Ultra-Fast and Precise Pressure Transmitters
Bandwidth 50 kHz / Resistant up to 200 °C / Accuracy 0.1 % FS

The Series M5 pressure transmitters, with their 0…50 kHz dynamic range and M5 pressure connection, are optimized both for dynamic (i.e. fast pressure pulsations at close proximity) as well as static pressure measurements. The sensor design enables excellent media compatibility and supports measurements at temperatures of up to 200 °C without cooling adapters.

Electronics
The circuitry for the Series M5 HB was specifically developed to take advantage of the high dynamic range of the M5 sensor head. The signal path remains entirely analog, although it is readjusted in real time by means of a high-precision digital compensation circuit. This ensures the full dynamic range of the sensor and the accuracy of the measurement signal are maintained across the entire 0…50 kHz bandwidth. With a temperature range of -40…+125 °C, the remote signal converter satisfies the exceptional demands associated with hostile environments; e.g., engine test benches. The sensor head alone (see the data sheet for the Series M5), i.e., without the remote signal converter, is available for those applications better served by a sensor with 80 mV output (@ 1 mA supply). Included with this configuration is a calibration card providing the user with actual test data taken from the sensor during factory calibration.

Sensor Technology
The Series M5 sensor incorporates a stable silicon sensor which is backside-soldered directly to a supporting element designed for excellent fluid dynamics. This construction eliminates the disadvantages of sealants, adhesives, separating membranes or capillary tubes in high temperature environments. The practically-flush connection to the measurement media is critical to the excellent dynamic range of 0…50 kHz. The micromechanical design delivers absolute measuring ranges of 3, 10 and 30 bar, overpressure protection of up to 5 times measuring range and effective isolation of mounting forces.

Performance Characteristics
• Sensor head capable of exposure to 200 °C
• Broad compensated temperature range, with a choice of either -20…+125 °C or -40…+180 °C
• Excellent dynamic response, up to 50 kHz (pulsation measurements)
• Insensitive to shock and vibration
• Extremely compact design, pressure connection: M5 x 0.5 fine thread
• Teflon FEP cable with IP67 ferrule, suitable for use on test benches
• Pressure ranges of 3 bar, 10 bar and 30 bar (absolute)

Electrical Connections
(Shielded cables recommended)

<table>
<thead>
<tr>
<th>Function</th>
<th>M12 A-coded</th>
<th>Binder 723</th>
</tr>
</thead>
<tbody>
<tr>
<td>+Vcc</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>-OUT *</td>
<td>2</td>
<td>n.c.</td>
</tr>
<tr>
<td>GND</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>+OUT</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>n.c.</td>
<td>5</td>
<td>n.c.</td>
</tr>
</tbody>
</table>

* Connected to GND for 4-wire measurement
Specifications

<table>
<thead>
<tr>
<th>Pressure ranges, absolute</th>
<th>PAA</th>
<th>0…3</th>
<th>0…10</th>
<th>0…30</th>
<th>bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overpressure / burst pressure</td>
<td>15</td>
<td>50</td>
<td>90</td>
<td></td>
<td>bar</td>
</tr>
</tbody>
</table>

PAA: Absolute pressure. Zero at vacuum.

Accuracy: ± 0.1 %FS

Total Error Band: ± 0.5 %FS @ -20 to +125 °C sensor temperature
± 1.0 %FS @ -40 to +180 °C sensor temperature

Operating Temperature of Sensor Head: -50…+180 °C
Operating Temperature of Electronics: -40…+125 °C

Temp. Coefficients for Amplifier Electronics: ± 0.01 %/K max.

Intermediate ranges show the overpressure resistance for the next biggest range listed.

Type: 3- and 4-wire

Signal Output: 0…10 V

Excitation: 13…32 VDC

Load Resistance: > 5 kΩ

Limiting Frequency (-3 dB): 50 kHz min.

Power Consumption (off-load): 15 mA max.

Electrical Connections: M12 plug (5-pin), Binder 723 (5-pin)

Pressure Connection: Metric fine thread: M5 x 0.5 male

Cable: 1.5 m FEP cable with Ø 2.9 mm shield

Insulation: > 10 MΩ @ 300 VDC

Materials in Contact with Media: Stainless steel AISI 316L (DIN 1.4404 / 1.4435), silicon, gold, external copper seal

Media Compatibility: Oil, fuels (diesel, petrol, etc.), gases, coolants, etc.

Protection: IP67 (with a suitable mating plug)

EMC: EN 61000-6-2 / EN 61000-6-3 / EN 61326-2-3

Options:

- Other pressure connections via thread adapter
- Other compensated pressure and temperature ranges

Frequency response for the amplifier electronics of the Series M5 HB

The ‘HB’ electronics designation stands for high bandwidth and is associated with the project name HummingBird.