



- **STATE OF THE ART TECHNOLOGY**
- **SILICON-ON-SAPPHIRE STRAIN GAUGE**
- **OUTSTANDING LONG TERM STABILITY**
- **SUPERB TEMPERATURE COMPENSATION**
- **EXCELLENT ACCURACY**
- **TITANIUM/STAINLESS STEEL CONSTRUCTION**
- **OPERATING TEMPERATURE -50 C TO +150 C**
- **RANGES 0-1 bar to 0-1000 bar**

DESCRIPTION

The HI2000 series of pressure transducers use Silicon-on-sapphire technology to offer levels of accuracy and performance previously unobtainable or prohibitively expensive.

Silicon strain gauge resistors are epitaxially grown onto the surface of the sapphire diaphragms, forming a radiation hardened structure. This structure provides virtually unmeasurable hysteresis and outstanding insulation properties which protect the strain gauge from the influences of pulse-electromagnetic fields.

The sensor construction is completed by mating the sapphire diaphragm with a BT9 titanium alloy pressure port and diaphragm. The titanium/sapphire assembly enables the transducer to be very stable at high or low temperatures (-50 C to +150 C).

Typical applications include testing of jet engines and other machinery operating at high temperatures, process monitoring, oil and gas exploration equipment, undersea exploration, military and other applications requiring accurate results at high or varying temperatures.

Available immediately in pressure ranges from 0-1 bar to 0-1000 bar and with electrical outputs of 0-100mV, 0-5Vdc and 0-10Vdc.

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SPECIFICATION

HI 2000 / HI 2010 - mV output

INPUT

Pressure ranges..... 0-1 bar to 0-1000 bar
Pressure reference..... Gauge
Over pressure..... 1.5 x Rated Pressure
up to 1000 bar
1.1 x 1000 bar range

OUTPUT

Sensitivity..... 10mV/V (nominal)
Span..... 0-100mV ($\pm 1\%$)
Type..... 4 wire
Common mode voltage..... 2-4Vdc

ACCURACY

Zero offset..... $<\pm 10\text{mV}$
Span tolerance..... $<\pm 30\% \text{FSO}$
Non-linearity..... $<\pm 0.2\% \text{FSO}$
Repeatability..... $<\pm 0.1\% \text{FSO}$
Long term stability..... $<\pm 0.2\% \text{FSO} / 6$
months

ELECTRICAL

Supply voltage..... 5Vdc (15Vdc max)
Supply voltage effects..... Ratiometric
Reverse polarity..... No damage
Power requirements..... 5mA

Input resistance..... $1500\Omega \pm 30\%$
Output resistance..... $1500\Omega \pm 30\%$
Insulation resistance..... $100\text{M}\Omega @ 100\text{Vdc}$ elec conn to case
Response time (63%)..... 0.2ms

ENVIRONMENTAL

Pressure media..... Media compatible with BT9 titanium
Operating temperature range... -50 to +150°C
Storage temperature range..... -65 to +165°C
Thermal effect Zero..... $<\pm 0.005\% \text{FSO}/^\circ\text{C}$
Thermal sensitivity..... $<\pm 0.005\% \text{FSO}/^\circ\text{C}$
Vibration tolerance..... $<\pm 0.02\%/g$
Acceleration tolerance..... $<\pm 0.02\%/g$
Mechanical shock tolerance..... 15g@s (11ms)
Operating humidity..... 95% RH

PHYSICAL

Pressure connection..... 1/4" BSP male (others on request)
Electrical connection..... HI 2000 - Via Screened cable
HI 2010 - MIL-C-26482 connector
Enclosure rating..... IP65
Natural frequency..... 8Khz (min)
Weight..... 85 grams
Materials..... 300 series stain'stl body
All wetted parts BT9 titanium alloy

SPECIFICATION

HI 2001 / HI 2011 - 0-5V output

INPUT

Pressure ranges..... 0-1 bar to 0-1000 bar
Pressure reference..... Gauge
Over pressure..... 1.5 x Rated Pressure
up to 1000 bar
1.1 x 1000 bar range

