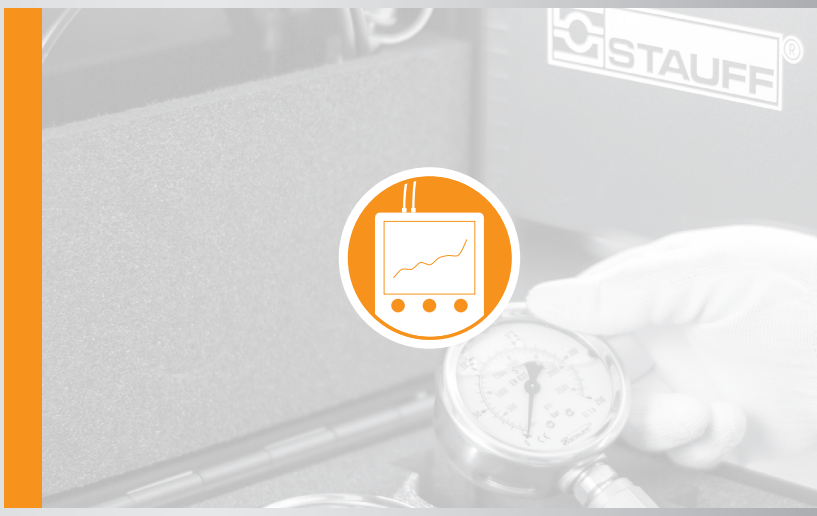
STAUFF®

Pressure Gauges



Hydraulic Testers




Oil Analysis Equipment



Catalogue 8

# STAUFF Diagtronics

## Germany

**Walter Stauffenberg GmbH & Co. KG**
Im Ehrenfeld 4
58791 Werdohl
Tel.: +49 2392 91 60
Fax: +49 2392 91 61 03
E-Mail: sales@stauff.com
**www.stauff.com**

STAUFF products and services are globally available through wholly-owned subsidiaries and a tight network of authorised distributors and representatives in all major industrial regions of the world.

**You can find detailed contact information on the last two pages of this product catalogue or at www.stauff.com.**

Please note: Unless otherwise stated, all data and figures in this product catalogue are approximate values and are only valid as references, which are not binding (also in respect to any third parties' rights of protection) and thus do not release the customer / user from checking and testing the suitability of the products for the foreseen purposes. Therefore, data and figures can only be used in a limited sense for construction purposes.

The application of the products is beyond the control possibilities of the manufacturer and, therefore, is exclusively subject to the responsibility of the customer / user.

In the event that a liability is nevertheless considered, any compensation will be limited to the value of the goods supplied by the manufacturer and used by the customer / user. As a matter of course, the manufacturer guarantees the perfect quality of all products in accordance with the General Terms and Conditions of Business and Sale.

Subject to modifications due to the ongoing development and improvement of the products.

With the publication of this product catalogue, previous editions are no longer valid.

| | |
|---|---|
| **Introduction** | **4 - 11** |
| **Pressure Gauges** | **12 - 21** |
| **Hydraulic Testers** | **22 - 57** |
| **Oil Analysis Equipment** | **58 - 77** |
| **Appendix** (Product-Specific Abbreviations / Global Contact Directory) | **78 - 83** |




Catalogue 1
## STAUFF Clamps

- Block Clamps
- Special Clamps
- Light Series Clamps
- Saddle Clamps
- U-Bolt Clamps
- Metal Clamps
- Construction Series



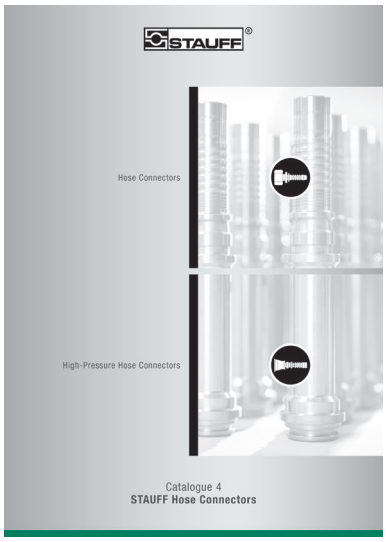

Catalogue 2
## STAUFF Connect

- Tube Connectors
- Assembly Tools and Devices



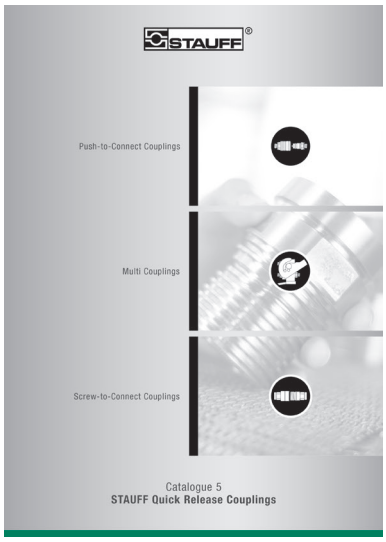

Catalogue 3
## STAUFF Flanges

- SAE Flanges
- Gear Pump Flanges




Catalogue 4
## STAUFF Hose Connectors

- Hose Connectors
- High-Pressure Hose Connectors




Catalogue 5
## STAUFF Quick Release Couplings

- Push-to-Connect Couplings
- Multi Couplings
- Screw-to-Connect Couplings




Catalogue 6
## STAUFF Valves

- Two-Way Ball Valves
- Multi-Way Ball Valves
- Flow Control and Check Valves
- Gauge Isolator Valves



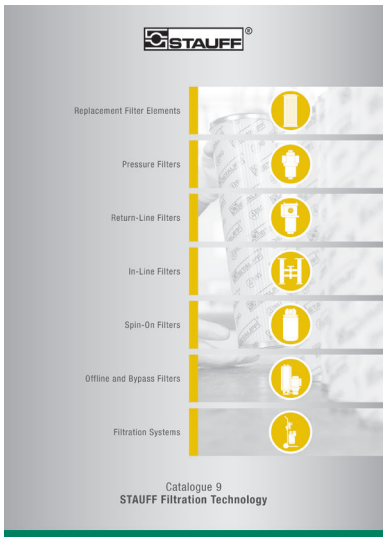

Catalogue 7
## STAUFF Test

- Test Couplings
- Test Adaptors
- Test Hoses and Connectors



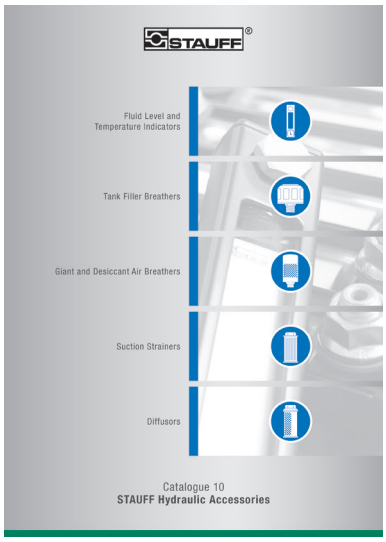

Catalogue 8
## STAUFF Diagtronics

- Pressure Gauges
- Hydraulic Testers
- Oil Analysis Equipment




Catalogue 9
## STAUFF Filtration Technology

- Replacement Filter Elements
- Pressure Filters
- Return-Line Filters
- In-Line Filters
- Spin-On Filters
- Offline and Bypass Filters
- Filtration Systems




Catalogue 10
## STAUFF Hydraulic Accessories

- Fluid Level and Temperature Indicators
- Tank Filler Breathers
- Giant and Desiccant Air Breathers
- Suction Strainers
- Diffusors

For more than 50 years, the companies of STAUFF Group have been developing, manufacturing and distributing pipework equipment and hydraulic components for mechanical and plant engineering and for service and industrial maintenance.

In addition to mobile and industrial hydraulic machinery, typical applications also include commercial and special purpose vehicles, rail transportation and energy technology. Likewise, STAUFF products are used in marine, oil and gas applications and in the process, food and chemical industries.

The overall range currently includes about 40000 standard products as well as numerous special and system solutions according to customer's specifications or based on our in-house development.

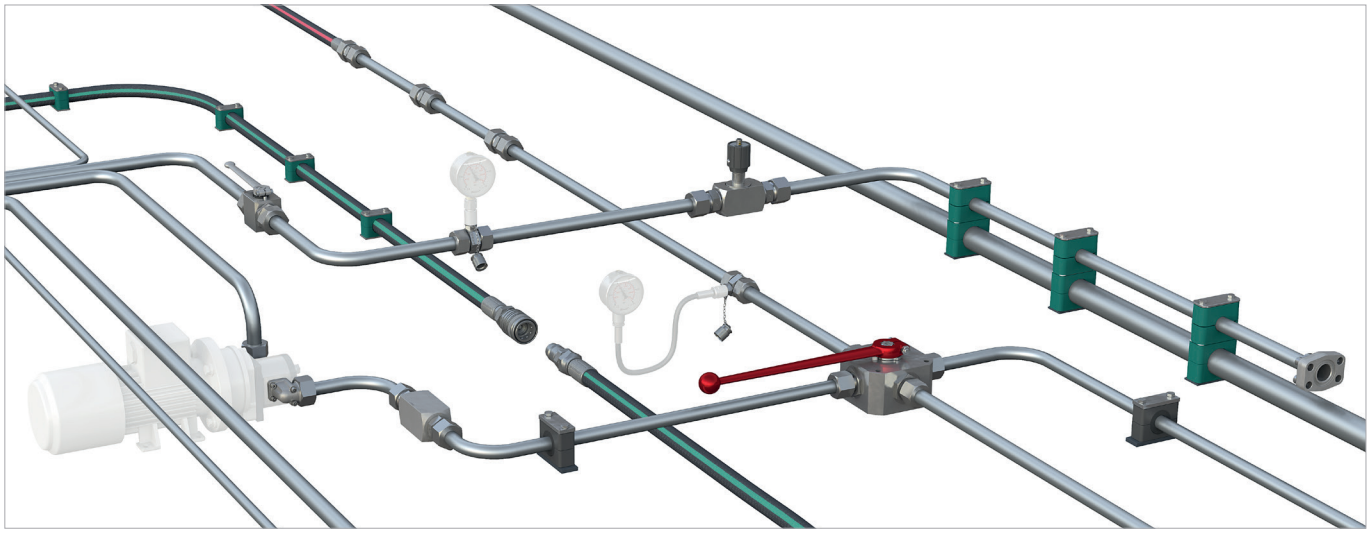
All STAUFF products undergo relevant testing in accordance with international regulations and are governed by the high standards of the in-house quality management system. Furthermore, many items have received certifications and approvals from various international institutes, organisations and authorities who have independently confirmed the quality and performance of the products.

Wholly-owned manufacturing, sales and service facilities in 18 countries and a tight global network of authorised distribution partners ensure high presence and service paired with a maximum of availability.

Lloyd's Register LRQA

Quality Management – ISO 9001:2015
Environmental Management – ISO 14001:2015
Safety Management OHSAS – 18001:2007

## **STAUFF LINE** Components



With the seven dedicated **STAUFF Line** product groups

- **STAUFF Clamps**
- **STAUFF Connect**
- **STAUFF Flanges**
- **STAUFF Hose Connectors**
- **STAUFF Quick Release Couplings**
- **STAUFF Valves**
- **STAUFF Test**

from own, in-house development and manufacturing, the companies of the STAUFF Group provide a comprehensive range of components for fastening and connecting pipes, tubes and hoses for mobile and industrial hydraulic applications and many other industries.

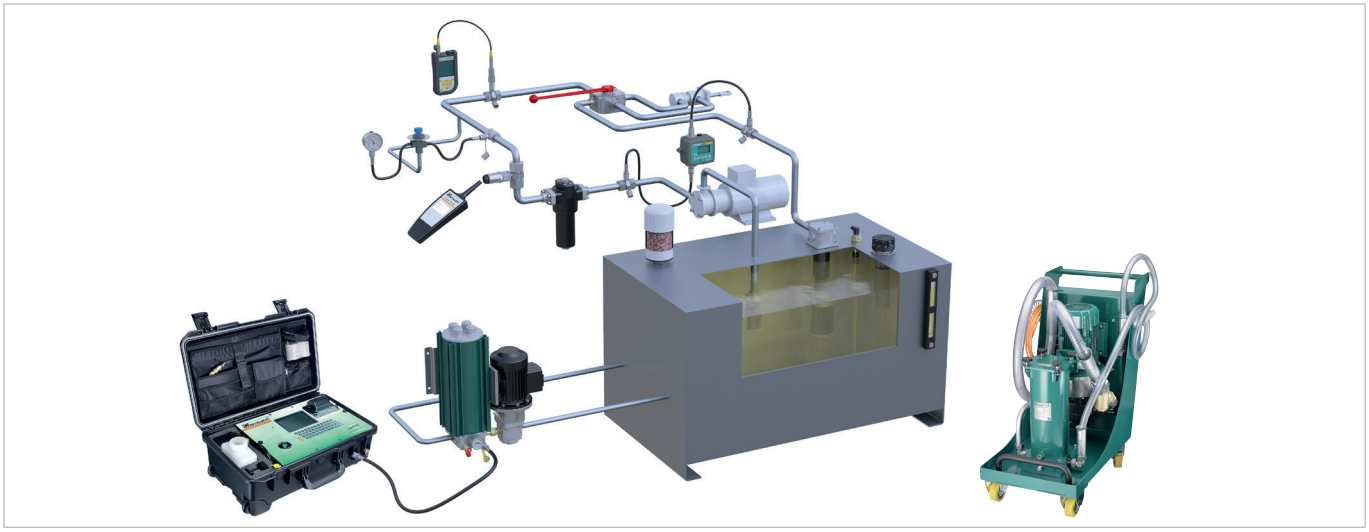
The portfolio is completed by components for shutting-off, regulating, throttling and measuring fluid media.

In order to perfectly match each other, STAUFF Line products are designed and offered on a high, uniform level of quality. A large proportion of the range made from steel comes as standard with the premium STAUFF Zinc/Nickel surface coating, which is also optionally available for many of the other components.

This coating offers the most reliable surface protection far beyond the previous market standards – even after transport, handling and assembly of the components – and meets all current legal requirements.

If desired, Original Equipment Manufacturers can be supported with value-added services, from **technical consultation** to **pre-assembly, assembly and kitting** as well as **logistics services**:

- Support with the **selection of suitable standard components** and ordering options; provision of **customised solutions** according to customer's specifications or based on our in-house development – from prototyping to large scale production
- **Analysis and optimization** of existing and design and developments of new systems aimed at increasing the efficiency and performance of machines and equipment and creating value for customers by reducing the total cost
- **Pre-assembly, assembly and kitting** of individual components to customer-specific system modules
- Individually coordinated **procurement solutions** (e.g. web shop and electronic data interchange) and **supply models** (e.g. from warehousing of customised components to Kanban logistics and just-in-time delivery of pre-fabricated system modules to the assembly lines of the customers) aimed at optimising material flows



Aligned with the needs of the market, the product groups

- **STAUFF Test**
- **STAUFF Diagtronics**
- **STAUFF Filtration Technology**
- **STAUFF Hydraulic Accessories**

include a comprehensive range of analogue and digital measuring equipment and devices, filtration systems and replacement filter elements as well as accessories for the construction of tanks, reservoirs, power packs and gear boxes in mobile and industrial hydraulics.

The offer is completed by relevant value-added services:

- Support with the **selection of suitable components** and ordering options; provision of **customised solutions** according to customer's specifications or based on our in-house development – from prototyping to large scale production
- Analysis of existing hydraulic circuits aimed at filtration systems, tank components and monitoring devices that perfectly match to the specific requirements, and developing integrated concepts to increase the efficiency and performance of machines and equipment
- Individually coordinated **procurement solutions** and **supply models**



## STAUFF Diagtronics

With measuring, testing, display and analysis devices and equipment from the STAUFF Diagtronics product range, system operators, maintenance personnel and repair technicians can determine and monitor the essential parameters in mobile and industrial hydraulics: operating pressure, maximum pressure, differential pressure, system temperature, volume flow, contamination and much more.

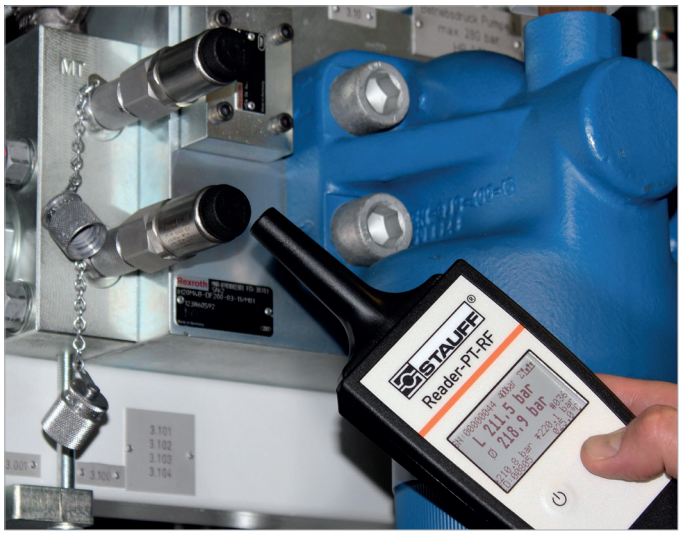
The range includes analogue and digital pressure gauges, that are either supplied individually or as part of practical pressure test kits including the required connection adaptors and accessories, as well as high-performance hand-held hydraulic testers of the PPC series, that have been developed to meet the growing demands of the industry.

The PT-RF series of pressure transmitters and readers are an alternative solution for universal pressure measurements for fluid technology applications. The advantages resulting from the use of the non-contact RFID technology for system operators, maintenance personnel and repair technicians are clear: Measurements can be carried very easily, without extensive training and within a few seconds at the press of a button and then documented in a reliable process – while temporary opening of the system if not required. Potential hazards for people, machines and the environment as well as ingress of contamination into the system can be effectively excluded.

Fluid analysis is a crucial element of any oil management program. Early detection of system contamination can prevent costly repairs and downtime.

Portable and permanently installed STAUFF particle counters and monitors enable the precise determination of cleanliness levels of hydraulic media according to international standards.




STAUFF
Reader-PT-RF





## www.stauff.com/catalogues

The STAUFF online catalogue centre at www.stauff.com/catalougues provides fast and direct access to digital versions of this as well as other STAUFF product catalogues in all available languages.

### Online Page-Flip Catalogues

- Easy navigation through index or the powerful full text search functionality
- Contents can be shared and forwarded by e-mail, printed or downloaded and saved in PDF file format
- Also suitable for mobile devices

### Download Catalogues

- Download entire product catalogues and save them in PDF file format

### Catalogue Request

- Contact form to request printed copies of the product catalogue as well as digital copies on USB stick

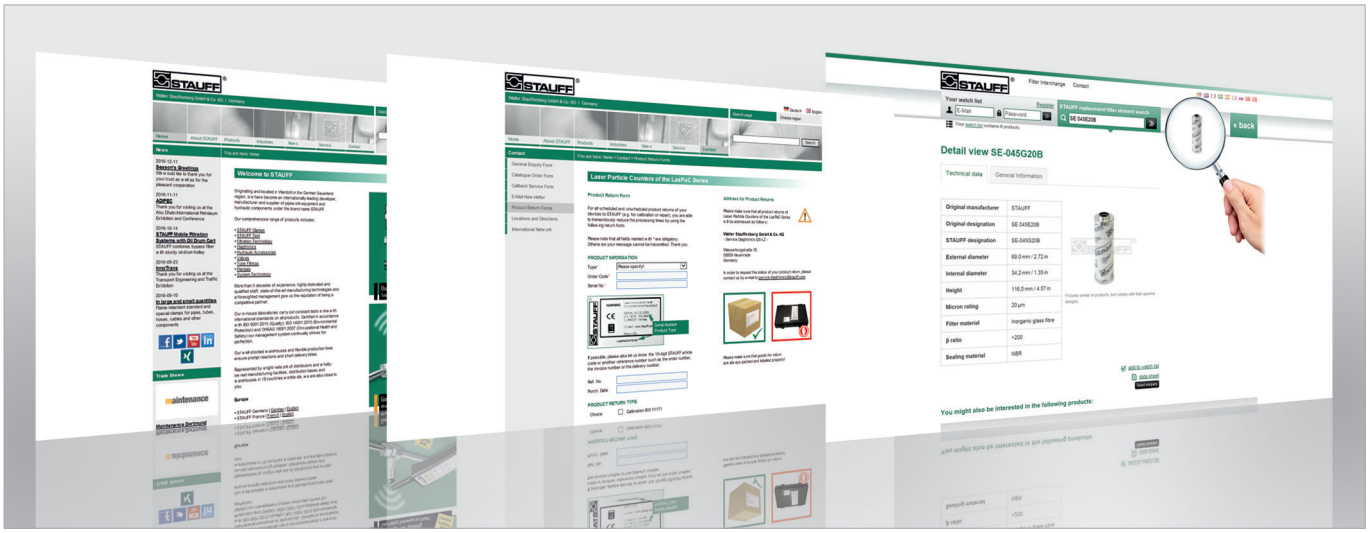
The fastest way to the online page-flip catalogue:

The links that can be found at the bottom edge of all pages of this product catalogue will lead you directly to the corresponding page in the online page-flip catalogue.

In doing so, contents can be searched, shared and forwarded by e-mail, printed or downloaded and saved in PDF file format.

Scan the QR code next to the direct link with the camera of your mobile device* and also use the functions in this way.

