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With the publication of this product catalogue, previous editions are no longer valid.
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- Light Series Clamps
- Saddle Clamps
- U-Bolt Clamps
- Metal Clamps
- Construction Series

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- SAE Flanges
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www.stauff.com/8/en/#5
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.

STAUFF LINE Components

With the seven dedicated STAUFF Line product groups

- STAUFF Clamps
- STAUFF Connect
- STAUFF Flanges
- VOSWINKEL Hose Connectors
- VOSWINKEL 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, and 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
Introduction

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.
Introduction

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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 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

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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 addition to the individual products, the STAUFF measuring devices are also available as kit.
Information on the Pressure Equipment Directive (PED) 97/23/EC

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 Gages**

**Pressure Gauge (analogue) • Type SPG**

**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 personalisation
- U-bolt and flange mounting kits are available separately as spare parts

**Technical Data**
- Stainless Steel Pressure Gauge
- Pressure gauge according to EN 837-1
- Subject to technical modifications

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

**Permissible Temperatures**
- Ambient: -20 °C ... +60 °C / +4 °F ... +140 °F
- Media: max. +60 °C / max. +140 °F

**Protection Ratings**
- **IP 65**: for all manometer SPG-100 and SPG-063 > 16 bar / 232 PSI
- **IP 66**: for all manometer SPG-063 ≤ 16 bar / 232 PSI due to pressure compensation opening
- **IP 54 protection rating**: Dust protected and protected against splashing water

**Order Codes**

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<thead>
<tr>
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</table>

**Series and Type**

- Stainless Steel Pressure Gauge
- Ø 63 mm, with G1/4 or 1/4 NPT connection
- Ø 100 mm, with G1/2 or 1/2 NPT connection

**Pressure Ranges (only for type 01 - bar/PSI)**
- -1...15 bar / -14.5...21 PSI
- -1...3 bar / -14.5...43 PSI
- 0...10 bar / 0...145 PSI
- 0...16 bar / 0...232 PSI
- 0...25 bar / 0...362 PSI
- 0...40 bar / 0...580 PSI
- 0...60 bar / 0...870 PSI
- 0...100 bar / 0...1450 PSI
- 0...160 bar / 0...2320 PSI
- 0...250 bar / 0...3625 PSI
- 0...400 bar / 0...5801 PSI
- 0...600 bar / 0...8702 PSI
- 0...800 bar / 0...9862 PSI
- 0...1000 bar / 0...14503 PSI

**Process Connection**

- G1/4 (only SPG-063) B04
- G1/2 (only SPG-100) B08

**Adaption**

- Stem mounting S
- Panel mounting P

**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

**Styles of Scales**

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

**For further information see Catalogue 7 - STAUFF Test.**

* FS = Full Scale
Pressure Gauges

Pressure Gauge (analogue) • Type SPG

Dimensions SPG-063

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Dimensions SPG-100

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<td>1,25</td>
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</table>

* FS = Full Scale
Dimensional drawings: All dimensions in mm (in).
Pressure Test Kit (analogue) • Type SMB-20 / SMB-15

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

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<th>1</th>
<th>xxx/xxx/xxx</th>
<th>W3</th>
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</thead>
</table>

Series and Type
Pressure Test Kit, analogue (STAUFF Test 20) SMB-20
Pressure Test Kit, analogue (STAUFF Test 15) SMB-15

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

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

Material Surface
Steel, zinc/nickel plated W3

For further information see Catalogue 7 - STAUFF Test.
<table>
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<td>1x Test hose (2000 mm length) SMB-15-2000-B-W3</td>
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</tr>
<tr>
<td></td>
<td>1x Pressure gauge Ø 100 mm SPG-100-xxx-..</td>
<td></td>
<td></td>
<td>1x Pressure gauge Ø 100 mm SPG-100-xxx-..</td>
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<tr>
<td></td>
<td>1x Gauge adaptor G1/4 SMA-20-G14-B-OR-W3</td>
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<td>1x Gauge adaptor G1/4 SMA-15-G14-B-OR-W3</td>
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<tr>
<td></td>
<td>1x Direct gauge adaptor G1/4 SMD-20-G14-B-OR-W3</td>
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<td>1x Direct gauge adaptor G1/4 SMD-15-G14-B-OR-W3</td>
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<tr>
<td></td>
<td>1x Test coupling G1/4 SMK-20-G14-B-C-W3</td>
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<td>1x Test coupling G1/4 SMK-15-G14-B-C-W3</td>
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<td>1x Test coupling M10 x 1 SMK-20-M10x1-B-A-W3</td>
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<td>1x Test coupling M14 x 1,5 SMK-15-M14x1-5-B-W3</td>
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<td>1x Thread adaptor G1/2 SRS-15-G1/2-B-W3</td>
<td></td>
</tr>
</tbody>
</table>

Other adaptors are available.

www.stauff.com/8/en/#19

Catalogue 8 • Edition 02/2017
Digital Pressure Gauge • Type SPG-DIGI

Product Description

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

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

Features

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

Order Codes

<table>
<thead>
<tr>
<th>SPG-DIGI</th>
<th>B0016</th>
<th>B</th>
<th>CAL</th>
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<td>SPG-DIGI</td>
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<td>Pressure Ranges</td>
<td>-1 ... 16 bar / -14.5 ... 232 PSI</td>
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<td>0 ... 100 bar / 0 ... 1450 PSI</td>
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<td></td>
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<tr>
<td></td>
<td>0 ... 400 bar / 0 ... 5801 PSI</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>0 ... 600 bar / 0 ... 8702 PSI</td>
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Pressure Ranges

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<tr>
<th>Version</th>
<th>Pressure Range (bar/PSI)</th>
<th>Maximum Pressure (bar/PSI)</th>
<th>Burst Pressure (bar/PSI)</th>
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</tr>
<tr>
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<td>-14.5 ... 232</td>
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<td>725</td>
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<tr>
<td>B0100</td>
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<td>200</td>
<td>800</td>
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<td>0 ... 1450</td>
<td>2900</td>
<td>11603</td>
</tr>
<tr>
<td>B0400</td>
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<td>600</td>
<td>1700</td>
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<td>0 ... 5801</td>
<td>11603</td>
<td>24666</td>
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<tr>
<td>B0600</td>
<td>0 ... 600</td>
<td>1200</td>
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<tr>
<td></td>
<td>0 ... 8702</td>
<td>17404</td>
<td>31908</td>
</tr>
</tbody>
</table>

Technical Data

Materials

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

Dimensions and Weight

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

Display

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

Accuracy

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

Permissible Temperatures

- Ambient: -10 °C ... +50 °C / +14 °F ... +122 °F
- Media: -20 °C ... +80 °C / -4 °F ... +176 °F
- Storage: -20 °C ... +60 °C / -4 °F ... +140 °F
- Relative humidity: < 85 %
- Battery life: max. 1500 hours (operating without lighting, 2 x 1,5 V DC AA (LR6-AA) Alkaline Mignon)

Process Connections

- G1/4 or 7/16–20 UNF made of 1.4404 Stainless Steel
- Vibration: IEC 60068-2-6 / 10 ... 500 Hz / 5 g
- Shock: IEC 60068-2-27 / 11 ms / 25 g
- Load cycles (10^6): 100

Protection Rating

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

* FS = Full Scale
Pressure Test Kit (digital) • Type SMB-DIGI

Product Description

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

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

Components

Standard Option SMB-DIGI-20
- Digital Pressure Gauge SPG-DIGI
- Test Hose (2 m / 6.56 ft), M16 x 2, pressure-resistant 600 bar (8702 PSI) SMS-20-2000-B-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
- Thread Adaptor SRS-20-G3/8-B-W3
- Thread Adaptor SRS-20-G1/2-B-W3
- Operating manual (multilingual) on CD

Order Codes

<table>
<thead>
<tr>
<th>SMB-DIGI</th>
<th>-</th>
<th>20</th>
<th>-</th>
<th>B</th>
<th>-</th>
<th>CAL</th>
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<td>Pressure Test Kit, digital pressure gauge SMB-DIGI</td>
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<tr>
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<td></td>
</tr>
<tr>
<td>Version</td>
<td></td>
<td>Pressure Range (bar/PSI)</td>
<td>Maximum Pressure (bar/PSI)</td>
<td>Burst Pressure (bar/PSI)</td>
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<tr>
<td>B0016</td>
<td>-1 ... 16 bar / -14.5 ... 232 PSI</td>
<td>580</td>
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<tr>
<td>B0100</td>
<td>0 ... 100</td>
<td>200</td>
<td>800</td>
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<td>31008</td>
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</table>

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

Other adaptors are available.
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<tr>
<th>Section</th>
<th>Pages</th>
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</thead>
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<td>Functional Block Diagrams</td>
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<td>Hydraulic Testers</td>
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<td>Temperature Sensors</td>
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<tr>
<td>Pressure / Temperature Sensors</td>
<td>38-39</td>
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<td>Section</td>
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<tr>
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<td>PPC-CAN-SFM</td>
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<tr>
<td>PPC-04/12-SOS-CAB</td>
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<tr>
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<td>Sensorconverter-PPC</td>
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</tr>
<tr>
<td>Accessories</td>
<td>44</td>
</tr>
<tr>
<td>CAN Accessories</td>
<td>45</td>
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<tr>
<td>CAN Frequency Converter</td>
<td>45</td>
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<tr>
<td>PPC-CAN-FR</td>
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</tr>
<tr>
<td>Complete Systems</td>
<td>46 - 48</td>
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<td>PPC-04-CAN-SET</td>
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<td>For CAN Hydraulic Testers</td>
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<td>Pressure Transmitter</td>
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<td>PT-RF</td>
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<tr>
<td>Reader-PT-RF</td>
<td>53</td>
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<tr>
<td>Complete Systems</td>
<td>54</td>
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<td>PT-RF-SET</td>
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<tr>
<td>Accumulator Adaptor</td>
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<tr>
<td>SBAA / SDAA</td>
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<tr>
<td>Flow Indicators</td>
<td>56 - 57</td>
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<tr>
<td>Sensorconverter-PPC</td>
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<td>Flow Indicators</td>
<td>56 - 57</td>
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<td>SDM / SDMKR</td>
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</table>
The STAUFF measuring and test equipment of the PPC series are perfectly suited for measuring all relevant parameters in fluid power systems, including pressure, differential pressure, temperature, flow and rotational speed.

