Honeywell

# MLH Series

## All Metal Pressure Sensors

**DESCRIPTION**

MLH Series pressure sensors combine Application Specific Integrated Circuit (ASIC) technology with a media isolated, metal diaphragm design. This digitally compensated sensor offers value and performance, making it the ideal pressure sensing solution for demanding applications. Fully temperature compensated, calibrated and amplified, the MLH is available in 50 psi to 8,000 psi pressure ranges.

MLH sensors deliver ±0.25% full scale accuracy Best Fit Straight Line (BFSL) and as low as 2% total error over a temperature range of -40 °C to 125 °C [-40 °F to 257 °F]. Industry standard connectors and process ports are offered for enhanced reliability and user flexibility.

The MLH has six standard output options:

A. 0.5 Vdc to 4.5 Vdc ratiometric from 5 Vdc excitation
B. 4 mA to 20 mA
C. 1 Vdc to 6 Vdc regulated
D. 0.25 Vdc to 10.25 Vdc regulated
E. 0.5 Vdc to 4.5 Vdc regulated
G. 1 Vdc to 5 Vdc regulated

**FEATURES**

- All metal wetted parts for use in wide variety of fluid applications
- No internal elastomeric seals mean no o-ring compatibility issues
- Amplified outputs eliminate cost of external amplifiers
- Input reverse voltage protection guards against mis-wiring
- Less than 2 ms response time provides accurate, high speed measurement
- Rated IP65 or better for protection from harsh environments

**POTENTIAL APPLICATIONS**

- Compressors
- Refrigeration and HVAC/R
- General industrial
- General hydraulics
- Multiple transportation applications including braking and alternate fuels
- Medical

# MLH Series

**Table 1. Pressure Range Specifications[1] (At 25 °C [77 °F] and at rated excitation unless otherwise specified.)**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **psi** | | | | | | | | | | | | |
| Pressure | 50 | 100 | 150 | 200 | 250 | 300 | 500 | 1000 | 2000 | 3000 | 5000 | 8000 |
| Proof pressure | 150 | 300 | 450 | 600 | 750 | 900 | 1500 | 2000 | 4000 | 6000 | 7500 | 12000 |
| Burst pressure | 500 | 1000 | 1500 | 2000 | 2500 | 3000 | 5000 | 10000 | 20000 | 30000 | 30000 | 30000 |
| **bar** | | | | | | | | | | | | |
| Pressure | 6 | 10 | 16 | 25 | 40 | 60 | 100 | 160 | 250 | 350 | 500 | 550 |
| Proof pressure | 18 | 30 | 48 | 75 | 80 | 120 | 200 | 320 | 500 | 700 | 750 | 825 |
| Burst pressure | 60 | 100 | 160 | 250 | 400 | 600 | 1000 | 1600 | 2068 | 2068 | 2068 | 2068 |

**Note:**

1. Comparable metric units follow same proof and burst specifications.

**Table 2. Physical and Environmental Specifications**

| **Parameter** | **Characteristic** |
|---|---|
| Material in contact with media | port: stainless steel 304L; diaphragm: Haynes 214 alloy |
| Housing material | black plastic – Amodel AS-4133 HS – PPA |
| Weight | 57.0 g [2.0 oz] (typical for Delphi Metri-Pack 150 and 1/8 NPT port) |
| Shock | 100 g peak [11 ms] |
| Vibration | MIL-STD-810C, Figure 514.2-5, Curve AK, Table 514.2-V, Random Vibration Test [overall g rms = 20.7 min.] |
| Compensated and operating temperature range:<br>0.5 Vdc to 4.5 Vdc ratiometric output<br>all regulated and 4 mA to 20 mA outputs | <br>-40 °C to 125 °C [-40 °F to 257 °F]<br>-40 °C to 125 °C [-40 °F to 257 °F] See Figures 2 and 3 for operating area details. |
| Storage temperature range | -40 °C to 125 °C [-40 °F to 257 °F] |
| Approvals | UL Component Recognition for USA and Canada: File No. E258956 |

