



**TELEDYNE HASTINGS INSTRUMENTS**  
Everywhereyoulook™

## HVG-2020B

## Vacuum Gauge

### FEATURES

- Two Sensors in One Small Package
- Range 0.1 mTorr to 1000 Torr
- Excellent Accuracy<sup>1</sup>
  - ≥ 10 Torr:  $\pm(0.1\% \text{ of Reading} + 0.5 \text{ Torr})$
  - < 10 Torr:  $\pm(10\% \text{ of Reading} + 0.1 \text{ mTorr})$
- Touchscreen Display/Control Option
- USB
- 0-1 VDC, 0-5 VDC, 0-10 VDC Log & Linear
- 0-20 mA, 4-20 mA Log & Linear
- RS232 / RS485
- Status LEDs
- Multiple Views
  - \* Pressure vs. Time Plot
  - \* Bar Graph
  - \* Set Point Status
- NIST Traceable Calibration
  - \* Certificate/Data Sheet Option

### APPLICATIONS

- Rough Vacuum Monitoring
- Vacuum Metallurgy
- Semiconductor
- Thin Film Coating
- Refrigeration & Air Conditioning
- Freeze Drying
- Oil Reprocessing

### BENEFITS

- High Accuracy—Cross Calibration
- Stable Performance
- Low Cost
- Flexible I/O
- Numerous System Connections
- Easy to Use

# Piezo-Pirani Vacuum Gauge



HVG - 2020B Vacuum Gauge



Optional Touchscreen Display



Data Logging Software



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## Description

The HVG-2020B vacuum gauge from Teledyne Hastings features two sensors, a piezo-based sensor and a thermal-based Pirani sensor, in a single small package. The piezo sensor is used at higher pressures, above 10 Torr, to accurately measure pressures. This sensor is media-isolated and is also gas composition independent.

The Pirani sensor is a precision welded hot-wire thermal sensor that measures pressures below 1 Torr. An ambient thermal sensor enables the instrument to make adjustments for temperature which in turn enables better accuracy throughout the pressure range of the instrument (0.1 mTorr to 1000 Torr). Between 1 and 10 Torr, a weighted average between the two sensors is used to determine the pressure.

The HVG-2020B also features cross-calibration. In short, the low pressure Pirani is able to periodically zero the piezo sensor and in turn, the piezo is used to span the Pirani. The cross-calibration gives the user superior accuracy performance compared to traditional Pirani gauges.

### Display Modes

The HVG-2020B is easy to install, and the optional display provides the user with several different views, or modes of operation. The **"Pressure versus Time"** Mode allows the user to monitor the pumpdown (or vent) of their vacuum system. In this mode, it can be possible to identify problems early and save time. Rate-of-rise can be viewed and may help to identify the presence of a chamber leak.

For users who want another method to see system pressure changes, we provide the **"Bar Graph"** Mode. As the pressure changes, the user can view both the numeric value of the pressure in the system as well as the rate of change by viewing the position of the bar.

### Flexible

The HVG-2020B is very flexible and can provide both analog and digital output to easily integrate into process control. A wide variety of analog output signals may be selected (0-1 VDC, 0-5 VDC, 0-10 VDC, 0-20 mA, and 4-20 mA). This makes the HVG-2020B an excellent choice to replace more expensive capacitance manometers.

Digital output can include RS232 and RS485 via a small jack on the top of the instrument. A USB connection is also available which makes connection and operation very easy. Free Windows data acquisition software for data logging is available for the HVG-2020B.



HVG-2020B Piezo Vacuum Gauge



Pressure vs. Time Mode



Bar Graph Display Mode



USB - Easy to Connect

*Teledyne Hastings Instruments reserves the right to change or modify the design of its equipment without any obligation to provide notification of change or intent to change.*