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

The application areas are broad:

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

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

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

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

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

### Hydraulic Testers of the PPC Series - Product Overview

<table>
<thead>
<tr>
<th>Options</th>
<th>PPC-04-plus</th>
<th>PPC-04-plus-CAN</th>
<th>PPC-06-plus</th>
<th>PPC-08-plus</th>
<th>PPC-Pad</th>
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<td>✓</td>
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<tr>
<td>Number of Sensor Inputs 2 (max. 2 analogue sensors)</td>
<td>1x CAN (max. 3 CAN sensors)</td>
<td>3</td>
<td>4</td>
<td>max. 6 + 2 x CAN (each 8 sensors)</td>
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<tr>
<td>PC Interface</td>
<td>USB</td>
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<td>Internal Trigger Function</td>
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</tr>
<tr>
<td>STAUFF CAN Sensor</td>
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<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

- = standard, – = not available
Hydraulic Testers of the PPC Series

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

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-CAN 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®) 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

<table>
<thead>
<tr>
<th>Series and Type</th>
<th>Version</th>
<th>Calibration</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-04-plus</td>
<td>Analogue</td>
<td>Without calibration (none)</td>
</tr>
<tr>
<td>PPC-04-plus-CAN</td>
<td>CAN</td>
<td>With calibration certificate</td>
</tr>
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</table>

Technical Data

Materials

• Housing made of ABS in a rubber protective

Dimensions and Weight

<table>
<thead>
<tr>
<th>W x H x D</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>96 x 172 x 54 mm / 3.78 x 6.77 x 2.13 in</td>
<td>ca. 540 g / 1.19 lbs</td>
</tr>
</tbody>
</table>

Pressures

<table>
<thead>
<tr>
<th>Pressure</th>
<th>Volume flow</th>
<th>Rotational speed</th>
<th>Display</th>
<th>Visible area</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>in bar, PSI, mbar, kPa, MPa</td>
<td>in l/min and US GPM</td>
<td>in 1/min and RPM</td>
<td>FSTN-LCD, graphic, LED backlit</td>
<td>62 x 62 mm / 2.44 x 2.44 in</td>
<td>130 x 130 Pixel</td>
</tr>
</tbody>
</table>

Power Supply

<table>
<thead>
<tr>
<th>External</th>
<th>Battery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro USB socket, type B +5V DC, max. 1000 mA</td>
<td>Lithium Ion pack</td>
</tr>
</tbody>
</table>

Operating time with the rechargeable battery: approx. 8 hours

Sensor Inputs

<table>
<thead>
<tr>
<th>Push-in connection: 5-pol., push-pull or 5-pol., M12x1, SPEEDCON, connector (CAN version)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic sensor recognition</td>
</tr>
<tr>
<td>Sampling rate: 1 ms</td>
</tr>
<tr>
<td>Accuracy: &lt; ±0.2 % FS ±1 Digit</td>
</tr>
</tbody>
</table>

Measurement / Display

Interfaces

<table>
<thead>
<tr>
<th>USB device: Online transmission between unit and PC via PPC-Soft-plus (software)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measured value transmission: ACT/MIN/MAX, min. 5 ms</td>
</tr>
<tr>
<td>Connection for USB stick, max. 4 GB</td>
</tr>
</tbody>
</table>

Protection Rating

<table>
<thead>
<tr>
<th>IP 54 protection rating: Dust protected and protected against splashing water</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP 67 protection rating: Dust tight and protected against splashing water</td>
</tr>
</tbody>
</table>

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 easily 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

Order Codes

- PPC - 06-plus - CAL

1. Series and Type
   HYDRAULIC TESTER

2. Version
   With 3 sensor inputs 06-plus
   With 4 sensor inputs 08-plus

3. Calibration
   Without calibration certificate (none)
   With calibration certificate CAL

Table:

<table>
<thead>
<tr>
<th>Version</th>
<th>No. Sensor Inputs</th>
<th>Integrated Data Memory for Measured Value Points</th>
<th>Memory Curves</th>
</tr>
</thead>
<tbody>
<tr>
<td>06-plus</td>
<td>3</td>
<td>1000000 Points</td>
<td>240000 Points</td>
</tr>
<tr>
<td>08-plus</td>
<td>4</td>
<td>Points</td>
<td>Points</td>
</tr>
</tbody>
</table>

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 easily transferred and processed by using PPC-Soft-plus software as well as exported to Microsoft Excel®.

Technical Data

Material

- Housing made of fibreglass-reinforced PA

Dimensions and Weight

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

Measurements / Display

- Pressure: in bar, PSI, mbar, kPa, MPa
- Temperature: in °C and °F
- Volume 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
- Numerical height: 6 mm / 0.24 in with eight-line display

Automation

- 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

* FS = Full Scale

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 ergonomic housing and the LCD display, which sets automatically to the appropriate line size, now allows problem free use even under difficult environmental 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 units are also available as a complete set. See page 46 for further information.
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

<table>
<thead>
<tr>
<th>Series and Type</th>
<th>PPC-Pad-101</th>
<th>PPC-Pad-102</th>
<th>PPC-Pad-103</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version</td>
<td>101</td>
<td>102</td>
<td>103</td>
</tr>
<tr>
<td>Calibration</td>
<td>(none)</td>
<td>CAL</td>
<td></td>
</tr>
</tbody>
</table>

Hydraulic Tester Version

<table>
<thead>
<tr>
<th>Version</th>
<th>CAN Sensor Inputs</th>
<th>Sensor Inputs with Sensor Recognition</th>
<th>Aux. Sensor Input (Digital)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-Pad-101</td>
<td>2 networks</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>PPC-Pad-102</td>
<td>3 sensors max</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>PPC-Pad-103</td>
<td>4 aux. sensors max</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>
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: Connection for mass storage devices such as USB memory stick or removable hard disc
  - standard: 2.0, fullspeed
  - 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 values
- 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 measured values
- Memory format: ACT/MIN/MAX
- Memory interval: 1 ms to 24 h
- Memory duration: 1 ms to 300 h (trigger measurement)
- Internal: 64 MB (approx. 32 million measured values)
- External SD memory: MicroSD memory card incl. in standard shipment
  - Slot: MicroSD memory card
- External USB mass memory device: up to 40 GB

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

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

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

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

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

Inputs for Auxiliary Sensors
- 2 analogue sensor inputs: for measuring current and voltage
  - Scanning rate: 0.1 ms = 10000 measured values/sec.
  - Voltage measuring range: -10 ... +10 V DC
  - 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 usable

Accuracy
- +0.02 % per °C
Hydraulic Tester • Type PPC-Pad

Functional Description

1. High protection from moisture and dirt due to cover caps and a rubber protective sleeve, protection class IP 64
2. Illuminated display for good readability in any situation
3. Protection of the housing, affording usage in tough environments 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. Portable multi-function hand-held measuring instrument - strong in design and tough in operation
9. Easy to carry and hang up with carrying strap
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 8 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
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 titles, 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
Hydraulic Testers

Pressure Sensor • Type PPC-04/12-P

Product Description

The Pressure Sensors PPC-04/12-P can be used with all analogue Hydraulic Testers of the PPC series, due to their 5-pin connection. Due to their sturdy Stainless Steel design, the quick response times (<1 ms) and the high accuracy (±0.25% FS* typ.) with automatic sensor recognition, the Pressure Sensors are a reliable and flexible solution for the Hydraulic Testers of the PPC series.

Note: A Connection Cable PPC-04/12-CAB3 (3 m / 9.84 ft) is needed to connect the Pressure Sensor PPC-04/12-P to the current Hydraulic Testers. An Extension Cable PPC-04/12-CAB5-EXT (5 m / 16.40 ft) is also available as an option. See page 44 for further information.

Pressure Sensor Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Pressure Measurement</th>
<th>Temperature Measurement</th>
<th>Process Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-04/12-P</td>
<td>yes</td>
<td>no</td>
<td>G1/4</td>
</tr>
</tbody>
</table>

Technical Data

- Sturdy Stainless Steel housing (1.4301)
- FKM/FPM (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

Order Code: PPC-04/12-P - 015 - CAL

Pressure Range and Accuracies

<table>
<thead>
<tr>
<th>Version</th>
<th>Pressure Measurement Range (Mbar)</th>
<th>Type of Measurement</th>
<th>Maximum Pressure (Mbar)</th>
<th>Burst Pressure (Mbar)</th>
<th>Accuracy (±% FS*) typ.</th>
<th>Accuracy (±% FS*) max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>015</td>
<td>-1 ... 15 Relative pressure</td>
<td>30</td>
<td>150</td>
<td>0.25</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>060</td>
<td>0 ... 60 Absolute pressure</td>
<td>120</td>
<td>500</td>
<td>0.25</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>0 ... 150 Absolute pressure</td>
<td>300</td>
<td>900</td>
<td>0.25</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>400</td>
<td>0 ... 400 Absolute pressure</td>
<td>800</td>
<td>1200</td>
<td>0.25</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>600</td>
<td>0 ... 600 Absolute pressure</td>
<td>1160</td>
<td>17404</td>
<td>0.25</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>601</td>
<td>0 ... 600 ** Absolute pressure</td>
<td>1200</td>
<td>1800</td>
<td>0.25</td>
<td>0.5</td>
<td></td>
</tr>
</tbody>
</table>

* 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.
CAN Pressure Sensor • Type PPC-CAN-P

Product Description

The CAN Pressure Sensors PPC-CAN-P are specially designed for use with the CAN Hydraulic Testers. These sensors are using the CANopen protocol to transfer the measurement values to the CAN Hydraulic Testers. Most technical details are the same as with the Pressure Sensors.

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

Connecting the CAN Pressure Sensor to the CAN Hydraulic Tester a CAN Connection Cable and a CAN Terminating Resistor is needed. See page 45 for further information.