* may require a suitable app




## www.stauff.com

General information about the companies of STAUFF Group, latest business and product news as well as complete global contact details

## www.stauff.com/service-diagtronics

Comfortable pre-registration for scheduled and unscheduled product returns of of your measuring, testing and analysis devices to STAUFF, e.g. for calibration or service

## www.filterinterchange.com

Online database for the quick and easy identification and interchange of almost all common brands and types of replacement filter elements

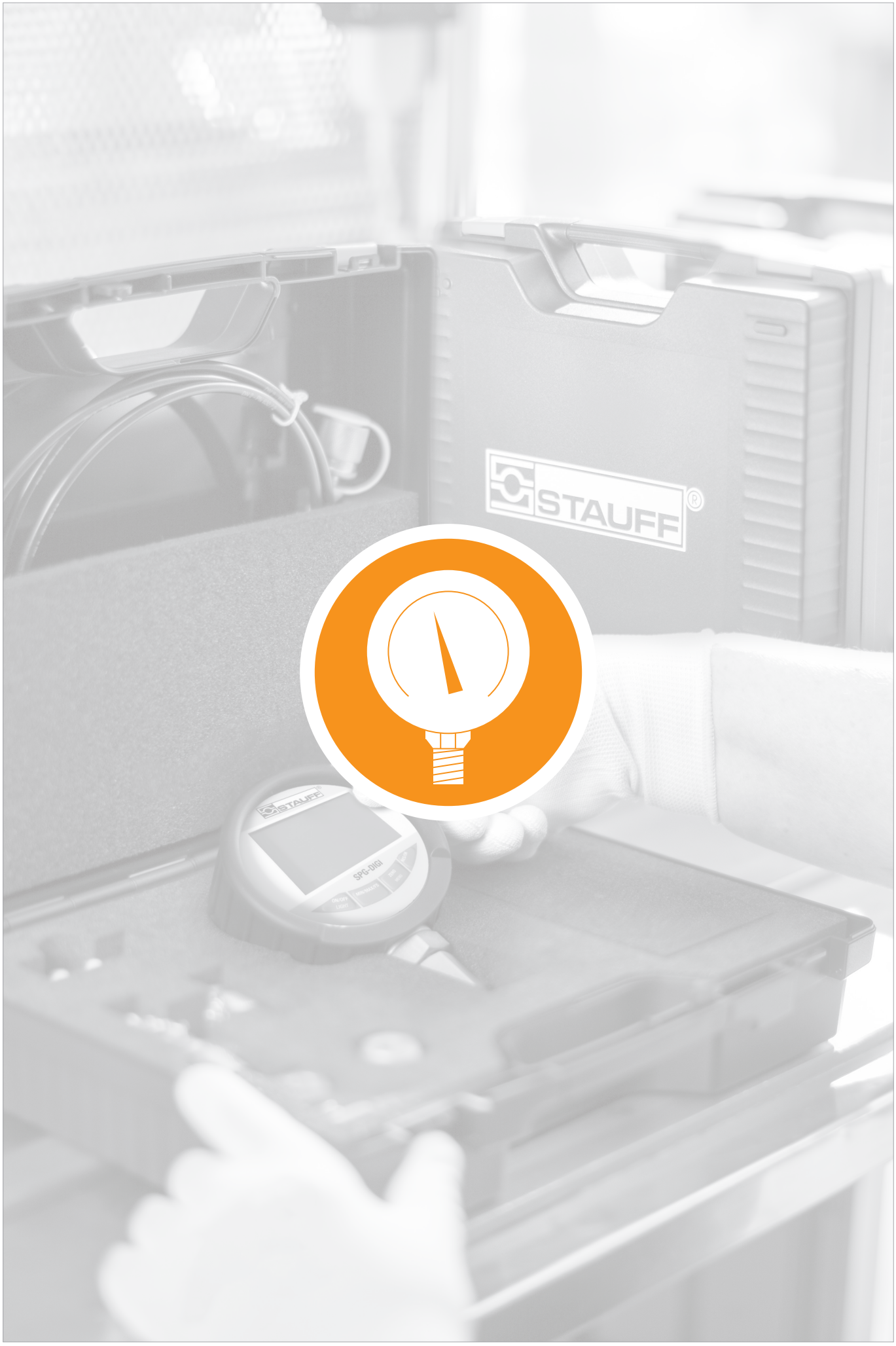
Follow STAUFF and keep yourself updated:

**Facebook**
www.facebook.com/stauffgroup

**Twitter**
www.twitter.com/stauffgroup

**Linkedin**
www.linkedin.com/company/stauff

**Youtube**
www.youtube.com/stauffgroup


STAUFF
SPG-DIGI

A


| | | |
|---|---|---|
| | **Introduction** | **14** |
| | **Information on the Pressure Equipment Directive** | **15** |
| | **Accessories for Pressure Gauges** | **15** |
| | **Pressure Gauges** | **16 - 21** |
|  | **Analogue Pressure Gauge**<br>SPG | **16 - 17** |
|  | **Analogue Pressure Test Kit**<br>SMB-20 / SMB-15 | **18 - 19** |
|  | **Digital Pressure Gauge**<br>SPG-DIGI / SPG-DIGI-USB | **20** |
|  | **Digital Pressure Test Kit**<br>SMB-DIGI / SMB-DIGI-USB | **21** |

## Pressure Gauges (analogue/digital) and Accessories

A




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.

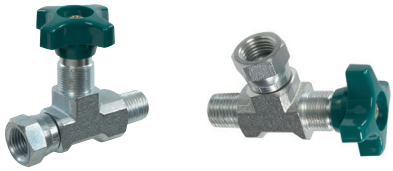
## Pressure Gauges ▪ Accessories



**Single Station Gauge Isolator Valve**
(see Catalogue 6 - STAUFF Valves)



**Multi Station Gauge Isolator Valve**
(see Catalogue 6 - STAUFF Valves)



**Gauge Isolator Needle Valves**
(see Catalogue 6 - STAUFF Valves)



**Test Hoses - Gauge Adaptor**
(see Catalogue 7 - STAUFF Test)



**Gauge Adaptor**
(see Catalogue 7 - STAUFF Test)



**Direct Gauge Adaptor**
(see Catalogue 7 - STAUFF Test)



**Adjustable Gauge Fitting**
(see Catalogue 7 - STAUFF Test)

# Pressure Gauge (analogue) ▪ Type SPG

A



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 contact 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<br>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<br>IP 54 protection rating: Dust protected and protected against splashing water |

For further information see Catalogue 7 - STAUFF Test.

## Order Codes

**SPG - 063 - 00160 - 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

| Pressure Ranges for style of scale 01 - bar/PSI | Code | Pressure Ranges for style of scale 05 - PSI/bar | Code |
|---|---|---|---|
| -1 ... 1,5 bar / -14.5 ... 21 PSI | **(-00001)-00001.5** | -1,02 ... 0 bar / -30 inHg ... 0 PSI | **30HG30** |
| -1 ... 3 bar / -14.5 ... 43 PSI | **(-00001)-00003** | -1,02 ... 2,07 bar / -30 inHg ... 30 PSI | **03030** |
| 0 ... 10 bar / 0 ... 145 PSI | **00010** | 0 ... 2,07 bar / 0 ... 30 PSI | **00030** |
| 0 ... 16 bar / 0 ... 232 PSI | **00016** | 0 ... 4,14 bar / 0 ... 60 PSI | **00060** |
| 0 ... 25 bar / 0 ... 362 PSI | **00025** | 0 ... 6,89 bar / 0 ... 100 PSI | **00100** |
| 0 ... 40 bar / 0 ... 580 PSI | **00040** | 0 ... 11,03 bar / 0 ... 160 PSI | **00160** |
| 0 ... 60 bar / 0 ... 870 PSI | **00060** | 0 ... 13,79 bar / 0 ... 200 PSI | **00200** |
| 0 ... 100 bar / 0 ... 1450 PSI | **00100** | 0 ... 20,68 bar / 0 ... 300 PSI | **00300** |
| 0 ... 160 bar / 0 ... 2320 PSI | **00160** | 0 ... 34,74 bar / 0 ... 500 PSI | **00500** |
| 0 ... 250 bar / 0 ... 3625 PSI | **00250** | 0 ... 41,37 bar / 0 ... 600 PSI | **00600** |
| 0 ... 400 bar / 0 ... 5801 PSI | **00400** | 0 ... 68,95 bar / 0 ... 1000 PSI | **01000** |
| 0 ... 600 bar / 0 ... 8702 PSI | **00600** | 0 ... 103,42 bar / 0 ... 1500 PSI | **01500** |
| 0 ... 680 bar / 0 ... 9862 PSI | **00680** | 0 ... 137,90 bar / 0 ... 2000 PSI | **02000** |
| 0 ... 700 bar / 0 ... 10152 PSI | **00700** | 0 ... 206,84 bar / 0 ... 3000 PSI | **03000** |
| 0 ... 1000 bar / 0 ... 14503 PSI | **01000** | 0 ... 275,79 bar / 0 ... 4000 PSI | **04000** |
| | | 0 ... 344,74 bar / 0 ... 5000 PSI | **05000** |
| | | 0 ... 413,69 bar / 0 ... 6000 PSI | **06000** |
| | | 0 ... 517,11 bar / 0 ... 7500 PSI | **07500** |
| | | 0 ... 689,48 bar / 0 ... 10000 PSI | **10000** |

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 Europe) | **01** |
| bar | **02** |
| PSI | **03** |
| PSI / bar (PSI outside/ bar inside - standard option North America) | **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.

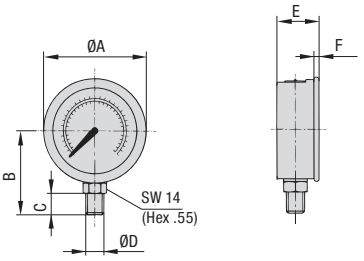
### ⑦ Accessories

| | |
|---|---|
| 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** |

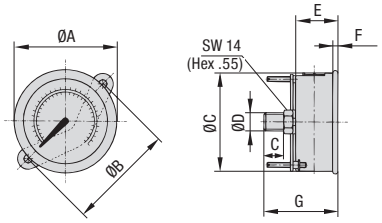
* FS = Full Scale

## Pressure Gauge (analogue) ▪ Type SPG

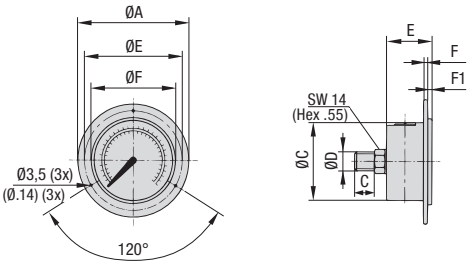





SPG-063 ... S ...



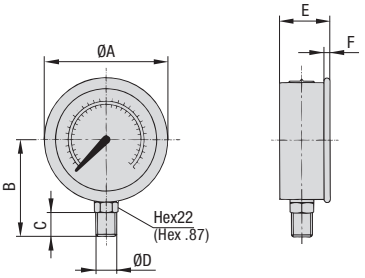

SPG-063 ... P ... U



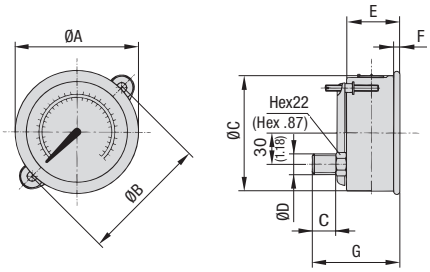

SPG-063 ... P ... F

### Dimensions SPG-063

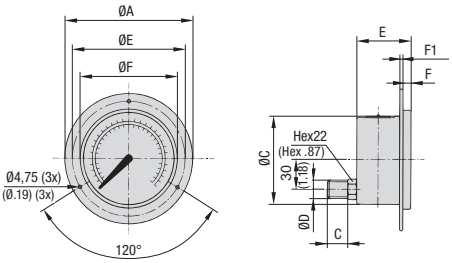
| Version | Dimension (mm/in) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pressure Gauge | ØA | ØB | ØC | ØD | ØE | ØF | B | C | E | F | F1 | G |
| SPG-063 | 69 | - | - | G1/4 | - | - | 54 | 15 | 32 | 6,5 | - | - |
| | 2.72 | | | 1/4 NPT | | | 2.13 | .59 | 1.26 | .26 | | |
| | | | | 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 | 1 | 6,5 | - |
| | 3.35 | | 2.44 | 1/4 NPT | 2.95 | 2.68 | | .59 | 1.26 | .04 | .26 | |
| | | | | 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).

A

## Pressure Test Kit (analogue) ▪ Type SMB-20 / SMB-15



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.

Custom kits available upon request. Please contact STAUFF.

Please see on page 19 for standard options.

### Order Codes

**SMB-20 - 1 - xxx/xxx/xxx - W3**

① ② ③ ④

#### ① Series and Type

| | |
|---|---|
| Pressure Test Kit, analogue (STAUFF Test 20) | **SMB-20** |
| Pressure Test Kit, analogue (STAUFF Test 15) | **SMB-15** |

#### 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)-003** |
| 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 | **W3** |

For further information see Catalogue 7 - STAUFF Test.

A

## Standard Option for Pressure Test Kits (analogue) ▪ Type SMB-20 / SMB-15

| Series | Components | Order Codes | Series | Components | Order Codes |
|---|---|---|---|---|---|
| SMB-20-1-xxx-W3 | 1x Test hose (2000 mm length) | SMS-20-2000-B-W3 | SMB-15-1-xxx-W3 | 1x Test hose (2000 mm length) | SMS-15-2000-B-W3 |
| | 1x Pressure gauge Ø 63 mm | SPG-063-xxx-... | | 1x Pressure gauge Ø 63 mm | SPG-063-xxx-... |
| | 1x Gauge adaptor G1/4 | SMA-20-G1/4-B-OR-W3 | | 1x Gauge adaptor G1/4 | SMA-15-G1/4-B-OR-W3 |
| | 1x Direct gauge adaptor G1/4 | SMD-20-G1/4-B-OR-W3 | | 1x Direct gauge adaptor G1/4 | SMD-15-G1/4-B-OR-W3 |
| | 1x Test coupling G1/4 | SMK-20-G1/4-B-C-W3 | | 1x Test coupling G1/4 | SMK-15-G1/4-B-B-W3 |
| | 1x Test coupling M10 x 1 | SMK-20-M10x1-B-A-W3 | | 1x Test coupling M14 x 1,5 | SMK-15-M14x1.5-B-B-W3 |
| | 1x Thread adaptor G3/8 | SRS-20-G3/8-B-W3 | | 1x Thread adaptor G3/8 | SRS-15-G3/8-B-W3 |
| | 1x Thread adaptor G1/2 | SRS-20-G1/2-B-W3 | | 1x Thread adaptor G1/2 | SRS-15-G1/2-B-W3 |

xxx/xxx/xxx = pressure ranges see on page 18 (please indicate pressure ranges in bar)
Custom kits available upon request. Please contact STAUFF.

| Series | Components | Order Codes | Series | Components | Order Codes |
|---|---|---|---|---|---|
| SMB-20-2-xxx/xxx-W3 | 1x Test hose (2000 mm length) | SMS-20-2000-B-W3 | SMB-15-2-xxx/xxx-W3 | 1x Test hose (2000 mm length) | SMS-15-2000-B-W3 |
| | 2x Pressure gauges Ø 63 mm | SPG-063-xxx-... | | 2x Pressure gauges Ø 63 mm | SPG-063-xxx-... |
| | 1x Gauge adaptor G1/4 | SMA-20-G1/4-B-OR-W3 | | 1x Gauge adaptor G1/4 | SMA-15-G1/4-B-OR-W3 |
| | 1x Direct gauge adaptor G1/4 | SMD-20-G1/4-B-OR-W3 | | 1x Direct gauge adaptor G1/4 | SMD-15-G1/4-B-OR-W3 |
| | 1x Test coupling G1/4 | SMK-20-G1/4-B-C-W3 | | 1x Test coupling G1/4 | SMK-15-G1/4-B-B-W3 |
| | 1x Test coupling M10 x 1 | SMK-20-M10x1-B-A-W3 | | 1x Test coupling M14 x 1,5 | SMK-15-M14x1.5-B-B-W3 |
| | 1x Thread adaptor G3/8 | SRS-20-G3/8-B-W3 | | 1x Thread adaptor G3/8 | SRS-15-G3/8-B-W3 |
| | 1x Thread adaptor G1/2 | SRS-20-G1/2-B-W3 | | 1x Thread adaptor G1/2 | SRS-15-G1/2-B-W3 |

xxx/xxx/xxx = pressure ranges see on page 18 (please indicate pressure ranges in bar)
Custom kits available upon request. Please contact STAUFF.

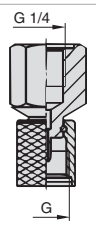
| Series | Components | Order Codes | Series | Components | Order Codes |
|---|---|---|---|---|---|
| SMB-20-3-xxx/xxx/xxx-W3 | 2x Test hoses (2000 mm length) | SMS-20-2000-B-W3 | SMB-15-3-xxx/xxx/xxx-W3 | 2x Test hoses (2000 mm length) | SMS-15-2000-B-W3 |
| | 3x Pressure gauges Ø 63 mm | SPG-063-xxx-... | | 3x Pressure gauges Ø 63 mm | SPG-063-xxx-... |
| | 1x Gauge adaptor G1/4 | SMA-20-G1/4-B-OR-W3 | | 1x Gauge adaptor G1/4 | SMA-15-G1/4-B-OR-W3 |
| | 2x Direct gauge adaptors G1/4 | SMD-20-G1/4-B-OR-W3 | | 2x Direct gauge adaptors G1/4 | SMD-15-G1/4-B-OR-W3 |
| | 3x Test couplings G1/4 | SMK-20-G1/4-B-C-W3 | | 3x Test couplings G1/4 | SMK-15-G1/4-B-B-W3 |
| | 3x Test couplings M10 x 1 | SMK-20-M10x1-B-A-W3 | | 3x Test couplings M14 x 1,5 | SMK-15-M14x1.5-B-B-W3 |
| | 1x Thread adaptor G3/8 | SRS-20-G3/8-B-W3 | | 1x Thread adaptor G3/8 | SRS-15-G3/8-B-W3 |
| | 1x Thread adaptor G1/2 | SRS-20-G1/2-B-W3 | | 1x Thread adaptor G1/2 | SRS-15-G1/2-B-W3 |

xxx/xxx/xxx = pressure ranges see on page 18 (please indicate pressure ranges in bar)
Custom kits available upon request. Please contact STAUFF.

| Series | Components | Order Codes | Series | Components | Order Codes |
|---|---|---|---|---|---|
| SMB-20/100-1-xxx-W3 | 1x Test hose (2000 mm length) | SMS-20-2000-B-W3 | SMB-15/100-1-xxx-W3 | 1x Test hose (2000 mm length) | SMS-15-2000-B-W3 |
| | 1x Pressure gauge Ø 100 mm | SPG-100-xxx-... | | 1x Pressure gauge Ø 100 mm | SPG-100-xxx-... |
| | 1x Gauge adaptor G1/2 | SMA-20-G1/2-B-OR-W3 | | 1x Gauge adaptor G1/2 | SMA-15-G1/2-B-OR-W3 |
| | 1x Direct gauge adaptor G1/2 | SMD-20-G1/2-B-OR-W3 | | 1x Direct gauge adaptor G1/2 | SMD-15-G1/2-B-OR-W3 |
| | 1x Test coupling G1/2 | SMK-20-G1/2-B-C-W3 | | 1x Test coupling G1/4 | SMK-15-G1/4-B-B-W3 |
| | 1x Test coupling M10 x 1 | SMK-20-M10x1-B-A-W3 | | 1x Test coupling M14 x 1,5 | SMK-15-M14x1.5-B-B-W3 |
| | 1x Thread adaptor G3/8 | SRS-20-G3/8-B-W3 | | 1x Thread adaptor G3/8 | SRS-15-G3/8-B-W3 |
| | 1x Thread adaptor G1/2 | SRS-20-G1/2-B-W3 | | 1x Thread adaptor G1/2 | SRS-15-G1/2-B-W3 |

xxx/xxx/xxx = pressure ranges see on page 18 (please indicate pressure ranges in bar)
Custom kits available upon request. Please contact STAUFF.

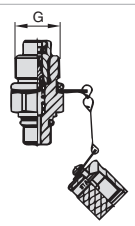
## Accessories (Connection Adaptors)




SDA adaptor
Connects the pressure gauge to a test coupling




SAD adaptor
Only in conjunction with the SDA-20-G1/4-W3 adaptor, connects to other test coupling sizes




Test coupling
STAUFF Test or comparable

| Adaptor | Adaption from | to Dimension G |
|---|---|---|
| SDA-20-G1/4-W3 | G1/4 | M16 x 2 |
| SDA-15-G1/4-W3 | G1/4 | M16 x 1,5 |
| SDA-12-G1/4-W3 | G1/4 | S12,65 x 1,5 |
| SAD-20/15-B-W3 | M16 x 2 | M16 x 1,5 |
| SAD-20/12-B-W3 | M16 x 2 | S12,65 x 1,5 |
| SAD-20/10-B-W3 | M16 x 2 | Plug-in system |

Other adaptors are available.

A

# Digital Pressure Gauge ▪ Type SPG-DIGI / SPG-DIGI-USB (Data Logger)

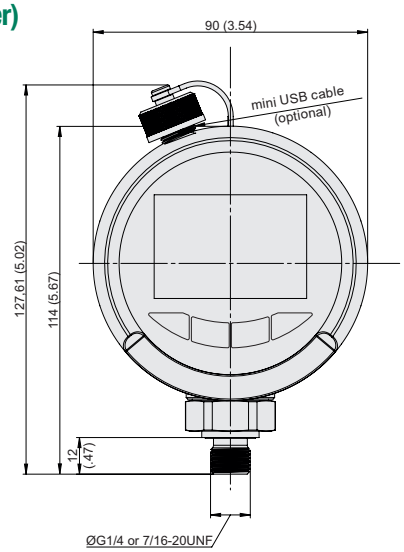
With Data Logger and USB Interface

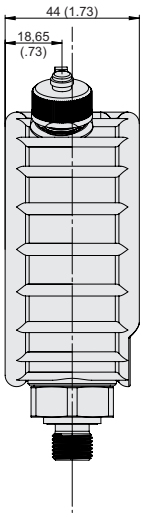



SPG-DIGI




SPG-DIGI-USB




## Product Description

The STAUFF SPG-DIGI digital pressure gauges are designed for digital measurement and display of pressure in hydraulic systems, especially for oils, lubricants and water. Current measured values as well as min and max values can be displayed with a precision of 0.5% of the full scale value.

The SPG-DIGI is optionally available in the USB version, equipped with an internal data memory. A measurement started on the measuring device is automatically stored in the internal data memory in the universal .csv file format.
The measurement data can then be transferred to the PC using the supplied mini USB cable. The device shows up on the PC as a USB data storage medium, so that no additional software is required for transferring the data. This allows easy export of the data, e.g. into Microsoft Excel®.

The measurement data are stored in the internal memory with a resolution of up to 100 ms for short measurements and a pressure peak monitoring of 10 ms. Up to ten measurement series can be stored in the device. The maximum measurement duration for each measurement is 24 h.

The STAUFF SPG-DIGI digital pressure gauges are available individually or as part of a complete pressure test kit.
They are very robust, reliable, easy to operate and bear a CE mark.

## Features

- Bar graph display (drag pointer)
- Backlit display
- Zero point correction
- Battery status indicator
- Gauge ability to swivel 360°

## Technical Data (for SPG-DIGI-USB)

- Internal memory: 10 measurement series
- Measurement data lengths: max. 24 h
- Memory interval: up to 100 ms (increases with duration of measurement)
- Pressure peak detection min/max: 10 ms
- Date type: Date/time/pressure value/ min. pressure/max. pressure
- Data format: CSV

A USB connecting cable is supplied as a standard.

