.5 - 16	-	3.0	
SDM-750-A-120-T	420	4 - 120	-	1,36	G3/4
	6091	1 - 32	-	3.0	
SDM-750-A-180-T	420	10 - 180	-	1,36	G3/4
	6091	4 - 48	-	3.0	
SDM-750-B-030-T	420	-	2 - 30 l/min in oil	3,80	G3/4
	6091	-	2- 30 l/min in water	8.40	
SDM-750-B-060-T	420	-	3 - 60 l/min in oil	3,80	G3/4
	6091	-	3 - 70 l/min in water	8.40	
SDM-750-B-120-T	420	-	4 - 120 l/min in oil	3,80	G3/4
	6091	-	4 - 140 l/min in water	8.40	
SDM-1500-A-200-T	350	10 - 200	-	3,0	G1-1/2
	5075	5 - 50	-	6.61	
SDM-1500-A-300-T	350	20 - 300	-	3,0	G1-1/2
	5075	4 - 80	-	6.61	
SDM-1500-A-400-T	350	20 - 400	-	3,0	G1-1/2
	5075	5 - 100	-	6.61	
SDM-1500-B-200-T	350	-	10 - 200 l/min in oil	8,0	G1-1/2
	5075	-	10 - 200 l/min in water	17.64	
SDM-1500-B-400-T	350	-	20 - 400 l/min in oil	8,0	G1-1/2
	5075	-	20 - 400 l/min in water	17.64	
SDMKR-750-A-030-T	420	2 - 30	-	6,6	G3/4
	6091	0.5 - 8	-	14.55	
SDMKR-750-A-060-T	420	5 - 60	-	6,6	G3/4
	6091	1.3 - 16	-	14.55	
SDMKR-750-A-120-T	420	5 - 120	-	6,6	G1
	6091	1.3 - 32	-	14.55	
SDMKR-750-A-200-T	420	10 - 200	-	6,6	G1
	6091	4 - 53	-	14.55	

Flow Curves - Aluminium Version (Oil)

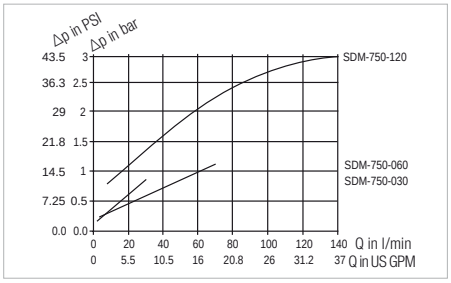
(Curves reffer to kinematic viscosity of 25cSt):

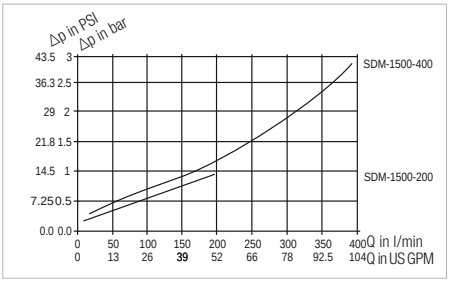


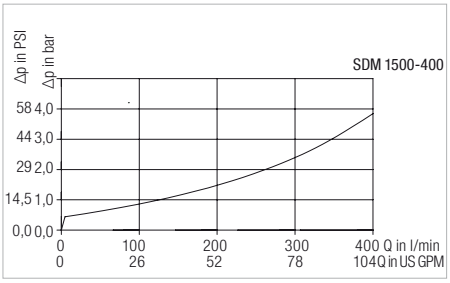




Flow Curves - Brass Version (Water)







* The Brass units have a scale for water and oil – in l/min.
Dimensional drawings: All dimensions in mm (in).

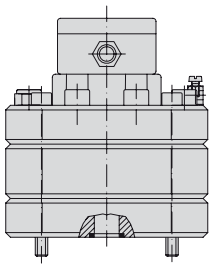
Flow Monitoring Unit ▪ Type SGF

Product Description

With the SGF flow monitoring unit STAUFF offers two different solutions for high accuracy and high pressure flow monitoring.

The SFG monitoring unit can be integrated into manifolds or supplied with two types of mounting plates.

Please see page D85 for details.



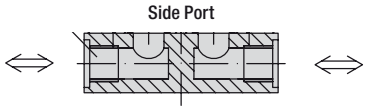
Mounting Plates ▪ Types SGFM

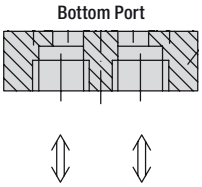
The connection plate SGFM is available in two versions.

- Side port version
- Bottom port version

They are only to be used with the SGF.

Please see page D88 for details.



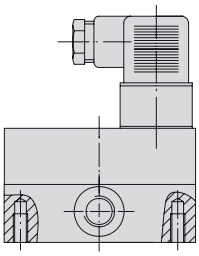


Flow Monitoring Unit ▪ Type SGFE

Product Description

The SGFE Aluminum Ecoflow based on the same measuring principal like the SGF, but is the economical alternative. This product only featured side port connection.

Please see page D90 for details.