Technical Data

- Sturdy Stainless Steel housing (1.4301)
- FKM/FPM (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 (106): 100

CANopen Interface

- CANopen protocol profile DS406 v3.2
- LSS service DS305 v2.0

Electrical Data

- Response time: 1 ms
- Long-term stability: < 0,2 % FS* typ.
- Shock loading: acc. to IEC 60068-2-27 (20 g)
- Vibration loading: acc. to IEC 60068-2-6 (26 g)

Order Codes

- Series and Type
  - CAN Pressure Sensor PPC-CAN-P
- Version
  - See table
- Calibration
  - Without calibration certificate
  - With calibration certificate CAL

Pressure Range and Accuracies

<table>
<thead>
<tr>
<th>Sensor PPC-CAN-P-</th>
<th>Pressure Measuring Range (*±% FS)</th>
<th>Type of Measurement</th>
<th>Maximum Pressure (**in bar)</th>
<th>Burst Pressure (**in bar)</th>
<th>Accuracy (±% FS* typ.)</th>
<th>Accuracy (±% FS* max.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>016</td>
<td>-1...16</td>
<td>Relative pressure</td>
<td>52</td>
<td>150</td>
<td>0,25</td>
<td>0,5</td>
</tr>
<tr>
<td></td>
<td>-14,5...232</td>
<td>464</td>
<td>2175</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>060</td>
<td>0...60</td>
<td>Absolute pressure</td>
<td>120</td>
<td>900</td>
<td>0,25</td>
<td>0,5</td>
</tr>
<tr>
<td></td>
<td>0...970</td>
<td>1740</td>
<td>7251</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>160</td>
<td>0...160</td>
<td>Absolute pressure</td>
<td>320</td>
<td>900</td>
<td>0,25</td>
<td>0,5</td>
</tr>
<tr>
<td></td>
<td>0...2320</td>
<td>4641</td>
<td>13053</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>400</td>
<td>0...400</td>
<td>Absolute pressure</td>
<td>800</td>
<td>1200</td>
<td>0,25</td>
<td>0,5</td>
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<tr>
<td></td>
<td>0...5601</td>
<td>11003</td>
<td>17404</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>600</td>
<td>0...600</td>
<td>Absolute pressure</td>
<td>1200</td>
<td>1800</td>
<td>0,25</td>
<td>0,5</td>
</tr>
<tr>
<td></td>
<td>0...8702</td>
<td>17404</td>
<td>26106</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>601</td>
<td>0...600**</td>
<td>Absolute pressure</td>
<td>1200</td>
<td>2500</td>
<td>0,25</td>
<td>0,5</td>
</tr>
<tr>
<td></td>
<td>0...8702</td>
<td>17404</td>
<td>38259</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* 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 (SDA-20/15-B-W3, SAD-20/12-B-W3, SAD-20/10-B-W3). For further information please see Catalogue 7 - STAUFF Test.
Hydraulic Testers

Temperature Sensor • Type PPC-04/12-T

Product Description

The Screw-in Temperature Sensors PPC-04/12-T measure current temperature directly in the pipeline and are compatible with the Flow Turbine PPC-04/12-SFM and the Straight Threaded Joint SGV-16S-G-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-CAB3 (3 m/9.84 ft) is needed to connect the Temperature Sensor PPC-04/12-T or -TSH to the current Hydraulic Testers. An Extension Cable PPC-04/12-CAB5-EXT (5 m/16.40 ft) is also available as an option. See page 44 for further information.

FS = Full Scale

Dimensional drawings: All dimensions in mm (in).

Order Codes

<table>
<thead>
<tr>
<th>PPC-04/12</th>
<th>T</th>
<th>M02</th>
<th>CAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

1. Series and Type
   - Temperature Sensor PPC-04/12
   - Screw-in
   - Rod-type TSH

2. Version
   - Process Connection only (for Version T)
     - M10x1 M02
     - G1/4 B04

3. 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
- 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
- Accuracy: ±0,01 % FS* a/Span
- Vibration loading: acc. to IEC 60068-2-6 (20 g)
- Shock loading: acc. to IEC 60668-2-27 (50 g)

Electrical Data

- Input signal: 7...12 V DC
- Output signal: 0...3 V DC
- Response time (T)
  - M02 (M10x1): T50 ≤ 4 s, T90 ≤ 14 s
  - B04 (G1/4): T50 ≤ 4 s, T90 ≤ 12 s
- Response time (TSH): T90 ≤ 9.1 s
- Long-term stability: ±0.01 % FS* a/Span
- Vibration loading: acc. to IEC 60668-2-6 (20 g)
- Shock loading: acc. to IEC 60668-2-27 (50 g)

Measuring Range

<table>
<thead>
<tr>
<th>Measuring Range</th>
<th>Temperature Sensor</th>
<th>Measuring Range (T)</th>
<th>Measuring Range (TSH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media temperature</td>
<td>-40 °C ... +150 °C / -40 °F ... +302 °F</td>
<td>-25 °C ... +125 °C / -13 °F ... +257 °F</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-40 °C ... +85 °C / -40 °F ... +185 °F</td>
<td>-25 °C ... +70 °C / -13 °F ... +158 °F</td>
<td></td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-40 °C ... +85 °C / -40 °F ... +185 °F</td>
<td>-25 °C ... +80 °C / -13 °F ... +176 °F</td>
<td></td>
</tr>
</tbody>
</table>

* FS = Full Scale

For further information please see Catalogue 7 - STAUFF Test.
Product Description

The CAN Temperature Sensor PPC-CAN-T are specially designed for use with the CAN Hydraulic Testers. This sensor is using the CANopen protocol to transfer the measurement values to the CAN Hydraulic Testers. The PPC-CAN-T is compatible with the CAN Flow Turbine PPC-CAN-SFM and the Straight Threaded Joint SGV-16S-G-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 to 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.

Order Codes

<table>
<thead>
<tr>
<th>PPC-CAN</th>
<th>T</th>
<th>M02</th>
<th>CAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Series and Type</td>
<td>CAN Temperature Sensor</td>
<td>PPC-CAN</td>
<td></td>
</tr>
<tr>
<td>Version</td>
<td>Screw-in</td>
<td>T</td>
<td></td>
</tr>
<tr>
<td>Process Connection (only for Version T)</td>
<td>M10x1</td>
<td>M02</td>
<td></td>
</tr>
<tr>
<td></td>
<td>G1/4</td>
<td>B04</td>
<td></td>
</tr>
<tr>
<td>Calibration</td>
<td>Without calibration certificate</td>
<td>(none)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>With calibration certificate</td>
<td>CAL</td>
<td></td>
</tr>
</tbody>
</table>

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/FPM (Viton®)

Weight

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

Ambient Conditions

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

Measuring Range

- Measuring range: -40 °C ... +150 °C / -40 °F ... +302 °F
- Operating pressure: 630 bar / 9137 PSI
- Maximum pressure: 800 bar / 11603 PSI
- Burst pressure: 2150 bar / 31183 PSI
- Accuracy: ±0.66 % FS

CANopen Interface

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

Electrical Data

- Output signal: CAN bus
- Response time
- M02 (M10x1): T50 < 4 s, T90 < 12 s
- B04 (G1/4): T50 < 4 s, T90 < 14 s
- Long-term stability: ±0.01 % FS / Span
- Vibration loading: acc. to IEC 60068-2-6 (20 g)
- Shock loading: acc. to IEC 60068-2-27 (50 g)

CAN Temperature Sensor • Type PPC-CAN-T

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

For further information please see Catalogue 7 - STAUFF Test.
Product Description

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

Due the sturdy Stainless Steel design, the quick response time (< 1 ms) and the high accuracy (±0.25% FS* typ.) with automatic sensor recognition, the Pressure / Temperature Sensor is a reliable and flexible solution for the Hydraulic Testers of the PPC series.

Note: A Connection Cable PPC-04/12-CAB3 (3 m / 9.84 ft) is needed to connect the Pressure / Temperature Sensor to the current Hydraulic Testers. An Extension Cable PPC-04/12-CAB5-EXT (5 m / 16.40 ft) is also available as an option. See page 44 for further information.

Technical Data

- Sturdy Stainless Steel housing (1.4301)
- FKM/FPM (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)

Pressurizer and Accuracies

<table>
<thead>
<tr>
<th>Sensor</th>
<th>Pressure Measuring Range (bar/PSI)</th>
<th>Type of Measurement</th>
<th>Maximum Pressure (bar/PSI)</th>
<th>Burst Pressure (bar/PSI)</th>
<th>Accuracy (±% FS*) typ.</th>
<th>Accuracy (±% FS*) max.</th>
<th>Temperature Measuring Range (°C/°F)</th>
<th>Accuracy (±% FS*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-04/12-PT-015/2</td>
<td>0 ... 15 Relative pressure 30 150 0,25 0,5 -25 ... 105 -13 ... 221 1,5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPC-04/12-PT-060/2</td>
<td>0 ... 60 Absolute pressure 120 500 0,25 0,5 -25 ... 105 -13 ... 221 1,5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPC-04/12-PT-150/2</td>
<td>0 ... 150 Absolute pressure 300 900 0,25 0,5 -25 ... 105 -13 ... 221 1,5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPC-04/12-PT-400/2</td>
<td>0 ... 400 Absolute pressure 800 1200 0,25 0,5 -25 ... 105 -13 ... 221 1,5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPC-04/12-PT-600/2</td>
<td>0 ... 600 Absolute pressure 1200 1800 0,25 0,5 -25 ... 105 -13 ... 221 1,5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPC-04/12-PT-6001/2</td>
<td>0 ... 600 Absolute pressure 1200 1800 0,25 0,5 -25 ... 105 -13 ... 221 1,5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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).
**Product Description**

The CAN Pressure / Temperature Sensors PPC-CAN-PT are specially designed for use with the CAN Hydraulic Testers. This sensor uses 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 to 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.

---

**Technical Data**

- **Sturdy Stainless Steel housing (1.4301)**
- **FKM/FPM (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
  - 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
  - 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)

---

**Pressure Range and Accuracies**

<table>
<thead>
<tr>
<th>Version</th>
<th>Pressure Range and Accuracies</th>
</tr>
</thead>
<tbody>
<tr>
<td>016</td>
<td>Pressure Measurement: 32-150 bar</td>
</tr>
<tr>
<td>060</td>
<td>Pressure Measurement: 120-500 bar</td>
</tr>
<tr>
<td>160</td>
<td>Pressure Measurement: 320-900 bar</td>
</tr>
<tr>
<td>400</td>
<td>Pressure Measurement: 800-1200 bar</td>
</tr>
<tr>
<td>600</td>
<td>Pressure Measurement: 1200-1800 bar</td>
</tr>
<tr>
<td>601</td>
<td>Pressure Measurement: 1250-2500 bar</td>
</tr>
</tbody>
</table>

* FS = Full Scale ** Pressure peaks up to 1000 bar / 14503 PSI

---

**Order Codes**

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

---

**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-20-1/2-W3), but also to the Test Couplings of the STAUFF Test 15/12/10 series (SA-20-1/2-W3, SAD-20-1/2-B-W3, SAD-20-1/2-B-W3). For further information please see Catalogue 7 - STAUFF Test.
Flow Turbine • Type PPC-04/12-SFM

Product Description

The PPC-04/12-SFM Flow Turbine is permanently installed in the pipeline. The oil flow rotates the internal axial turbine. 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 accuracy.