**Table 3. Electrical Specifications (At 25 °C [77 °F] and at rated excitation unless otherwise specified.)**

| **Parameter** | **Ratiometric (A)** | **Current (B)** | **Regulated (C)** | **Regulated (D)** | **Regulated (E)** | **Regulated (G)** |
|---|---|---|---|---|---|---|
| Zero output | 0.5 Vdc | 4 mA | 1 Vdc | 0.25 Vdc | 0.5 Vdc | 1 Vdc |
| Full scale span (FSS) | 4 Vdc (0.5 Vdc to 4.5 Vdc) | 16 mA (4 mA to 20 mA) | 5 Vdc (1 Vdc to 6 Vdc) | 10 Vdc (0.25 Vdc to 10.25 Vdc) | 4 Vdc (0.5 Vdc to 4.5 Vdc) | 4 Vdc (1 Vdc to 5 Vdc) |
| Excitation | 5 Vdc (6 Vdc max.)[1] | 9.5 Vdc to 30 Vdc[2] | 8 Vdc to 30 Vdc[2] | 14 Vdc to 30 Vdc[2] | 7 Vdc to 30 Vdc[2] | 8 Vdc to 30 Vdc[2] |
| Supply current | 4 mA typ. (8 mA max.) | N/A | 5 mA typ. (17 mA max.) | 5 mA typ. (17 mA max.) | 5 mA typ. (17 mA max.) | 5 mA typ. (17 mA max.) |
| Source (nominal) | 1 mA | N/A | 1 mA | 1 mA | 1 mA | 1 mA |
| Sink (nominal) | 1 mA at zero output | N/A | 1 mA at zero output | 1 mA at zero output | 1 mA at zero output | 1 mA at zero output |
| Supply rejection ratio | 90 dB | 90 dB | 90 dB | 90 dB | 90 dB | 90 dB |
| Output impedance | 25 Ω max. | N/A | 25 Ω max. | 25 Ω max. | 25 Ω max. | 25 Ω max. |

**Notes:**

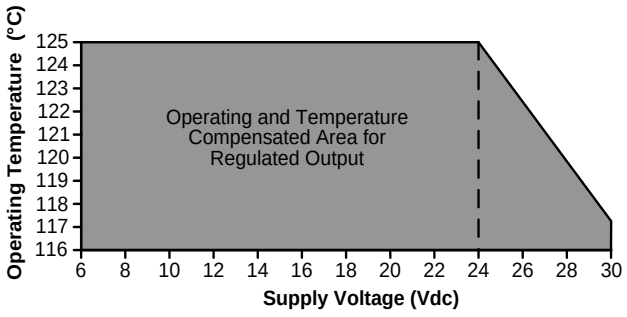
1. Maintains ratiometricity at 5 ±0.25 Vdc excitation. Product can tolerate 6 Vdc excitation without damage.
2. See Figures 2 and 3 for more information regarding maximum excitation voltage vs. operating temperature.

**Table 4. Performance Specifications (At 25 °C [77 °F] and at rated excitation unless otherwise specified.)**

| Parameter | Characteristic |
|---|---|
| Response time | <2 ms |
| Accuracy[1]: | |
| ≥100 psi | ±0.25% FSS |
| <100 psi | ±0.50% FSS |
| Total error band[2]: | |
| Gage: | |
| <300 psig | ±3% FSS |
| ≥300 psig | ±2% FSS |
| Seal gage: | |
| ≥300 psis | ±2% FSS |
| Seal gage without L, M, P termination: | |
| 100 psis to 299 psis (-40 °C to 85 °C [-40 °F to 185 °F]) | ±3% FSS |
| 100 psis to 299 psis (>85 °C to 125 °C [>185 °F to 257 °F]) | ±10% FSS |
| ≥300 psis (-40 °C to 125 °C [-40 °F to 257 °F]) | ±2% FSS |
| Seal gage with L, M, P termination: | |
| 100 psis to 299 psis (-40 °C to 65 °C [-40 °F to 149 °F]) | ±10% FSS |
| 100 psis to 299 psis (>65 °C to 125 °C [>149 °F to 257 °F]) | ±15% FSS |
| ≥300 psis (-40 °C to 65 °C [-40 °F to 149 °F]) | ±5% FSS |
| ≥300 psis (>65 °C to 125 °C [>149 °F to 257 °F]) | ±15% FSS |