Flow Rate Displays ▪ Types STD 1 / STD 2 / STD 3 / STD 4

Product Description

The Flow Rate Display allows to visualize the values of both flow monitoring units (SGF and SGFE).

STAUFF offers four versions of flow rate displays.

Please see page D93 / D94 for details.

STD 1

STD 2

STD 3

STD 4

Flow Monitoring Unit ▪ Type SGF

Order Codes

SGF - 0.04 - C - 1 - V - X

① ② ③ ④ ⑤ ⑥

① Series and Type

Flow Monitoring Unit	**SGF**

② Version

0,002 ... 2 l/min / 0.0005 ... 0.53 US GPM	**0.02**
0,004 ... 4 l/min / 0.0011 ... 1.06 US GPM	**0.04**
0,01 ... 10 l/min / 0.0026 ... 2.64 US GPM	**0.1**
0,02 ... 18 l/min / 0.0053 ... 4.76 US GPM	**0.2**
0,03 ... 40 l/min / 0.0079 ... 10.57 US GPM	**0.4**
0,05 ... 80 l/min / 0.0132 ... 21.13 US GPM	**1**
0,1 ... 120 l/min / 0.0264 ... 31.70 US GPM	**2**
1,0 ... 250 l/min / 0.2642 ... 66.00 US GPM	**4**

③ Material

Cast Iron	**C**
Stainless Steel 1.4305	**S**

④ Bearing Type

Ball bearing	**1**
Spindle - bearing	**2**

* Special bearing typ for special application on request

⑤ Sealings

FPM (Viton®) (standard option)	**V**
NBR (Buna-N®)	**B**
PTFE	**T**
EPDM	**E**

⑥ Special Options

Contact STAUFF for details

Note: Further technical details of connection plates SGFM please see on pages D88 / D89.

Available Ranges

Version	Geometric Tooth Volume cm³	Measuring Range (l/min / US GPM)	K-Factor (Imp/Liter / Imp/Gal)
0.02	0,02	0,002 ... 2	50000
		0.005 ... 0.53	189272
0.04	0,04	0,004 ... 4	25000
		0.0011 ... 1.06	94636
0.1	0,1	0,01 ... 10	10000
		0.0026 ... 2.64	37854.4
0.2	0,2	0,02 ... 18	5000
		0.0053 ... 4.76	18927.2
0.4	0,4	0,03 ... 40	2500
		0.0079 ... 10.57	9463.6
1	1	0,05 ... 80	1000
		0.0132 ... 21.13	3785.44
2	2	0,1 ... 120	500
		0.0264 ... 31.70	1892.72
4	4	1 ... 250	250
		0.2642 ... 66.00	946.36

Product Description

The STAUFF SGF positive displacement Flow Meter offers a comprehensive solution for high accuracy and high pressure flow monitoring. The units are available for flow ranges from 0,002 l/min to 250 l/min / 0.0005 to 66.00 US GPM and are suitable for pressures up to 450 bar / 6500 PSI. It is possible to integrate the units direct into the hydraulic circuit.
Furthermore a special digital display to visualize the flow is available.

Media specific models are available for applications such as: Hydraulic test stand, Grease, Ink, Lubrication Systems, Diesel Fuel, Kerosene and Brake Fluid.

Technical Data

Materials
- Body: EN-GJS-400-15 (EN 1563) / Stainless Steel 1.4305
- Bearings: Ball, Spindle
- Sealings: FPM (Viton®), NBR (Buna-N®), PTFE, EPDM

Accuracy
- ± 0.3 % of measured value at 20 cSt

Repeatability
- ± 0.05 % of measured value at 20 cSt

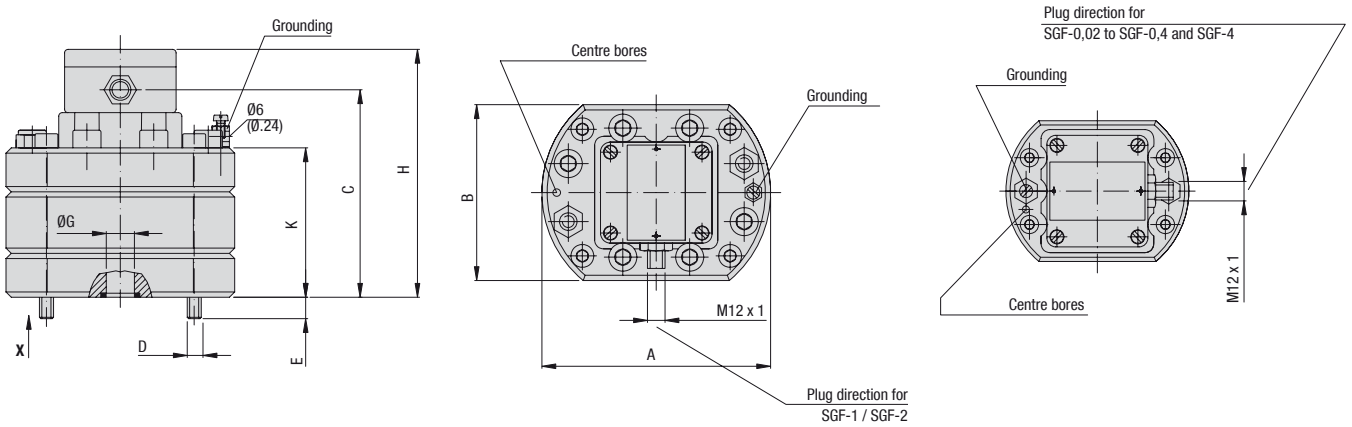
Power Supply
- 10 ... 28 V DC

Max. Operating Pressure
- Cast Iron housing: 315 bar / 4568 PSI
- Stainless Steel housing: 450 bar / 6526 PSI