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

Note: A Connection Cable PPC-04/12-CAB3 (3 m / 9.84 ft) is needed to connect the Flow Turbine to the current Hydraulic Testers. An Extension Cable PPC-04/12-CAB5-EXT (5 m / 16.40 ft) is also available as an option. See page 44 for further information.

Technical Data

Materials
- Housing: Aluminium (black anodised)
- Gaskets: FKM/FPM (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

Order Codes

PPC-04/12-SFM-015-CAL

1 Series and Type
Flow Turbine PPC-04/12

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

3 Calibration
Without calibration certificate (none)
With calibration certificate CAL

UNF version available on request.

Dimensions and Measuring Range

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SFM-015</td>
<td>1 ... 15</td>
<td>16.5</td>
<td>520</td>
<td>420</td>
<td>±1 (FS)</td>
</tr>
<tr>
<td></td>
<td>27 ... 3.90</td>
<td>4.4</td>
<td>5076</td>
<td>6091</td>
<td>1.5</td>
</tr>
<tr>
<td>SFM-060</td>
<td>3 ... 60</td>
<td>86</td>
<td>350</td>
<td>420</td>
<td>±1 (of the displayed value)</td>
</tr>
<tr>
<td></td>
<td>29 ... 15.90</td>
<td>17.4</td>
<td>5076</td>
<td>6091</td>
<td>21.8</td>
</tr>
<tr>
<td>SFM-150</td>
<td>5 ... 150</td>
<td>165</td>
<td>350</td>
<td>420</td>
<td>±1 (of the displayed value)</td>
</tr>
<tr>
<td></td>
<td>1.32 ... 39.60</td>
<td>43.6</td>
<td>5076</td>
<td>6091</td>
<td>21.8</td>
</tr>
<tr>
<td>SFM-300</td>
<td>8 ... 300</td>
<td>330</td>
<td>350</td>
<td>420</td>
<td>±1 (of the displayed value)</td>
</tr>
<tr>
<td></td>
<td>21.1 ... 79.00</td>
<td>87.2</td>
<td>5076</td>
<td>6091</td>
<td>58</td>
</tr>
<tr>
<td>SFM-600</td>
<td>15 ... 600</td>
<td>660</td>
<td>290</td>
<td>348</td>
<td>±1 (of the displayed value)</td>
</tr>
<tr>
<td></td>
<td>3.96 ... 158.00</td>
<td>174.4</td>
<td>4206</td>
<td>5947</td>
<td>72.2</td>
</tr>
</tbody>
</table>

* FS = Full Scale
** Standard option

Dimensional drawings: All dimensions in mm (in.).
The CAN Flow Turbine PPC-CAN-SFM is specially designed for 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 on the calibration (available as an option) apply only when the flow through the CAN Flow Turbine matched the recommended flow direction. A double-headed arrow is shown on the nameplate of the PPC-CAN-SFM. The thicker end of the double-headed arrow specifies the recommended direction of the flow.

Connecting the CAN Flow Turbine to the CAN Hydraulic Tester a CAN Connection Cable and a CAN Terminating Resistor is needed. See page 45 for further information.

**Materials**
- Housing: Aluminium (black anodised)
- Gaskets: FKM/FPM (Viton®)
- 5-pin SPEEDCON connection plug
- Pressure measurement connection: SMK-20 (M16 x 2)
- Temperature measurement connection: M15 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

**Technical Data**
- **Response time**: 50 ms

**Process Connection**
- **Please see table below**

**Dimensions and Measuring Range**

<table>
<thead>
<tr>
<th>Version</th>
<th>Measuring Range (l/min/US GPM)</th>
<th>Max. Flow (l/min/US GPM)</th>
<th>Operating Pressure (bars)</th>
<th>Max. Pressure (bars)</th>
<th>Accuracy (at 21 cSt)</th>
<th>Max. Pressure Drop (bars)</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFM-015</td>
<td>1 ... 15</td>
<td>16,5</td>
<td>350</td>
<td>420</td>
<td>±1 % (FS)</td>
<td>21,8</td>
<td>3/4-16</td>
</tr>
<tr>
<td></td>
<td>26 ... 30</td>
<td>4.4</td>
<td>5076</td>
<td>6091</td>
<td>21,8</td>
<td>43/4</td>
<td></td>
</tr>
<tr>
<td>SFM-060</td>
<td>3 ... 60</td>
<td>66</td>
<td>350</td>
<td>420</td>
<td>±1 % of the displayed value</td>
<td>21,8</td>
<td>1-1/16-16</td>
</tr>
<tr>
<td></td>
<td>29 ... 15,90</td>
<td>17,4</td>
<td>5076</td>
<td>6091</td>
<td>21,8</td>
<td>1-1/16-16</td>
<td></td>
</tr>
<tr>
<td>SFM-150</td>
<td>5 ... 150</td>
<td>165</td>
<td>350</td>
<td>420</td>
<td>±1 % of the displayed value</td>
<td>1,5</td>
<td>43/4</td>
</tr>
<tr>
<td></td>
<td>5,12 ... 39,60</td>
<td>45,6</td>
<td>5076</td>
<td>6091</td>
<td>21,8</td>
<td>1-1/16-16</td>
<td></td>
</tr>
<tr>
<td>SFM-300</td>
<td>8 ... 300</td>
<td>330</td>
<td>350</td>
<td>420</td>
<td>±1 % of the displayed value</td>
<td>4</td>
<td>1-5/8-16</td>
</tr>
<tr>
<td></td>
<td>30 ... 120</td>
<td>97,2</td>
<td>5076</td>
<td>6091</td>
<td>21,8</td>
<td>1-5/8-16</td>
<td></td>
</tr>
<tr>
<td>SFM-600</td>
<td>15 ... 600</td>
<td>660</td>
<td>290</td>
<td>348</td>
<td>±1 % of the displayed value</td>
<td>5</td>
<td>1-5/8-16</td>
</tr>
<tr>
<td></td>
<td>3,96 ... 158,00</td>
<td>17,4</td>
<td>4206</td>
<td>5047</td>
<td>72,5</td>
<td>1-5/8-16</td>
<td></td>
</tr>
</tbody>
</table>

**Order Codes**
- **PPC-CAN**
- **SFM-015**
- **CAL**

**Catalogue 8 • Edition 02/2017**

www.stauff.com/B/en/#41
**Rotational Speed Sensor • Type PPC-04/12-SDS-CAB**

**Product Description**

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

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

This also produces high-accuracy measurement results. In the case of especially 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**

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

**Measuring Range**

- **Measuring range:** 20 ... 10000 1/min
- **Measuring distance:** 25 ... 500 mm (1 ... 20 in)
- **Measuring angle:** ±45 °C
- **Accuracy:** ≤ ±0.5 % FS*
- **Resolution:** ±5 1/min

**Electrical Data**

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

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

**Applications Examples**

**Order Codes**

**Focus Adaptor**

- **Series and Type**
  - PPC-04/12-SFA-focus

**Contact Adaptor**

- **Series and Type**
  - PPC-04/12-SKA-contact
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 sensors (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.
Connection and Extension Cables (analogue)

Product Description

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

Connection and Extension Cables

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

Note: This cable cannot be used with older Hydraulic Testers and/or sensors (with 4-pin connection)!

The PPC-04/12-CAB5-EXT Extension 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!

Order Codes

<table>
<thead>
<tr>
<th>Series and Type</th>
<th>Order Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Connection Cable for Sensors</td>
<td>PPC-04/12-CAB3</td>
</tr>
<tr>
<td>Extension Cable</td>
<td>PPC-04/12-CAB5-EXT</td>
</tr>
</tbody>
</table>

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.

Order Code

<table>
<thead>
<tr>
<th>Series and Type</th>
<th>Order Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC Set</td>
<td>PC-SET-PPC-04-plus-SW-CAB</td>
</tr>
</tbody>
</table>

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 Code

<table>
<thead>
<tr>
<th>Series and Type</th>
<th>Order Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC Set</td>
<td>PC-SET-PPC-06/08-plus-SW-CAB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Order Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-04/12-CAB3</td>
</tr>
<tr>
<td>PC-SET-PPC-04-plus-SW-CAB</td>
</tr>
<tr>
<td>PC-SET-PPC-06/08-plus-SW-CAB</td>
</tr>
</tbody>
</table>
CAN Accessories

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 / 65.65 ft.