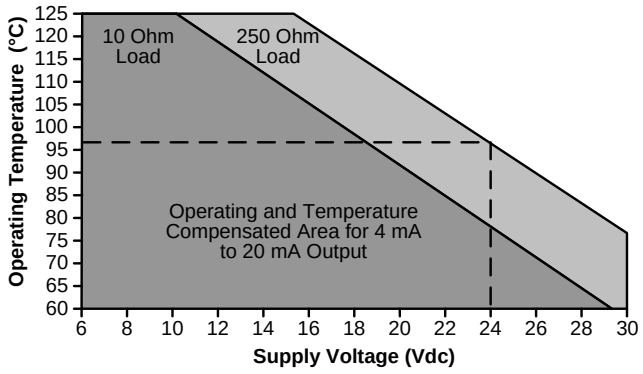
**Notes:**
1. Includes pressure non-linearity (BFSL), pressure hysteresis and non-repeatability. Thermal errors are not included.
2. Includes zero error, span error, thermal effect on zero, thermal effect on span, thermal hysteresis, pressure-non-linearity, pressure hysteresis and non-repeatability.

**Figure 2. Operating and Temperature Compensated Area for All Regulated Output Options**



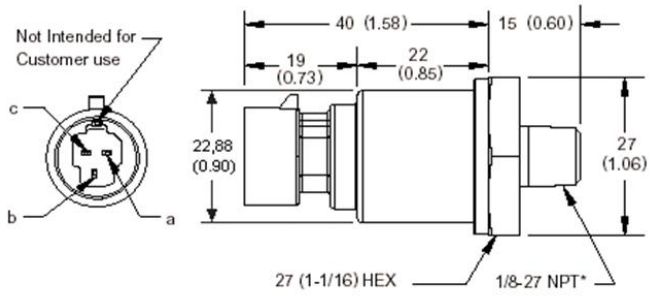

**Note:**
The dashed line indicates the operating and temperature compensated area with a 24 V supply.

**Figure 3. Operating and Temperature Compensated Area for 4 mA to 20 mA Output**




**Note:**
The operating area is extended with a 250 Ohm resistor. Higher loads extend the operating area. The dashed line indicates the operating and temperature compensated area with a 24 V supply using a 250 Ohm load.

**Figure 4. Mounting Dimensions (For reference only. mm/(in).)**




**Pin and Wire Codes (Option B – Packard)**

| Pin | Voltage | Current |
|---|---|---|
| a | + excitation | + excitation |
| b | output | - excitation |
| c | common | no connection |

A variety of pressure ports and electrical termination connection options are available. Refer to the "How to Order" on previous page for possible combinations. Contact your Honeywell representative for details.

**Nomenclature and Order Guide**[1]

**MLH** _ _ _ _ _ _ _ _

**Series**

**Pressure Range**

| psi | | bar | |
|---|---|---|---|
| 050 | 500 | 006 | 100 |
| 100 | 01K | 010 | 160 |
| 150 | 02K | 016 | 250 |
| 200 | 03K | 025 | 350 |
| 250 | 05K | 040 | 500 |
| 300 | 08K | 060 | 550 |

