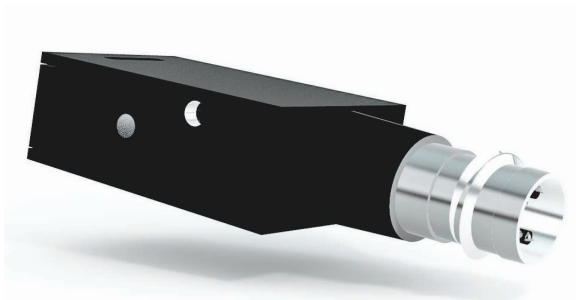


General description

The HPSDW 5000 is a pressure sensing device acting as pressure transducer and pressure switch at the same time. Signal conditioning consist of complete temperature compensation and adjusted amplifier in single, programmable ASIC. High performance and accuracy enables use of this tansducer in many applications. Programmable temperature compensation provides 1% total error over 0 to 70°C temperature range. Wide supply range 7 to 40 V, standard 0.5 to 4.5 V voltage output, digital output and switching output provides users maximum freedom for any type of application with dry air or non-corrosive gases and liquids.

The model HPSDW 5000 is designed for standard M8 electrical connector. The whole group consists for pressure ranges from 20 mbar to 7 bar. Gage pressure configuration available for this group.



Features

- Wide supply voltage range 7 to 40 V
- Wide compensated range (0 to 70°C)
- Total accuracy down to 1% over 0 to 70°C, all effects included (maximum)
- Standard 0.5 to 4.5 V analog output
- Switching output with led indicator
- Overcurrent and overvoltage protection
- Overload and short circuit protection
- High performance OEM applications
- Standard M8 output connector
- Gage pressure configuration
- Pressure ranges: from 20 mbar to 7 bar or vacuum

Applications

- Pressure switch
- Pressure measurement
- Process control
- Leak detection
- Pneumatic controls



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Types overview

$$T_{AMB} = 25^{\circ}\text{C}$$

$$V_{CC} = 5\text{ V, unless otherwise noted}$$

Low pressure range

| Pressure range | 20 mbar (0.15psi) | 50 mbar (0.3psi) | 100 mbar (0.8psi) | 350 mbar (5psi) |
|------------------------------|--|----------------------------|----------------------------|----------------------------|
| ID group | HPSDW 5000-020M | HPSDW 5000-050M | HPSDW 5000-100M | HPSDW 5000-350M |
| Pressure types | gage bidirectional gage | gage bidirectional gage | gage bidirectional gage | gage bidirectional gage |
| V _{OUT} | 0.5 to 4.5 V | 0.5 to 4.5 V | 0.5 to 4.5 V | 0.5 to 4.5 V |
| Temperature ranges | Operating: -25 to 85°C Compensated: 0 to 70°C Storage : -40 to 125°C | | | |
| Over pressure ¹⁾ | 200 mbar | 500 mbar | 1 bar | 1 bar |
| Burst pressure ²⁾ | 300 mbar | 750 mbar | 1.5 mbar | 1.7 bar |

High pressure range

| Pressure range | 1 bar (15psi) | 2 bar (30psi) | 4 bar (60psi) | 7 bar (100psi) | 0 bar (vacuum) |
|------------------------------|--|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| ID group | HPSDW 5000-001B | HPSDW 5000-002B | HPSDW 5000-004B | HPSDW 5000-007B | HPSDW 5000-000B |
| Pressure types | gage bidirectional gage | gage bidirectional gage | gage bidirectional gage | gage bidirectional gage | gage bidirectional gage |
| V _{OUT} | 0.5 to 4.5 V | 0.5 to 4.5 V | 0.5 to 4.5 V | 0.5 to 4.5 V | 0.5 to 4.5 V |
| Temperature ranges | Operating: -25 to 85°C Compensated: 0 to 70°C Storage : -40 to 125°C | | | | |
| Over pressure ¹⁾ | 3 bar | 6 bar | 8 bar | 14 bar | 3 bar |
| Burst pressure ²⁾ | 5 bar | 10 bar | 12 bar | 21 bar | 5 bar |

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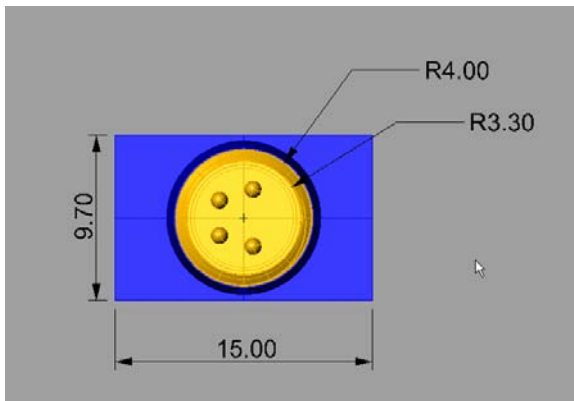
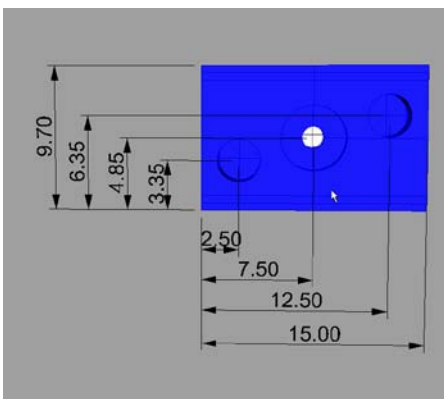
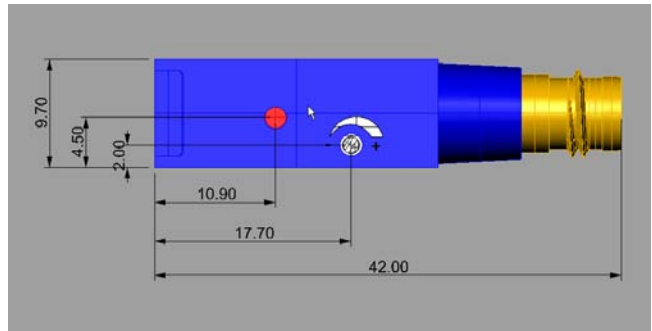
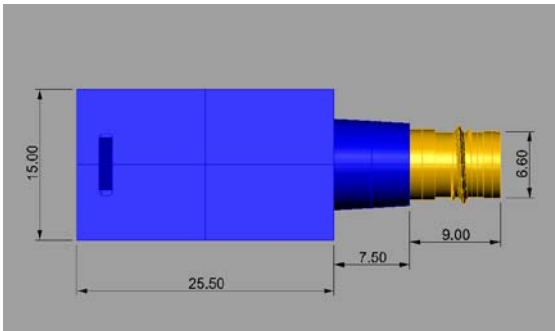
Performance characteristics