## Ordering key

**SPG-DIGI** - **B0016** - **B** - **CAL**

① ② ③ ④

### ① Series and Type

| | |
|---|---|
| Digital Pressure Gauge | **SPG-DIGI** |
| Digital Pressure Gauge USB | **SPG-DIGI-USB** |

### ② Pressure Ranges

| | |
|---|---|
| -1 ... 5 bar / -14.5 ... 72 PSI | **B0005** |
| -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** |
| 0 ... 1000 bar / 0 ... 14504 PSI | **B1000** |

### 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) |
|---|---|---|---|
| B0005 | -1 ... 5 | 30 | 50 |
| | -14.5 ... 72 | 435 | 725 |
| B0016 | -1 ... 16 | 32 | 160 |
| | -14.5 ... 232 | 464 | 2321 |
| B0100 | 0 ... 100 | 200 | 800 |
| | 0 ... 1450 | 2900 | 11603 |
| B0400 | 0 ... 400 | 800 | 1700 |
| | 0 ... 5801 | 11603 | 24656 |
| B0600 | 0 ... 600 | 1200 | 2400 |
| | 0 ... 8702 | 17404 | 31908 |
| B1000 | 0 ... 1000 | 1500 | 2500 |
| | 0 ... 14504 | 0 ... 21756 | 0 ... 36259 |

## Technical Data

### Materials
- Housing made of die-cast Zinc with TPE
- Wetted parts: Stainless Steel 1.4404, NBR (Buna-N®), ceramics
- Seals: NBR (Buna-N®)
  FKM (Viton®) or EPDM on request

### Weight
- Max. weight: 360 g / .79 lbs

### Display
- Text display 4 1/2 digits
- 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
- Pressure peak measurement with 10 ms sampling rate
  Illuminated measured value display

### Accuracy
- ±0.25% FS* typ. / ±0.5% FS* max.
- Resolution: 4096 steps

### Permissible Temperature ranges
- Ambient temp.: -10 °C ... +50 °C / +14 °F ... +122 °F
- Media temp.: -20 °C ... +80 °C / -4 °F ... +176 °F
- Storage temp.: -20 °C ... +60 °C / -4 °F ... +140 °F
- Relative humidity: < 85%
- Battery life: max. 600 hours
  (operation without illumination, 2 x 1.5 V DC AA (LR6-AA) alkaline)

### Process Connections
- G1/4 or 7/16–20 UNF, Stainless Steel 1.4404
- Vibration: IEC 60068-2-6 / 10 ... 500 Hz / 5 g
- Shock: IEC 60068-2-27 / 11 ms / 25 g
- Load change ($10^6$): 100

### Protection Rating
- IP 65:
  Dust-tight and protected against water jets
  (SPG-DIGI-USB: IP65 only with cover installed)

* FS = Full Scale

# Pressure Test Kit (digital) ▪ Type SMB-DIGI



Digital Pressure Test Kit (SPG-DIGI-USB)

## 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** |
| Digital Pressure Gauge USB | **SMB-DIGI-USB** |

### ② Adaptor Version

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

### ③ Pressure Ranges

| | |
|---|---|
| -1 ... 5 bar / -14.5 ... 72 PSI | **B0005** |
| -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) |
|---|---|---|---|
| B0005 | -1 ... 5 | 30 | 50 |
| | -14.5 ... 72 | 435 | 725 |
| B0016 | -1 ... 16 | 32 | 160 |
| | -14.5 ... 232 | 464 | 2321 |
| B0100 | 0 ... 100 | 200 | 800 |
| | 0 ... 1450 | 2900 | 11603 |
| B0400 | 0 ... 400 | 800 | 1700 |
| | 0 ... 5801 | 11603 | 24656 |
| B0600 | 0 ... 600 | 1200 | 2400 |
| | 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.

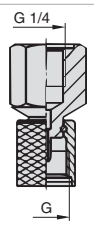
The SMB-DIGI pressure test kits are assembled in various versions, in accordance with customer wishes. All pressure test kits are supplied in a handy case with custom-designed foam inserts.

## Components

**Standard Option SMB-DIGI-20**

- Digital Pressure Gauge SPG-DIGI or SPG-DIGI-USB*
- Test Hose (2 m / 6.56 ft), M16 x 2, pressure-resistant 600 bar (8702 PSI) SMS-20-2000-B-W3
- Adaptor SDA (G1/4 to M16 x 2) SDA-20-G1/4-W3
- Hose Connector SSV-20-W3
- Test Coupling SMK-20-G1/4-B-C-W3
- Test Coupling SMK-20-M10x1-B-A-W3
- Thread Adaptor SRS-20-G3/8-B-W3
- Thread Adaptor SRS-20-G1/2-B-W3
- Operating manual (multilingual) on CD
- *Supplied with a mini USB connecting cable

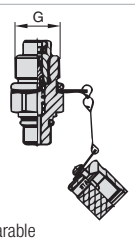
## Accessories (Connection Adaptors)




SDA adaptor
Connects the pressure gauge to a test coupling
(Max. Pressure 630 bar / 9137 PSI)




SAD adaptor
Only in conjunction with the SDA-20-G1/4-W3 adaptor, connects to other test coupling sizes
(Max. Pressure 630 bar / 9137 PSI)




Test coupling
STAUFF Test or comparable
(Max. Pressure 630 bar / 9137 PSI)

| Adaptor | Adaption from | to Dimension G |
|---|---|---|
| SDA-20-G1/4-W3 | G1/4 | M16 x 2 |
| SDA-15-G1/4-W3 | G1/4 | M16 x 1,5 |
| SDA-12-G1/4-W3 | G1/4 | S12,65 x 1,5 |
| SAD-20/15-B-W3 | M16 x 2 | M16 x 1,5 |
| SAD-20/12-B-W3 | M16 x 2 | S12,65 x 1,5 |
| SAD-20/10-B-W3 | M16 x 2 | Plug-in system |

Other adaptors are available.




| | | |
|---|---|---|
| | **Introduction** | **25** |
| | **Overview** | **26** |
| | **Functional Block Diagrams** | **27** |
| | **Hydraulic Testers** | **28 - 33** |
|  | PPC-04-plus<br>PPC-04-plus-CAN | **28** |
|  | PPC-06/08-plus | **29** |
|  | PPC-Pad | **30 - 33** |
| | **Pressure Sensors** | **34 - 35** |
|  | Sensor-PPC-04/12-P | **34** |
|  | Sensor-PPC-CAN-P | **35** |
| | **Temperature Sensors** | **36 - 37** |
|  | Sensor-Sensor-PPC-04/12-T | **36** |
|  | Sensor-Sensor-PPC-CAN-T | **37** |
| | **Pressure / Temperature Sensors** | **38 - 39** |
|  | Sensor-PPC-04/12-PT | **38** |
|  | Sensor-PPC-CAN-PT | **39** |

B


| | | |
|---|---|---|
| | **Flow Turbine** | **40 - 41** |
|  | Flow-meter-PPC-04/12-SFM | **40** |
|  | Flow-meter-PPC-CAN-SFM | **41** |
|  | **Rotational Speed Sensor**<br>Sensor-Sensor-PPC-04/12-SDS-CAB | **42** |
|  | **Current / Voltage / Frequency Converter**<br>Sensorconverter-PPC | **43** |
|  | **Accessories** | **44** |
|  | **CAN Accessories** | **45** |
| | **Complete Systems** | **46 - 48** |
|  | PPC-04/06/08-plus-SET | **46** |
|  | PPC-04-CAN-SET | **47** |
|  | PPC-Pad-SET | **48** |
| | **Ordering Tables** | **49 - 50** |
| | For analogue Hydraulic Testers | **49** |
| | For CAN Hydraulic Testers | **50** |
| | **Pressure Transmitter** | **51 - 55** |
| | **Overview** | **51** |
|  | PT-RF | **52** |
|  | Reader-PT-RF | **53** |
|  | **Complete Systems**<br>PT-RF-SET | **54** |
|  | **Accumulator Adaptor**<br>SBAA / SDAA | **55** |
| | **Flow Indicators** | **56 - 57** |
|  | **Flow Indicators**<br>SDM / SDMKR | **56 - 57** |

B

## 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.

B

## 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<br>(max. 2 analogue sensors) | 1x CAN<br>(max. 3 CAN sensors) | 3 | 4 | max. 6 + 2 x CAN<br>(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** | – | ● | – | – | ● |

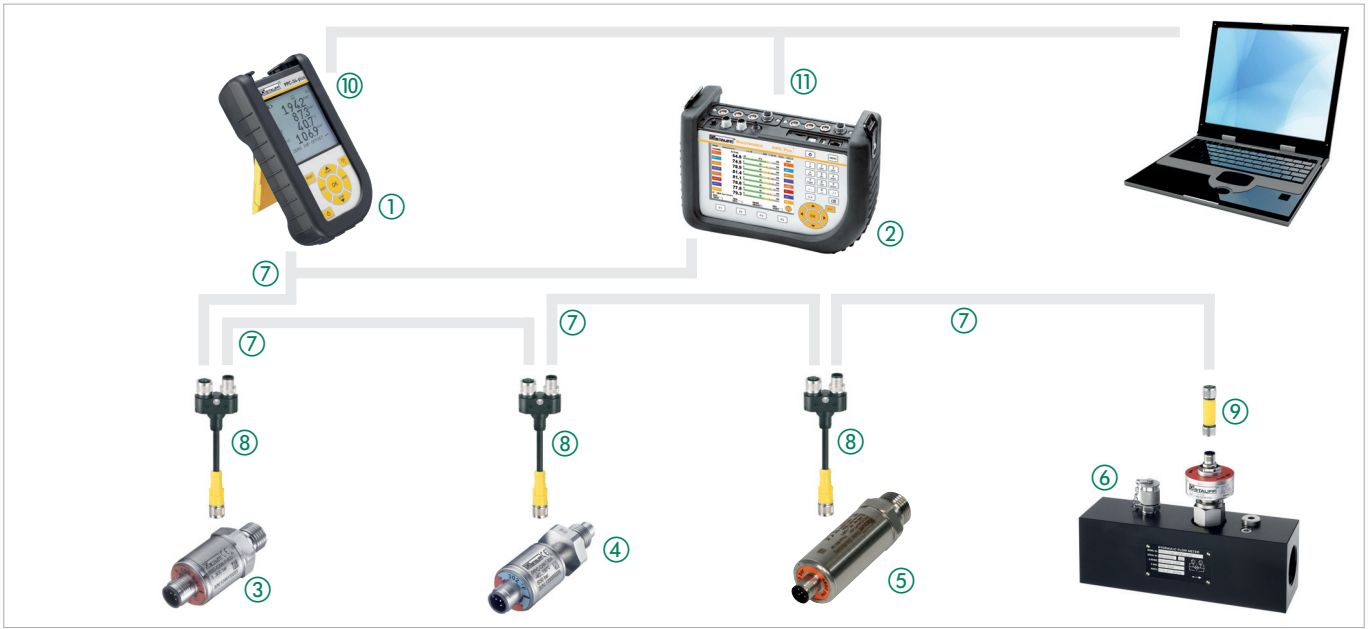
● = standard, – = not available

## 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-**Sensor-PPC-04/12-SDS-CAB** with integrated connection cable, optionally with Contact Adaptor **Adaptor-PPC-04/12-SKA-Contact** or Focusing Adaptor **Adaptor-PPC-04/12-SKA-Focus**
⑧ Screw-in Temperature **Sensor-Sensor-PPC-04/12-T** Manual Temperature Sensor-**Sensor-PPC-04/12-TSH**
⑨ Flow Turbine **Flow-meter-PPC-04/12-SFM** with integrated signal converter, for connecting pressure and temperature sensor
⑩ 5-pin Connection Cable for sensors **Cable-PPC-04/12-3** (3 m / 9.84 ft), optionally with Extension Cable **Cable-PPC-04/12-5-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-Cable**

## 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-**Sensor-PPC-CAN-T**
⑤ CAN Pressure / Temperature Sensor-**PPC-CAN-PT**
⑥ CAN Flow Turbine **Flow-meter-PPC-CAN-SFM** with integrated signal converter, for connecting pressure and temperature sensors
⑦ CAN Connection Cable-**PPC-CAN-X**
⑧ CAN Y-Splitter Cable-**PPC-CAN-Y**
⑨ CAN Terminating Resistor **Resistor-PPC-CAN**
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-Cable**

B

# 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 (1 GB included)
- 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 XP®, Windows Vista®, Windows 7®, Windows 8® and Windows 10®) 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 46 / 47 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** |

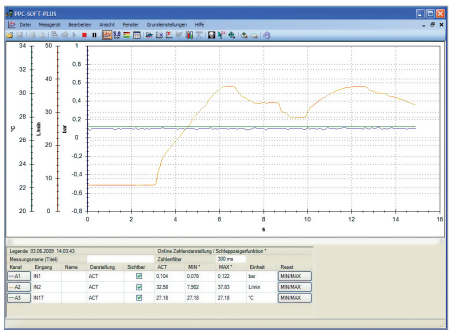
#### ③ Calibration

| | |
|---|---|
| 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®.



* FS = Full Scale

### 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 XP®, Windows Vista®, Windows 7®, Windows 8® and Windows 10®) 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 46 for further information.

B

# 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 31 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 Sensor-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

SPEEDCON ist ein Markenzeichen der PHOENIX CONTACT GmbH & Co. KG

B

## Hydraulic Tester ▪ Type PPC-Pad



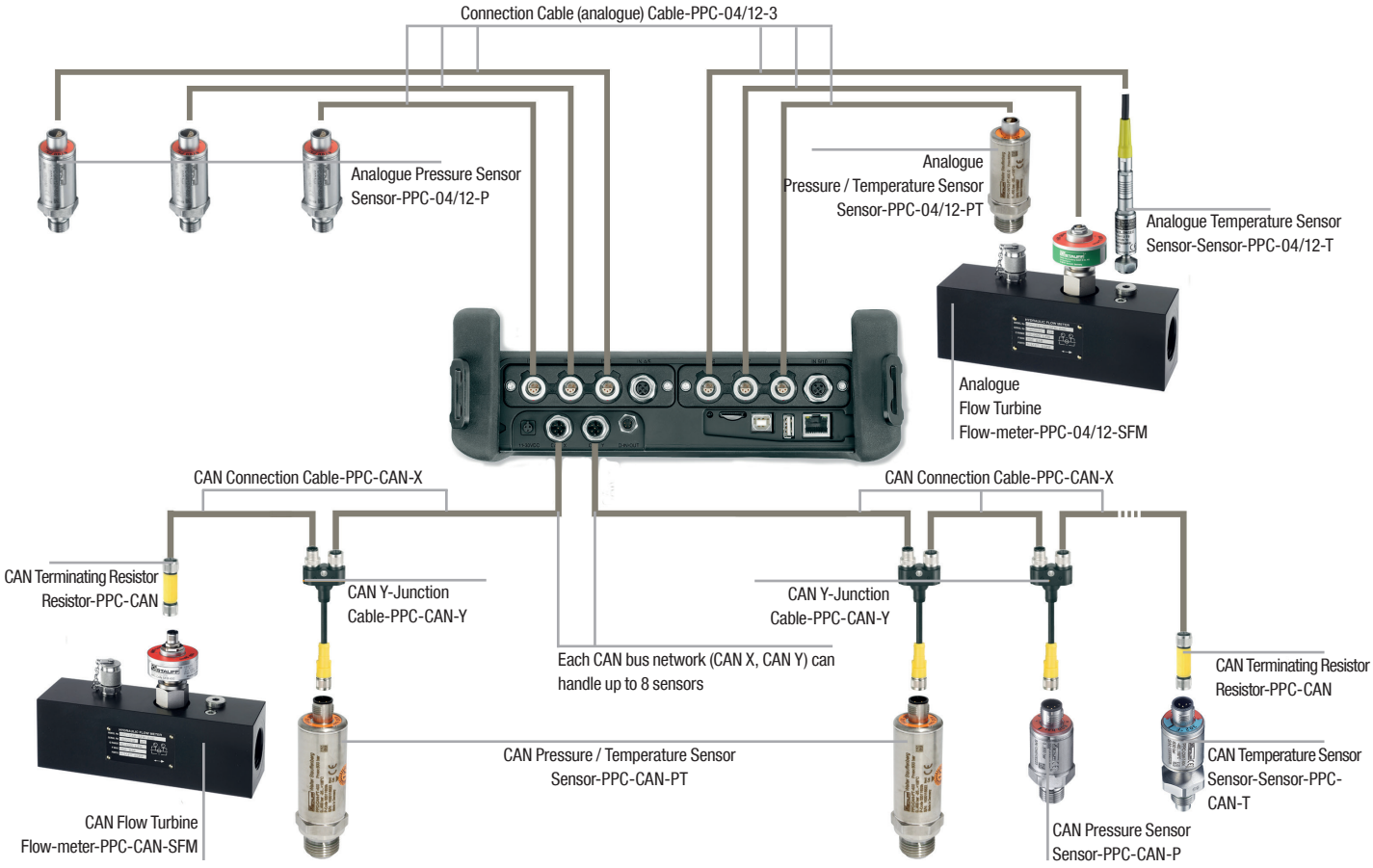




### Functional Description

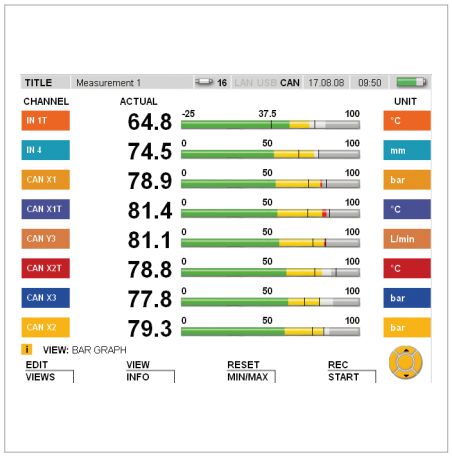
① High protection from moisture and dirt due to cover caps and a rubber protective sleeve, protection class IP 64
② Illuminated display for good readability in any situation
③ Protection of the housing, affording usage in tough enviroments and absorption of shocks
④ Big 5.7 in colour display for clearly 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



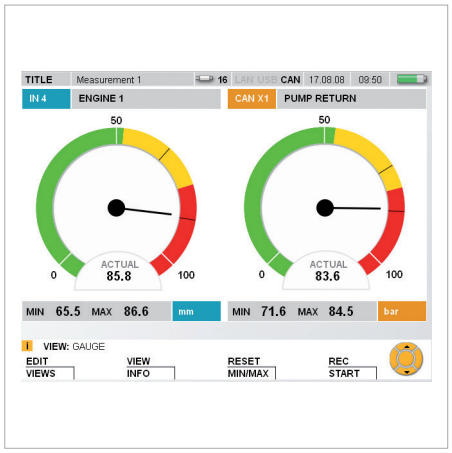



- Display of measured values as figures and bars
- Fixing of alarm ranges in green, yellow and red
- Trailing pointer function with MIN and MAX values

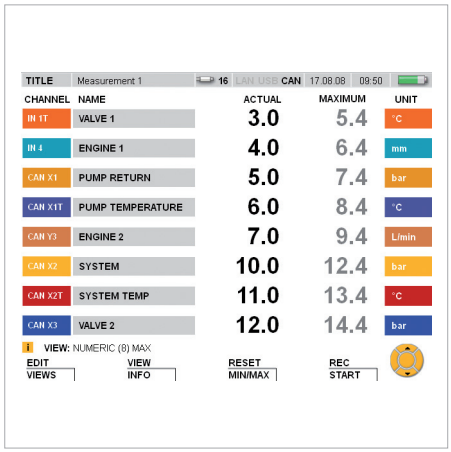



- Up to 4 channels in one large-format display
- Simultaneous display of ACT, MIN and MAX values
- Information lines of current settings, events and views
- Individual measurement channel identifier

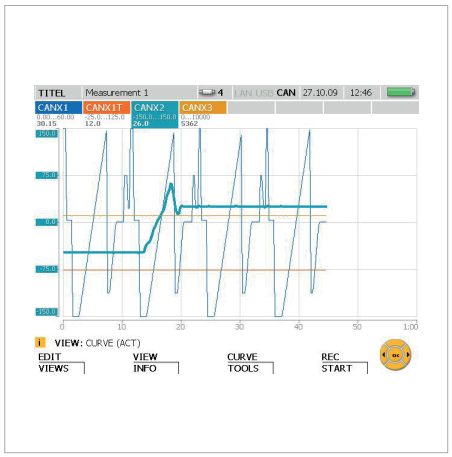





- Large-area pointer display of measured values
- Trailing pointer for MIN and MAX values
- Alarm range in green, yellow and red
- Further channels can be called up with the arrow keys




- 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

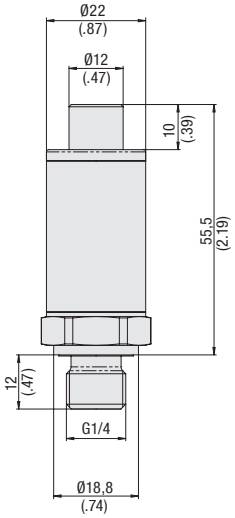


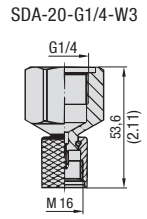

- Up to 8 channels in one graph display
- Fine, precise graph image thanks to high definition display
- Choice between ACT and MIN/MAX value display
- Automatic and manual scaling of the time axis for optimum measured value display

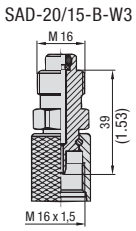
B

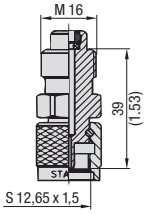
# Pressure Sensor ▪ Type Sensor-PPC-04/12-P

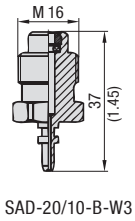





## Product Description

The Pressure Sensor-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-04/12-3 (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-04/12-5-EXT (5 m / 16.40 ft) is also available as an option.
See page 44 for further information.

| Sensor-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)
- FKM (Viton®) gasket
- Weight: 85 g / .19 lbs
- Suitable for gases and liquids (in the case of aggressive media, only after contactation)
- 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

**Sensor-PPC-04/12-P** - **015** - **CAL**

① ② ③

### ① Series and Type

| | |
|---|---|
| Pressure Sensor | **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 | Relative pressure | 30 | 150 | 0,25 | 0,5 |
| | -14.5 ... 217 | | 435 | 2175 | | |
| **060** | 0 ... 60 | Absolute pressure | 120 | 500 | 0,25 | 0,5 |
| | 0 ... 870 | | 1740 | 7251 | | |
| **150** | 0 ... 150 | Absolute pressure | 300 | 900 | 0,25 | 0,5 |
| | 0 ... 2175 | | 4351 | 13053 | | |
| **400** | 0 ... 400 | Absolute pressure | 800 | 1200 | 0,25 | 0,5 |
| | 0 ... 5801 | | 11603 | 17404 | | |
| **600** | 0 ... 600 | Absolute pressure | 1200 | 1800 | 0,25 | 0,5 |
| | 0 ... 8702 | | 17404 | 26106 | | |
| **601** | 0 ... 600 ** | Absolute pressure | 1200 | 2500 | 0,25 | 0,5 |
| | 0 ... 8702 | | 17404 | 36259 | | |

* FS = Full Scale

** Pressure peaks up to 1000 bar / 14503 PSI

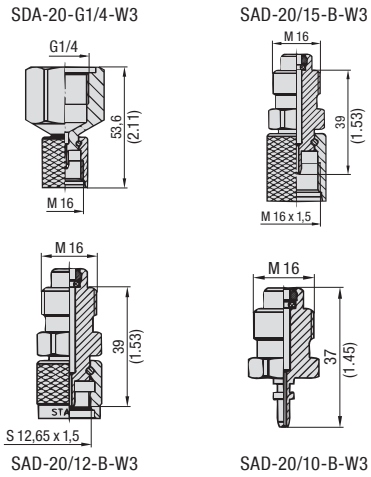
## Connection Adaptors for PPC Sensors

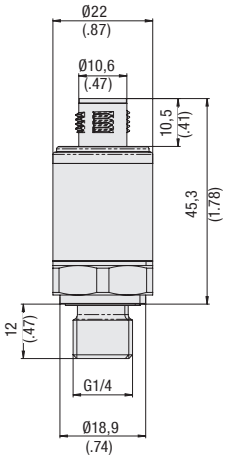
In addition to the Pressure Sensors, different adaptors and adaptor sets are available that not only connect to the STAUFF Test 20 (SDA-20-G1/4-W3), but also to the Test Couplings of the STAUFF Test 15/12/10 series (SAD-20/15-B-W3, SAD-20/12-B-W3, SAD-20/10-B-W3).
For further information please see Catalogue 7 - STAUFF Test.