## Specifications



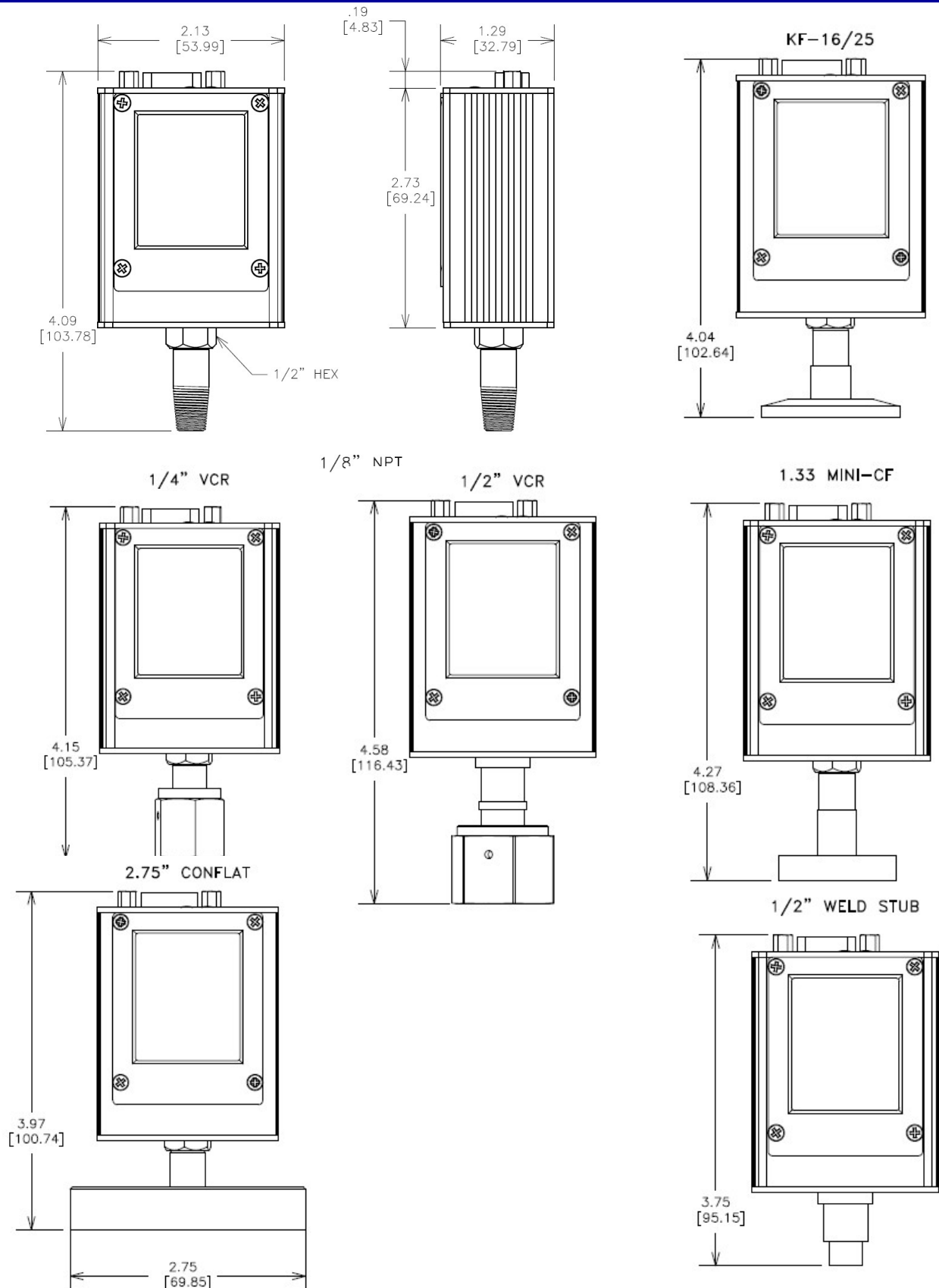
### Specifications

### HVG-2020B

Range	0.1 mTorr to 1000 Torr
Accuracy <sup>1</sup>	≥ 10 Torr: ±(0.1% of Reading +0.2 Torr) < 10 Torr: ±(10% of Reading +0.2 mTorr)
Maximum Overpressure	2000 Torr
Proof Pressure	25 psig <sup>2</sup>
Burst Pressure	45 psig
Operating Temperature	-20 — 70°C
Warm up time <sup>3</sup>	30 min (typical)
Warm up time <sup>4</sup>	2 hr (typical)
Analog Output (voltage)	0-1 VDC, 0-5 VDC, 0-10 VDC Lin. & Log
Analog Output (current)	0-20 mA, 4-20 mA Linear & Log
Wetted Materials	304 and 316L SS, glass, Ni, Au
Analog Connector	9 Pin D-sub
Digital Connector	Bayonet, 4 –conductor TRRS 3.5 mm
Input Voltage	12—36 VDC
Process Control Setpoints	Dual TTL (High & Low)
Power (With Display)	2.0 W (Max) @ 36VDC < 1.5 W (Typ) @ 24 VDC
Power (No Display)	1.8 W (Max) @ 36VDC < 1.3 W (Typ) @ 24 VDC
CE Mark	EN55011; EN61326; EN61010
RoHS Compliant	YES
Note 1:	Includes non-linearity, hysteresis, repeatability at ambient operating temperature after 2 hours warm up followed by zero adjustment.
Note 2:	The max pressure that can be applied without changing performance.
Note 3:	Warm-up time to within rated accuracy at atmosphere
Note 4:	Warm-up time for zero adjustment



## Outline Drawings HVG-2020B Series



## Selection Chart - HVG-2020B Series

Model Number		Analog Output	System Connection	Units	Digital Comm	Display
HVG-2020B						

Analog Output (Linear)	
01	0 - 1 VDC
02	0 - 5 VDC
03	0 - 10 VDC
04	4 - 20 mA
05	0 - 20 mA

Analog Output (Log)	
06	1 V/decade (1-8 VDC)
07	1 V/decade (1.6249 - 8.6249 VDC)
08	1 V/decade (2-9 VDC) DEFAULT
09	1.286 V/decade (1.616 - 10.1608 VDC)
10	2.0 mA/decade (4-20 mA)
11	2.5 mA/decade (0 - 20 mA)

System Connection	
01	1/8" NPT
02	1/4" VCR <sup>®</sup>
03	1.33" Mini-CF
04	2.75" CF
05	KF-16
06	KF-25
07	1/2" Weld Stub
08	1/2" VCR <sup>®</sup>

Units	
01	Torr
02	mbar
03	kPa
04	psia
05	Bar
06	Pa
07	Atm

Digital Communication	
02	RS232 & USB
03	RS485 & USB

Display	
01	Display
02	No Display

## Power Supplies & Cables



### 24 VDC Switching Power Supply

12-01-169

For use with HVG-2020, THCD-101, or 300 Vue  
(Please specify AC Input Clip)



### AC Input Clips

12-01-160

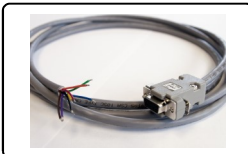
United States

12-01-165

United Kingdom

12-01-164

Europe



### HVG-2020 Cable (9-pin) to bare leads

65-170

8' Cable (~2.4m)

CB-LDS-XXX-HV9

Other lengths available



### Serial Communication Cable

CB-RS232-TRRS

RS232 Cable (9-pin "D" Female to Male TRRS)  
6' Cable (~1.8m)



### USB Cable

CB-USB-MICRO-B

USB-A to Micro-B  
2m cable (~6.6')

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