

**ACCURACY • PRESSURE MEASUREMENT**

**psi (Gauge Pressure)**

► **18 to 28° C**

0 to 30% of Range: **±(0.01% of Full Scale)**

30 to 110% of Range: **±(0.035% of Reading)**

Vacuum\*: **±(0.05% of Full Scale\*\*)**

► **-20 to 50° C**

0 to 30% of Range: **±(0.015% of Full Scale)**

30 to 110% of Range: **±(0.050% of Reading)**

Vacuum\*: **±(0.05% of Full Scale\*\*)**

\* Applies to 300 psi and lower ranges only.

Vacuum Range = -14.5 psi.

\*\* Full Scale is the numerical value of the positive pressure range.

*Includes all effects of linearity, hysteresis, repeatability, temperature, and stability for one year.*

*All models indicate vacuum, but vacuum specification applies to 15, 30, 100, and 300 psi models only.*

*Not recommended for continuous use at high vacuum. Refer to [XP2i-DP data sheet](#) for gauges that are intended for continuous high vacuum use.*

*The BARO option allows you to toggle between gauge and absolute pressure.*

*Exposure to environmental extremes of temperature, shock, and/or vibration may warrant a more frequent recertification period.*

*APMi modules must be exercised and re-zeroed whenever exposed to significant changes in environmental conditions to achieve these specifications. To exercise a module, cycle the module between zero (ambient barometric pressure) and the pressure of interest. A properly exercised module will return to a zero reading (or return to the same ambient barometric reading).*

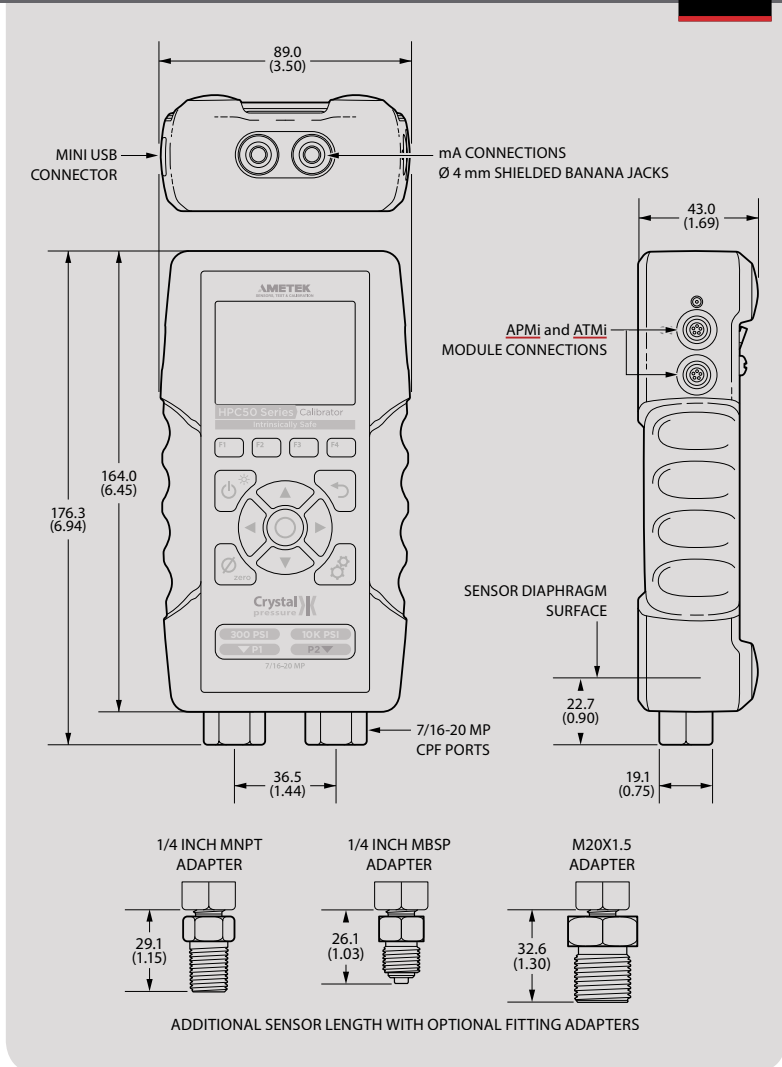
**psiA (Absolute Pressure with BARO Option)**

► All absolute accuracies are equivalent to the gauge pressure accuracies, except as noted below.