Dimensional drawings: All dimensions in mm (in).

# CAN Pressure Sensor ▪ Type Sensor-PPC-CAN-P









## Order Codes

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

① ② ③

### ① Series and Type

| | |
|---|---|
| CAN Pressure Sensor | **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 | Relative pressure | 32 | 150 | 0,25 | 0,5 |
| | -14.5 ... 232 | | 464 | 2175 | | |
| **060** | 0 ... 60 | Absolute pressure | 120 | 500 | 0,25 | 0,5 |
| | 0 ... 870 | | 1740 | 7251 | | |
| **160** | 0 ... 160 | Absolute pressure | 320 | 900 | 0,25 | 0,5 |
| | 0 ... 2320 | | 4641 | 13053 | | |
| **400** | 0 ... 400 | Absolute pressure | 800 | 1200 | 0,25 | 0,5 |
| | 0 ... 5801 | | 11603 | 17404 | | |
| **600** | 0 ... 600 | Absolute pressure | 1200 | 1800 | 0,25 | 0,5 |
| | 0 ... 8702 | | 17404 | 26106 | | |
| **601** | 0 ... 600 ** | Absolute pressure | 1200 | 2500 | 0,25 | 0,5 |
| | 0 ... 8702 | | 17404 | 36259 | | |

* 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 (SDA-20-G1/4-W3), but also to the Test Couplings of the STAUFF Test 15/12/10 series (SAD-20/15-B-W3, SAD-20/12-B-W3, SAD-20/10-B-W3). For further information please see Catalogue 7 - STAUFF Test.

## Product Description

The CAN Pressure Sensor-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 45 for further information.

| Sensor-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)
- FKM (Viton®) gasket)
- Sensor identification LED
- Weight: 85 g / .19 lbs
- Suitable for gases and liquids (in the case of aggressive media, only after contactation)
- 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

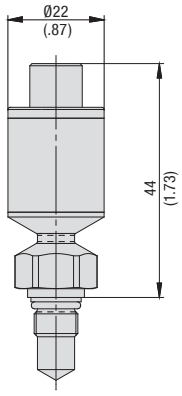
- Response time: 1 ms
- Long-term stability: < 0,2 % FS* /a
- Vibration loading: acc. to IEC 60068-2-6 (20 g)
- Shock loading: acc. to IEC 60068-2-27 (50 g)

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

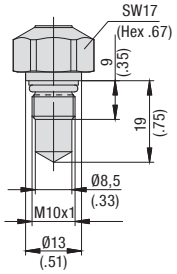
B

## Temperature Sensor ▪ Type Sensor-PPC-04/12-T

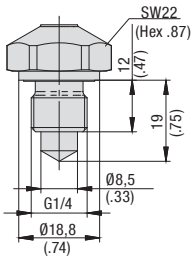


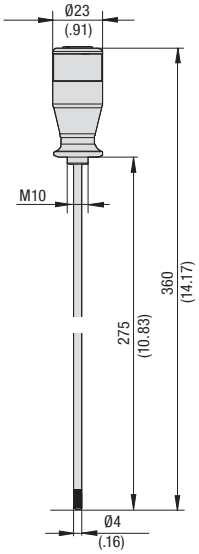

Screw-in Temperature Sensor (T)




Process Connection M10x1




Process Connection G1/4




Rod-type Temperature Sensor (TSH)

### Product Description

The Screw-in Temperature Sensor-PPC-04/12-T measure current temperature directly in the pipeline and are compatible with the Flow Turbine Flow-meter-PPC-04/12-SFM and the Straight Threaded Joint SGV-16S-G-W3 (only process connection M10x1, see figure below).
See product information of Flow Turbine on page 40.

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-04/12-3 (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-04/12-5-EXT (5 m / 16.40 ft) is also available as an option. See page 44 for further information.

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

### Sensor-PPC-04/12-T-M02 with SGV-16S-G-W3

For further information please see Catalogue 7 - STAUFF Test.



### Order Codes

**Sensor-PPC-04/12 - T - M02 - CAL**

① ② ③ ④

#### ① Series and Type

| | |
|---|---|
| Temperature Sensor | **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 contactation)
- 5-pin connection

#### Materials

- Housing (T): Stainless Steel
- Gaskets (T): FKM (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-W3 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

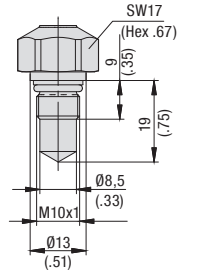
- Measuring range (T): -40 °C ...+150 °C / -40 °F ... +302 °F
- Measuring range (TSH): -25 °C ... +125 °C / -13 °F ... +257 °F
- Operating pressure (T): 630 bar / 9137 PSI
- Maximum pressure (T): 800 bar / 11603 PSI
- Burst pressure (T): 2150 bar / 31183 PSI
- Accuracy: ±1 % FS

#### Electrical Data

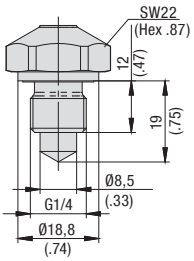
- Input signal: 7 ...12 V DC
- Output signal: 0 ...3 V DC
- Response time (T)
  M02 (M10x1): $T_{50} \leq 4$ s, $T_{90} \leq 14$ s
  B04 (G1/4): $T_{50} \leq 4$ s, $T_{90} \leq 12$ s
- Response time (TSH): $T_{90} \leq 9{,}1$ s
- Vibration loading: acc. to IEC 60068-2-6 (20 g)
- Shock loading: acc. to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

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

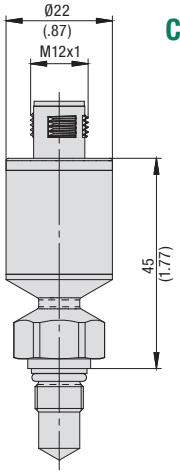
# CAN Temperature Sensor ▪ Type Sensor-PPC-CAN-T




Process Connection M10x1




Process Connection G1/4







## Order Codes

**Sensor-PPC-CAN - T - M02 - CAL**

① ② ③ ④

### ① Series and Type

| | |
|---|---|
| CAN Temperature Sensor | **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** |

## 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 Sensor-PPC-CAN-T is compatible with the CAN Flow Turbine Flow-meter-PPC-CAN-SFM and the Straight Threaded Joint SGV-16S-G-W3 (only process connection M10x1, see figure below). See product information of CAN Flow Turbine on page 41.
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 45 for further information.

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

## Technical Data

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

### Materials

- Housing: Stainless Steel
- Gaskets: FKM (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
- Vibration loading: acc. to IEC 60068-2-6 (20 g)
- Shock loading: acc. to IEC 60068-2-27 (50 g)

## Sensor-PPC-CAN-T-M02 with SGV-16S-G-W3

For further information please see Catalogue 7 - STAUFF Test.

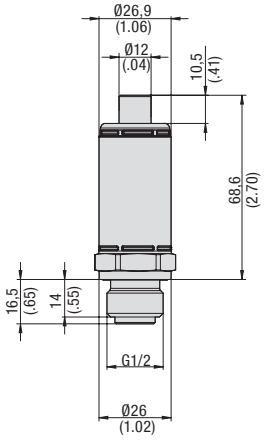


* FS = Full Scale
SPEEDCON is a trademark of PHOENIX CONTACT GmbH & Co. KG
Dimensional drawings: All dimensions in mm (in).

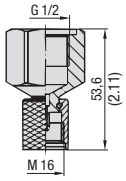
B

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

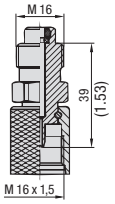


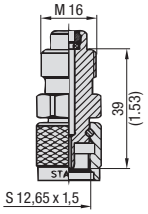




SDA-20-G1/2-W3

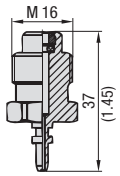



SAD-20/15-B-W3




SAD-20/12-B-W3




SAD-20/10-B-W3

## 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-04/12-3 (3 m / 9.84 ft) is needed to connect the Pressure / Temperature Sensor to the current Hydraulic Testers. An Extension Cable-PPC-04/12-5-EXT (5 m / 16.40 ft) is also available as an option.
See page 44 for further information.

| Sensor-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)
- FKM (Viton®) gasket
- Weight: 200 g / .44 lbs
- Suitable for gases and liquids (in the case of aggressive media, only after contactation)
- 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

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

① ② ③

### ① Series and Type

Pressure / Temperature Sensor **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 | Relative pressure | 30 | 150 | 0,25 | 0,5 | -25 ... 105 | 1,5 |
| | -14.5 ... 217 | | 435 | 2175 | | | -13 ... 221 | |
| **060/2** | 0 ... 60 | Absolute pressure | 120 | 500 | 0,25 | 0,5 | -25 ... 105 | 1,5 |
| | 0 ... 870 | | 1740 | 7251 | | | -13 ... 221 | |
| **150/2** | 0 ... 150 | Absolute pressure | 300 | 900 | 0,25 | 0,5 | -25 ... 105 | 1,5 |
| | 0 ... 2175 | | 4351 | 13053 | | | -13 ... 221 | |
| **400/2** | 0 ... 400 | Absolute pressure | 800 | 1200 | 0,25 | 0,5 | -25 ... 105 | 1,5 |
| | 0 ... 5801 | | 11603 | 17404 | | | -13 ... 221 | |
| **600/2** | 0 ... 600 | Absolute pressure | 1200 | 1800 | 0,25 | 0,5 | -25 ... 105 | 1,5 |
| | 0 ... 8702 | | 17404 | 26106 | | | -13 ... 221 | |
| **601/2** | 0 ... 600 ** | Absolute pressure | 1200 | 2500 | 0,25 | 0,5 | -25 ... 105 | 1,5 |
| | 0 ... 8702 | | 17404 | 36259 | | | -13 ... 221 | |

* FS = Full Scale

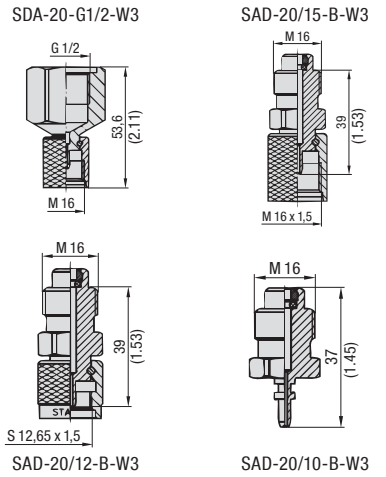
** Pressure peaks up to 1000 bar / 14503 PSI

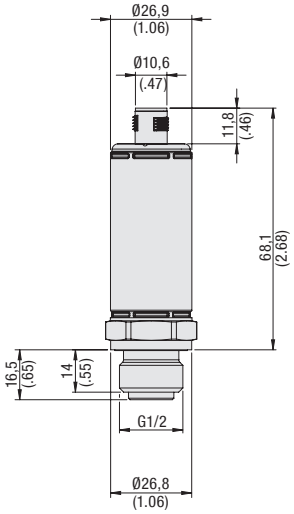
## Connection Adaptors for PPC Sensors

In addition to the Pressure / Temperature Sensors, different adaptors and adaptor sets are available that not only connect to the STAUFF Test 20 (SDA-20-G1/2-W3), but also to the Test Couplings of the STAUFF Test 15/12/10 series (SAD-20/15-B-W3, SAD-20/12-B-W3, SAD-20/10-B-W3). For further information please see Catalogue 7 - STAUFF Test.

Dimensional drawings: All dimensions in mm (in).

# CAN Pressure / Temperature Sensor ▪ Type Sensor-PPC-CAN-PT






## Order Codes

**Sensor-PPC-CAN-PT - 016 - CAL**

① ② ③

### ① Series and Type

CAN Pressure / Temperature Sensor **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 (SDA-20-G1/2-W3), but also to the Test Couplings of the STAUFF Test 15/12/10 series (SAD-20/15-B-W3, SAD-20/12-B-W3, SAD-20/10-B-W3). For further information please see Catalogue 7 - STAUFF Test.

## Product Description

The CAN Pressure / Temperature Sensor-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 45 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)
- FKM (Viton®) gasket
- Sensor identification LED
- Weight: 200 g / .44 lbs
- Suitable for gases and liquids (in the case of aggressive media, only after contactation)
- 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

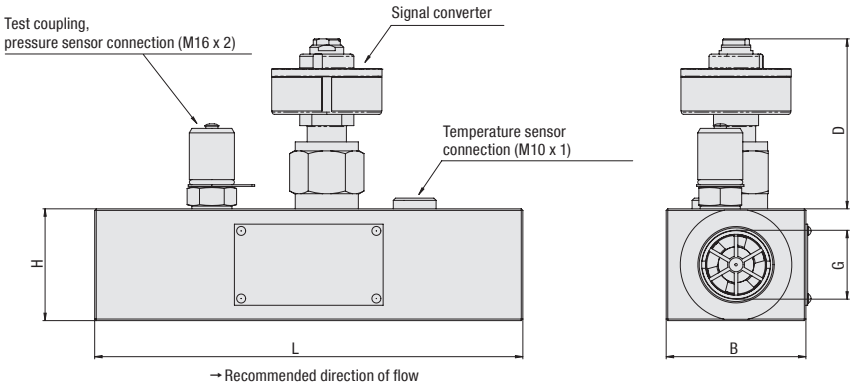
- Response time: 1 ms
- Vibration loading: acc. to IEC 60068-2-6 (20g)
- Shock loading: acc. to IEC 60068-2-27 (50g)

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

B

# Flow Turbine ▪ Type Flow-meter-PPC-04/12-SFM






## Product Description

The Flow-meter-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 Flow-meter-PPC-04/12-SFM is available in five versions for various flow speeds. A Pressure Sensor-PPC-04/12-P (see page 34) 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 36).

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 Flow-meter-PPC-04/12-SFM. The thicker end of the double-headed arrow specifies the recommended direction of flow.

Note: A Connection Cable-PPC-04/12-3 (3 m / 9.84 ft) is needed to connect the Flow Turbine to the current Hydraulic Testers. An Extension Cable-PPC-04/12-5-EXT (5 m / 16.40 ft) is also available as an option.
See page 44 for further information.

## Order Codes

**Flow-meter-PPC-04/12** - **SFM-015** - **CAL**

① ② ③

### ① Series and Type

| | |
|---|---|
| Flow Turbine | **Flow-meter-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.**

## Technical Data

### Materials

- Housing: Aluminium (black anodised)
- Gaskets: FKM (Viton®)
- 5-pin connection
- Pressure measurement connection: SMK-20 (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

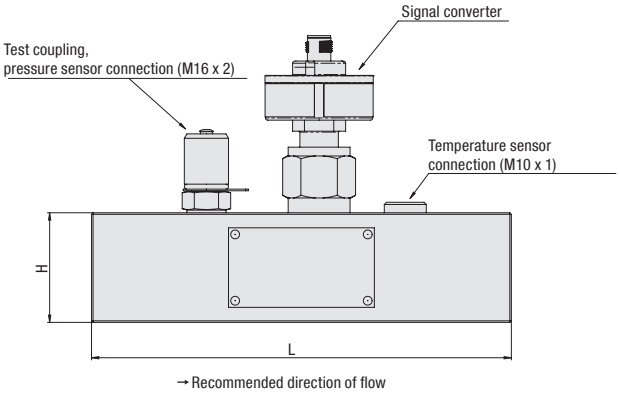
- Please see table below

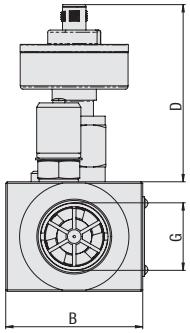
## Dimensions and Measuring Range

| Version | Measuring Range | | | | | | Dimensions (mm/in) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow-meter-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 Flow-meter-PPC-CAN-SFM








### Order Codes

**Flow-meter-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: FKM (Viton®)
- 5-pin SPEEDCON connection plug
- Pressure measurement connection: SMK-20 (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 Flow-meter-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 35) 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 37).

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 Flow-meter-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 45 for further information.

### Dimensions and Measuring Range

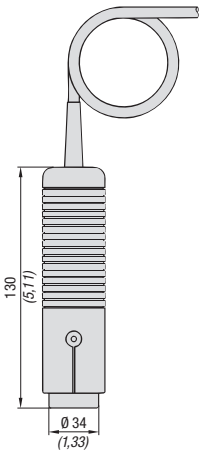
| Version | Measuring Range | | | | | | Dimensions (mm/in) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow-meter-PPC-CAN- | Measuring Range (l/min / US GPM) | Max. Flow (l/min / US GPM) | Operating Pressure (bar/PSI) | Max. Pressure (bar/PSI) | Accuracy (at 21 cSt) | Max. 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).

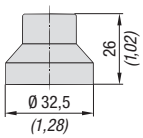
B

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

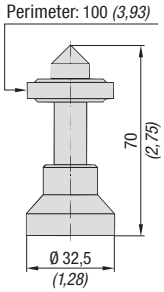





Sensor-PPC-04/12-SDS-CAB




Adaptor-PPC-04/12-SFA-Focus




Adaptor-PPC-04/12-SKA-Contact

### Product Description

The Sensor-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!

### Order Codes

**Sensor-PPC-04/12-SDS-CAB** - **CAL**

① ②

#### ① Series and Type

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

#### ② Calibration

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

### Order Codes

#### Focus Adaptor

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

①

#### ① Series and Type

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

#### Contact Adaptor

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

①

#### ① Series and Type

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

### Applications Examples

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

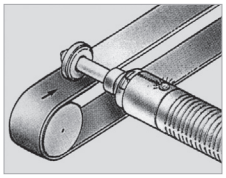


**Fig. 2 -**
End face rotational speed measurement with the contact adaptor

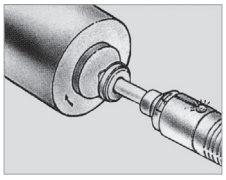
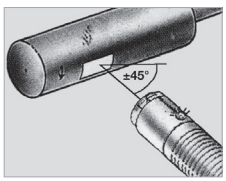


**Fig. 3 -**
Rotating shaft / non-contacting rotational speed measurement using the focusing adaptor and marking strip




Dimensional drawings: All dimensions in mm (in).

## Current/Voltage/Frequency Converter ▪ Type Sensorconverter-PPC





### Order Code

**Sensorconverter-PPC**

①

① Series and Type

| | |
|---|---|
| Current/Voltage/Frequency Converter | **Sensorconverter-PPC** |

### 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 Sensorconverter-PPC.**

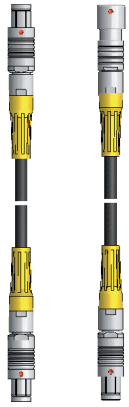
The Sensorconverter-PPC Current/Voltage/Frequency Converter is used, for example, for measuring current at proportional valves or for determining the switching states of motors or pumps and to evaluate and process measurements from third-party sensors.
Typical applications are the generation and measurement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

- Electrical currents up to 4 A DC
- Electrical voltages up to 48 V DC
- Frequencies up to 5 kHz

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

B

## Connection and Extension Cables (analogue)



Connection Cable-PPC-04/12-3
Extension Cable-PPC-04/12-5-EXT



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



PC Connection Cable as a component
of the PC-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 Cable-PPC-04/12-3 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 Cable-PPC-04/12-5-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

**Cable-PPC-04/12-3**

①

① Series and Type

| | |
|---|---|
| Standard Connection Cable for Sensors | **Cable-PPC-04/12-3** |
| Extension Cable | **Cable-PPC-04/12-5-EXT** |

### Order Code

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

①

① Series and Type

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

### Order Code

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

①

① Series and Type

| | |
|---|---|
| PC Set | **PC-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

### 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 32. 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 / 65.62 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

**Cable-PPC-CAN - 2**

① ②

① Series and Type

| | |
|---|---|
| CAN Connection Cable | **Cable-PPC-CAN** |

② Length

| | |
|---|---|
| 0,5 m / 1.64 ft | **0.5** |
| 2 m / 6.65 ft | **2** |
| 5 m / 16.40 ft | **5** |
| 10 m / 32.81 ft | **10** |
| 20 m / 65.62 ft | **20** |

### Order Code

**Cable-PPC-CAN-Y**

①

① Series and Type

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

### Order Code

**Cable-PPC-CAN-R**

①

① Series and Type

| | |
|---|---|
| CAN Terminating Resistor | **Cable-PPC-CAN-R** |

B

# 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 Case
- 1x Hydraulic Tester PPC-04-plus
- 1x Power supply incl. country-specific adaptor
- Up to 3 Pressure Sensor-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-W3 (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 Case
- 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-W3 (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 contact STAUFF for calibrated version.

## Order Codes

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

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

### 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** |

### ⑧ Calibration

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

## 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** | Pressure Range 1. Pressure Sensor | Pressure Range 2. Pressure Sensor | Pressure Range 3. Pressure Sensor |
| **060** | | | |
| **150** | | | |
| **400** | | | |
| **600** | | | |
| **601** | | | |
| **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 - CAL**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

#### 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** |

#### ⑤ Pressure Range and Pressure Sensors

| | |
|---|---|
| 1. CAN Pressure Sensor | **see table** |

#### ⑥ Pressure Range and Pressure Sensors

| | |
|---|---|
| 2. CAN Pressure Sensor | **see table** |

#### ⑦ Pressure Range and Pressure Sensors

| | |
|---|---|
| 3. CAN Pressure Sensor | **see table** |

#### ⑧ Calibration

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

### 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<br>060<br>160<br>400<br>600<br>601 | Pressure Range<br>1. CAN Pressure Sensor | Pressure Range<br>2. CAN Pressure Sensor | Pressure Range<br>3. CAN Pressure Sensor |
| 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 Case
- 1x Hydraulic Tester PPC-04-plus-CAN
- 1x Power Supply incl. country-specific Adaptor
- Up to 3 CAN Pressure Sensor-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-W3 (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 contact STAUFF for calibrated version.