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

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

Order Codes

<table>
<thead>
<tr>
<th>Series and Type</th>
<th>Order Code</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CAN Connection Cable</strong></td>
<td>PPC-CAN</td>
</tr>
<tr>
<td><strong>CAN Y-Splitter Cable</strong></td>
<td>PPC-CAN-CAB-Y</td>
</tr>
<tr>
<td><strong>CAN Terminating Resistor</strong></td>
<td>PPC-CAN-R</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Length</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 m / 1.64 ft</td>
<td>CAB05</td>
</tr>
<tr>
<td>2 m / 6.65 ft</td>
<td>CAB2</td>
</tr>
<tr>
<td>5 m / 16.40 ft</td>
<td>CAB5</td>
</tr>
<tr>
<td>10 m / 32.81 ft</td>
<td>CAB10</td>
</tr>
<tr>
<td>20 m / 65.65 ft</td>
<td>CAB20</td>
</tr>
</tbody>
</table>

Product Description

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

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

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

**Technical Data**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>114 x 64 x 26 mm / 4.49 x 2.52 x 1.02 in</td>
</tr>
</tbody>
</table>

**Ambient Conditions**

| Operating temperature | 0 °C ... +60 °C / +32 °F ... +140 °F |
| Storage temperature | -25 °C ... +70 °C / -13 °F ... +158 °F |
| Relative humidity | < 80 % |

**Electrical Data**

| Measuring range | 1 Hz ... 5 KHz |
| Sinus and rectangle signals | 40 mV pp ... 10 V pp |
| Sensor power supply | 24 V DC ± 0.5 V DC |
| I_mean, without power supply | 50 mA |

**Power Supply**

| Power supply (external) | 8 ... 24 V DC |

**Electrical Connection**

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

*SPEEDCON is a trademark of PHOENIX CONTACT GmbH & Co. KG*
Complete Systems for analogue Hydraulic Testers PPC-04/06/08-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

<table>
<thead>
<tr>
<th>Standard Options for Complete Systems PPC-04-plus</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 x Hydraulic Tester PPC-04-plus</td>
<td></td>
</tr>
<tr>
<td>1 x Power supply incl. country-specific adaptor</td>
<td></td>
</tr>
<tr>
<td>Up to 3 Pressure Sensors PPC-04/12-P with installed adaptors for STAUFF Test 20 (M16 x 2)</td>
<td></td>
</tr>
<tr>
<td>Up to 2 Connection Cables (3 m / 9.84 ft)</td>
<td></td>
</tr>
<tr>
<td>1 x Temperature Sensor PPC-04/12-T-M02 with installed SGV-165-G-W3 (optional)</td>
<td></td>
</tr>
<tr>
<td>3 x Adaptors SAD for the STAUFF Test 15/12/10 series (standard for all PPC complete systems)</td>
<td></td>
</tr>
<tr>
<td>1 x Operating instructions (bilingual) on CD</td>
<td></td>
</tr>
<tr>
<td>1 x PC software for PPC-04-plus</td>
<td></td>
</tr>
<tr>
<td>1 x PC connection cable</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard Options for Complete Systems PPC-06/08-plus</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 x Hydraulic Tester PPC-06-plus or PPC-08-plus</td>
<td></td>
</tr>
<tr>
<td>1 x Power supply incl. country-specific adaptor</td>
<td></td>
</tr>
<tr>
<td>Up to 3 Pressure Sensors with installed adaptors STAUFF Test 20 (M16 x 2)</td>
<td></td>
</tr>
<tr>
<td>Up to 3 Connection Cables (3 m / 9.84 ft)</td>
<td></td>
</tr>
<tr>
<td>1 x Temperature Sensor PPC-04/12-T-M02 with installed SGV-165-G-W3 (optional)</td>
<td></td>
</tr>
<tr>
<td>3 x Adaptors SAD for the STAUFF Test 15/12/10 series (standard for all PPC complete systems)</td>
<td></td>
</tr>
<tr>
<td>1 x Operating instructions (bilingual) on CD</td>
<td></td>
</tr>
<tr>
<td>1 x PC software for PPC-06/08-plus</td>
<td></td>
</tr>
<tr>
<td>1 x PC connection cable</td>
<td></td>
</tr>
</tbody>
</table>

Note: Please contact STAUFF for calibrated version.

Order Codes

<table>
<thead>
<tr>
<th>PPC</th>
<th>-04-SET</th>
<th>-2-</th>
<th>T</th>
<th>015</th>
<th>150</th>
<th>000</th>
<th>CAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

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
   - Pressure Range
     - 000: When ordering a complete system with one or two pressure sensors, specify “000” for the pressure range of the 2. and / or 3. pressure sensors.
     - 015
     - 060
     - 150: Pressure Range
     - 400: 1. Pressure Sensor
     - 600: 2. Pressure Sensor
     - 601: 3. Pressure Sensor
   - Pressure Sensor
     - 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.

Pressure Range and Pressure Sensor

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>Pressure Sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td>000</td>
<td>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.</td>
</tr>
<tr>
<td>015</td>
<td></td>
</tr>
<tr>
<td>060</td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>Pressure Range</td>
</tr>
<tr>
<td>400</td>
<td>1. Pressure Sensor</td>
</tr>
<tr>
<td>600</td>
<td>2. Pressure Sensor</td>
</tr>
<tr>
<td>601</td>
<td>3. Pressure Sensor</td>
</tr>
</tbody>
</table>

Note: Please contact STAUFF for calibrated version.
Complete Systems • Type PPC-04-CAN-SET

Product Description

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

Components

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

- 1x Hydraulic Tester PPC-04-plus-CAN
- 1x Power Supply incl. country-specific Adaptor
- Up to 3 CAN Pressure Sensors PPC-CAN-P with installed Adaptors for STAUFF Test 20 (M16 x 2)
- 1x CAN Temperature Sensor PPC-CAN-T-M02 with installed SGV-16S-G-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.

Order Codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Series and Type</th>
<th>Version</th>
<th>Number of CAN Pressure Sensors</th>
<th>CAN-Temperature Sensor</th>
<th>Pressure Range and Pressure Sensors 1</th>
<th>Pressure Range and Pressure Sensors 2</th>
<th>Pressure Range and Pressure Sensors 3</th>
<th>Calibration</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC</td>
<td>04-CAN-SET</td>
<td>2-T</td>
<td>1</td>
<td>(none)</td>
<td>(see table)</td>
<td>(see table)</td>
<td>(see table)</td>
<td>(none)</td>
</tr>
</tbody>
</table>

Pressure Range and CAN Pressure Sensor

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>CAN Pressure Sensor</th>
<th>Pressure Range</th>
<th>Pressure Range</th>
<th>Pressure Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>000</td>
<td>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.</td>
<td>160</td>
<td>400</td>
<td>600</td>
</tr>
</tbody>
</table>

Please keep in mind that two CAN pressure sensors with identical measuring ranges are necessary for differential pressure measurements.
Complete Systems • Type 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)
- 1 CAN 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

Version PPC-Pad-Set

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>PPC-Pad-SET-101</td>
<td>PPC-Pad-101</td>
<td>2 networks</td>
<td>Sensor Recognition STAFF (Analogue)</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>PPC-Pad-SET-102</td>
<td>PPC-Pad-102</td>
<td>3</td>
<td>Sensor Recognition STAFF (Analogue)</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
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<tr>
<td>PPC-Pad-SET-103</td>
<td>PPC-Pad-103</td>
<td>4</td>
<td>Sensor Recognition STAFF (Analogue)</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>
### Ordering Table for analogue Hydraulic Test Equipment

<table>
<thead>
<tr>
<th>Series</th>
<th>Descriptions</th>
<th>Order Codes</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hydraulic Testers</td>
<td>Hydraulic Tester PPC-04-plus with 2 sensor inputs, incl. accessories</td>
<td>PPC-04-plus</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Hydraulic Tester PPC-06-plus with 3 sensor inputs, incl. accessories</td>
<td>PPC-06-plus</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>Hydraulic Tester PPC-08-plus with 4 sensor inputs, incl. accessories</td>
<td>PPC-08-plus</td>
<td>30</td>
</tr>
<tr>
<td>2. Pressure Measurement</td>
<td>Pressure Sensors G1/4 (without Adaptor)</td>
<td>PPC-04/12-P-015</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>Pressure range from 1 ... 15 bar / 21.7 PSI relative pressure</td>
<td>PPC-04/12-P-060</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>Pressure range from 0 ... 150 bar / 2175 PSI absolute pressure</td>
<td>PPC-04/12-P-150</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>Pressure range from 0 ... 420 bar / 6070 PSI absolute pressure</td>
<td>PPC-04/12-P-400</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>Pressure range from 0 ... 600 bar / 8702 PSI absolute pressure</td>
<td>PPC-04/12-P-600</td>
<td>34</td>
</tr>
<tr>
<td>3. Temperature Measurement</td>
<td>Temperature Sensors (±40 °C ... +150 °C / -40 °F ... +302 °F)</td>
<td>PPC-04/12-T-M02</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>Screw-in Temperature Sensor for pipeline installation</td>
<td>PPC-04/12-T-M02</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>Red-type Temperature Sensor for tank / container measurements</td>
<td>PPC-04/12-T-M02</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>Straight threaded Adaptor</td>
<td>S8N-16S-5-W3</td>
<td>36</td>
</tr>
<tr>
<td>4. Pressure / Temperature Measurement</td>
<td>Pressure / Temperature Sensors G1/2 (without Adaptor)</td>
<td>PPC-04/12-P-015</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>Pressure range from 1 ... 15 bar / 21.7 PSI relative pressure</td>
<td>PPC-04/12-P-060</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>Pressure range from 0 ... 150 bar / 2175 PSI absolute pressure</td>
<td>PPC-04/12-P-150</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>Pressure range from 0 ... 420 bar / 6070 PSI absolute pressure</td>
<td>PPC-04/12-P-400</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>Pressure range from 0 ... 600 bar / 8702 PSI absolute pressure</td>
<td>PPC-04/12-P-600</td>
<td>38</td>
</tr>
<tr>
<td>5. Connection Adapters for PPC Sensors</td>
<td>Connection Adaptors</td>
<td>SDA-20-014-W3</td>
<td>34 / 38</td>
</tr>
<tr>
<td></td>
<td>Adapter G1/4 to M16 x 2 (STAUFF Test 20)</td>
<td>SDA-20-014-W3</td>
<td>34 / 38</td>
</tr>
<tr>
<td></td>
<td>Adapter G1/4 to M16 x 2 (STAUFF Test 20)</td>
<td>SDA-20-014-W3</td>
<td>34 / 38</td>
</tr>
<tr>
<td></td>
<td>Adapter M16 x 2 to M16 x 1.5 (STAUFF Test 20 to STAUFF Test 15)</td>
<td>SAD-20/15-B-W3</td>
<td>34 / 38</td>
</tr>
<tr>
<td></td>
<td>Adapter M16 x 2 to S12,65 x 1,5 (STAUFF Test 20 to STAUFF Test 12)</td>
<td>SAD-20/15-B-W3</td>
<td>34 / 38</td>
</tr>
<tr>
<td></td>
<td>Measuring range from 1 ... 15 l/min / 3.3 ... 3.9 US GPM</td>
<td>PPC-04/12-SFM-060</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Measuring range from 0 ... 100 l/min / 0 ... 160 US GPM</td>
<td>PPC-04/12-SFM-150</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Measuring range from 0 ... 400 l/min / 0 ... 660 US GPM</td>
<td>PPC-04/12-SFM-300</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Measuring range from 0 ... 600 l/min / 5.3 ... 158 US GPM</td>
<td>PPC-04/12-SFM-600</td>
<td>40</td>
</tr>
<tr>
<td>7. Rotational Speed Measurement</td>
<td>Rotational Speed Sensor with integrated Connection Cable 2 m / 6.56 ft</td>
<td>PPC-04/12-SDS-CAB</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>Contact Adaptor</td>
<td>PPC-04/12-SKA-contact adaptor</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>Focus Adaptor</td>
<td>PPC-04/12-SFA-focus adaptor</td>
<td>42</td>
</tr>
<tr>
<td>8. Current / Voltage / Frequency Converter for Third-party Sensors</td>
<td>Current / Voltage / Frequency Converter / Third-party Sensor (up to 4 A DC / 48 V DC / 5 kHz)</td>
<td>Sensorconverter-PPC</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>Connection Cable 3 m / 9.84 ft (5-pin push/pull connection on both sides)</td>
<td>PPC-04/12-CAB3</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>Extension Cable 5 m / 16.40 ft (5-pin push/pull connection on both sides)</td>
<td>PPC-04/12-CAB5-EXT</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>PC Connection Cable and PC Software for PPC-04-plus</td>
<td>PC-SET-PPC-04-plus-SW-CAB</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>PC Connection Cable and PC Software for PPC-06/08-plus</td>
<td>PC-SET-PPC-06/08-plus-SW-CAB</td>
<td>44</td>
</tr>
<tr>
<td>9. Accessories (Connection / Extension Cables and Software)</td>
<td>Case PPC-04-plus (with foam insert)</td>
<td>PPC-04-plus-case</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>Case PPC-06/08-plus (with foam insert)</td>
<td>PPC-06/12-case</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>Power Supply (10/230 V AC) for PPC-04-plus with USB connections, incl. country-specific adapter</td>
<td>PPC-04-plus-110V/230V-USB</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>Power Supply (10/230 V AC) for PPC-06/08-plus, incl. country-specific adapter</td>
<td>PPC-04/12-110V/230V</td>
<td>46</td>
</tr>
</tbody>
</table>