Medium Temperature
- -40 °C ... +120 °C / -40 °F ... +248 °F

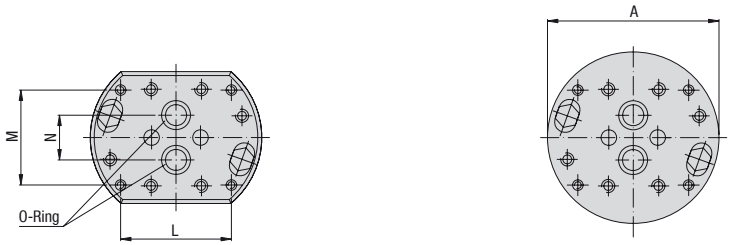
Viscosity Range
- Up to 100000 cSt (depends on type)

Flow Monitoring Unit ▪ Type SGF



Cast Iron Version - Housing curve mill cuted

Connection Drawing (View X)



Cast Iron Version

Stainless Steel Version - Housing not mill cuted

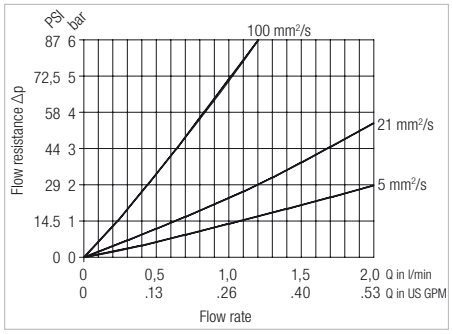
Dimensions

Version	A (mm/in)	B (mm/in)	C (mm/in)	D	E (mm/in)	ØG (mm/in)	H (mm/in)	K (mm/in)	L (mm/in)	M (mm/in)	N (mm/in)	O-Ring	Weight (kg/lbs) Cast Iron *	Stainless Steel **
0.02	100,0	80,0	91,0	M6	12,5	9	114,0	58,0	70,0	40,0	20,0	11 x 2	2,8	3,4
	3.94	3.15	3.58		.49	.35	4.49	2.28	2.76	1.57	.79		6.17	7.50
0.04	100,0	80,0	91,5	M6	11,5	9	114,5	58,5	70,0	40,0	20,0	11 x 2	2,8	3,4
	3.94	3.15	3.60		.45	.35	4.51	2.30	2.76	1.57	.79		6.17	7.50
0.1	100,0	80,0	94,0	M6	9,0	9	117,0	61,0	70,0	40,0	20,0	11 x 2	2,8	3,4
	3.94	3.15	3.70		.35	.35	4.61	2.40	2.76	1.57	.79		6.17	7.50
0.2	100,0	80,0	93,5	M6	9,5	9	116,5	60,5	70,0	40,0	20,0	11 x 2	3,0	3,7
	3.94	3.15	3.68		.37	.35	4.59	2.38	2.76	1.57	.79		6.61	8.16
0.4	115,0	90,0	96,5	M8	11,5	16	119,5	63,5	80,0	38,0	34,0	17,96 x 2,62	4,0	5,0
	4.53	3.54	3.80		.45	.63	4.70	2.50	3.15	1.50	1.34		8.82	11.02
1	130,0	100,0	101,0	M8	12,0	16	124,0	68,0	84,0	72,0	34,0	17,96 x 2,62	5,3	6,8
	5.12	3.94	3.98		.47	.63	4.88	2.68	3.31	2.83	1.34		11.68	15.00
2	130,0	100,0	118,0	M8	15,0	16	141,0	85,0	84,0	72,0	34,0	17,96 x 2,62	6,7	8,4
	5.12	3.94	4.65		.59	.63	5.55	3.35	3.31	2.83	1.34		14.78	18.52
4	180,0	140,0	143,0	M12	20,0	30	166,0	110,0	46,0	95,0	45,0	17,96 x 2,62	14,7	18,4
	7.09	5.51	5.63		.79	1.18	6.54	4.33	1.81	3.74	1.77		32.41	40,57

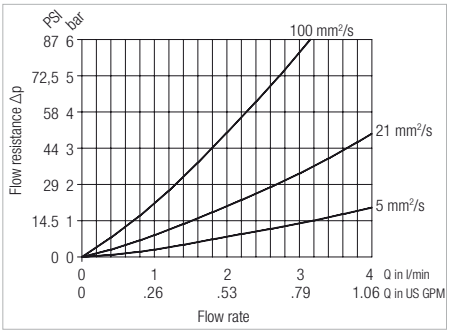
* Cast Iron EN-GJS-400-15 (EN 1563)
** Stainless Steel 1.4305

Dimensional drawings: All dimensions in mm (in).