B

# 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 incalibrated 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 | 28 |
| | Hydraulic Tester PPC-06-plus with 3 sensor inputs, incl. accessories | PPC-06-plus | 29 |
| | 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 | Sensor-PPC-04/12-P-015 | 34 |
| | Pressure range from 0 ... 60 bar / 0 ... 870 PSI absolute pressure | Sensor-PPC-04/12-P-060 | |
| | Pressure range from 0 ... 150 bar / 0 ... 2175 PSI absolute pressure | Sensor-PPC-04/12-P-150 | |
| | Pressure range from 0 ... 400 bar / 0 ... 5801 PSI absolute pressure | Sensor-PPC-04/12-P-400 | |
| | Pressure range from 0 ... 600 bar / 0 ... 8702 PSI absolute pressure | Sensor-PPC-04/12-P-600 | |
| | Pressure range from 0 ... 600 bar / 0 ... 8702 PSI absolute pressure * | Sensor-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) | Sensor-PPC-04/12-T-M02 | 36 |
| | Screw-in Temperature Sensor for pipeline installation (G1/4) | Sensor-PPC-04/12-T-B02 | |
| | Rod-type Temperature Sensor for tank / container measurements | Sensor-PPC-04/12-TSH | |
| | Straight threaded Adaptor with M10 x 1 connection (for Sensor-PPC-04/12-T-M02) | SGV-16S-G-W3 | |
| 4. Pressure/ Temperature Measurement | **Pressure/ Temperature Sensors G1/2** (without Adaptor) | | |
| | Pressure range from -1 ... 15 bar / -14.5 ... 217 PSI relative pressure | Sensor-PPC-04/12-PT-015 | 38 |
| | Pressure range from 0 ... 60 bar / 0 ... 870 PSI absolute pressure | Sensor-PPC-04/12-PT-060 | |
| | Pressure range from 0 ... 150 bar / 0 ... 2175 PSI absolute pressure | Sensor-PPC-04/12-PT-150 | |
| | Pressure range from 0 ... 400 bar / 0 ... 5801 PSI absolute pressure | Sensor-PPC-04/12-PT-400 | |
| | Pressure range from 0 ... 600 bar / 0 ... 8702 PSI absolute pressure | Sensor-PPC-04/12-PT-600 | |
| | Pressure range from 0 ... 600 bar / 0 ... 8702 PSI absolute pressure * | Sensor-PPC-04/12-PT-601 | |
| 5. Connection Adaptors for PPC Sensors | **Connection Adaptors** | | |
| | Adaptor G1/4 to M16 x 2 (STAUFF Test 20) | SDA-20-G1/4-W3 | 34 / 38 |
| | Adaptor G1/2 to M16 x 2 (STAUFF Test 20) | SDA-20-G1/2-W3 | |
| | Adaptor M16 x 2 to M16 x 1,5 (STAUFF Test 20 to STAUFF Test 15) | SAD-20/15-B-W3 | |
| | Adaptor M16 x 2 to S12,65 x 1,5 (STAUFF Test 20 to STAUFF Test 12) | SAD-20/12-B-W3 | |
| | Adaptor M16 x 2 to plug-in (STAUFF Test 20 to STAUFF Test 10) | SAD-20/10-B-W3 | |
| 6. Flow Measurement | **Flow Turbines with integrated Signal Converter** | | |
| | Measuring range from 1 ... 15 l/min / .3 ... 3.9 US GPM | Flow-meter-PPC-04/12-SFM-015 | 40 |
| | Measuring range from 4 ... 60 l/min / 1 ... 15.9 US GPM | Flow-meter-PPC-04/12-SFM-060 | |
| | Measuring range from 6 ... 150 l/min / 1.6 ... 39.6 US GPM | Flow-meter-PPC-04/12-SFM-150 | |
| | Measuring range from 10 ... 300 l/min / 2.7 ... 79 US GPM | Flow-meter-PPC-04/12-SFM-300 | |
| | Measuring range from 20 ... 600 l/min / 5.3 ... 158 US GPM | Flow-meter-PPC-04/12-SFM-600 | |
| 7. Rotational Speed Measurement | Rotational Speed Sensor with integrated Connection Cable 2 m / 6.56 ft | Sensor-PPC-04/12-SDS-CAB | 42 |
| | Contact Adaptor | Adaptor-PPC-04/12-SKA-contact | |
| | Focus Adaptor | Adaptor-PPC-04/12-SFA-focus | |
| 8. Current / Voltage / Frequency Converter / Third-party Sensors | Current / Voltage / Frequency Converter / Third-party Sensor (up to 4 A DC / 48 V DC / 5 kHz) | Sensorconverter-PPC | 43 |
| 9. Accessories (Connection / Extension Cables and Software) | Connection Cable 3 m / 9.84 ft (5-pin push/pull connection on both sides) | Cable-PPC-04/12-3 | 44 |
| | Extension Cable 5 m / 16.40 ft 5-pin push/pull connection on both sides) | Cable-PPC-04/12-5-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) | Case-PPC-04-plus | 46 |
| | Case PPC-06/08-plus (with foam insert) | Case-PPC-06/12 | |
| | Power Supply (110/230 V AC) for PPC-04-plus with USB connections, incl. country-specific adaptor | Power-supply-PPC-04-plus-110/230V-USB | |
| | Power Supply (110/230 V AC) for PPC-06/08-plus, incl. country-specific adaptor | Power-supply-PPC-04/12-110/230V | |
| | Complete Systems for Analogue Hydraulic Testers PPC-04/06/08-plus, Order Codes on page 46 | | |

## Ordering Table for CAN Hydraulic Test Equipment

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.

B

* 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.**

| 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 | 28 |
| | CAN Hydraulic Tester PPC-Pad-101 with 2 CAN networks, incl. accessories | PPC-Pad-101 | 30 |
| | 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 | Sensor-PPC-CAN-P-016 | 35 |
| | Pressure range from 0 ... 60 bar / 0 ... 870 PSI absolute pressure | Sensor-PPC-CAN-P-060 | |
| | Pressure range from 0 ... 160 bar / 0 ... 2321 PSI absolute pressure | Sensor-PPC-CAN-P-160 | |
| | Pressure range from 0 ... 400 bar / 0 ... 5801 PSI absolute pressure | Sensor-PPC-CAN-P-400 | |
| | Pressure range from 0 ... 600 bar / 0 ... 8702 PSI absolute pressure | Sensor-PPC-CAN-P-600 | |
| | Pressure range from 0 ... 600 bar / 0 ... 8702 PSI absolute pressure * | Sensor-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) | Sensor-PPC-CAN-T-M02 | 37 |
| | Screw-in Temperature Sensor for pipeline installation (G1/4) | Sensor-PPC-CAN-T-B02 | |
| | Straight threaded Adaptor with M10 x 1 connection (for Sensor-PPC-CAN-T-M02) | SGV-16S-G-W3 | |
| 4. Pressure/ Temperature Measurement | **CAN Pressure/ Temperature Sensors G1/2** (without Adaptor) | | |
| | Pressure range from -1 ... 16 bar / -14.5 ... 232 PSI relative pressure | Sensor-PPC-CAN-PT-016 | 39 |
| | Pressure range from 0 ... 60 bar / 0 ... 870 PSI absolute pressure | Sensor-PPC-CAN-PT-060 | |
| | Pressure range from 0 ... 160 bar / 0 ... 2321 PSI absolute pressure | Sensor-PPC-CAN-PT-160 | |
| | Pressure range from 0 ... 400 bar / 0 ... 5801 PSI absolute pressure | Sensor-PPC-CAN-PT-400 | |
| | Pressure range from 0 ... 600 bar / 0 ... 8702 PSI absolute pressure | Sensor-PPC-CAN-PT-600 | |
| | Pressure range from 0 ... 600 bar / 0 ... 8702 PSI absolute pressure * | Sensor-PPC-CAN-PT-601 | |
| 5. Connection Adaptors for PPC Sensors | **Connection Adaptors** | | |
| | Adaptor G1/4 to M16 x 2 (STAUFF Test 20) | SDA-20-G1/4-W3 | 35 / 39 |
| | Adaptor G1/2 to M16 x 2 (STAUFF Test 20) | SDA-20-G1/2-W3 | |
| | Adaptor M16 x 2 to M16 x 1,5 (STAUFF Test 20 to STAUFF Test 15) | SAD-20/15-B-W3 | |
| | Adaptor M16 x 2 to S12,65 x 1,5 (STAUFF Test 20 to STAUFF Test 12) | SAD-20/12-B-W3 | |
| | Adaptor M16 x 2 to plug-in (STAUFF Test 20 to STAUFF Test 10) | SAD-20/10-B-W3 | |
| 6. Flow Measurement | **CAN Flow Turbines with integrated Signal Converter** | | |
| | Measuring range from 1 ... 15 l/min / .3 ... 3.9 US GPM | Flow-meter-PPC-CAN-SFM-015 | 41 |
| | Measuring range from 4 ... 60 l/min / 1 ... 15.9 US GPM | Flow-meter-PPC-CAN-SFM-060 | |
| | Measuring range from 6 ... 150 l/min / 1.6 ... 39.6 US GPM | Flow-meter-PPC-CAN-SFM-150 | |
| | Measuring range from 10 ... 300 l/min / 2.7 ... 79 US GPM | Flow-meter-PPC-CAN-SFM-300 | |
| | Measuring range from 20 ... 600 l/min / 5.3 ... 158 US GPM | Flow-meter-PPC-CAN-SFM-600 | |
| 7. CAN Accessories | CAN Connection Cable 0,5 m / 1.64 ft | Cable-PPC-CAN-0.5 | 45 |
| | CAN Connection Cable 2 m / 6.65 ft | Cable-PPC-CAN-2 | |
| | CAN Connection Cable 5 m / 16.40 ft | Cable-PPC-CAN-5 | |
| | CAN Connection Cable 10 m / 32.81 ft | Cable-PPC-CAN-10 | |
| | CAN Connection Cable 20 m / 65.62 ft | Cable-PPC-CAN-20 | |
| | CAN Y-Splitter Cable 0,3 m / .98 ft | Cable-PPC-CAN-Y | |
| | CAN Terminating Resistor | Resistor-PPC-CAN | |
| 8. Connection Cable and Accessories | PC Connection Cable and PC Software for PPC-04-plus-CAN | PC-SET-PPC-04-plus-SW-CAB | 44 |
| 9. Spare Parts and Complete Systems | Complete Systems for CAN Hydraulic Tester PPC-04-plus-CAN, Order Codes on page 47 | | 47 |
| | Case PPC-04-plus-CAN (with foam insert) | Case-PPC-04-plus | |
| | Power Supply (110/230 V AC) for PPC-04-plus-CAN with USB connection, incl. country-specific Adaptor | power-supply-PPC-04-plus-110/230V-USB | |
| | Case PPC-Pad (with foam insert) | Case-PPC-Pad | 48 |
| | 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 | |

## Pressure Transmitter






The PT-RF series of pressure transmitters are an alternative solution for universal pressure measurements for fluid technology applications, which will provide benefits for system operators, maintenance personnel and repair technicians as well as for original equipment manufacturers.

The advantages resulting from the use of the new technology for system operators, maintenance personnel and repair technicians are clear:

Measurements can be carried very easily, without extensive training and within a few seconds at the press of a button and then documented in a reliable process.

Unscrewing and re-installing pressure gauges or other measuring and display devices – practically a temporary opening of the system – is not required. Potential hazards for people, machines and the environment, for example from emitted residual oil in the test hose or leaks at the measuring point, as well as ingress of dirt into the system (e.g. in dusty environments) can be effectively excluded.

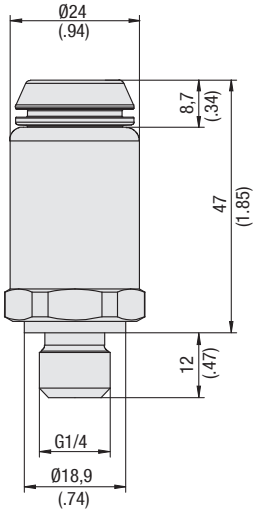
Original equipment manufacturers will also benefit from this new technology: If the pressure transmitters are installed at their factory already, the innovative technology can provide a competitive edge over alternative suppliers and open up specific advantages for the users, increasing the value retention of their own devices in the long term.

If the pressure transmitters are installed directly in the system or pipeline for permanent use, they protrude only slightly more than conventional hydraulic test couplings and meet the highest demands with regard to space requirements and weight.

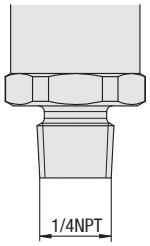
B

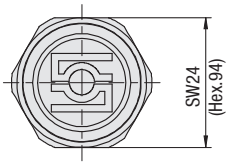
# Pressure Transmitter ▪ Type PT-RF






Process connection G1/4 (B04)




Process connection 1/4NPT (N04)

## Product Description

The pressure transmitters from the PT-RF series are integrated into fluid technology plants and systems permanently or temporarily using the appropriate process connection adapters. The energy required for a measurement is transferred to the pressure transmitter via the antenna of the reading device using wireless RFID technology.
This means that the pressure transmitters require neither internal nor external power supply and are completely maintenance-free.

## Technical Data

**Wetted Parts**
- Suitable for liquid and gaseous media

**Materials**
- Housing: Stainless Steel 1.4305
- Sealing (B04): FKM (Viton®)
- Cap: Polyamide (glass fibre-reinforced)

**Dimensions / Weight**
- Dimensions: 59 x 26 mm / 2.32 x 1.02 in
- Weight: 80 g / .18 lbs

**Temperature Range**
- Media temp. (N04): -40°C … +135°C / -40°F … +275°F
  Media temp. (B04): -30°C … +135°C / -22°F … +275°F
- Ambient temp.: -40 °C ... +85 °C / -40 °F ... +185 °F
- Storage temp.: -55 °C ...+125 °C / -67 °F ... +257 °F

**Electrical Data**
- Sampling rate: typ. 250 ms / max. 400 ms
- Long-term stability: according to IEC EN 60770-1
  max. ± 0,25 % FS* /a
- Load cycles ($10^6$): 10
- Vibration loading: acc. to IEC 60068-2-6 (20 g)
- Shock loading: acc. to IEC 60068-2-27 (30 g) 11ms

**Protection Rating**
- IP69 protection rating: Dust tight and protected against high-pressure and steam cleaning

## Order Codes

**PT** - **RF** - **B00600** - **B04**
① ② ③ ④

### ① Series and Type

| | |
|---|---|
| Pressure Transmitter | **PT** |

### ② Version

| | |
|---|---|
| Signal transmission via RFID technology | **RF** |

### ③ Pressure Range

see table

### ④ Process Connection

| | |
|---|---|
| G1/4 | **B04** |
| 1/4 NPT | **N04** |

## Pressure Range and Accuracies

| Version | Pressure Range and Accuracies | | | | | |
|---|---|---|---|---|---|---|
| Pressure Transmitter PT-RF | Pressure Range ($^{bar}/_{PSI}$) | Type of Measurement | Maximum Pressure ($^{bar}/_{PSI}$) | Burst Pressure ($^{bar}/_{PSI}$) | Accuracy (±% FS*) typ. | Accuracy (±% FS*) max. |
| **B00016** | 0 ... 16 | Relative pressure | 32 | 48 | 0,25 | 0,5 |
| | 0 ... 232 | | 464 | 696 | | |
| **B00060** | 0 ... 60 | Relative pressure | 120 | 180 | 0,25 | 0,5 |
| | 0 ... 870 | | 1740 | 2610 | | |
| **B00160** | 0 ... 160 | Relative pressure | 320 | 480 | 0,25 | 0,5 |
| | 0 ... 2320 | | 4641 | 6961 | | |
| **B00400** | 0 ... 400 | Relative pressure | 800 | 1200 | 0,25 | 0,5 |
| | 0 ... 5801 | | 11603 | 17405 | | |
| **B00600** | 0 ... 600 | Relative pressure | 1200 | 1800 | 0,25 | 0,5 |
| | 0 ... 8702 | | 17404 | 26107 | | |

Temperature behaviour: max. ± 0,2 % FS* /10K (test condition 25 °C; 45 % r. H.)

* FS = Full Scale

## Process Connection Adaptors for Pressure Transmitter PT-RF

Various adaptors are available in addition to the pressure transmitters from the PT-RF series, allowing connection to the known STAUFF Test 20 system as well as installation in pipes.



**SDA-20-G1/4-W3**
Adaptor for process connection G1/4 (B04)
on test coupling STAUFF Test 20
(connection thread M16 x 2)



**SRS-G1/4-***-V-G-W3**
Straight fitting with adaptor
Note: Please replace *** with tube-Ø and series (L or S).



**SMD-20-1/4NPT-W3**
Adaptor for process connection 1/4NPT (N04)
on test coupling STAUFF Test 20
(connection thread M16 x 2)

Dimensional drawing: All dimensions in mm (in).

# Reader ▪ Type Reader-PT-RF




## Order Code

**Reader-PT-RF**

①

### ① Series and Type

| | |
|---|---|
| Reader | **Reader-PT-RF** |

Standard option:
- Reader-PT-RF
- Manual and software on CD
- Quick guide
- USB 2.0 cable (1 m / 3.28 ft)
- 5 V DC / 1 A power supply incl. country-specific adaptors

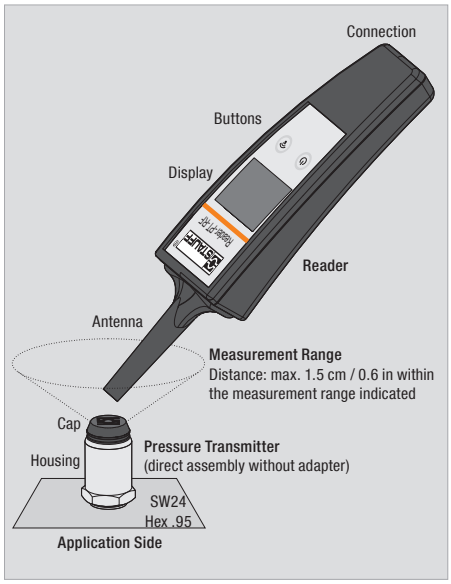
## Technical Data

### Material
- Housing made of ABS

### Dimensions / Weight
- Dimensions: 76 x 35 x 240 mm / 3.0 x 1.38 x 9.45 in
- Weight: 220 g / .49 lbs

### Measurements / Display
- Pressure: in bar and PSI
- Temperature: in °C and °F
- Display: graphic, LED backlit
- Visible area: 55 x 46 mm / 2.17 x 1.81 in
- Resolution: 128 x 64 Pixel

## Set Up




### Power Supply
- Battery: Lithium Ion (3,7 V DC / 900 mAh)
- Operating time approx. 6h (approx. 1800 individual measurement)

### Temperature Range
- Ambient temp.: -20 °C ... +70 °C / -4 °F ... +158 °F
- Storage temp.: -25 °C ... +60 °C / -13 °F ... +140 °F
- CE certified

## Product Description

The hand-held readers transfer the energy required for a measurement to the pressure transmitter using RFID technology. All that is required is a maximum distance of 1.5 cm / 0.6 in from the antenna to the tip of the pressure transmitter for the duration of the measurement.

When the pressure transmitter is activated by the press of a button, a current measured value is determined within only 0.5 seconds and then immediately transmitted back to the reading device together with other relevant information and then output on the illuminated display and stored.
Over 15,000 of these measurement sets can be stored in the internal memory of the device.

## PC Software

The software included with the delivery allows transmission of the stored measured values from the reading device to the PC, subsequent evaluation and export, e.g. to Microsoft Excel®.

### Electrical Data / Interface
- Sampling rate: typ. 250 ms / max. 400 ms
- Interface: Micro USB
- EMV: EN 61326-1:2013
  EN 300330

### Protection Rating
- IP65 protection rating: Dust tight and protected against water jets

## Type of Measurement

### Start Measurement

1. Switch on the reader using the ⏻ function button.

During the brief start process, the charge state of the lithium ion battery (Battery) is shown on the display and the share of the currently occupied data memory (MemUsed) in percent as well as the current date and time.

2. Position the tip of the antenna of the reader inside the measurement range of the pressure transmitter and hold this position as long as possible during the entire measurement process.

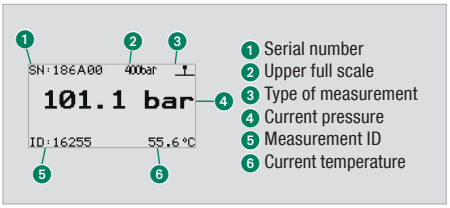
### Individual Measurement (Single Value)

3. **Start the individual measurement by tapping the function button once.**

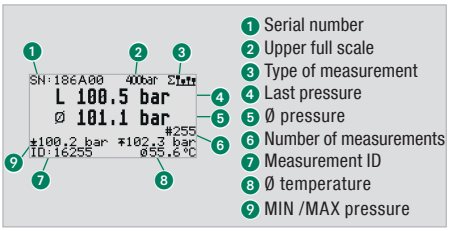
### Permanent Measurement (Multiple Values)

3. **Start the permanent measurement by holding down the function button.**
The simplest way of recognising the successful start of a permanent measurement is the change in the corresponding symbol in the upper right-hand corner of the display.
The absolute number of the values determined as part of the measurement process is shown below the current pressure.

4. **End a continuous measurement by releasing the function key.**




Display after successful individual measurement




Display after successful permanent measurement

B

## Complete system ▪ Type PT-RF-SET





Complete system in case PT-RF-SET

### Product Description

The PT-RF-SET complete system is compiled in different versions according to customer requirements. All complete systems are supplied in a handy carrying case containing individually shaped foam inserts for a maximum of 10 pressure transmitters and 10 process connection adaptors and offering space for the following components:

**Standard Option**

- 1x Reader-PT-RF
- up to 3 Pressure Transmitters PT-RF
- up to 3 Process Connection Adaptors SDA or SMD
- 1x Manual and Software on CD
- 1x Quick Guide
- 1x USB 2.0 cable(1 m / 3.28 ft)
- 1x Power Supply incl. country-specific adaptors

### Order Codes

**PT-RF** - **SET** - **2** - **400** / **600** / **000** - **B**

① ② ③ ④ ⑤ ⑥ ⑦

#### ① Series and Type

| | |
|---|---|
| Series PT-RF | **PT-RF** |

#### ② Version

| | |
|---|---|
| Complete system in case | **SET** |

#### ③ Number of Pressure Transmitters in the Set

| | |
|---|---|
| 1x pressure transmitter | **1** |
| 2x pressure transmitter | **2** |
| 3x pressure transmitter | **3** |

#### ④ Pressure Range / Version

| | |
|---|---|
| 1st pressure transmitter | **see table** |

#### ⑤ Pressure Range / Version

| | |
|---|---|
| 2nd Pressure Transmitter | **see table** |

#### ⑥ Pressure Range / Version

| | |
|---|---|
| 3rd Pressure Transmitter | **see table** |

#### ⑦ Process Connection Adaptor

| | |
|---|---|
| Adaptor SDA for process connection G1/4 (B04) | **B** |
| Adaptor SMD for process connection 1/4NPT (N04) | **N** |

### Pressure Transmitter: Pressure Range and Version

| Pressure Range | Version of Pressure Transmitter | | |
|---|---|---|---|
| 000 | When ordering a complete system with one or two pressure transmitters, the pressure range for the 2nd and 3rd pressure transmitter is given as "**000**". | | |
| 016 | Version pressure transmitter: **B00016** (pressure range: 0 ... 16 bar / 0 ... 232 PSI) | | |
| 060 | Version pressure transmitter: **B00060** (pressure range: 0 ... 60 bar / 0 ... 870 PSI) | | |
| 160 | Version pressure transmitter: **B00160** (pressure range: 0 ... 160 bar / 0 ... 2320 PSI) | | |
| 400 | Version pressure transmitter: **B00400** (pressure range: 0 ... 400 bar / 0 ... 5801 PSI) | | |
| 600 | Version pressure transmitter: **B00600** (pressure range: 0 ... 600 bar / 0 ... 8702 PSI) | | |
| e.g. | **400** (400 bar) | **600** (600 bar) | **000** (0 bar) |

## Spare Parts / Accessories



Case-Reader-PT-RF

### Product Description

In addition to the Charger-Set-Reader-PT-RF which is available as a spare part, the Case-PT-RF-Set is also available as an individual item for assembling a complete system later on.

