The Service Master
Diagnostic Meter

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Hand-held Diagnostic Meter to Measure Pressure, Temperature, Flow and Rotational Speed for Hydraulic and Pneumatic Systems

Easy operation • Rugged design • Large display • Auto sensor recognition • MIN/MAX Memory • On-line operation • Multiple sensor inputs • Battery monitoring •

As with all SensoControl equipment, the Service Master offers the latest in sensor recognition technology, eliminating the need for individual sensor setup. It also allows you to program the individual inputs to accept other data collection formats, such as 4-20 ma, or 0-10 Volt.

Parker Hannifin provides the most complete line of hydraulic and pneumatic diagnostic equipment available today. For more information contact the Quick Coupling Division or your local distributor.

The Service Master meter is a state-of-the-art instrument available in either four or six channel models. The ergonomically designed case and large automatic scaling LCD display make it very easy to use in even the most demanding environments.

They are the perfect tool to capture diagnostic measurements at remote locations. Able to measure pressure, temperature, flow and rotational speed simultaneously, the data can be gathered and stored on a PC for later analysis.

The SCM-360 offers 125,000 data points and the SCM-450 offers 250,000 data points of storage. These measurements can easily be transferred to your PC via an RS232 interface and SensoWin™ 4.03 software which is compatible with Windows98 and newer operating systems.
SensoControl Service Master Schematic

Measures and Documents Flow, Pressure, Voltage, Current, Temperature and Rotation speed
SensoControl Service Master Diagnostic Meter

Function Descriptions
1. ON/OFF Turns meter on or off
2. SETUP/OPTION Change system settings
3/4 ARROWS Select line and function values
5. START/ENTER Change function values and start measurements
6. STOP/ESC Stop or terminate functions
7. I1-I2 Differential value between input 1 and input 2.
8. TEMP Displays the measured temperature values for all channels
9. DATA-OUTPUT Displays output to PC, printer or graphic display
10. RECORD To record and store measurements
11. MIN/MAX/ACTUAL Displays the minimum, maximum and actual values. Reset deletes values
12. INPUTS Inputs for up to (6) sensors
13. 11-30 VDC Input for external power supply and charging of internal battery
14. DATA OUTPUT RS232 port for connecting to the PC, printer, or external trigger module
15. GRAPHIC LCD Displays measured values, adjustment menus and graphics.
16. ADDITIONAL LINE Displays the power or flow runout values.
17. STATUS LINE Shows the designation of the measured value or the menu name.

Technical Data

Meter
- Digital LCD Text Display 128x64 pixels
- Automatic Character Height Scaling
- Display of Pressure, Temperature, Flow and Rotational Speed
  - Pressure in PSI and Bar
  - Temperature in °F and °C
  - Flow in GPM and l/min.
  - Rotational Speed in RPM

Inputs
- Four or six, 5-pin push-pull style connectors
- Automatic Sensor Recognition
- 0-3 Volts (R=470 k)
- 12 Bit A/D Converter
- 1 ms Scanning Rate (1-3 inputs)
- 2 ms Scanning Rate (4-6 inputs)

Functions
- Differential Value Measurement
- MIN/MAX Memory
- Online data transfer
- Battery level indicator
- Power calculation (display only)
- Flow run-out (display only)
- Auto power off

Output
- RS232 interface
- Adjustable baud rate up to 38400 BPS
- 8 data bits, 1 stop bit

Power Requirements
- Internal 7.2-volt rechargeable Ni-Cad battery
- Recharge circuit for use with external power supply.
- Operating time (Approx. 5 hours)
- Excitation voltage (12-30 VDC)

Memory Functions
- Memory capacity
  - 125,000 data points (SCM-360)
  - 250,000 data points (SCM-450)
- Memory used in 25,000 data point intervals
- Variable storage rate
- Variable measuring period up to 100 hours
- Manual and automatic triggering

Ambient Conditions
- Operating Temperatures
  - 32°F to 122°F (0°C to 50°C)
- Storage Temperatures
  - -4°F to 140°F (-20°C to 60°C)
- Protection class IP54