15 psi Range: **Gauge Accuracy + 0.005 psiA**

30 psi Range: **Gauge Accuracy + 0.005 psiA**

100 psi Range: **Gauge Accuracy + 0.002 psiA**



**DIFFERENTIAL PRESSURE**

The Tare function can improve differential pressure measurement uncertainties. Requires the use of an equalizing valve.

Full Scale Range of Both Sensors	The Greater of (+/-)				% of DP Reading
	psi	mbar	inH <sub>2</sub> O	mmH <sub>2</sub> O	
15	0.00015	0.01	0.004	0.1	0.035%
30	0.0005	0.04	0.014	0.4	
100	0.0015	0.10	0.04	1.0	
300	0.005	0.4	0.14	4.0	
1000	0.02	1.0	0.4	10.0	
3000	0.05	4.0	1.4	n/a	
10000	0.2	10.0	4.0	n/a	

Unit is enabled in CrystalControl

► **Without tare function:**

±(0.05% of static line pressure reading)

**PRESSURE SENSOR**

Wetted Materials: (WRENCH TIGHT) **316 stainless steel**

(FINGER TIGHT) **316 stainless steel and Viton® with internal o-ring**

**(10 psi / 1 bar / 100 kPa) 316 stainless steel and Viton®**

Diaphragm Seal Fluid: **Silicone Oil**

Connection: **Crystal CPF Female**

*All welded construction on sensors above 3 bar.  
(The 1 bar sensor may have Viton o-ring seal.)*

*Metal to metal cone seal; O-ring can be removed if necessary.*

*1/4" medium pressure tube system compatible with HIP LM4 and LF4 Series, Autoclave Engr SF250CX Male and Female Series.*

*1/4" male NPT adapter included unless BSP or M20 is specified.*

**BAROMETRIC REFERENCE (BARO)**

Accuracy: **± 0.00725 psi, ± 0.5 mbar**

Range: **10.153 to 15.954 psiA, 700.0 to 1100.0 mbarA**

Units and Resolution: **psi ..... 0.001  
inHg ..... 0.001  
mmHg ..... 0.01  
mbar ..... 0.1**

*Includes all effects of linearity, hysteresis, repeatability, temperature, and stability for one year.*

*Exposure to environmental extremes of temperature, shock, and/or vibration may warrant a more frequent recertification period.*

*Other units available depending on the installed modules.*

**STANDARD DELIVERY**

- HPC51 or HPC52
- ISO 17025 Accredited Calibration Certificate, NIST Traceable
- 3 x AA batteries
- Your choice of adapters (1/4" NPT, 1/4" BSP, or 1/4" M20)
- Protective Boot—required for Intrinsic Safety
- Test Leads, red and black with clips
- Velco strap
- User manual
- Mini-USB Cable

**COMPLEMENTARY PRODUCTS**

**Crystal Engineering offers a wide range of products that work with the HPC50 Series:**

- [Fittings that connect without tools, safely and without leaks](#)
- [Lightweight, super flexible high pressure hoses](#)
- [Fitting kits and adapters](#)
- [Pneumatic hand pumps](#)
- [Hydraulic hand pumps](#)
- [Portable pressure comparators](#)

Pressure Connection: **Cylindrical sensor fitting of 5.8mm OD. A flexible 4.8 mm [3/16"] ID tube is recommended to connect for calibration.**



**CURRENT & VOLTAGE MEASUREMENT**

Connection: **4 mm jacks**

**Current (mA) Input**

Accuracy:  **$\pm(0.015\% \text{ of rdg} + 0.002 \text{ mA})$**   
 mA Range: **0 to 55 mA**  
 Percent Range: **0-20, 4-20, 10-50**  
 Max Allowable Current: **93.3 mA**  
 Resolution: **0.001 mA or 0.01%**  
 Units: **mA, scaling, % error, and % flow**  
 Input Resistance: **< 4.99  $\Omega$**   
 Voltage Burden @ 20mA: **< 0.10 V**  
 Voltage Burden @ 50mA: **< 0.250 V**  
 HART Resistor: **250  $\Omega$**