The Case-Reader-PT-RF is available if only a storage case for the reading device is required. It only provides space for the reading device and the associated accessories (without pressure transmitters and process connection adaptors).

### Order Codes

**Spare Parts / Accessories**

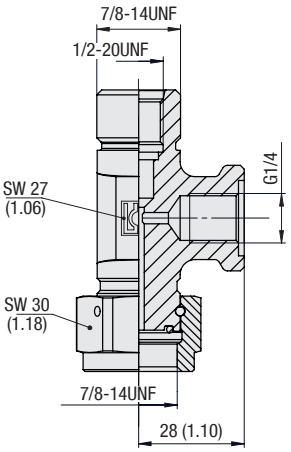
①

#### ① Spare Parts / Accessories

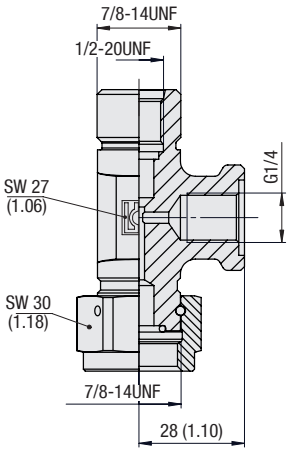
| | |
|---|---|
| Case, small | **Case-Reader-PT-RF** |
| Case, large | **Case-PT-RF-SET** |
| 5 V DC / 1 A power supply incl. country-specific adaptors and USB 2.0 cable | **Charger-Set-Reader-PT-RF** |
| Adaptor for pressure transmitter (B04) | **SDA-20-G1/4-W3** |
| Adaptor for pressure transmitter (N04) | **SMD-20-1/4NPT-W3** |
| Straight fitting with adaptor | **SRS-G1/4-***-V-G-W3** |

# Accumulator Adaptor ▪ Type SBAA / SDAA

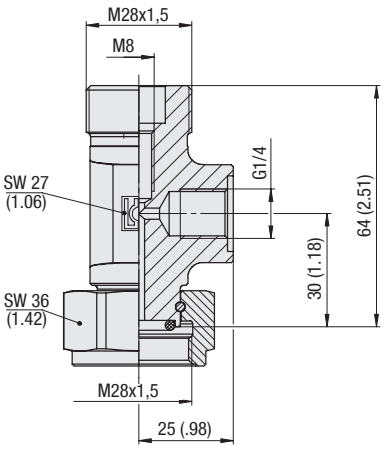





Bladder accumulator adaptor SBAA-CV




Bladder accumulator adaptor SBAA-FV




Diaphragm accumulator adaptor SDAA



## Order Codes

**SBAA** - **CV** - **U05** - **B04**

① ② ③ ④

### ① Adaptor Type

| | |
|---|---|
| STAUFF Bladder Accumulator Adaptor 7/8-14UNF Connection Thread | **SBAA** |
| STAUFF Diaphragm Accumulator Adaptor M28x1.5 Connection Thread | **SDAA** |

### ② Adaptor Type (only for SBAA)

| | |
|---|---|
| for accumulators with changeable valve (only for SBAA) | **CV** |
| for accumulators with fixed valve (only for SBAA) | **FV** |

### ③ Valve Connection Thread

| | |
|---|---|
| 1/2-20UNF (only for SBAA) | **U05** |
| M8 (only for SDAA) | **M08** |

Other Connection Threads available on request.

### ④ Sensor Connection Thread

| | |
|---|---|
| G1/4 Connection Thread | **B04** |

Other Connection Threads available on request.

## Product Description

Membrane and bladder accumulators are important components of modern hydraulic systems. Monitoring the nitrogen pressure level is becoming ever more important for ensuring correct operation.

The STAUFF Accumulator Adaptor together with the PT-RF pressure sensors allow maintenance personal to quickly and easily check the accumulator pressure without pressure loss. Pressure values, serial numbers, date and time will automatically be stored in the memory of the reader and then easily and conveniently read out on the PC later on.

For this, the Accumulator Adaptor is screwed onto the nitrogene connection of the accumulator and a PT-RF pressure sensor is attached at the side.

### Technical Data

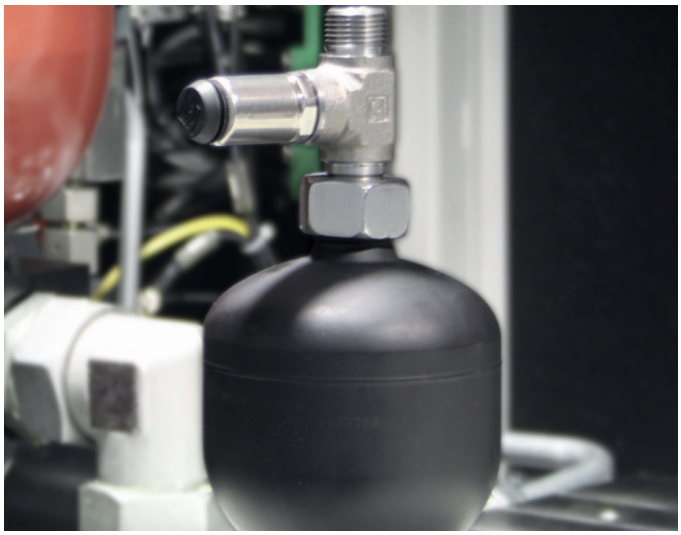
- max. Pressure: 400 bar / 5801 PSI
- Burst Pressure: 1600 bar / 23206 PSI
- Sealing Material: NBR (Buna-N®)

For more information please see our Brochure
**Accumulator Adaptors** Art.No. 9910000503

## Application




Bladder accumulator in use with Reader-PT-RF

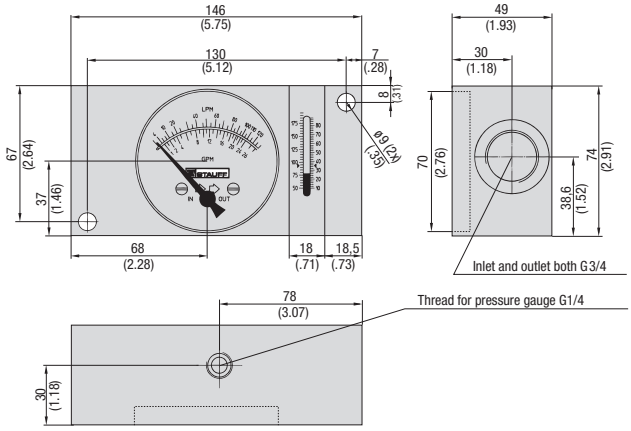


Diaphragm accumulator

B

# 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** |

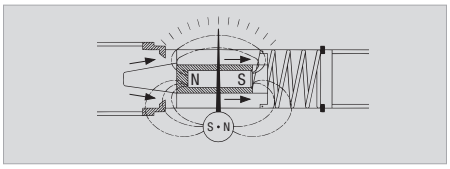
### ④ Flow Ranges

See table on page 57

### 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.

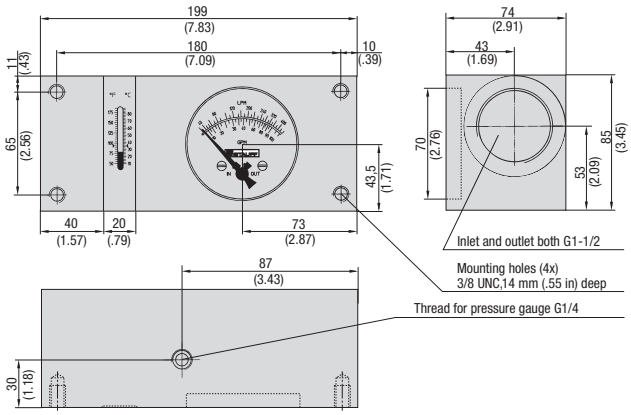
## Controlling Working Pressure with SDMKR

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).

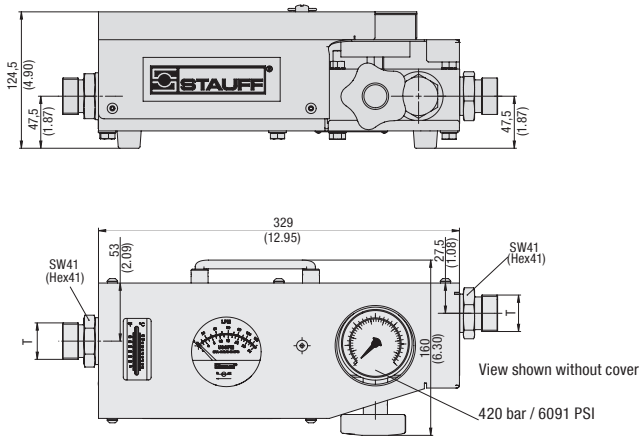
Dimensional drawings: All dimensions in mm (in).
*FS = Full Scale

## Flow Indicators ▪ Types SDM / SDMKR






Dimensions SDM-1500



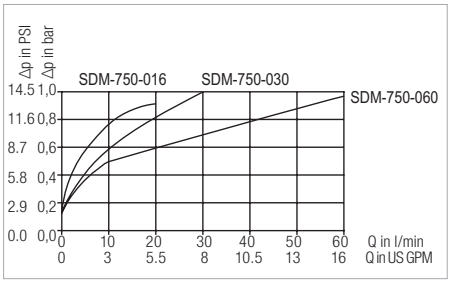

Dimensions SDMKR-750

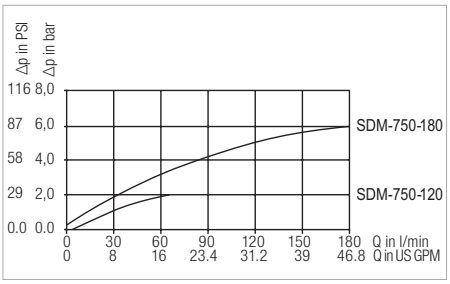
## Technical Data

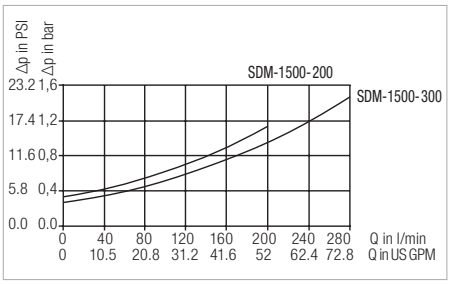
| Max. Working Pressure (bar/PSI) | Flow Range (l/min/US GPM) Aluminum Units | Flow Range Brass Units (only SDM) * | Weight (kg/lbs) | Connection T | Order Codes |
|---|---|---|---|---|---|
| 420 | 2 - 16 | - | 1,36 | G3/4 | SDM-750-A-016-T |
| 6091 | 0.5 - 4 | - | 3.0 | | |
| 420 | 2 - 30 | - | 1,36 | G3/4 | SDM-750-A-030-T |
| 6091 | 0.5 - 8 | - | 3.0 | | |
| 420 | 2 - 60 | - | 1,36 | G3/4 | SDM-750-A-060-T |
| 6091 | 0.5 - 16 | - | 3.0 | | |
| 420 | 4 - 120 | - | 1,36 | G3/4 | SDM-750-A-120-T |
| 6091 | 1 - 32 | - | 3.0 | | |
| 420 | 10 - 180 | - | 1,36 | G3/4 | SDM-750-A-180-T |
| 6091 | 4 - 48 | - | 3.0 | | |
| 420 | - | 2 - 30 l/min in oil | 3,80 | G3/4 | SDM-750-B-030-T |
| 6091 | - | 2- 30 l/min in water | 8.40 | | |
| 420 | - | 3 - 60 l/min in oil | 3,80 | G3/4 | SDM-750-B-060-T |
| 6091 | - | 3 - 70 l/min in water | 8.40 | | |
| 420 | - | 4 - 120 l/min in oil | 3,80 | G3/4 | SDM-750-B-120-T |
| 6091 | - | 4 - 140 l/min in water | 8.40 | | |
| 350 | 10 - 200 | - | 3,0 | G1-1/2 | SDM-1500-A-200-T |
| 5075 | 5 - 50 | - | 6.61 | | |
| 350 | 20 - 300 | - | 3,0 | G1-1/2 | SDM-1500-A-300-T |
| 5075 | 4 - 80 | - | 6.61 | | |
| 350 | 20 - 400 | - | 3,0 | G1-1/2 | SDM-1500-A-400-T |
| 5075 | 5 - 100 | - | 6.61 | | |
| 350 | - | 10 - 200 l/min in oil | 8,0 | G1-1/2 | SDM-1500-B-200-T |
| 5075 | - | 10 - 200 l/min in water | 17.64 | | |
| 350 | - | 20 - 400 l/min in oil | 8,0 | G1-1/2 | SDM-1500-B-400-T |
| 5075 | - | 20 - 400 l/min in water | 17.64 | | |
| 420 | 2 - 30 | - | 6,6 | G3/4 | SDMKR-750-A-030-T |
| 6091 | 0.5 - 8 | - | 14.55 | | |
| 420 | 5 - 60 | - | 6,6 | G3/4 | SDMKR-750-A-060-T |
| 6091 | 1.3 - 16 | - | 14.55 | | |
| 420 | 5 - 120 | - | 6,6 | G1 | SDMKR-750-A-120-T |
| 6091 | 1.3 - 32 | - | 14.55 | | |
| 420 | 10 - 200 | - | 6,6 | G1 | SDMKR-750-A-200-T |
| 6091 | 4 - 53 | - | 14.55 | | |

## Flow Curves - Aluminium Version (Oil)

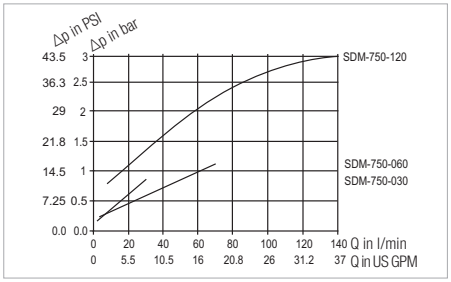
(Curves reffer to kinematic viscosity of 25cSt):

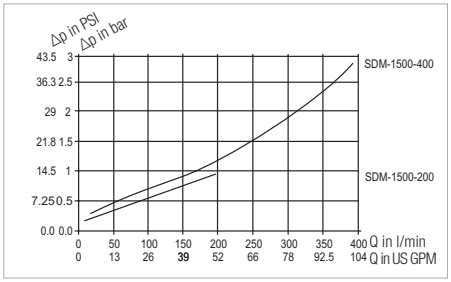


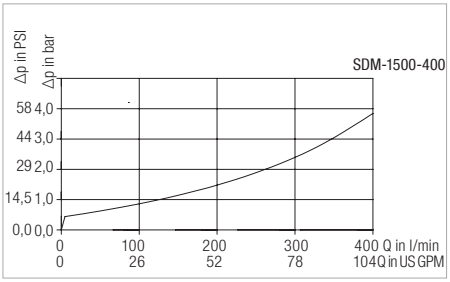




## Flow Curves - Brass Version (Water)




* The Brass units have a scale for water and oil – in l/min.
Dimensional drawings: All dimensions in mm (in).



| | | |
|---|---|---|
| | **Overview** | **60** |
| | **Features & Options** | **61** |
| | **Laser Particle Counter** | **62 - 68** |
|  | **Portable**<br>LasPaC-II-P | **62 - 63** |
|  | **Mobile**<br>LasPaC-II-M | **64 - 65** |
|  | **Bottle Sampler Unit**<br>Bottle-Sampler-LasPaC-II | **66** |
|  | **Accessories** | **67** |
| | **Technical Data (Overview)** | **68** |
| | **Particle Monitor** | **70 - 74** |
|  | LPM-II-plus | **70** |
|  | Interface-LPM-II-USB/ETH | **71** |
|  | DISPLAY-LPM-II-plus-REMOTE | **71** |
|  | **Flow Control Valve**<br>LPM-II-DAV | **72** |
|  | **ATEX Device**<br>LPM-II- ... -CX | **73** |
|  | **Oil Sampling Kit**<br>SFSK-1/-2 | **74** |
| | **Oil Condition Sensor** | **75 - 77** |
| | Overview | **75** |
|  | Oil Condition Sensor | **76** |
| | Interface-OCS-I-USB | **76** |
|  | Oil Condition Display | **77** |
|  | OCS Starterkit | **77** |


C

C

## 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.

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)** | **Bottle Sampler 110** | **Bottle Sampler 500** | **LPM-II-plus** |
| **Laser Type** | Twin-Laser | Twin-Laser | - | - | LED 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) | - | - | Internal / External |
| **Keyboard** | Integrated | - | - | - | - |
| **Printer** | Integrated | - | - | - | - |
| **Data Storage** | Internal (for approximately 600 tests) | Internal (for approximately 600 tests) | - | - | Internal (for approximately 4000 tests) |
| **PC Interface** | RS-232 | RS-232 | - | - | RS485, RS232, Modbus, CAN Bus, 4-20 mA Time-Multiplex |
| **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, Specific Water Glycol fluids or phosphate ester | Mineral oil and petroleum based fluids, Specific Water Glycol fluids or phosphate ester | Mineral oil and petroleum based fluids | Mineral oil, petroleum based fluids and Specific Water Glycol fluids or phosphate ester | Mineral oil and Specific Water Glycol fluids or phosphate ester |

## 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.

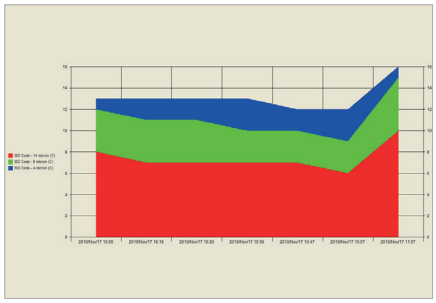
As the fluid passes through the laser beam the amount of light changes. These changes are directly proportional to size of the particles, and the total volume of particles. In many other particle counters only part of the measuring cell is lighted by the laser, thus only a part of the total amount of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

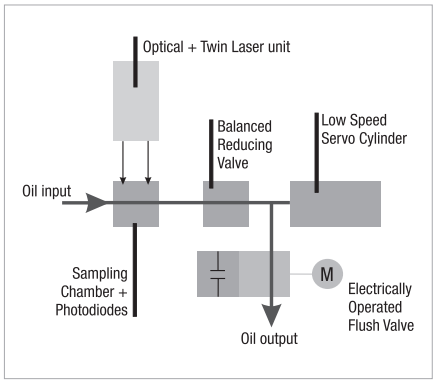
**Functional - Calibration to ISO 11 171**
The LasPaC-II devices are calibrated with ISO Medium Test Dust (MTD) based on the ISO 11 171:1999 calibration standard.

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 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.

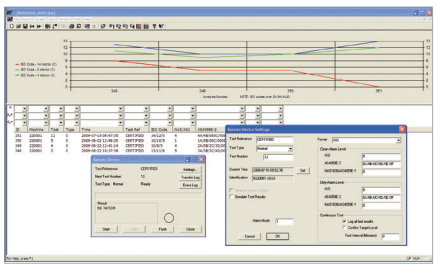
The LasPaC-II software supports an easy download for data processing of the recorded measurements.

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 67.

**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 66.

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
- 1x Pressure hose: 1,5 m / 2.67 ft
- 1x Waste bottle
- 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)

C

# 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 67.

- 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 Compatibility

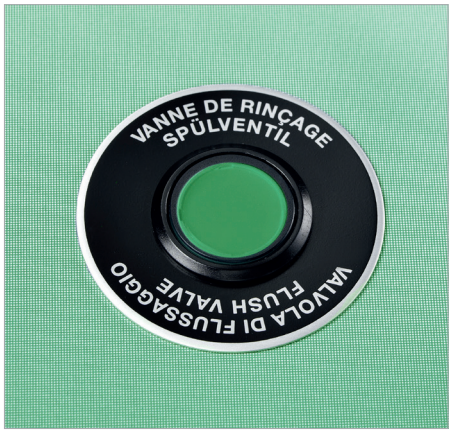
| | |
|---|---|
| Mineral Oil, Petroleum based fluids (standard option) | **M** |
| Phosphate Ester (e.g. Skydrol®) | **E** |
| Specific Water Glycol fluids | **G** |

### 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 66.
- Screen filter: 500 µm (see on page 67)

**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 Compatibility**
- 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.

C

## 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 indicates the current fluid temperature (in °C).
  For further information please see on page 67.
- Phosphate Ester (e.g. Skydrol®) or specific Water Glycol fluids units on request
- LasPaC-II-M also available without integrated battery

### Order Codes

**LasPaC-II - M - M - O - B**
① ② ③ ④ ⑤

#### ① Type and Series

| | |
|---|---|
| Laser Particle Counter | **LasPaC-II** |

#### ② Version

| | |
|---|---|
| Mobile | **M** |

#### ③ Fluid Compatibility

| | |
|---|---|
| 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.