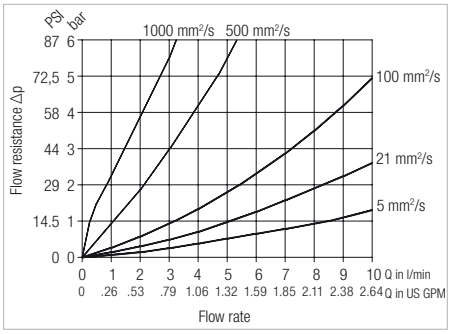
Flow Monitoring Unit ▪ Type SGF



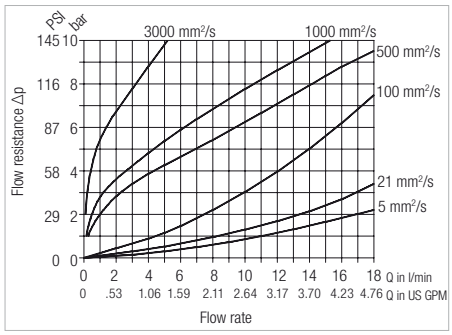
SGF-0.02



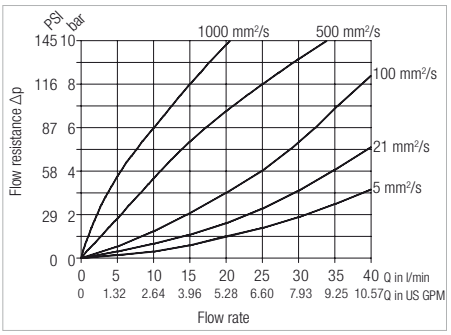
SGF-0.04



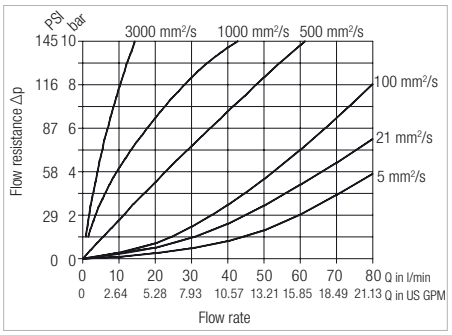
SGF-0.1



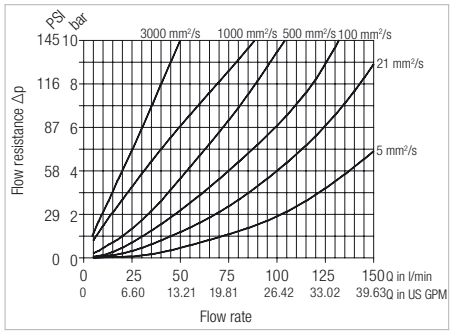
SGF-0.2



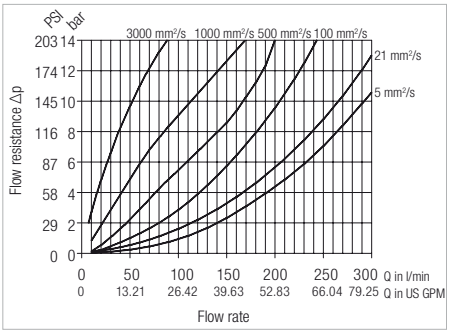
SGF-0.4



SGF-1

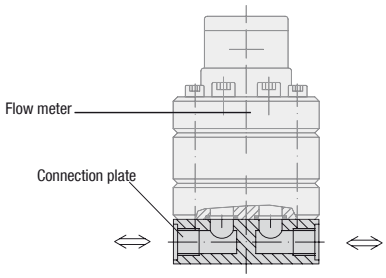


SGF-2

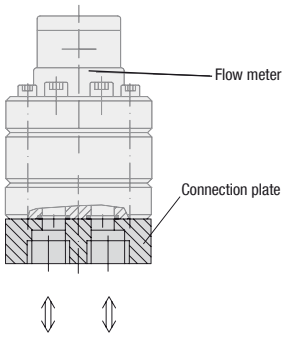


SGF-4

Connection Plate for use with SGF ▪ Type SGFM



Side Ports



Bottom Ports

Product Description

STAUFF offers different connections plates to connect your SGF flow monitoring unit to your application.
They allow a side port or bottom port connection and are available in different thread sizes.