$T_{AMB} = 25^{\circ}\text{C}$
 $V_{CC} = 5\text{ V}$, unless otherwise noted

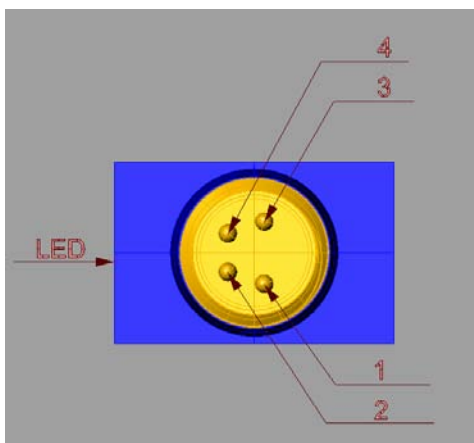
| Parameter | Symbol | Min. | Type | Max. | Unit |
|--|-----------|------|-------------------------------|------|--------|
| Power supply | | | | | |
| Supply voltage | V_{CC} | 4.75 | | 5.25 | V |
| Current consumption | I_{CC} | | 4 | 6.5 | mA |
| Analog output (pressure) ³⁾ | | | | | |
| Offset voltage ⁴⁾ | V_O | | 0.50 | | V |
| Full scale output (FSO) ⁵⁾ | V_{FS} | | 4.50 | | V |
| Full scale span (FSS) ⁶⁾ | V_{FSO} | | 4.00 | | V |
| Offset voltage (bidirectional devices) | V_O | | 2.50 | | V |
| Digital output (pressure), 15 bits ³⁾ | | | | | |
| Offset voltage ⁴⁾ | V_O | | 3277 | | counts |
| Full scale output (FSO) ⁵⁾ | V_{FS} | | 29491 | | counts |
| Full scale span (FSS) ⁶⁾ | V_{FSO} | | 26214 | | counts |
| Offset voltage (bidirectional devices) | V_O | | 16384 | | counts |
| Digital output (temperature), 15 bits ⁷⁾ | | | | | |
| Temperature output @ 0°C | T_o | | 8192 | | counts |
| Temperature output @ 70°C | T_s | | 24576 | | counts |
| Accuracy (pressure) @ 25°C ⁸⁾ | | | | | |
| Low pressure (20 to 100 mbar FS devices) | E_a | | | ±1.5 | %FSO |
| Standard pressure | E_a | | | ±0.8 | %FSO |
| Total accuracy (pressure) @ 0 to 70°C ⁹⁾ | | | | | |
| Low pressure (20 to 100 mbar FS devices) | E_{ta} | | | ±2 | %FSO |
| Standard pressure (all other devices) | E_{ta} | | | ±1 | %FSO |
| Resolution | | | | | |
| A/D converter | D_i | | | 15 | bit |
| D/A converter | D_o | | 11 | | bit |
| Response time | E_{rt} | | 1.5 | | ms |
| Repeatability ¹⁰⁾ | E_r | | ±0.05 | | % FSO |
| Nonlinearity & pressure hysteresis (BFSL) ¹¹⁾ | E_l | | ±0.1 | ±0.3 | % FSO |
| Load resistance | R_L | 2 | | ∞ | k |
| Media compatibility | | | See spec. note ¹²⁾ | | |
| Weight | W | | 9 | | g |

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Outline dimensions



Pinout



ANALOG VERSION:

| | |
|---|-----------------|
| 1 | +Vin |
| 2 | Out (analog) |
| 3 | GND |
| 4 | Out (switching) |

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Ordering guide

| Transducer type | Pressure range | Pressure type | Direction |
|-----------------|----------------|---------------|-----------|
| HPSDW 5000 | 020M | G | 0 |
| | 050M | | B |
| | 100M | | |
| | 350M | | |
| | 001B | | |
| | 002B | | |
| | 004B | | |
| | 007B | | |
| | 000B | | |

| Pressure range | |
|----------------|----------|
| 020M | 20 mbar |
| 050M | 50 mbar |
| 100M | 100 mbar |
| 350M | 350 mbar |
| 001B | 1 bar |
| 002B | 2 bar |
| 004B | 4 bar |
| 007B | 7 bar |
| 000B | vacuum |

| Pressure type | |
|---------------|------|
| G | Gage |

| Pressure direction | |
|--------------------|---|
| 0 | 0 to press. range |
| B | -press range to +press. range (bidirectional) |

Other configurations possible on special request.

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