#### ⑤ Battery

| | |
|---|---|
| With internal rechargeable battery (standard option) | **B** |
| Without internal rechargeable battery | **O** |

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




LasPaC-II-M with small Bottle Sampler




Display and Buttons

C

### 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 66.
- Screen filter: 500 µm (see on page 67)

**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 Compatibility**
- 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

C

## Bottle Sampling Unit ▪ Typ Bottle-Sampler-LasPaC-II



Bottle Sampling Unit 110 ml and Accessories



Bottle Sampling Unit 110 ml



Bottle Sampling Unit 500 ml

### 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.

### Order Codes

**Bottle-Sampler - LasPaC-II - 110-M**

① ② ③

#### ① Bottle Sampling Unit

| | |
|---|---|
| Bottle Sampling Unit | **Bottle-Sampler** |

#### ② Type and Series

| | |
|---|---|
| Laser Particle Counter | **LasPaC-II** |

#### ③ Unit

| | |
|---|---|
| 110 ml Bottle Sampling Unit suitable for Mineral Oil and Petroleum based fluids only | **110-M** |
| 500 ml Bottle Sampling Unit suitable for Mineral Oil and Specific Water Glycol fluids, Petroleum based fluids only | **500-M/G** |
| 500 ml Bottle Sampling Unit suitable Phosphate Ester (e.g. Skydrol®) | **500-E** |

## Moisture / Temperature Sensor

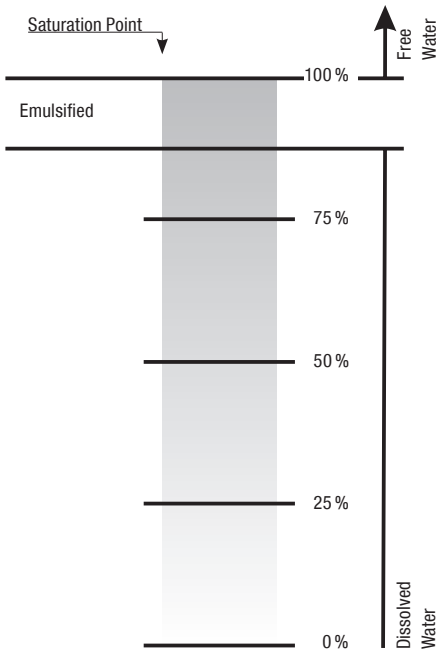
**Saturation Levels**
Since the effects of free (also emulsified) water are more harmful than those of dissolved water, water levels should remain always well below the saturation point.

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.




### 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.

## Laser Particle Counter ▪ Accessories





### Order Codes

**Accessories / Spare Parts**

①

① Type of Accessories / Spare Parts

| | |
|---|---|
| Waste hose 2 m / 6.56 ft | **Hose-LasPaC-II-Waste-2m** |
| Pressure hose 1,5 m / 4.92 ft | **SMS-20-1500-A-W3** |
| 110 ml certified clean bottle (5 pieces) | **Set-Bottle-LasPaC-II-110-C** |
| 250 ml certified clean bottle (5 pieces) | **Set-Bottle-LasPaC-II-250-C** |
| 110 ml glass sample bottle (5 pieces) | **Set-Bottle-LasPaC-II-110** |
| 250 ml glass sample bottle (5 pieces) | **Set-Bottle-LasPaC-II-250** |
| 500 ml glass sample bottle (5 pieces) | **Set-Bottle-LasPaC-II-500** |
| Printer paper LasPaC-II-P (5 pieces) | **Set-Paper-LasPaC-II-Printer** |
| RS 232 to USB converter | **Adaptor-PPC-04/12-RS232-to-USB-CAB** |
| Screen filter | **Screen-Filter-LasPaC-II** |

### 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.

C

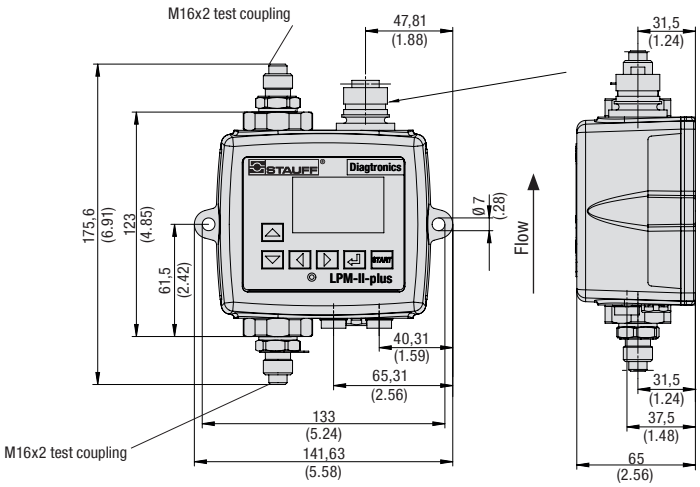
## Laser Particle Counter ▪ Technical Data

| |  |  |  |
|---|---|---|---|
| **Type** | **LasPaC-II-P (Portable)** | **LasPaC-II-M (Mobile)** | **LPM-II-plus** |
| **Dimensions ($^{mm}/_{in}$) (W x D x H)** | 551 x 358 x 226 | 340 x 295 x 152 | 141,63 x 123 x 65 |
| | 21.69 x 14.09 x 8.90 | 13.40 x 11.61 x 5.98 | 5.58 x 4.85 x 2.65 |
| **Weight ($^{kg}/_{lbs}$)** | 13 | 4,75 | 1,6 |
| | 28.66 | 10.47 | 3.53 |
| **Keyboard** | QWERTY keyboard integrated | - | 5 Button Display Settings |
| **Printer** | Thermal printer integrated (384 dots per line) | - | - |
| **Viscosity Range** | 1 ... 400 cSt | 1 ... 400 cSt | <= 1000 cSt |
| **Calibration** | MTD, ISO 11 171:1999 | MTD, ISO 11 171:1999 | MTD, ISO 11171:1999 |
| **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 $\mu m_{(c)}$ | 4, 6, 14, 21, 25, 38, 50, 68 $\mu m_{(c)}$ | 4, 6, 14, 21, 25, 38, 50, 68 $\mu m_{(c)}$ |
| **Sample Volume** | 8 ml (short) | 8 ml (short) | Adjustable by user |
| | 15 ml (normal) | 15 ml (normal) | |
| | 30 ml (dynamic) | 30 ml (dynamic) | |
| | 24 ml (bottle sampler) | 24 ml (bottle sampler) | |
| | 15 ml (continuous) | 15 ml (continuous) | |
| **Pressure Range ($^{bar}/_{PSI}$)** | 2 ... 400 | 2 ... 400 | Please refer differential pressure diagram |
| | 29 ... 5801 | 29 ... 5801 | |
| **Operating Temperature ($^{°C}/_{°F}$)** | +5 ... +80 | +5 ... +80 | -25 ... +80 |
| | +41 ... +176 | +41 ... +176 | -13 ... +176 |
| **Max. Concentration** | ISO 24 | ISO 24 | ISO 24 |
| **Power Supply** | 110 ... 240 V AC<br>12 ... 24 V DC | 110 ... 240 V AC<br>12 ... 24 V DC | 110 ... 240 V AC<br>9 ... 36 V DC, <2,2W |
| **Battery** | Internal rechargeable battery | Internal rechargeable battery | - |
| **Data Storage** | 600 tests | 600 tests | 4000 tests |
| **Fluid Compatibility** | 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 |
| **PC Interface** | RS-232 | RS-232 | RS-232 |
| **External Alarm** | External alarm socket | - | External Alarm |
| **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 | Moisture/temperature sensor | Remote Display |
| | Bottle sampling unit (110 ml / 500 ml) | Bottle sampling unit (110 ml / 500 ml) | Interface Module |
| | Screen filter (500 µm) | Screen filter (500 µm) | Flow Control Valve |

C

# Particle Monitor ▪ LPM-II-plus




## Product Description

The LPM-II-plus 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-plus 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.

- Multicolour indicators via LCD (K versions) and LED with output alarm signals as standard
- Secondary connector to allow the simultaneous control/ download of results during operation
- 4-20mA analogue output as standard (time multiplex)

## 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
- USB Port for Data transfer (optional)

## 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

## Order Codes

**LPM-II-plus - D - M - W - U**

① ② ③ ④ ⑤

### ① Series and Type

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

### 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** |

### ⑤ Interface

| | |
|---|---|
| USB interface to transfer measured data to a data carrier | **U** |

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.

### 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
- 1,6kg / 3.53 lbs

### Fluid Compatibility
- M: suitable for Synthetic and Mineral Oil based fluids, Diesel and Petroleum
- G: Austenitic Stainless Steel, FKM (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
- 420 bar / 6091 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
- 4-20 mA time multiplex interface
- USB interface to transfer measured data to a data carrier (optional)

### International Protection Rating
- IP 65/67: Dust-proof and protected from spray
- Impact resistance rating IK04

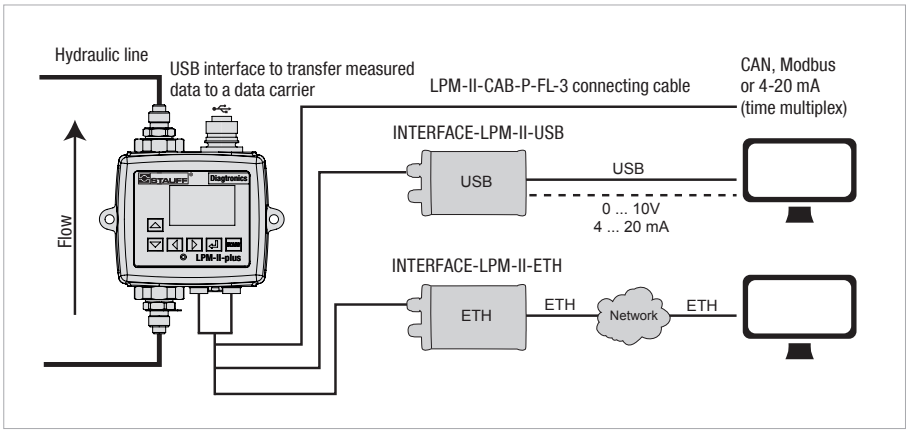
### Power Supply / Power
- 9 ... 36 V DC, < 2.2 W (connecting cable with flying leads is included)

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

### Housing Surface Treatment
- Polyurethane based paint, according to BSX34 colour BS381-638 (dark sea 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, FKM (Viton®), FR4, Sapphire
- G: 316 Stainless Steel, FKM (Viton®), Sapphire
- E: 316 Stainless Steel, Perfluorinated Rubber (FFKM), Sapphire, EPDM

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






Connection diagram: PC connection of the LPM-II-plus Particle Monitor

### Order Code

**INTERFACE-LPM-II-USB**

①

### Order Code

**INTERFACE-LPM-II-ETH**

①

### Product Description

The LPM-II-plus 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-plus using a connecting cable (3 m / 9.84 ft). With the power supply unit connected, the LPM-II-plus 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-plus can be supplied with current via the USB cable too.

The USB interface is optionally also available with additional 0-10 V or 4-20 mA outputs. The 0-10 V interface provides six ISO channels, the relative humidity and the temperature on eight voltage outputs. The 4-20 mA version, on the other hand, supplies e.g. the NAS code and the relative humidity on two outputs.

The optional USB interface enables the direct transfer of measurement data to a USB data medium.

### ① Series and Type

| | |
|---|---|
| Interface module with USB interface | **INTERFACE-LPM-II-USB** |
| Interface module with USB interface | **INTERFACE-LPM-II-USB-010V** |
| Interface module with USB interface | **INTERFACE-LPM-II-USB-420A** |

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

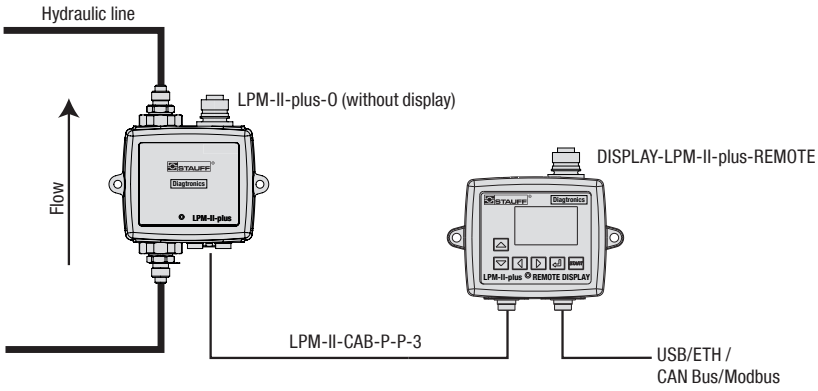
### ① Series and Type

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

**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.

## Remote Display Unit ▪ DISPLAY-LPM-II-plus-REMOTE




Connection diagram: Remote display

### Order Code

**DISPLAY-LPM-II-plus-REMOTE**

①

### 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-plus measured.

### ① Series and Type

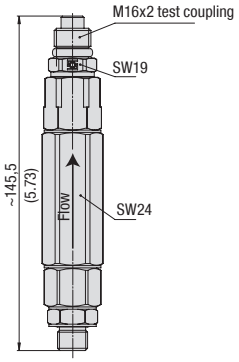
**DISPLAY-LPM-II-plus-REMOTE**

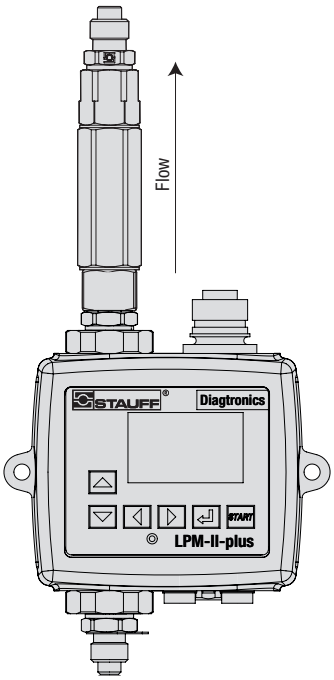
**Scope of supply:**
- Remote Display
- LPM-II-CAB-P-P-3 connecting cable

C

## Flow Control Valve ▪ LPM-II-DAV






LPM-II-plus 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-plus 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**

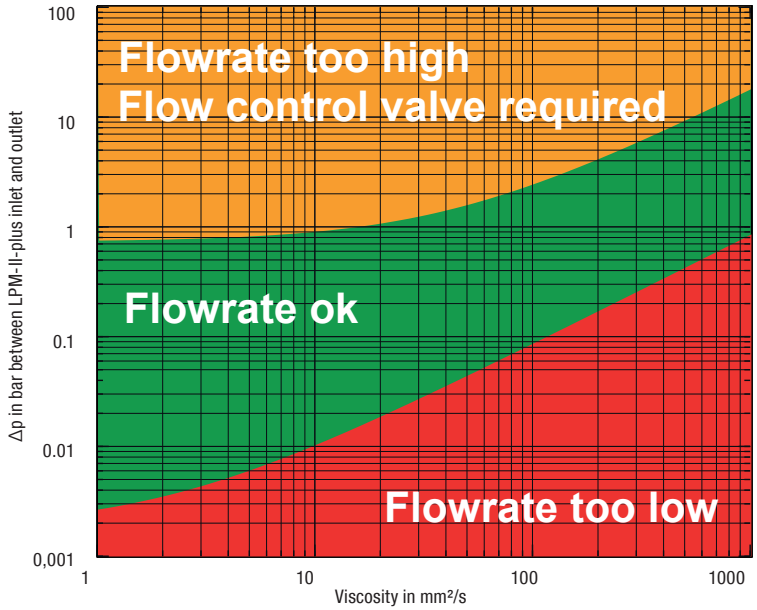
① ②

#### ① Series and Type

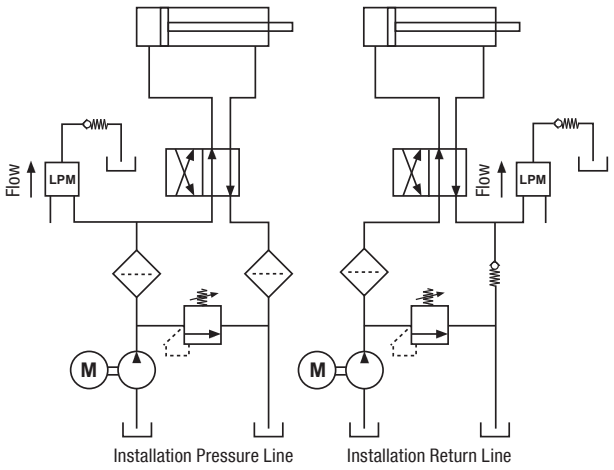
| | |
|---|---|
| Flow Control Valve | **LPM-II-DAV** |

#### ② Fluid Compatibility

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



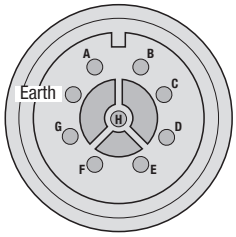

### Application example



# Particle Monitor ▪ LPM-II-...-CX

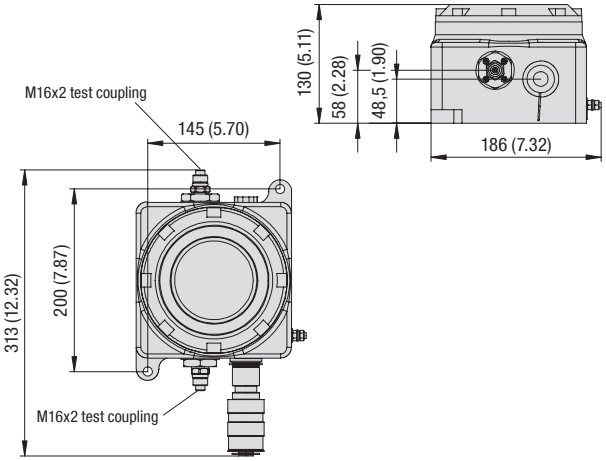
## Wiring Diagram

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




View when looking at supplied male connector

A Data-
B Data+
C Power 0V
D Power +9V-36V DC
E Output 1
F Output 2
G Common
H Start






## Order Codes

**LPM-II - D - M - O - CX**

① ② ③ ④ ⑤

### ① Series and Type

| | |
|---|---|
| Particle Monitor | **LPM-II** |

### ② Version

| | |
|---|---|
| With display | **D** |

### 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** |

### ⑤ Version according to ATEX 94/9/EG

| | |
|---|---|
| ATEX certification (Zone 2 / Cat. 3G) | **CX** |

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. The USB interface is not ATEX rated.

## 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 particle 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 compliant (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 classes 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, FKM (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)
- Cast
- Stainless Steel
- Material spec.: ANC ABF/C

**Wetted Parts**
- M: C46400 Cu Alloy, 316 Stainless Steel, FKM (Viton®), FR4, Sapphire
- G: 316 Stainless Steel, FKM (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

C

# 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 SMK-20-1/4NPT-V-D-W3
- 1x SMK-20-7/16UNF-V-E-W3
- 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 SMK-20-G1/4-B-C-W3
- 1x SMK-20-M10x1-B-A-W3
- Sample bottles

## Order Codes

KIT-SFS - 01 - 110 - MC-38AL

① ② ③ ④

### ① Series and Type

| | |
|---|---|
| Oil Sampling Kit | **KIT-SFS** |

### ② Version

| | |
|---|---|
| NPT-Version | **01** |
| BSP-Version | **02** |

### ③ Bottle Size

| | |
|---|---|
| 110 ml | **110** |

### ④ Equipment

| | |
|---|---|
| Protec. Container / 38 mm Aluminum pump | **MC-38AL** |

## Oil Condition Sensor






Preventative maintenance and servicing is playing an increasingly relevant role today to guarantee the trouble-free operation of plant and machinery.

With hydraulic and lubricating oil systems, the main focus is on preventative monitoring of their condition and analysis of the fluids used. Apart from the purity of the oils, which can be determined using mobile or stationary STAUFF LasPac-II and LPM-II-plus Laser Particle Counters, oil ageing is a second important criterion for the decisive and comprehensive determination of the condition of a system.

Lubricants and operating media age with progressive use. Old or used oils can sometimes no longer guarantee the necessary protection of system components from wear, a factor that can decisively impair the operation of sensitive components in particular. Quite often this means repairing or replacing the affected components, which usually results in expensive downtimes and unplanned oil changes.

The STAUFF OCS Oil Condition Sensor continuously monitors the condition of hydraulic and lubricating oils and displays this in real time on the OCD Oil Condition Display, optionally available as an accessory.

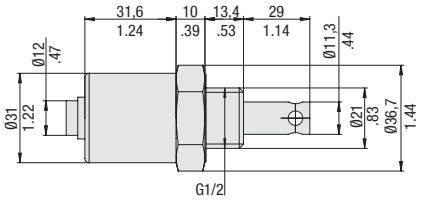
The OCD displays the values recorded by the OCS sensor on a multi-segment display, which enables the oil condition and temperature to be recorded at a glance without the need to connect to a PC.

The data can, of course, also be transmitted directly into the machine control or to a PC, if required. More important, a multi-coloured LED provides the ACTUAL condition in relation to the TARGET condition, which enables demand-led maintenance and oil change intervals to be planned.

C

## Oil Condition Sensor ▪ Type OCS-I-M-B08-M16









### Product Description

The Oil Condition Sensor OCS is designed for continuous monitoring of hydraulic systems. Permanently installed in the system the OCS sensor monitors the condition of hydraulic fluids and lubricating oils in real time, whereby water ingress and oxidation can be detected in time. The OCS sensor is 60 times more sensitive than dielectric sensors on increasing contamination and protects the system from cost-intensive downtimes and reduces machine downtimes.

### Features

- Robust construction
- Usage under extreme conditions with temperatures from -20 °C to +120 °C / -4 °F to +248 °F
- Suitable for use at operating pressures up to 20 bar / 290 PSI

### Order Code

**OCS-I-M-B08-M16**

① Series

| | |
|---|---|
| Oil Condition Sensor (only) | **OCS-I-M-B08-M16** |

### Technical Data

**Materials**
- Stainless Steel (corrosion-resistant Steel) AISI304, 1.4301

**Dimensions**
- 90 x 37 mm / 3.54 x 1.46 in

**Weight**
- 160 g / .35 lbs

**Sealing Material**
- FKM (Viton®)

**Max. Burst Pressure**
- 20 bar / 290 PSI

**Media Temperature**
- -20 °C ... +120 °C / -4 °F ... +248 °F

**Media Compatibility**
- Mineral and Synthetic Oil
  (Please contact STAUFF for other fluids)

**Process Connection**
- G1/2

**Electrical Connection**
- 6-pin connection plug

**Power Supply**
- 9 ... 30 V DC

**Analog Output**
- 4 ... 20 mA

**Computer Interface**
- RS485

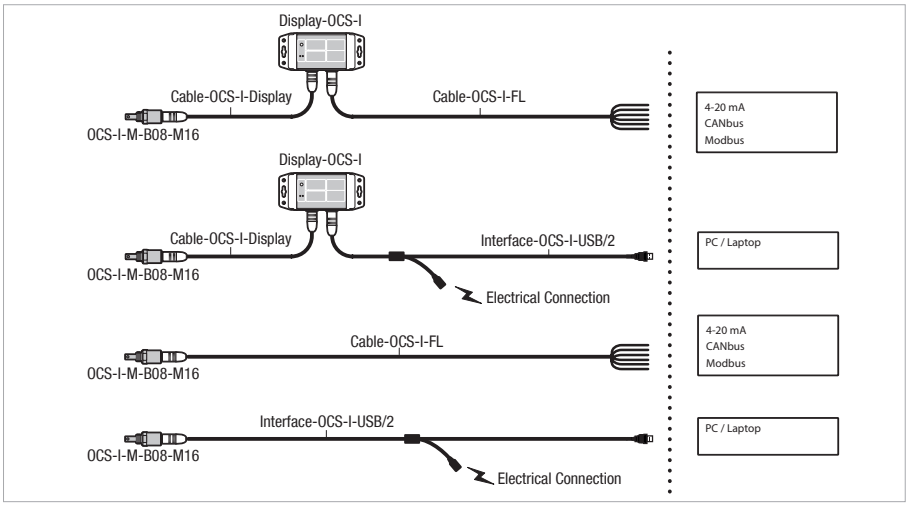
**Protection Rating**
- IP67

## USB Interface ▪ Type Interface-OCS-I-USB

### Product Description

The OCS sensor respectively the Display-OCS-I can be connected to a PC or laptop using the Interface-OCS-I-USB. It allows you to download the measured data and to carry out programming using the supplied software.