Order Codes

SGFM	-	0.4	-	S	-	C	-	15	-	X
①		②		③		④		⑤		⑥

① Series and Type

Connection Plate	**SGFM**

② Size

Manifold Size	Available Thread Connections		Code
SGF-0.02 ... SGF-0.2	SAE	-4, -6, -8, -12	**0.2**
	NPT	1/4 NPT, 3/8 NPT, 1/2 NPT, 3/4 NPT	
	BSPP	G1/4, G3/8, G1/2, G3/4	
SGF-0.4	SAE	-8, -12, -16	**0.4**
	NPT	1/2 NPT, 3/4 NPT, 1 NPT	
	BSPP	G1/2, G3/4, G1	
SGF-1 ... 2	SAE	-8, -12, -16	**1**
	NPT	1/2 NPT, 3/4 NPT, 1 NPT, 1-1/4 NPT	
	BSPP	G1/2, G3/4, G1	
SGF-4	SAE	-12, -16, -20	**4**
	NPT	3/4 NPT, 1 NPT, 1-1/4 NPT	
	BSPP	G3/4, G1, G1-1/4, G1-1/2	
SGF-10	SAE Flange	1-1/2, 2	**10**
	BSPP	G1-1/2, G2	

③ Connection Type

Side Port Connection	**S**
Bottom Port Connection	**B**

④ Material

Cast Iron	**C**
Stainless Steel 1.4305	**S**

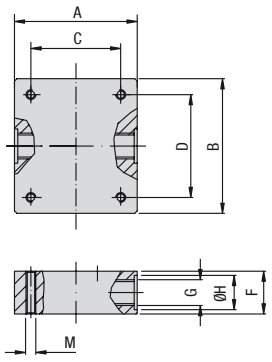
⑤ Connection Thread

G1/4	**1**
G3/8	**2**
G1/2	**3**
G3/4	**4**
G1	**5**
G1-1/4	**6**
G1-1/2	**7**
1/4 NPT	**8**
3/8 NPT	**9**
1/2 NPT	**10**
3/4 NPT	**11**
1 NPT	**12**
1-1/4 NPT	**13**
1-1/2 NPT	**14**
-8 SAE	**15**
-12 SAE	**16**
-16 SAE	**17**
-20 SAE	**18**
-24 SAE	**19**
-32 SAE	**20**
Others on request	

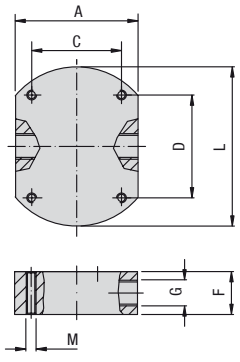
⑥ Special Options

Contact STAUFF for details

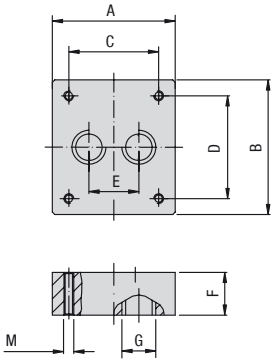
Connection Plate ▪ Type SGFM



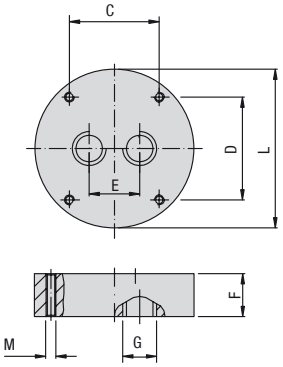
Side Port - Cast Iron



Side Port - Stainless Steel



Bottom Port * - Cast Iron



Bottom Port * - Stainless Steel

Dimensions

Affiliated Size	Size SGF	G Pipe Thread Classification	G	F (mm/in)	ØH (mm/in)	E ** (mm/in)
	0.02 / 0.04 0.1 / 0.2		G1/4	35 1.38	20 .79	26 1.02
	0.02 / 0.04 0.1 / 0.2		G3/8	35 1.38	23 .91	30 1.18
	0.02 / 0.04 0.1 / 0.2		G1/2	35 1.38	28 1.10	38 1.50
	0.4 / 1 / 2		G1/2	35 1.38	28 1.10	46 1.81
	0.4 / 1 / 2		G3/4	40 1.57	33 1.30	52 2.05
	1 / 2		G1	55 2.17	41 1.61	55 2.17
	4		G1-1/4	70 2.76	51 2.01	60 2.36
	4		G1-1/2	AP..U=70 AP..U= 2.76	56 2.20	72 2.83
	4		G1-1/2	AP..S=80 AP..S=3.15	56 2.20	72 2.83

Size SGF	A (mm/in)	B (mm/in)	C (mm/in)	D (mm/in)	L *** (mm/in)	Depth M	Weight (kg/lbs)
0.02 / 0.04	80	90	40	70	100	M6/12	1,8
0.1 / 0.2	3.15	3.54	1.57	2.76	3.94		3.97
0.4	90	100	38	80	115	M8/15	2,7
	3.54	3.94	1.50	3.15	4.53		5.95
1 / 2	100	110	72	84	130	M8/15	3,6
	3.94	4.33	2.83	3.31	5.12		7.94
4	120	130	100	110	-	M8/15	7,4
	4.72	5.12	3.94	4.33			16.31
	140	120	120	100	-	M8/15	7,4
	5.51	4.72	4.72	3.94			16.31
	140	-	100	110	180	M8/15	12
	5.51		3.94	4.33	7.09		26.46

* Both bottom ports (G) for sizes 4 have a displacement of 90° to the shown drawings.
** Only for bottom port connections
*** Only for Stainless Steel versions
Dimensional drawings: All dimensions in mm (in).