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

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

* Pressure peaks up to 1000 bar / 14500 PSI

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

* 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 | 45
| | CAN Hydraulic Tester PPC-Pad-103 with 2 CAN networks and 6 analogue sensor inputs, incl. accessories | PPC-Pad-103 | 46
2. **Pressure Measurement** | CAN Pressure Sensors G1/4 (without Adaptor) | PPC-CAN-P | 35
| | Pressure range from -1 ... 16 bar / -14.5 ... 232 PSI relative pressure | PPC-CAN-P-016 | 35
| | Pressure range from 0 ... 60 bar / 0 ... 870 PSI absolute pressure | PPC-CAN-P-060 | 35
| | Pressure range from 0 ... 160 bar / 0 ... 2231 PSI absolute pressure | PPC-CAN-P-160 | 35
| | Pressure range from 0 ... 400 bar / 0 ... 5807 PSI absolute pressure | PPC-CAN-P-400 | 35
| | Pressure range from 0 ... 600 bar / 0 ... 8702 PSI absolute pressure | PPC-CAN-P-600 | 35
| | Pressure range from 0 ... 600 bar / 0 ... 8702 PSI absolute pressure | PPC-CAN-P-601 | 35
3. **Temperature Measurement** | CAN-Temperature Sensors (-40 °C ... +150 °C / -40 °F ... +302 °F) | PPC-CAN-T | 37
| | Same-In Temperature Sensor for pipeline installation (M10x1) | PPC-CAN-T-M02 | 37
| | Same-In Temperature Sensor for pipeline installation (G1/4) | PPC-CAN-T-G02 | 37
| | Straight threaded Adapter with M10 x 1 connection for PPC-CAN-T-M02 | SDA-10-G-W3 | 37
| | Pressure range from 0 ... 600 bar / 0 ... 8702 PSI absolute pressure | PPC-CAN-P-600 | 35
| | Pressure range from 0 ... 600 bar / 0 ... 8702 PSI absolute pressure | PPC-CAN-P-601 | 35
4. **Connection Adaptors for PPC-Sensors** | Connection Adaptors | SDA-20/G1/4/W3 | 35 / 39
| | Adapter G1/4 to M10 x 2 (STAUFF Test 20) | SDA-20/G1/4/W3 | 35
| | Adapter G1/2 to M10 x 2 (STAUFF Test 20) | SDA-20/G1/2/W3 | 35
| | Adapter M16 x 2 to M16 x 1,5 (STAUFF Test 20 to STAUFF Test 15) | SAD-10/15-B-W3 | 39
| | Adapter M10 x 2 to S12,65 x 1,5 (STAUFF Test 20 to STAUFF Test 12) | SAD-10/12-B-W3 | 39
| | Adapter M16 x 2 to plug-in (STAUFF Test 20 to STAUFF Test 10) | SAD-10/10-B-W3 | 39
5. **CAN Flow Turbines with integrated Signal Converter** | CAN Flow Turbines with integrated Signal Converter | PPC-CAN-SFM | 41
| | Measuring range from 1 ... 15 l/min / 1.3 ... 3.9 US GPM | PPC-CAN-SFM-015 | 41
| | Measuring range from 4 ... 60 l/min / 5.3 ... 15 US GPM | PPC-CAN-SFM-060 | 41
| | Measuring range from 6 ... 100 l/min / 8 ... 21 US GPM | PPC-CAN-SFM-150 | 41
| | Measuring range from 10 ... 300 l/min / 17 ... 49 US GPM | PPC-CAN-SFM-300 | 41
| | Measuring range from 20 ... 600 l/min / 33 ... 100 US GPM | PPC-CAN-SFM-600 | 41
6. **CAN Accessories** | CAN Connection Cable 0,5 m / 1.64 ft | PPC-CAN-CAB0,5 | 45
| | CAN Connection Cable 2 m / 6.65 ft | PPC-CAN-CAB2 | 45
| | CAN Connection Cable 5 m / 16.40 ft | PPC-CAN-CAB5 | 45
| | CAN Connection Cable 10 m / 32.81 ft | PPC-CAN-CAB10 | 45
| | CAN Connection Cable 10 m / 60.62 ft | PPC-CAN-CAB60 | 45
| | CAN-Y Splitter Cable 0,3 m / 1 ft | PPC-CAN-CAB-Y | 46
| | CAN Terminating Resistor | PPC-CAN-R | 46
7. **Connection Cable and Accessories** | | | 46
8. **CAN Frequency Converter** | CAN Frequency Converter | PPC-CAN-FR | 45
9. **Spare Parts and Complete Systems** | Complete Systems for CAN Hydraulic Testers PPC-04-plus-CAN, Order Codes on page 47 | PPC-CAN-SET | 47
| | Case PPC-04-plus-CAN (with foam insert) | PPC-04-plus-case | 47
| | Power Supply (110/230 V AC) for PPC-04-plus-CAN with USB connection, incl. country specific Adaptor | PPC-04-plus-110V/230V-USB | 47
| | Case PPC-Pad (with foam insert) | PPC-Pad-case | 47
| | Complete System PPC-Pad-SET-101 with 2 CAN networks, incl. accessories, case, CAN Connection Cable | PPC-Pad-SET-101 | 48
| | Complete System PPC-Pad-102 with 2 CAN networks and 3 analogue sensor inputs, incl. accessories, case, CAN Connection Cable | PPC-Pad-SET-102 | 48
| | 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 | 48

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**Catalogue 8 • Edition 02/2017**

www.stauff.com/8/en/#50
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.
Pressure Transmitter • Type PT-RF

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
- Housing: Stainless Steel 1.4305
- Sealing (B04): FKM/FPM (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. (B04): -40°C … +135°C / -40°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

1. Series and Type
   - Pressure Transmitter: PT

2. Version
   - Signal transmission via RFID technology: RF

3. Pressure Range
   - See table

4. Process Connection
   - 1/4 NPT (N04): B04

Pressure Range and Accuracies

<table>
<thead>
<tr>
<th>Version</th>
<th>Pressure Transmitter PT-RF</th>
<th>Pressure Range (°C/°F)</th>
<th>Type of Measurement</th>
<th>Maximum Pressure (°C/°F)</th>
<th>Burst Pressure (°C/°F)</th>
<th>Accuracy (±% FS*) typ.</th>
<th>Accuracy (±% FS*) max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B00016</td>
<td>0 ... 16 Relative pressure</td>
<td>32</td>
<td>48</td>
<td>0.25</td>
<td>0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B00060</td>
<td>0 ... 60 Relative pressure</td>
<td>120</td>
<td>180</td>
<td>0.25</td>
<td>0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B00160</td>
<td>0 ... 160 Relative pressure</td>
<td>320</td>
<td>480</td>
<td>0.25</td>
<td>0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B00400</td>
<td>0 ... 400 Relative pressure</td>
<td>800</td>
<td>1200</td>
<td>0.25</td>
<td>0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B00600</td>
<td>0 ... 600 Relative pressure</td>
<td>1200</td>
<td>1800</td>
<td>0.25</td>
<td>0.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Temperature behaviour: max. ± 0.2 % FS / 10K (test condition 25°C; 45 % v. F.)

* FS = Full Scale

Process Connection Adapters 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.

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

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).

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www.stauff.com/8/en/#52
Reader • Type Reader-PT-RF

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®.

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.

Order Code

Reader-PT-RF

Press the function key to:

1. Switch on the reader using the function button.

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.

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

4. Start the permanent measurement by holding down the function button.

5. End a continuous measurement by releasing the function key.

Display after successful individual measurement

Display after successful permanent measurement

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 backlight
- Visible area: 55 x 46 mm / 2.17 x 1.81 in
- Resolution: 128 x 64 Pixel

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

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

Design and content are subject to change without notice.
**Complete system • Type 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

**Pressure Transmitter: Pressure Range and Version**

<table>
<thead>
<tr>
<th>Pressure Range</th>
<th>Version of Pressure Transmitter</th>
</tr>
</thead>
<tbody>
<tr>
<td>000</td>
<td>1st pressure transmitter</td>
</tr>
<tr>
<td>016</td>
<td>2nd pressure transmitter</td>
</tr>
<tr>
<td>060</td>
<td>3rd pressure transmitter</td>
</tr>
<tr>
<td>160</td>
<td>Adaptor SDA for process connection G1/4 (B04)</td>
</tr>
<tr>
<td>400</td>
<td>Adaptor SMD for process connection 1/4NPT (N04)</td>
</tr>
<tr>
<td>600</td>
<td>Straight fitting with adaptor</td>
</tr>
</tbody>
</table>

**Order Codes**

<table>
<thead>
<tr>
<th>PT-RF</th>
<th>SET</th>
<th>2</th>
<th>1000</th>
<th>400</th>
<th>600</th>
<th>000</th>
<th>B</th>
</tr>
</thead>
</table>

**Spares Parts / Accessories**

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).
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 personnel 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 nitrogen connection of the accumulator and a PT-RF pressure sensor is attached at the side.