*Includes all effects of linearity, hysteresis, repeatability, temperature, and stability for one year.*

*Inputs protected by a resettable fuse.*

*mA can be displayed as a percentage, where 0 to 100% corresponds to either 0 to 20, 4 to 20, or 10 to 50 mA.*

*Jacks are compatible with safety sheathed banana plugs.*

**Current (mA) Sink**

Accuracy:  **$\pm(0.015 \text{ of rdg} + 0.002 \text{ mA})$**   
 Range: **0 to 25 mA\***  
 Step Time: **1 to 999 seconds**  
 Ramp Time: **5 to 999 seconds**

*\* From 0.001 to 0.05 mA, add 0.02 mA to accuracy.*

**Voltage (VDC) Input**

Accuracy:  **$\pm(0.015 \% \text{ of rdg} + 2 \text{ mV})$**   
 Range: **0 to 28 VDC**  
 Resolution: **0.001 VDC**

*Includes all effects of linearity, hysteresis, repeatability, temperature, and stability for one year.*

**Switch Test**

Switch Type: **Dry Contact**  
 Closed State Resistance: **< 1K  $\Omega$**   
 Open State Resistance: **> 100K  $\Omega$**   
 Sample Rate: **10 Hz**

*Switch test screen reports switch open, close, and deadband values.*



**ATEX and IECEx Scheme Entity Parameters**

The HPC50 has these specific entity parameters:

mA/V port	APMi/ATMi ports
U <sub>i</sub> = 28 V	U <sub>o</sub> = 4.95 V
I <sub>i</sub> = 94 mA	I <sub>o</sub> = 731 mA
P <sub>i</sub> = 654 mW	P <sub>o</sub> = 880 mW
C <sub>i</sub> = 3 nF	C <sub>i</sub> = 83.5 $\mu$ F
L <sub>i</sub> = 0	L <sub>i</sub> = 32.2 $\mu$ H
	C <sub>o</sub> = 9.2 $\mu$ F
	L <sub>o</sub> = 12 $\mu$ H

## EXTERNAL MODULES

The HPC50 Series has two identical ports to connect external pressure or temperature modules. For details on the modules, see the links below.

### Pressure Measurement



- [See the APMi datasheet.](#)

### Temperature Measurement



- [See the ATMi datasheet.](#)

## DATA/COMMUNICATION

Digital Interface: **mini-USB**

*The mini USB will power the HPC50 Series with or without the batteries installed.*

*Do not use mini USB connection in a hazardous area.*

*For hazardous location product warnings, refer to the operation manual.*

## DISPLAY

Screen: **320 x 240 pixel graphical display**

*LCD readable in sunlight.*

Display Rate: **3 readings/second (standard)**

*Switch test and peak hi/lo modes are captured at 10 readings/second.*



## POWER

Cell Voltage: **1.5 V (Alkaline Batteries)**

*Uses 3 alkaline AA (LR6) batteries.*

## BATTERY LIFE

No External Modules: **35 Hours**

*All hours are based on operation without the use of the backlight.*

One External Module: **25 Hours**

*Use of the backlight will decrease battery life.*

Two External Modules: **12 Hours**

## ENCLOSURE

Weight: **567 g (20.0 oz)**

*Weight is for dual sensor model with protective boot installed.*

Rating: **IP66/67**

*LCD protected from impact damage by 0.5 mm (0.02") thick polycarbonate lens.*

Housing: **PC/PBT plastic**

Keypad and Labels: **UV Resistant Silicone**

## OPERATING TEMPERATURE

Temperature Range: **-20 to 50° C (-4 to 122° F)**

*< 95% RH, non-condensing. No change in pressure, electrical, or temperature accuracy over operating temperature range except as noted in the accuracy specifications.*

*Gauge must be zeroed to achieve rated specification.*

## STORAGE TEMPERATURE

Temperature Range: **-40 to 75° C (-40 to 167° F)**

*Batteries should be removed if stored for more than one month.*

## SPECIAL FEATURES

The following requires the use of our free **CrystalControl** software

Remove: **Unwanted pressure units.**

Auto Off: **Adjust automatic shutoff settings.**

Calibration: **Calibrate the modules and enter new Calibrated On and Calibration Due dates.**