Flow Monitoring Unit ▪ Type SGFE

Product Description

Based upon the same positive displacement gear principle as the STAUFF SGF series, the SGFE Aluminum Ecoflow is an economical alternative for applications that require lower accuracy, temperature, and pressure.

Features

- In-line connection on the side
- An integrated pick up with PNP or NPN switching output produces one impulse per tooth volume.

Options

- LCD flow display with analog output and set limit switches mounted directly to the flow meter

Technical Data

Materials

- Body: Aluminium
- Bearings: Stainless Steel, Bronze, DU
- Sealings: FPM (Viton®), NBR (Buna-N®), PTFE, EPDM

Accuracy

- ± 2 % of measured value at 20 cSt

Power Supply

- 10 ... 30 V DC

Max. Operating Pressure

- 200 bar / 2900 PSI

Medium Temperature

- 0 °C ... +80 °C / 32 °F ... +176 °F

Viscosity Range

- Up to 100000 cSt (depends on type)

Order Codes

SGFE	-	0.04	-	S	-	1	-	N	-	V	-	X
①		②		③		④		⑤		⑥		⑦

① Series and Type

Flow Monitoring Unit	**SGFE**

② Version

0,05 ... 4 l/min / 0.013 ... 1.06 US GPM	**0.04**
0,1 ... 10 l/min / 0.026 ... 2.64 US GPM	**0.1**
0,2 ... 30 l/min / 0.053 ... 7.93 US GPM	**0.4**
0,5 ... 70 l/min / 0.132 ... 18.49 US GPM	**2**
3,0 ... 150 l/min / 0.79 ... 39.63 US GPM	**4**

③ Connection Type

Connection plate and location on side	**S**

④ Bearing Type

Stainless Steel - ball bearing	**1**
Bronze - sleeve bearing	**2**
DU - sleeve bearing	**3**