OUTPUT

Span..... 0-5V
Type..... 4 wire
Common mode voltage..... 1Vdc $\pm 1\%$

ACCURACY

Zero offset..... $<\pm 0.2\% \text{FSO}$
Span tolerance..... $<\pm 0.2\% \text{FSO}$
Combined non-linearity..... $<\pm 0.2\% \text{FSO}$
Repeatability..... $<\pm 0.05\% \text{FSO}$
Long term stability..... $<\pm 0.2\% \text{FSO} / 6$
months

ELECTRICAL

Supply voltage..... 13-40Vdc
Supply voltage effects..... 11 $\mu\text{V}/\text{V}$
Reverse polarity..... No damage
Power requirements..... 10mA (max)

Load Driving Capacity..... 2.5K Ω (min)
Insulation resistance..... $100\text{M}\Omega @ 100\text{Vdc}$ elec conn to case
Response time (63%)..... 1ms

ENVIRONMENTAL

Pressure media..... Media compatible with BT9 titanium
Operating temperature range... -50 to +150°C
Storage temperature range..... -65 to +165°C
Thermal effect Zero..... $<\pm 0.005\% \text{FSO}/^\circ\text{C}$
Thermal sensitivity..... $<\pm 0.005\% \text{FSO}/^\circ\text{C}$
Vibration tolerance..... $<\pm 0.02\%/g$
Acceleration tolerance..... $<\pm 0.02\%/g$
Mechanical shock tolerance..... 15g@s (11ms)
Operating humidity..... 95% RH

PHYSICAL

Pressure connection..... 1/4" BSP male (others on request)
Electrical connection..... HI 1001 - Via Screened cable
HI 1011 - MIL-C-26482 connector
Enclosure rating..... IP65
Natural frequency..... 8 KHz (min)
Weight..... 95 grams
Materials..... 300 series stain's body
All wetted parts BT9 titanium alloy

SPECIFICATION

HI 2002 / HI 2012 - 10V output

INPUT

Pressure ranges..... 0-1 bar to 0-1000 bar
 Pressure reference..... Gauge
 Over pressure..... 1.5 x Rated Pressure
 up to 1000 bar
 1.1 x 1000 bar range

OUTPUT

Span..... 0-10V
 Type..... 4 wire
 Common mode voltage..... 1Vdc±1%

ACCURACY

Zero offset..... <±0.2% FSO
 Span tolerance..... <±0.2% FSO
 Combined non-linearity..... <±0.2% FSO
 Repeatability..... <±0.05% FSO
 Long term stability..... <±0.2% FSO/ 6
 months

ELECTRICAL

Supply voltage..... 13-40Vdc
 Supply voltage effects..... 11µV/V
 Reverse polarity..... No damage
 Power requirements..... 10mA (max)

Load Driving Capacity..... 5KΩ (min)
 Insulation resistance..... 100MΩ@ 100Vdc elec conn to case
 Response time (63%)..... 1mS

ENVIRONMENTAL

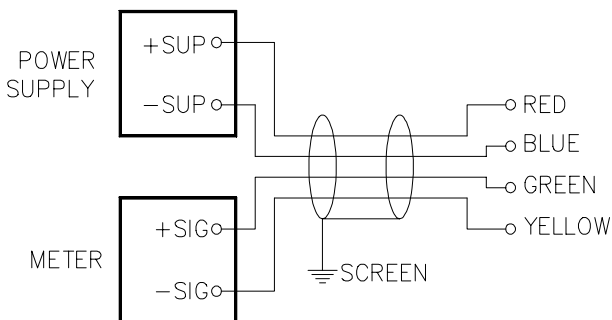
Pressure media..... Media compatible with BT9 titanium
 Operating temperature range... -50 to +150°C
 Storage temperature range..... -65 to +165°C
 Thermal effect Zero..... <±0.005% FSO/°C
 Thermal sensitivity..... <±0.005% FSO/°C
 Vibration tolerance..... <±0.02%/g
 Acceleration tolerance..... <±0.02%/g
 Mechanical shock tolerance..... 15g@s (11mS)
 Operating humidity..... 95% RH