Housing
- Glass reinforced polyamide
- 11-Key tactile touch membrane
- EMC Protection
  - Electromagnetic interference (DIN/EN 50081, Part 1)
  - Immunity to emitted interference (DIN/EN 50082, Part 2)

Dimensions
- Length/Height/Width
  - 9.25 x 4.19 x 2.09 (235 x 106 x 52 mm)

Weight
- 1.2 lbs (700 grams)

Accessories Expand the Functional

Temperature Sensor
for Serviceman and Service Master.
Can be used with Parker flow sensors or with an SCTA-1/4 port adapter.
Accuracy: ±1.5% Full scale
Temperature range: -13°F to 257°F (-25°C to 125°C)
Part Number
SCT-150-04-02
Pressure Transducer Options

- Six measurement ranges: Vacuum to 14,500 PSI
- Color coded for easy identification
- Corrosion resistant stainless steel housing
- Accuracy of .5% Full Scale (FS)
- Available with PD, PDP or EMA style diagnostic couplings

Transducer Technical Data

<table>
<thead>
<tr>
<th>Measuring Range Pressure</th>
<th>PD ***-0010</th>
<th>PD ***-0600</th>
<th>PD ***-1500</th>
<th>PD ***-6000</th>
<th>PD ***-10000</th>
</tr>
</thead>
<tbody>
<tr>
<td>-14.5 to 235 PSI</td>
<td>0 to 8 PSI</td>
<td>0 to 21 PSI</td>
<td>0 to 5800 PSI</td>
<td>0 to 800 PSI</td>
<td>0 to 14500 PSI</td>
</tr>
<tr>
<td>Color Code</td>
<td>blue</td>
<td>green</td>
<td>yellow</td>
<td>red</td>
<td>red</td>
</tr>
<tr>
<td>Measuring Range Temp.</td>
<td>-13 F to 221 F</td>
<td>-13 F to 221 F</td>
<td>-13 F to 221 F</td>
<td>-13 F to 221 F</td>
<td>-13 F to 221 F</td>
</tr>
<tr>
<td>Max. overload Pressure</td>
<td>290 PSI</td>
<td>1450 PSI</td>
<td>3625 PSI</td>
<td>14500 PSI</td>
<td>14500 PSI</td>
</tr>
<tr>
<td>Output Signal Volts</td>
<td>-0.2 to 2 VDC</td>
<td>0 to 3 VDC</td>
<td>0 to 3 VDC</td>
<td>0 to 3 VDC</td>
<td>0 to 3 VDC</td>
</tr>
<tr>
<td>Hysteresis FS Typical</td>
<td>0.1 mV</td>
<td>0.05 mV</td>
<td>0.1 mV</td>
<td>0.08 mV</td>
<td>0.05 mV</td>
</tr>
<tr>
<td>Repeatitivity FS Typical</td>
<td>0.08 %</td>
<td>0.13 %</td>
<td>0.13 %</td>
<td>0.1 %</td>
<td>0.1 %</td>
</tr>
<tr>
<td>on-conformity FS</td>
<td>0.2 mV</td>
<td>0.2 mV</td>
<td>0.2 mV</td>
<td>0.28 mV</td>
<td>0.25 mV</td>
</tr>
<tr>
<td>Response Time</td>
<td>1 ms</td>
<td>1 ms</td>
<td>1 ms</td>
<td>1 ms</td>
<td>1 ms</td>
</tr>
<tr>
<td>xcitation Voltage</td>
<td>-12 VDC</td>
<td>-12 VDC</td>
<td>-12 VDC</td>
<td>-12 VDC</td>
<td>-12 VDC</td>
</tr>
</tbody>
</table>

1 Maximum Rated Pressure for PD Series Couplers is 6000 PSI.
2 Maximum Rated Pressure for MA Series Couplers is 9000 PSI.