**Unit**
P = psi
B = bar

**Measurement Type**
G = Gage (psi)
S = Sealed gage (psi)[4]

**Electrical Termination**
B = Delphi Metri-Pack 150
C = Hirschmann (mates with G4W1F)
D = M12 x 1 (Brad Harrison micro)
G = DIN 43650-C, 8 mm-male
H = Amp Superseal 1.5[2]
L = Cable (1 m)
M = Cable (3 m)
P = Flying leads (20 AWG – 6 in)
T = Deutsch DTM04-3P (integral)

*(Mating connectors are not supplied.)*

**Output Signal**
A = 0.5 Vdc to 4.5 Vdc ratiometric from 5 Vdc excitation
B = 4 mA to 20 mA
C = 1 Vdc to 6 Vdc regulated
D = 0.25 Vdc to 10.25 Vdc regulated
E = 0.5 Vdc to 4.5 Vdc regulated
G = 1 Vdc to 5 Vdc regulated

**Pressure Connection**
01 = 1/4-18 NPT
02 = M12 x 1.5 (ISO 6149)[3]
03 = M14 x 1.5 (ISO 6149)[3]
04 = 3/8-24 UNF (SAE-3 O-ring boss)[3]
05 = M18 x 1.5 (ISO 6149)[3]
06 = 1/8 in-27 NPT
07 = 1/2 in-20 UNF (SAE-5 O-ring boss)[3]
08 = M10 x 1 (ISO 6149)[3]
09 = 1/4 in SAE female Schrader (7/16-20 UNF-2B internal thread)
10 = 7/16-20 UNF (SAE-4 O-ring boss)[3]
11 = 1/2 in NPT
12 = 9/16-18 UNF (SAE-6 O-ring boss)[3]
13 = R 1/4-19 BSPT (ISO 7-1 tapered thread)
14 = G 1/4-19 (DIN 3852-2)[3]
15 = G 1/8 with O-ring groove[3]
16 = M16 x 1.5 (ISO 6149)[3]
17 = G 1/4 with O-ring groove[3]
18 = G 1/8 (DIN 3852-2)[3]
19 = R 1/8-28 BSPT (ISO 7-1 tapered thread)
20 = M20 x 1.5 (ISO 6149)[3]
21 = 1/2-20 (SAE J514)[3]

**Notes:**
1. Not all combinations are available. Minimum quantity orders apply. Additional pressure ranges, port styles and special calibration versions are available. Contact your local sales representative for assistance.
2. Available with "A" output only.
3. Supplied with O-ring.
4. Sealed gage devices are not available for pressure ranges below 100 psi.

## ⚠ WARNING

**MISUSE OF DOCUMENTATION**

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

**Failure to comply with these instructions could result in death or serious injury.**

**WARRANTY/REMEDY**

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

## ⚠ WARNING

**PERSONAL INJURY**

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

**Failure to comply with these instructions could result in death or serious injury.**

**SALES AND SERVICE**

Honeywell serves its customers through a worldwide network of sales offices, representatives and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact your local sales office or:

**E-mail:** info.sc@honeywell.com

**Internet:** www.honeywell.com/sensing

**Phone and Fax:**

| | |
|---|---|
| Asia Pacific | +65 6355-2828 |
| | +65 6445-3033 Fax |
| Europe | +44 (0) 1698 481481 |
| | +44 (0) 1698 481676 Fax |
| Latin America | +1-305-805-8188 |
| | +1-305-883-8257 Fax |
| USA/Canada | +1-800-537-6945 |
| | +1-815-235-6847 |
| | +1-815-235-6545 Fax |

Sensing and Control
Honeywell
1985 Douglas Drive North
Golden Valley, MN 55422
**www.honeywell.com/sensing**

Honeywell

008118-7-EN IL50 GLO Printed in USA
February 2011
Copyright © 2011. Honeywell International Inc. All rights reserved.

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

**Данный компонент на территории Российской Федерации**

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

http://moschip.ru/get-element

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

**Офис по работе с юридическими лицами:**

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:
moschip.ru
moschip.ru_4
moschip.ru_6
moschip.ru_9