The original Valve from the Accumulator can either still be used on top of the Adaptor in case it is equipped with a 1/2-20UNF thread, or be replaced by a Valve with the above thread e.g. STAUFF SKK-20-1/2UNF-V-E-FILL-W3. Charging devices already in use can still be used.

**Order Codes**

<table>
<thead>
<tr>
<th>Adaptor Type</th>
<th>Valve Connection Thread</th>
<th>Sensor Connection Thread</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBAA</td>
<td>1/2-20UNF (only for SBAA)</td>
<td>G1/4 Sensor Connection</td>
</tr>
<tr>
<td>U05</td>
<td>M8 (only for SDAA)</td>
<td>B04</td>
</tr>
<tr>
<td>SBAA</td>
<td>Other Connection Threads on request.</td>
<td>Other Connection Threads on request.</td>
</tr>
<tr>
<td>SDAA</td>
<td>M28x1,5 Accumulator Connection Thread</td>
<td>G1/4 Sensor Connection</td>
</tr>
</tbody>
</table>

**Set Up**

- **Bladder accumulator**
  - Set up: Skk-20-1/2UNF-V-E-FILL-W3 (not part of delivery)
  - Standard Acc. Plug Screw (not part of delivery)
  - SW min. 19 7/8-14 UNF

- **Diaphragm accumulator**
  - Set up: Skk-20-1/2UNF-V-E-FILL-W3 (not part of delivery)
  - Standard Acc. Plug Screw (not part of delivery)
  - PT-RF (not part of delivery)
  - M28x1.5

**Application**

- Bladder accumulator in use with Reader-PT-RF
- Diaphragm accumulator
Hydraulic Testers

Flow Indicator • Types SDM / SDMKR

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
- Media temperature
  permanent: +80 °C / +176 °F
  temporary (<10 min.): +110 °C / +245 °F

Order Codes
<table>
<thead>
<tr>
<th></th>
<th>SDM</th>
<th>750</th>
<th>A</th>
<th>016</th>
<th>T</th>
</tr>
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<tbody>
<tr>
<td>1</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
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</tr>
<tr>
<td>5</td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Flow and Type
Flow Indicator Type SDM
Flow Indicator Type SDMKR

Size
750
1500 (only SDM)

Housing Material
Aluminium
Brass (only SDM)

Flow Ranges
See table on page 57

Thermometer
With integrated thermometer (standard option)

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).

Notes
- Other thread versions available on request.
- Dimensional drawings: All dimensions in mm (in).
- *FS = Full Scale

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www.stauff.com/8/en/#56
Technical Data

<table>
<thead>
<tr>
<th>Max. Working Pressure (bar)</th>
<th>Flow Range (l/min)</th>
<th>Flow Range (US GPM)</th>
<th>Weight (kg)</th>
<th>Connection</th>
<th>Order Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>420</td>
<td>2 - 16</td>
<td>0.5 - 4</td>
<td>3.0</td>
<td>G3/4</td>
<td>SDM-750-A-016-T</td>
</tr>
<tr>
<td>6091</td>
<td>0.5 - 4</td>
<td>-</td>
<td>3.0</td>
<td>G3/4</td>
<td>SDM-750-A-030-T</td>
</tr>
<tr>
<td>420</td>
<td>2 - 30</td>
<td>0.5 - 8</td>
<td>3.0</td>
<td>G3/4</td>
<td>SDM-750-A-060-T</td>
</tr>
<tr>
<td>6091</td>
<td>0.5 - 8</td>
<td>-</td>
<td>3.0</td>
<td>G3/4</td>
<td>SDM-750-A-120-T</td>
</tr>
<tr>
<td>420</td>
<td>2 - 60</td>
<td>1 - 32</td>
<td>3.0</td>
<td>G3/4</td>
<td>SDM-750-A-180-T</td>
</tr>
<tr>
<td>420</td>
<td>10 - 180</td>
<td>1.3 - 64</td>
<td>6.61</td>
<td>G1-1/2</td>
<td>SDM-1500-A-200-T</td>
</tr>
<tr>
<td>6091</td>
<td>10 - 180</td>
<td>-</td>
<td>6.61</td>
<td>G1-1/2</td>
<td>SDM-1500-A-300-T</td>
</tr>
<tr>
<td>420</td>
<td>10 - 180</td>
<td>1.3 - 64</td>
<td>6.61</td>
<td>G1-1/2</td>
<td>SDM-1500-A-400-T</td>
</tr>
<tr>
<td>6091</td>
<td>10 - 180</td>
<td>-</td>
<td>6.61</td>
<td>G1-1/2</td>
<td>SDM-1500-B-200-T</td>
</tr>
<tr>
<td>420</td>
<td>2 - 30</td>
<td>0.5 - 8</td>
<td>3.0</td>
<td>G3/4</td>
<td>SDM-750-B-060-T</td>
</tr>
<tr>
<td>6091</td>
<td>2 - 30</td>
<td>-</td>
<td>3.0</td>
<td>G3/4</td>
<td>SDM-750-B-120-T</td>
</tr>
<tr>
<td>420</td>
<td>2 - 60</td>
<td>1 - 32</td>
<td>3.0</td>
<td>G3/4</td>
<td>SDM-750-B-180-T</td>
</tr>
<tr>
<td>6091</td>
<td>2 - 60</td>
<td>-</td>
<td>3.0</td>
<td>G3/4</td>
<td>SDM-750-B-320-T</td>
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<tr>
<td>420</td>
<td>4 - 120</td>
<td>1.3 - 64</td>
<td>14.55</td>
<td>G1</td>
<td>SDM-750-B-320-T</td>
</tr>
<tr>
<td>6091</td>
<td>4 - 120</td>
<td>-</td>
<td>14.55</td>
<td>G1</td>
<td>SDM-750-B-320-T</td>
</tr>
<tr>
<td>420</td>
<td>4 - 48</td>
<td>1 - 32</td>
<td>3.0</td>
<td>G3/4</td>
<td>SDM-1500-B-180-T</td>
</tr>
<tr>
<td>6091</td>
<td>4 - 48</td>
<td>-</td>
<td>3.0</td>
<td>G3/4</td>
<td>SDM-1500-B-300-T</td>
</tr>
</tbody>
</table>

* The Brass units have a scale for water and oil – in l/min.

Dimensional drawings: All dimensions in mm (in).
Oil Analysis Equipment

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OCS Starterkit 77
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 Cleanliness 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 guarantee high accuracy and repeatability. These compact units are easy to handle for mobile and inline applications for systems with pressures up to 400 bar / 5800 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 rechargable 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 brilliant 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**

<table>
<thead>
<tr>
<th>Options</th>
<th>LasPaC-II-P (Portable)</th>
<th>LasPaC-II-M (Mobile)</th>
<th>Bottle Sampler 110</th>
<th>Bottle Sampler 500</th>
<th>LPM-II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laser Type</td>
<td>Twin-Laser</td>
<td>Twin-Laser</td>
<td>-</td>
<td>-</td>
<td>LED Laser</td>
</tr>
<tr>
<td>Analysis Range</td>
<td>8 channels</td>
<td>8 channels</td>
<td>-</td>
<td>-</td>
<td>8 channels</td>
</tr>
<tr>
<td>(4,6,14,21,25,38,50,68 µm)</td>
<td>(4,6,14,21,25,38,50,68 µm)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Power Supply</td>
<td>External</td>
<td>External</td>
<td>-</td>
<td>-</td>
<td>External</td>
</tr>
<tr>
<td>Battery Option</td>
<td>Internal (optional)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Display</td>
<td>Integrated (large)</td>
<td>Integrated (small)</td>
<td>-</td>
<td>-</td>
<td>Internal / External</td>
</tr>
<tr>
<td>Keyboard</td>
<td>Integrated</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Printer</td>
<td>Integrated</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Data Storage</td>
<td>Internal (for approximately 600 tests)</td>
<td>Internal (for approximately 600 tests)</td>
<td>-</td>
<td>-</td>
<td>Internal (for approximately 4000 tests)</td>
</tr>
<tr>
<td>Fluid Preparation</td>
<td>-</td>
<td>-</td>
<td>Integrated vacuum/pressure pump</td>
<td>Integrated vacuum/pressure pump</td>
<td>-</td>
</tr>
<tr>
<td>Maximal Bottle Size</td>
<td>-</td>
<td>-</td>
<td>110 ml</td>
<td>500 ml</td>
<td>-</td>
</tr>
<tr>
<td>Compatible with</td>
<td>Mineral oil and petroleum based fluids, Specific Water Glycol fluids or phosphate ester</td>
<td>Mineral oil and petroleum based fluids, Specific Water Glycol fluids or phosphate ester</td>
<td>Mineral oil and petroleum based fluids</td>
<td>Mineral oil and Specific Water Glycol fluids or phosphate ester</td>
<td>Mineral oil and Specific Water Glycol fluids or phosphate ester</td>
</tr>
</tbody>
</table>
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 lightweight 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 the 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 μm.

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 dirty 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 alternatively 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.