Materials of Construction

- Transducer: Stainless steel
- Diaphragm: Stainless steel
- Coupler: Plated steel
- Seal: Fluorocarbon

Temperature Range

- Working: -4 to 185°F
- Fluid: -13 to 221°F
- Storage: -40 to 25°C

Output

- Accuracy: .5% Full Scale (FS)
- Load: 2 m ohms
- Response time: 1 ms
- Input signal to noise: 0.1 VDC
- Resonant frequency: 100 Hz

Voltage Requirement

- to 12 VDC excitation voltage
- Permissible ripple: 2 mV
- Current requirement: 5 mA

Cable End (Pin Out)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Mark</th>
<th>Wire Colors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>P</td>
<td>yellow</td>
</tr>
<tr>
<td>2</td>
<td>T</td>
<td>white</td>
</tr>
<tr>
<td>3</td>
<td>+</td>
<td>brown</td>
</tr>
<tr>
<td>4</td>
<td>-</td>
<td>green</td>
</tr>
<tr>
<td>5</td>
<td>SK</td>
<td>grey</td>
</tr>
</tbody>
</table>

Special Note: All Parker SensoControl hand-held diagnostic meters are now equipped with the same 5-pin push-pull style connector ports. Accessories such as pressure sensors, temperature sensors, flow meters, tachometers and cables are all interchangeable between Serviceman and Service Master meters.

Utility of the Service Master

SCRPM Tachometer

for Serviceman and Service Master Meters. Displays a precision measurement of rotational speed. 5-pin push-pull style connector.

- Part Number: SCRPM-220

Tachometer Adapters

- Contact adapter for belt drive wheel.
  - Part Number: SCRPMA-001

- Focus adapter for confined areas.
  - Part Number: SCRPMA-001

Voltage Adapter

for use with Auxiliary Sensors to Serviceman and Service Master.

- Input: 0 - 20 mA or 0 - 10 VDC
- Accuracy: 0.25% FS

- Part Number: SCMA-VADC-250
SensoControl Flow Sensors

These flow sensors are a compact light-weight aluminum diagnostic tool capable of measuring pressure, temperature and flow from a single test point in a hydraulic system.

These flow sensors are designed to be used with a wide variety of hydraulic fluids. This design also minimizes the effect of viscosity changes. These units are manufactured from solid aluminum bar stock and are rated to 6000 PSI and temperatures of 0 F to 350 F. They are available in four sizes with flow measuring ranges from 0.2 to 160 PM.

Flow sensors are provided with a choice of PD, PDP or MA style diagnostic ports and are designed to be used with Serviceman and Service Master equipment.

### Flow Sensors Technical Data

<table>
<thead>
<tr>
<th>Measuring Range</th>
<th>Flow Sensor with PD Nipple</th>
<th>Flow Sensor with PDP Nipple</th>
<th>Flow Sensor with EMA Nipple</th>
<th>Inlet/Outlet Port Configuration</th>
<th>Length</th>
<th>Height</th>
<th>Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2  4 PM 1 15 l/min</td>
<td>SCFT-0004-PD</td>
<td>SCFT-0004-PDP</td>
<td>SCFT-0004-MA</td>
<td>3 4-16 R</td>
<td>5.35</td>
<td>4.61</td>
<td>1.46</td>
</tr>
<tr>
<td>1 16 PM 4 60 l/min</td>
<td>SCFT-0116-PD</td>
<td>SCFT-0116-PDP</td>
<td>SCFT-0116-MA</td>
<td>1 16-12 R</td>
<td>.48</td>
<td>5.12</td>
<td>2.44</td>
</tr>
<tr>
<td>3 80 PM 10 300 l/min</td>
<td>SCFT-0380-PD</td>
<td>SCFT-0380-PDP</td>
<td>SCFT-0380-MA</td>
<td>1 5 16-12 R</td>
<td>.48</td>
<td>5.28</td>
<td>2.44</td>
</tr>
<tr>
<td>5 160 PM 20 600 l/min</td>
<td>SCFT-5160-PD</td>
<td>SCFT-5160-PDP</td>
<td>SCFT-5160-MA</td>
<td>1 5 8-12 R</td>
<td>8.35</td>
<td>5.91</td>
<td>2.44</td>
</tr>
</tbody>
</table>