⑤ Pulse Output

NPN	**N**
PNP	**P**

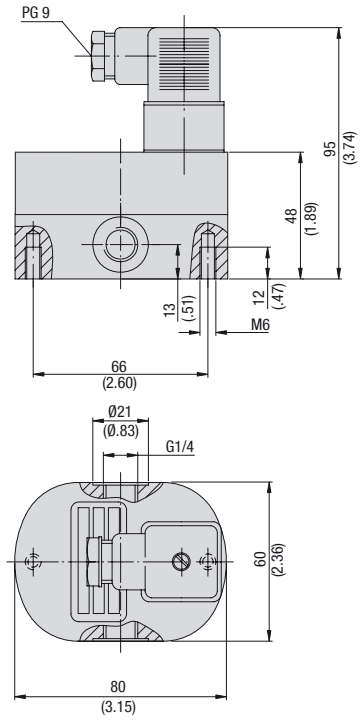
⑥ Sealings

FPM (Viton®) (standard option)	**V**
NBR (Buna-N®)	**B**
PTFE	**T**
EPDM	**E**

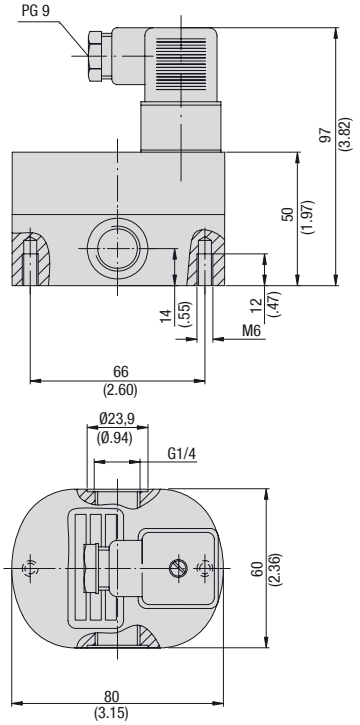
⑦ Special Options

Contact STAUFF for details	

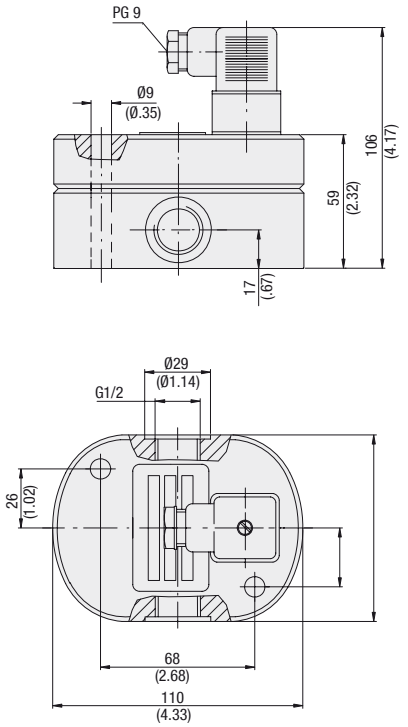
Flow Monitoring Unit ▪ Type SGFE



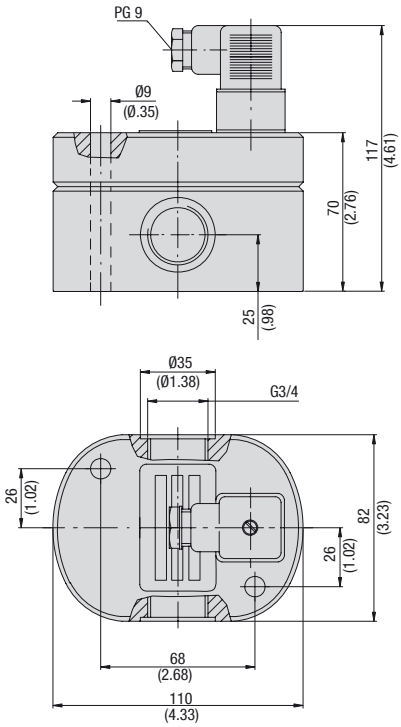
SGFE-0.04



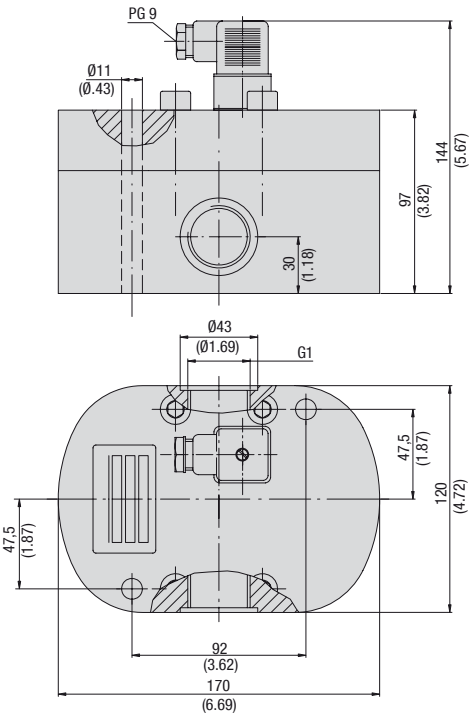
SGFE-0.1



SGFE-0.4



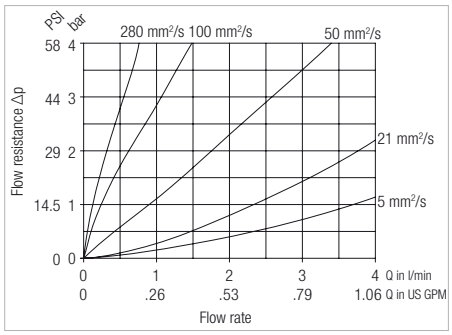
SGFE-2



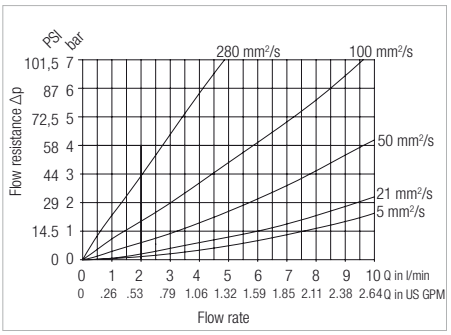
SGFE-4

Dimensional drawings: All dimensions in mm (in).

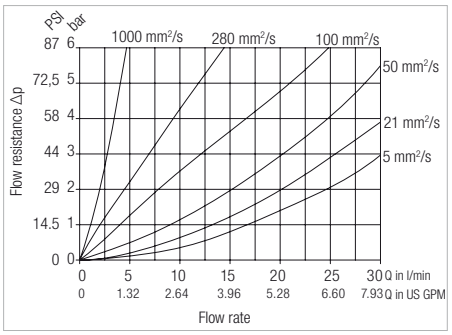
Flow Monitoring System ▪ Type SGFE



SGFE-0.04



SGFE-0.1



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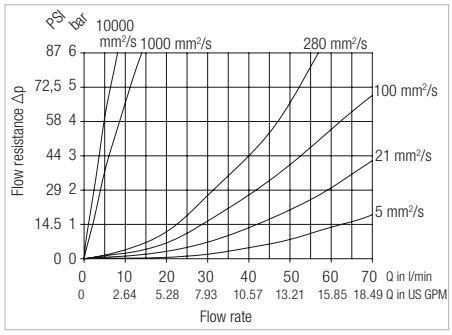
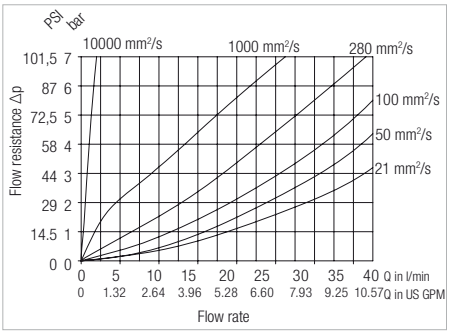


SGFE-2



SGFE-4

Note:
For trouble-free and safe operation of the flow monitoring units the correct selection of type and size is critical. Due to the great number of different applications and flow monitoring unit versions the technical data in the catalogue are of general character.

Certain characteristics of the devices depend on type, size and measuring range as well as on the medium to be measured.

For exact flowmeter select please contact STAUFF.