PHYSICAL

Pressure connection..... ¼" BSP male (others on request)
 Electrical connection..... HI 2002 - Via Screened cable
 HI 2012 - MIL-C-26482 connector
 Enclosure rating..... IP65
 Natural frequency..... 8 KHz (min)
 Weight..... 95 grams
 Materials..... 300 series stain/stl body
 All wetted parts BT9 titanium alloy

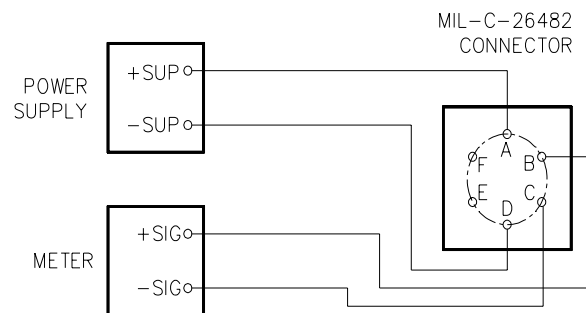
WIRING DETAILS

TRANSDUCER WIRING DIAGRAM



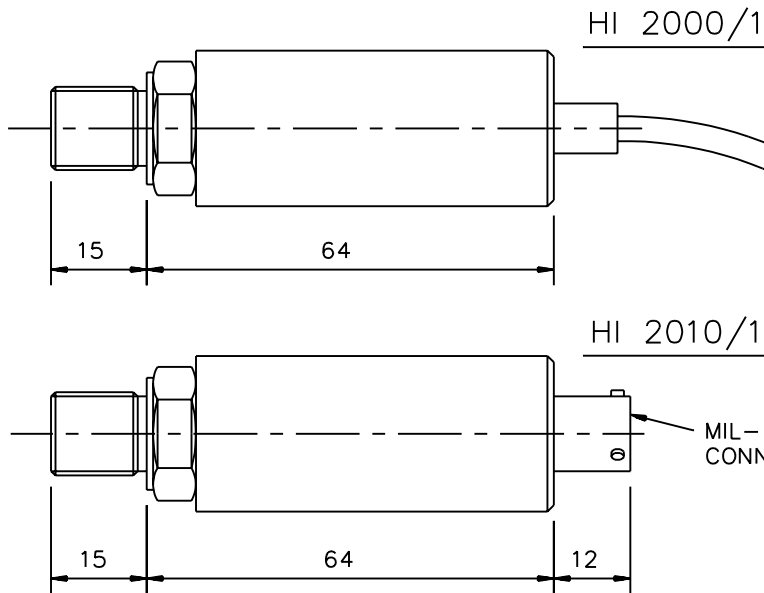
Cable Connection for HI 2000/1/2

TRANSDUCER WIRING DIAGRAM



MIL Connection for HI 2010/1/2

DIMENSIONS



ORDERING INFORMATION

STATE MODEL NUMBER AND PRESSURE RANGE
REQUIRED:-
i.e. HI 2000 0-10bar

MODEL NO.	DESCRIPTION
HI 2000	mV output. Cable Connection
HI 2001	5V output. Cable Connection
HI 2002	10V output. Cable Connection
HI 2010	mV output. MIL Connection
HI 2011	5V output. MIL Connection
HI 2012	10V output. MIL Connection

PRESSURE RANGES

0 - 1 bar	0 - 60 bar
0 - 2.5 bar	0 - 100 bar
0 - 6 bar	0 - 160 bar
0 - 10 bar	0 - 250 bar
0 - 16 bar	0 - 400 bar
0 - 25 bar	0 - 600 bar
0 - 40 bar	0 - 1000 bar

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