### How to Order

<table>
<thead>
<tr>
<th>Flow Sensor</th>
<th>Transducer</th>
<th>Temperature Probe</th>
<th>cables for both Serviceman and Service Master.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>Part Number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 ft 3 m</td>
<td>SC -102-03-02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extension Cable</td>
<td>16.4 ft 5 m</td>
<td>SC -102-05-12</td>
<td></td>
</tr>
</tbody>
</table>

### Adapters

See Catalog 3800 for the available adapters used in conjunction with Service Master diagnostic equipment.

### Material Specifications

- **Flow lock**: Anodized Aluminum
- **Turbine**: Stainless Steel
- **Bearings**: Stainless Steel
- **Seal Material**: Triterile
- **Electrical Connection**: 5 Pin Push-Pull Style
- **Pressure Rating**: 6000 PSI
- **Fluid Temperature Range**: 0 F to 350 F
- **Ambient Temperature Range**: 0 F to 120 F
- **Media Compatibility**: Petroleum based Fluids
  - Contact factory for use with water based hydraulic fluids
- **Flow Measurement Accuracy**: 1.0 Full Scale
- **Voltage Input**: to 12 VDC
  - Supplied by SensoControl meter
- **Current Requirement**: 6mA
- **Response Time**: .50 ms
- **Viscosity Range**: 11 to 50 cSt

### 5 pin to 5 pin Cables

- **Flow sensor, transducer and temperature probe cables**
- **Length**: 10 ft 3 m
- **Part Number**: SC -102-03-02
- **Extension Cable**: 16.4 ft 5 m
- **Part Number**: SC -102-05-12

### SensoWIN™ 4.03 Software

- for data transfer to a PC Windows 98 and newer
- **Part Number**: SCSW-400
Service Master Test Meter Kits

Kit Contents:
- Case
- Service Master Meter
- Transducers (Quantity 2)
- Transducer Cable, 10' (Quantity 2)
- Power Supply – Meter*
- SensoWin Software 4.03
- Computer Interface Cable
- Operating Manual*

* Included with Service Master Meter

Service Master 360
Meter Kit
- SC-690
- SCM-360-1-01
- SCK-102-03-02
- SCSW-400
- SCK-313-02-31

Service Master 450
Meter Kit
- SC-690
- SCM-450-1-01
- SCK-102-03-02
- SCSN-450
- SCK-313-02-31

Transducer Pressure Range (Choose two)
- 01 -14.5 – +145 PSI Blue
- 06 0 – 870 PSI Green
- 15 0 – 2175 PSI Yellow
- 40 0 – 5800 PSI Orange
- 60 0 – 8700 PSI Red

Code for Ordering

Service Master Meter Kits:
PDSM XX - X - XX - XX

Diagnostic Style
- 2 PD Style
- 4 PDP Style
- 6 EMA3 Style (Female)

Meter Style

Code for Ordering Separately:

PD XXXXXX - XXXX

Pressure Range
- 0100 -14.5 – +145 PSI Blue
- 0600 0 – 870 PSI Green
- 1500 0 – 2175 PSI Yellow
- 4000 0 – 5800 PSI Orange
- 6000 0 – 8700 PSI Red

Diagnostic Style
- TA PD Style
- PTA PDP Style
- TEMA3 EMA3 Style (Female)

PTA - 10000

Pressure Range

Diagnostic Style

DIRECT PORT ONLY
(1/2-14BSPP Thread)

Flow Sensors

Code for Ordering Separately:

SCFT-XXXX - XXX

Diagnostic Style

Flow Range
- 0004 0.2 – 4 GPM (1 – 15 l/min)
- 0116 1 – 16 GPM (4 – 60 l/min)
- 0380 3 – 80 GPM (10 – 300 l/min)
- 5160 5 – 160 GPM (20 – 600 l/min)