Laser Particle Counter • Type LasPaC-II

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)
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 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)

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
- 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
- Standard accuracy laser: 6 ... 88 μm
- Measured channels: 4, 6, 14, 21, 25, 38, 50, 68 μm
- 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)

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.
**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 brilliant 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**

<table>
<thead>
<tr>
<th>1</th>
<th>Type and Series</th>
<th>2</th>
<th>Version</th>
<th>3</th>
<th>Fluid Compatibility</th>
<th>4</th>
<th>Moisture/ Temperature Sensor</th>
<th>5</th>
<th>Battery</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Laser Particle Counter</td>
<td>M</td>
<td>Mobile</td>
<td>M</td>
<td>Mineral Oil, Petroleum based fluids (standard option)</td>
<td>O</td>
<td>Without moisture/ temperature sensor</td>
<td>B</td>
<td>Without internal rechargeable battery</td>
</tr>
<tr>
<td>2</td>
<td>LasPaC-II</td>
<td>M</td>
<td></td>
<td></td>
<td>Phosphate Ester (e.g. Skydrol®)</td>
<td></td>
<td>With moisture/ temperature sensor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Specific Water Glycol fluids</td>
<td>W</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

LasPaC-II-M with integrated battery (standard option)

LasPaC-II-M also available without integrated battery

Catalogue 8 - Edition 02/2017

www.stauff.com/8/en/#64
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
- Standard accuracy laser: 6 ... 68 μm
- Measured channels: 4, 6, 14, 21, 25, 38, 50, 68 μm
- 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)

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
Bottle Sampling Unit • Typ Bottle-Sampler-LasPaC-II

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

<table>
<thead>
<tr>
<th>Bottle-Sampler</th>
<th>LasPaC-II</th>
<th>110-M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottle Sampling Unit</td>
<td>Bottle-Sampler</td>
<td></td>
</tr>
<tr>
<td>Type and Series</td>
<td>Laser Particle Counter</td>
<td>LasPaC-II</td>
</tr>
<tr>
<td>Unit</td>
<td>110 ml Bottle Sampling Unit suitable for Mineral Oil and Petroleum based fluids only</td>
<td>110-M</td>
</tr>
<tr>
<td>500 ml Bottle Sampling Unit suitable for Mineral Oil and Specific Water Glycol fluids</td>
<td>500-M/G</td>
<td></td>
</tr>
<tr>
<td>500 ml Bottle Sampling Unit suitable Phosphate Ester (e.g. Skydrol®)</td>
<td>500-E</td>
<td></td>
</tr>
</tbody>
</table>
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.

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 • Technical Data

<table>
<thead>
<tr>
<th>Type</th>
<th>LasPaC-II-P (Portable)</th>
<th>LasPaC-II-M (Mobile)</th>
<th>LPM-II</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions (mm)</strong></td>
<td>551 x 358 x 226</td>
<td>349 x 295 x 152</td>
<td>141 x 116 x 63,5</td>
</tr>
<tr>
<td><strong>Weight (kg)</strong></td>
<td>13</td>
<td>4,75</td>
<td>1,15</td>
</tr>
<tr>
<td><strong>Viscosity Range</strong></td>
<td>1 ... 400 cSt</td>
<td>1 ... 400 cSt</td>
<td>&lt;= 1000 cSt</td>
</tr>
<tr>
<td><strong>Sensitivity</strong></td>
<td>4, 6, 14, 21, 25, 30, 50, 68 µm</td>
<td>4, 6, 14, 21, 25, 30, 50, 68 µm</td>
<td>4, 6, 14, 21, 25, 30, 50, 68 µm</td>
</tr>
<tr>
<td><strong>Sample Volume</strong></td>
<td>8 ml (short)</td>
<td>8 ml (short)</td>
<td>Adjustable by user</td>
</tr>
<tr>
<td><strong>Pressure Range (mmHg)</strong></td>
<td>2 ... 400</td>
<td>2 ... 400</td>
<td>Please refer differential pressure diagram</td>
</tr>
<tr>
<td><strong>Operating Temperature (°C)</strong></td>
<td>25 ... -80</td>
<td>-25 ... +80</td>
<td>-13 ... +176</td>
</tr>
<tr>
<td><strong>Max. Concentration</strong></td>
<td>ISO 24</td>
<td>ISO 24</td>
<td>ISO 24</td>
</tr>
<tr>
<td><strong>Power Supply</strong></td>
<td>110 ... 240 V AC, 12 ... 24 V DC</td>
<td>110 ... 240 V AC, 9 ... 36 V DC, &lt;2,2W</td>
<td>-</td>
</tr>
<tr>
<td><strong>Battery</strong></td>
<td>Internal rechargeable battery</td>
<td>Internal rechargeable battery</td>
<td>-</td>
</tr>
<tr>
<td><strong>Data Storage</strong></td>
<td>600 tests</td>
<td>600 tests</td>
<td>4000 tests</td>
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<tr>
<td><strong>Fluid Compatibility</strong></td>
<td>Mineral Oil / Petroleum based fluids; Phosphate Ester and Water Glycol compatible devices on request</td>
<td>Mineral Oil / Petroleum based fluids; Phosphate Ester and Water Glycol compatible devices on request</td>
<td>Mineral Oil / Petroleum based fluids; Phosphate Ester and Water Glycol compatible devices on request</td>
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<tr>
<td><strong>PC Interface</strong></td>
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<td>RS-232</td>
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<td><strong>External Alarm</strong></td>
<td>External alarm socket</td>
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<td>External Alarm</td>
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<tr>
<td><strong>Hose Connections</strong></td>
<td>Test coupling STAUFF Test 20 or comparable (M10 x 2)</td>
<td>Test coupling STAUFF Test 20 or comparable (M10 x 2)</td>
<td>Test coupling STAUFF Test 20 or comparable (M10 x 2)</td>
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<tr>
<td><strong>Accessories</strong></td>
<td>Moisture/temperature sensor; Bottle sampling unit [110 ml / 500 ml]; Screen filter (500 µm)</td>
<td>Moisture/temperature sensor; Bottle sampling unit [110 ml / 500 ml]; Screen filter (500 µm)</td>
<td>Flow Control Valve</td>
</tr>
</tbody>
</table>
Oil Analysis Equipment

Particle Monitor • LPM-II

Product Description

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

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

Options

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

Technical Data

Channels
• >4, 6, 14, 21, 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, AS8609 Rev. E, Tables 1 and 2 Sizes A-F: Classes 00 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):
• ±3 °C / ±32 °F
• % RH (relative humidity) ±3 %

Order Codes

<table>
<thead>
<tr>
<th>LPM-II</th>
<th>D</th>
<th>M</th>
<th>W</th>
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<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Fluid Compatibility

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

Max. Permissible Operating Pressure
• 400 bar / 5801 PSI static *temperature-dependent

Fluid Compatibility

• Phosphate Ester (e.g. Skydrol®)
• Specific Water Glycols

Interfaces
• RS485, RS232, Modbus, CAN Bus

International Protection Rating
• IP 65: 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-O), 150 mA (LPM-II-D)
• 24 V: 40 mA (LPM-II-O), 80 mA (LPM-II-D)
• 36 V: 30 mA (LPM-II-O), 60 mA (LPM-II-D)

Housing Surface Treatment
• Painted, Polyurethane based paint, according to BSX34 colour BS381-638 (dark grey)
• Tested according to: BS2X34A and BS2X34B, MMO114 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/FPM (Viton®), FR4, Sapphire
• G: 316 Stainless Steel, FKM/FPM (Viton®), Sapphire
• E: Perfluorinated Rubber (FFKM), Sapphire, EPDM

Catalogue 8 • Edition 02/2017

www.stauff.com/8/en/#70
**Product Description**

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

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

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

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

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.

**Remote Display Unit • DISPLAY-LPM-II-REMOTE**

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

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

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

Max. Permissible Operating Pressure

- 400 bar / 5801 PSI

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

Order Code

<table>
<thead>
<tr>
<th>LPM-II-DAV - M</th>
</tr>
</thead>
</table>

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

Flowrate vs. Viscosity Graph

Flowrate too high
Flow rate control valve required

Flowrate ok

Flowrate too low

Viscosity in mm²/s

Δp in bar between LPM-II inlet and outlet

Flowrate ok

Flowrate too low

Flowrate too high

Flow rate control valve required
Order Codes

<table>
<thead>
<tr>
<th>LPM-II</th>
<th>D</th>
<th>M</th>
<th>O</th>
<th>CX</th>
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<tbody>
<tr>
<td>1</td>
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<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

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
   Version according to ATEX 94/9/EG
   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.

5. **Product Features**
   Determines contamination level of measured fluids in 8 size particle channels
   Precise and complete determination of particle 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 certified (Zone 2 / Category 3G)

**Technical Data**

**Channels**
- 4, 6, 14, 21, 25, 38, 50, 70 μm acc. to ISO 4406:1999

**Measuring Range / Particle Classes**
- ISO 4406:1999 Code 0 to 25, NAS 1638 classes 00 to 12, AS4059 Rev. E. classes 000 to 12, ISO 11171 classes 00 to 12 (lower codes or classes are test time-dependent)

**Accuracy**
- ±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/FPM (Viton®): suitable for offshore and aqueous fluids
- E: Austenitic Stainless Steel, Perfluorinated Rubber (FFKM): suitable for Phosphate Ester and aggressive media
- O: Cast FR4, Sapphire
- W: E: 316 Stainless Steel, Perfluorinated Rubber (FFKM), Saphire, EPDM

**Max. Permissible Operating Pressure**
- 400 bar / 5801 PSI

**Test Duration**
- Settable between 10 ... 3600 sec., set ex-works to 120 sec.

**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 A8B/C

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

**ATEX Directive 94/9/EG**
Harmonises legal provisions of memberstates for devices and protection systemst designated use in the oil and gas industry or chemical and process industry.

**ATEX Classification**
- Zone 2 / Cat. 3G
Oil Sampling Kit • Type SFSK-1 / -2

Product Description

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

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

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

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

<table>
<thead>
<tr>
<th>Series and Type</th>
<th>NPT Type</th>
<th>Code</th>
</tr>
</thead>
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<tr>
<td>SFSK-1</td>
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<td>SFSK-1</td>
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<tr>
<td>SFSK-2</td>
<td></td>
<td>SFSK-2</td>
</tr>
</tbody>
</table>
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 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.
Oil Analysis Equipment

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.

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/FPM (Viton®)

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

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

Interface-OCS-I-USB/2

Cable-OCS-I-FL
Oil Analysis Equipment

Oil Condition Display • Type Display-OCS-I

Order Code

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

Order Code

Starterkit-OCS-I

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

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

Includes

- Series Starterkit
- Series Starterkit-OCS-I
### Product-Specific Abbreviations

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<th>Product Category</th>
<th>Product Description</th>
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<td>Interface-LPM-II-USB/ETH</td>
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<td>PPC-04-plus-CAN</td>
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<td>SPS</td>
<td>Pressure Gauges</td>
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<tr>
<td>SPS-DIGI</td>
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<td>Digital Pressure Gauge</td>
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<td>SBAA / SEAA</td>
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Appendix

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.

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www.stauff.com

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Plettenberg-Ohe Production Site
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58840 Plettenberg

Voswinkel GmbH
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www.voswinkel.net

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