Flow Rate Display ▪ Type STD 1

Order Codes

STD 1 - 420A - 24 - 1
① ② ③ ④

Only flow rate display

① Series and Type

Flow rate display	**STD 1**

② Output Signal

without analog output	**0**
0 ... 20 mA analog output	**020A**
4 ... 20 mA analog output	**420A**
0 ... 10 V analog output	**010V**
±0 ... 20 mA analog output	**N020A**
±0 ... 10 V analog output	**N010V**

③ Power Supply

Power supply 12 V DC	**12**
Power supply 24 V DC	**24**
Power supply 115 V AC	**115**
Power supply 230 V AC	**230**

④ Design

Panel Mount Design	**1**
19" Push in Design	**2**
Desktop Design	**3**

Product Description

Flow rate instrument to display and process signals of the STAUFF flow monitoring units SGF and SGFE.

- Flow direction indication with switching outputs
- Desktop housing design, panel mounting 96 x 48 mm or 19" push in design
- Analog output: 0 ... ± 10 V, 0 ... ±20 mA or 4 ... 20 mA flow rate direction depent voltage-/current-polarity is available
- Integrated power supply for flow sensor 24 V DC / 50 mA
- Maximum input frequency 2000 Hz
- Refreshtime 50 ms

Flow Rate or Volume Display ▪ Type STD 2

Order Codes

STD 2 - V - N020A - 24 - 1
① ② ③ ④ ⑤

Programmable display with switching outputs

① Series and Type

Flow rate- or volume display	**STD 2**

② Version

Volume display	**V**
Flow rate display	**F**

③ Output Signal

±0 ... 20 mA analog output	**N020A**
±0 ... 10 V analog output	**N010V**
4 ... 20 mA analog output	**420A**

④ Power Supply

Power supply 24 V DC *	**24**
Power supply 230 V AC	**230**

* 24 V DC supply only for STD 2

⑤ Design

Panel Mount Design	**1**
Desktop Design	**2**

Product Description

Flow rate or volume diplay device to display and process signals of the STAUFF flow monitoring units SGF and SGFE.

- Flow meter type selectable by menu
- Flow meter direction indicator
- Desktop housing design or panel mount design
  96 x 48 x 150 mm / 3.78 x 1.89 x 5.91
  (12 V, 30 mA for sensor with 230 V AC power supply) or
  96 x 96 x 150 mm / 3.78 x 3.78 x 5.91
  (24 V, 100 mA for sensor with 24 V DC power supply)
- 16-bit analog output 0 ... ± 10 V, 0 ... ± 20 mA or 0 / 4 ... 20 mA
- 2 limit value outputs
- Semiconductor
- SGF and SGFE preprogrammed parameters
- Power supply for flow sensor integrated 24 V DC / 100 mA and 12 V DC / 30 mA
- Maximum input frequency 45000 Hz
- Refreshtime 20 ... 9999 ms adjustable

Flow Rate and Volume Display ▪ Type STD 3

Programmable display with switching outputs

Order Codes

STD 3 - N020A - 24 - 0 - 1

① ② ③ ④ ⑤

Product Description

Selectable flow rate or volume display in once device to display and process signals of the STAUFF flow monitoring units SGF and SGFE.

- Flow meter and volume meter type programmable
- Desktop housing design or panel mount design
- 12-bit analog output 0 ... 10 V, 0 ... 20 mA or 4 ... 20 mA
- Switching outputs available
- Power supply for flow sensor integrated 12 V / 100 mA
- Maximum input frequency 6000 Hz
- Refreshtime 100 ... 9999 ms
- Power supply 24 V (11-36 V DC) or 110 / 230 V (85-250 V AC)

① Series and Type

Flow rate- and volume display	**STD 3**

② Output Signal

Without	**0**
0 ... 10 V	**010V**
0 ... 20 mA	**020A**
4 ... 20 mA	**420A**

③ Power Supply

Power supply 24 V DC (11-36 V DC)	**24VDC**
Power supply 110/230 V AC (85-2501 V AC)	**230VAC**

④ Switching Output

Without switching output	**0**
With switching output	**W**

⑤ Design

Panel Mount Design	**1**
Desktop Design	**2**

Signal Converter ▪ Type STD 4

Product Description

STD 4 is a small and inexpensive, but very powerful converter for industrial applications where frequencies of the STAUFF flow monitoring units SGF and SGFE will be converted into an analog signal or a serial data stream. The unit is housed in a compact housing for DIN rail mounting and is equipped with 12 screw terminal connections and a 9-pin Sub-D socket.

- Input frequency for scale in the range of 0.1 Hz to 1 MHz adjustable
- Extremely fast conversion time of only 1 ms (f> 3 kHz)
- Analog outputs ± 10 V, 0 ... ± 20 mA and 4 ... 20 mA
- Polarity of the output signal depends on the direction of rotation
- Converts also sum, difference, product or ratio of two frequencies
- RS 232 and RS 485 interface for serial readout of the sensor frequency
- Power supply 18 ... 30 V DC
- Programmable digital filter and default option for any linearization curves
- Maximum frequency 1 MHz (200 kHz with SGF / SGFE
- Can also handle asymmetric TTL pulse

Order Code

STD 4