The Interface-OCS-I-USB was not designed for a permanent operating and should be used for programming the OCS sensor respectively download the measured data from the Display-OCS-I only.




### Order Code

**Cable-OCS-I-Display**

① Series

| | |
|---|---|
| Connection Cable | **Cable-OCS-I-Display** |

### Order Code

**Interface-OCS-I-USB/2**

① Series

| | |
|---|---|
| Connection Cable | **Interface-OCS-I-USB/2** |

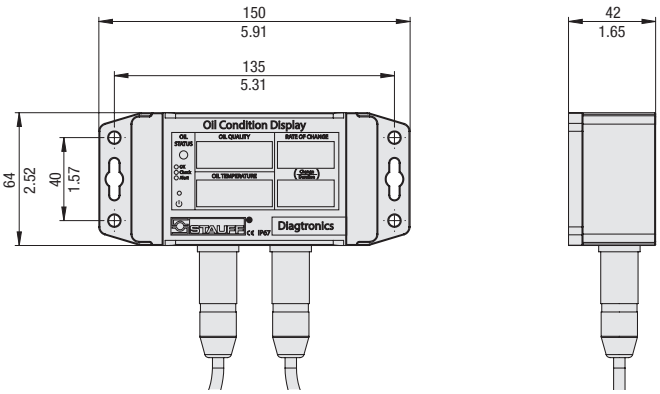
### Order Code

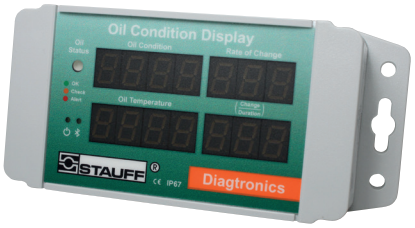
**Cable-OCS-I-FL**

① Series

| | |
|---|---|
| Connection Cable | **Cable-OCS-I-FL** |

## Oil Condition Display ▪ Type Display-OCS-I




C

### Order Code

**Display-OCS-I**

①

① Series

| | |
|---|---|
| Oil Condition Display OCS | **Display-OCS-I** |

### Product Description

The optional Oil Condition Display OCS unit shows the values measured by the sensor using a multi-segment LED indicator, which makes the oil condition apparent at a glance and without any connection to a PC.

The display unit also has integrated measurement value memory, from which the data can be subsequently transferred for assessment via USB.

### Technical Data

**Materials**
- Polycarbonate

**Dimensions**
150 x 64 x 42 mm / 5.91 x 2.52 x 1.65 in

**Weight**
- 250 g / .35 lbs

**Power Supply**
- 9 ... 30 V DC

**Analog Output**
- 4 ... 20 mA

**Computer Interface**
- RS485, 9600 Baud (half duplex)

**Mounting**
- Mounting flange on back side
  150 x 64 mm / 5.91 x 2.52 in

**Protection Rating**
- IP67

**Display**
- Multi-segment LED indicator
  (20 segments: 13 green LED, 4 amber LED, 3 red LED, 1 red LED (Unit ON))

## Starterkit ▪ Type Starterkit-OCS-I

### Order Code

**Starterkit-OCS-I**

①

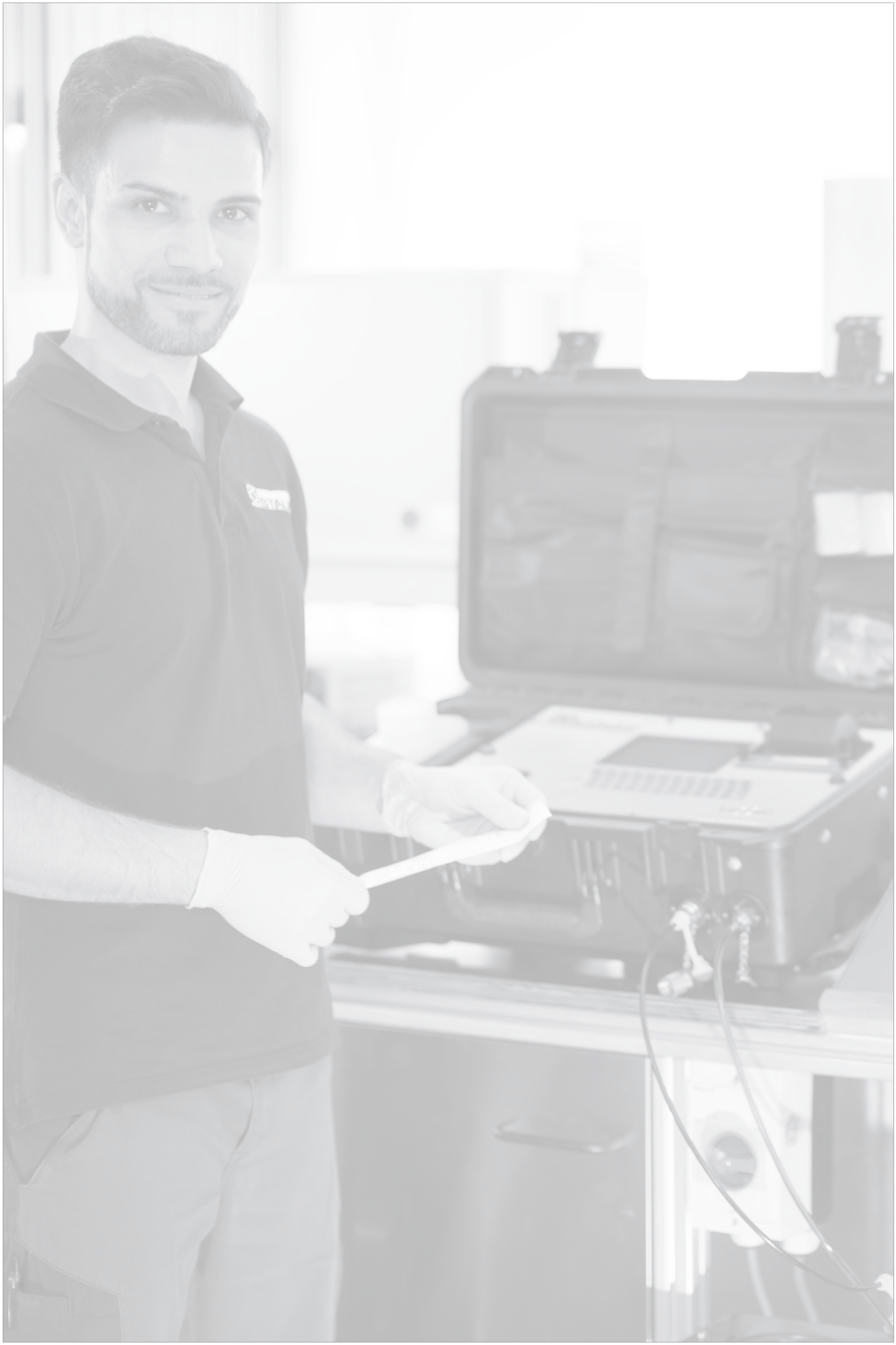
① Series

| | |
|---|---|
| Starterkit | **Starterkit-OCS-I** |

### Includes

- 1x Oil Condition Sensor - Type OCS-I-M-B08-M16
- 1x Oil Condition Display - Type Display-OCS-I
- 1x Connection Cable - Type Cable-OCS-I-Display
- 1x Connection Cable - Type Interface-OCS-I-USB/2
- 1x Connection Cable - Type Cable-OCS-I-FL





| | |
|---|---|
| Product-Specific Abbreviations | 80 |
| Global Contact Directory | 82 - 83 |

## Product-Specific Abbreviations

| Abbreviation | Product Category | Product Description | Page |
|---|---|---|---|
| Bottle-Sampler-LasPaC-II | Oil Analysis Equipment | Bottle Sampler Unit | 66 |
| DISPLAY-LPM-II-plus-REMOTE | Oil Analysis Equipment | Particle Monitor | 71 |
| Interface-LPM-II-USB/ETH | Oil Analysis Equipment | Particle Monitor Interface | 71 |
| LasPaC-II-M | Oil Analysis Equipment | Laser Particle Counter (Mobile) | 64 |
| LasPaC-II-P | Oil Analysis Equipment | Laser Particle Counter (Portable) | 62 |
| LPM-II-plus | Oil Analysis Equipment | Particle Monitor | 70 |
| LPM-II- ... -CX | Oil Analysis Equipment | Particle Monitor (ATEX) | 73 |
| LPM-II-DAV | Oil Analysis Equipment | Flow Control Valve | 72 |
| OCS | Oil Analysis Equipment | Oil Condition Sensor | 76 |
| PPC-04/06/08-plus | Hydraulic Testers | Complete Systems | 46 |
| Sensor-PPC-04/12-P | Hydraulic Testers | Pressure Sensors | 34 |
| Sensor-PPC-04/12-PT | Hydraulic Testers | Pressure / Temperature Sensors | 38 |
| Sensor-PPC-04/12-SDS-CAB | Hydraulic Testers | Rotational Speed Sensor | 42 |
| Flow-meter-PPC-04/12-SFM | Hydraulic Testers | Flow Turbine | 40 |
| Sensor-PPC-04/12-T | Hydraulic Testers | Temperature Sensors | 36 |
| PPC-04-CAN-SET | Hydraulic Testers | Complete Systems | 47 |
| PPC-04-plus | Hydraulic Testers | Hydraulic Testers | 28 |
| PPC-04-plus-CAN | Hydraulic Testers | Hydraulic Testers | 28 |
| PPC-06/08-plus | Hydraulic Testers | Hydraulic Testers | 29 |
| Sensor-PPC-CAN-P | Hydraulic Testers | Pressure Sensors | 35 |
| Sensor-PPC-CAN-PT | Hydraulic Testers | Pressure / Temperature Sensors | 39 |
| Flow-meter-PPC-CAN-SFM | Hydraulic Testers | Flow Turbine | 41 |
| Sensor-PPC-CAN-T | Hydraulic Testers | Temperature Sensors | 37 |
| PPC-Pad | Hydraulic Testers | Hydraulic Testers | 30 |
| PPC-Pad-SET | Hydraulic Testers | Complete Systems | 48 |
| PT-RF | Hydraulic Testers | Pressure Transmitter | 52 |
| PT-RF-SET | Hydraulic Testers | Pressure Transmitter (Complete Systems) | 54 |
| Reader-PT-RF | Hydraulic Testers | Pressure Transmitter Reader | 53 |
| SDM | Hydraulic Testers | Flow Indicators | 56 |
| SDMKR | Hydraulic Testers | Flow Indicators | 56 |
| Sensorconverter-PPC | Hydraulic Testers | Current / Voltage / Frequency Converter | 43 |
| SFSK-1 /-2 | Oil Analysis Equipment | Oil Sampling Kit | 74 |
| SMB-20 / SMB-15 | Pressure Gauges | Analogue Pressure Test Kit | 18 |
| SMB-DIGI | Pressure Gauges | Digital Pressure Test Kit | 21 |
| SPG | Pressure Gauges | Analogue Pressure Gauge | 16 |
| SPG-DIGI / SPG-DIGI-USB | Pressure Gauges | Digital Pressure Gauge | 20 |
| SBAA /SDAA | Hydraulic Testers | Accumulator Adaptor for Pressure Transmitter | 55 |

# Global Contact Directory

STAUFF products and services are globally available through wholly-owned subsidiaries and a tight network of authorised distributors and representatives in all major industrial regions of the world.

Contact information on this page may be subject to changes and additions over time. Frequently updated and complete contact information can always be found at www.stauff.com.

## Germany



**Walter Stauffenberg GmbH & Co. KG**
Im Ehrenfeld 4
58791 Werdohl
Tel.: +49 2392 91 60
Fax: +49 2392 91 61 03
E-Mail: sales@stauff.com
**www.stauff.com**



Neuenrade-Küntrop Logistics Centre
Wasserburgstraße 35
58809 Neuenrade



Plettenberg-Ohle Production Site
Lennestraße 2
58840 Plettenberg



Meinerzhagen Production Site
Neugrünenthal
58540 Meinerzhagen

## Europe

### France

**STAUFF S.A.S.**
230, Avenue du Grain d'Or
Z.I. de Vineuil - Blois Sud
41354 Vineuil-cedex
Tel.: +33 2 54 50 55 50
Fax: +33 2 54 42 29 19
E-Mail: direction@stauffsa.com
**www.stauff.fr**

### Ireland

**STAUFF UK Ltd.**
Block B, 9 Ferguson Drive
Knockmore Hill Industrial Estate
Lisburn, County Antrim, BT28 2EX
Tel.: +44 2892 60 69 00
Fax: +44 2892 60 26 88
E-Mail: sales@stauffireland.com
**www.stauff.co.uk**

### Italy

**STAUFF Italia s.r.l**
Via Borima 21 (Frazione Borima)
23867 Suello (LC)

Tel.: +39 031 65 84 94
Fax: +39 031 65 50 05
E-Mail: sales@stauff.it
**www.stauff.it**

### Poland

**STAUFF Polska Sp. z o.o.**
Miszewko 43 A
80-297 Banino

Tel.: +48 58 660 11 60
Fax: +48 58 629 79 52
E-Mail: sales@stauff.pl
**www.stauff.pl**

### Russian Federation

**STAUFF LLC**
Building 1
19, Leninskaya Sloboda
Moscow, 115280
Tel.: +7 495 276 16 50
Fax: +7 495 276 16 51
E-Mail: sales@stauff.ru
**www.stauff.ru**

Further branch offices in
Engels, Volzhskiy, Magnitogorsk,
Nizhny Novgorod and St. Petersburg.

### United Kingdon

**STAUFF UK Ltd.**
500, Carlisle Street East
Off Downgate Drive
Sheffield, S4 8BS
Tel.: +44 114 251 85 18
Fax: +44 114 251 85 19
E-Mail: sales@stauff.co.uk
**www.stauff.co.uk**

**STAUFF UK Ltd.**
Badentoy Avenue
Badentoy Industrial Estate
Portlethen, Aberdeen, AB12 4YB
Tel.: +44 1224 78 61 66
Fax: +44 1224 78 61 77
E-Mail: sales@stauffscotland.co.uk
**www.stauff.co.uk**

**STAUFF UK Ltd.**
Unit 9, Southampton Trade Park
Third Avenue, Millbrook
Southampton, SO15 0AD
Tel: +44 2380 69 87 00
Fax: +44 2380 69 87 01
E-Mail: sales@stauffsouthampton.co.uk
**www.stauff.co.uk**

## North America

### Canada

**STAUFF Canada Ltd.**
866 Milner Avenue
Scarborough
Ontario M1B 5N7
Tel.: +1 416 282 46 08
Fax: +1 416 282 30 39
E-Mail: sales@stauffcanada.com
**www.stauffcanada.com**

### United States

**STAUFF Corporation**
7 Wm. Demarest Place
Waldwick, 07463-1542
New Jersey
Tel.: +1 201 444 78 00
Fax: +1 201 444 78 52
E-Mail: sales@stauffusa.com
**www.stauffusa.com**

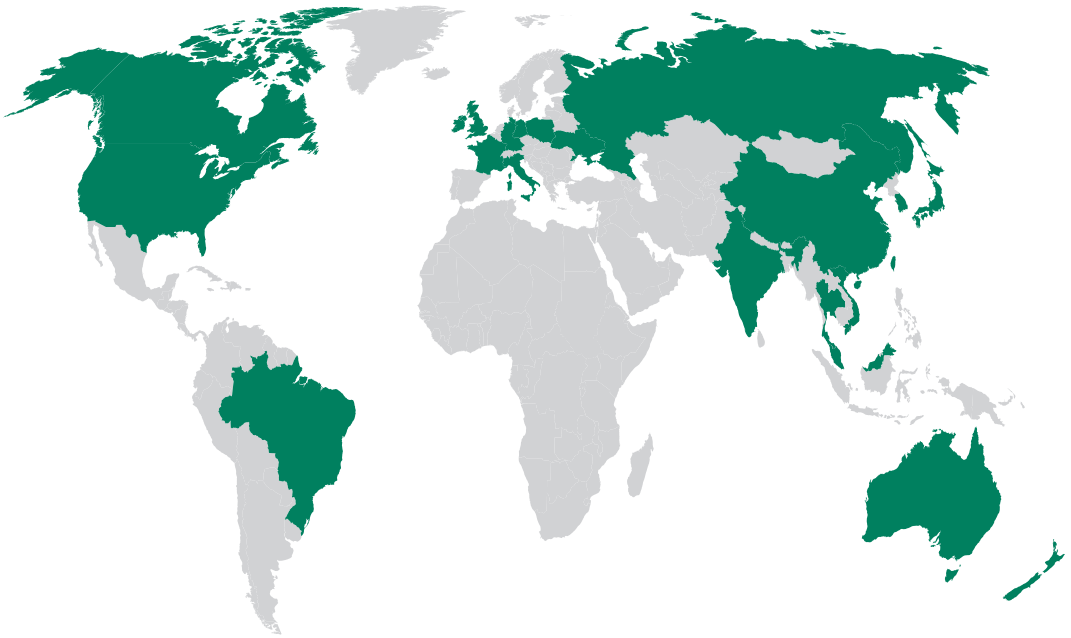
Further branch office in
Canton, Michigan.

## South America

### Brazil

**STAUFF Brasil Ltda.**
Avenida Gupê 10767
Galpão 2 - Bloco A
Barueri, São Paulo, CEP 06422-120
Tel.: +55 11 47 72 72 00
Fax: +55 11 47 72 72 10
E-Mail: stauff@stauffbrasil.com
**www.stauffbrasil.com**

## Global Contact Directory



## Asia

### China

**STAUFF CHINA**
Building 1, No. 128, Die Qiao Road
Jushuo Industrial Zone, Kang Qiao
Shanghai, 201319
Tel.: +86 21 68 18 70 00
Fax: +86 21 68 18 71 36
E-Mail: info@stauff.com.cn
**www.stauff.com.cn**

Further branch offices in Beijing, Changsha, Chengdu, Changchun, Chongqing, Jinan, Harbin, Guangzhou, Shenyang, Wuhan, Xian and Xuzhou.

### India

**STAUFF India Pvt. Ltd.**
Gat no. 26/1 & 27, Sanghar Warehousing
Pune - Nagar Road
Lonikand - 412216
Tel.: +91 20 6731 4900
Fax: +91 20 6731 4905
E-Mail: sales@stauffindia.com
**www.stauffindia.com**

### Korea

**STAUFF Korea Ltd.**
105, Hwajeonsandan 5-ro
Gangseo-gu
Busan, 46739
Tel.: +82 51 266 6666
Fax: +82 51 266 8866
E-Mail: info@stauff.co.kr
**www.stauff.co.kr**

### Malaysia

**STAUFF South East Asia Sdn Bhd**
No. 8, Jalan SS13/6A
Subang Jaya Industrial Estate
47500 Subang Jaya
Tel.: +60 3 5637 78 88
Fax: +60 3 5636 78 90
E-Mail: sales@stauff.com.my
**www.stauff.com.my**

### Thailand

**STAUFF (Thailand) Co., Ltd.**
10 Soi On-Nut 74/4
Pravet District
Bangkok 10250
Tel.: +66 2 721 73 23 / 24
Fax: +66 2 721 73 35
E-Mail: sales@stauff.co.th
**www.stauff.co.th**

### Vietnam

**STAUFF Vietnam Ltd.**
2nd Floor, CT-IN Building
#435 Hoang Van Thu Street
Tan Binh District, Ho Chi Minh City
Tel.: +84 8 3948 10 41 / 42
Fax: +84 8 3948 10 44
E-Mail: sales@stauff.com.vn
**www.stauff.com.vn**

## Oceania

### Australia

**STAUFF Corporation Pty Ltd**
24-26 Doyle Avenue
Unanderra NSW 2526

Tel.: +61 2 4271 9000
Fax: +61 2 4271 8432
E-Mail: sales@stauff.com.au
**www.stauff.com.au**

Further branch offices in Adelaide, Brisbane, Melbourne and Sydney.

### New Zealand

**STAUFF Corporation (NZ) Ltd.**
Unit D, 103 Harris Road
East Tamaki, Auckland 2013

Tel.: +64 9 912 1530
Fax: +64 9 912 1531
E-Mail: sales @stauff.co.nz
**www.stauff.co.nz**

Introduction

Pressure Gauges

Hydraulic Testers

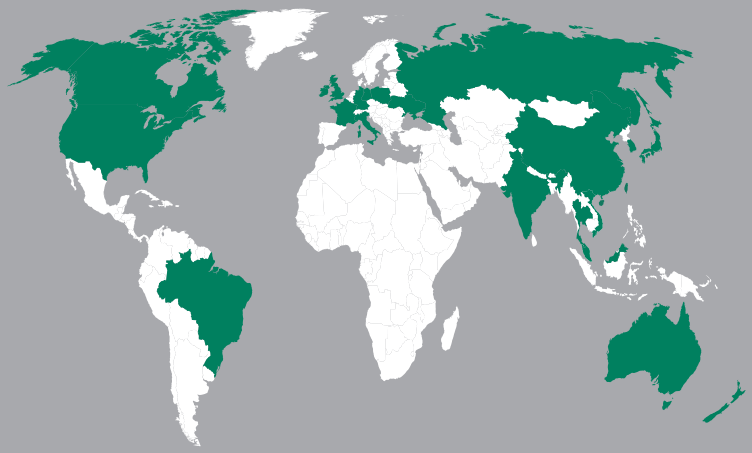
Oil Analysis Equipment

Appendix

STAUFF®

# Catalogue 8

## STAUFF Diagtronics



## Germany

**Walter Stauffenberg GmbH & Co. KG**
Im Ehrenfeld 4
58791 Werdohl
Tel.: +49 2392 91 60
Fax: +49 2392 91 61 03
E-Mail: sales@stauff.com

STAUFF products and services are globally available through wholly-owned subsidiaries and a tight network of authorised distributors and representatives in all major industrial regions of the world.

**You can find detailed contact information on the last two pages of this product catalogue or at**

**www.stauff.com**

Catalogue 8 STAUFF Diagtronics ▪ English ▪ 9910000428 ▪ 02/2020