User Defined Unit: **Define and display any pressure units not included, or to use the gauge to display force, level or other pressure related parameters.**

## CERTIFICATIONS



**II 1G IEx ia IIC T4/T3 Ga**  
**FTZU 18 ATEX 0043X**



**Ex ia IIC T4/T3 Ga**  
**IECEX FTZU 18.0012X**



Exia Intrinsically Safe and Non-Incendive for Hazardous Locations: Class I, Division 1, Groups A, B, C, and D; Temperature Code T4/T3. Class I, Zone 0, AEx ia IIC T4/T3 Ga.



HPC50 Series complies with the Electromagnetic Compatibility and the Pressure Equipment Directives.



HPC50 Series complies with the Australian Radiocommunications (Electromagnetic Compatibility) Standard 2008.



This HPC50 is approved for use as a portable test instrument for Marine use and complies with DNV GL Rules for Classification of Ships, High Speed & Light Craft, and Offshore Units.

**RANGE & RESOLUTION TABLE**

P/N	Range (psi)	Over-pressure	Display Resolution									
			psi	in H <sub>2</sub> O	in Hg	mm Hg	mm H <sub>2</sub> O	kg/cm <sup>2</sup>	bar	mbar	kPa	MPa
15PSI	15	3.0 x	0.0001	0.01	0.001	0.01	0.1	0.00001	0.00001	0.01	0.001	
30PSI	30	3.0 x	0.001	0.01	0.001	0.01	1	0.0001	0.0001	0.1	0.01	0.00001
100PSI	100	2.0 x	0.001	0.1	0.01	0.1	1	0.0001	0.0001	0.1	0.01	0.00001
300PSI	300	2.0 x	0.01	0.1	0.01	0.1		0.001	0.001	1	0.1	0.0001
1KPSI	1000	2.0 x	0.01		0.1			0.001	0.001		0.1	0.0001
3KPSI	3000	1.5 x	0.1		0.1			0.01	0.01		1	0.001
10KPSI	10000	1.5 x	0.1					0.01	0.01		1	0.001

(Add one digit of resolution for differential mode.)

**ORDERING INFORMATION**

Number of Sensors	1st Pressure Range P/N	2nd Pressure Range P/N	BARO Option	Adapter	Pump System*	Carrying Case~
HPC51 ... (Single)			No .... (omit)	1/4 NPT .... (omit)	No Pump.... (omit)	
HPC52 .... (Dual)			Yes... -BARO	G 1/4 B. .... -BSP	System A.... -AXX	Aluminum ... (omit)
				M20x1.5 ... -M20	System A.... -AHX	Waterproof..... -W
					System B.... -BXX	
					System B.... -BHX	~ The Waterproof Case is an <i>option</i> for Systems A, B, and C only.
					System C.... -CXX	
					System C.... -CHX	The Waterproof Case is <i>the only option</i> for Systems G and H.
					System D.... -DOX	
					System D.... -DWX	
					System E.... -EOX	
					System F.... -FOV	
					System F.... -FWV	
					System G.... -GOX	
					System G.... -GWX	
					System H ... -HOX	

AMETEK offers a variety of solutions for pressure generation and measurement. Our line of products for pressure generation includes everything from small pneumatic hand pumps to a precision, hydraulic pressure comparator.

All of our pumps may be ordered as part of a Pump System, complete with an HPC50 Series and delivered in a sturdy carrying case with custom insert.

\* Refer to the following page for a more detailed description of each pump system.

**SAMPLE PART NUMBERS**

- HPC51-1KPSI ..... Single Sensor (1000 psi) HPC50 with a 1/4" male NPT pressure fitting.
- HPC52-3KPSI-10KPSI-BARO-BSP ... Dual Sensor (3000 psi/10 000 psi) HPC50 with the BARO option and a 1/4" male BSP pressure fitting.
- HPC52-1KPSI-10KPSI-GWX-W ..... Dual Sensor (1000 psi/10 000 psi) HPC50 with a 1/4" male NPT pressure fitting; a System G pump system; and a waterproof carrying case.









► **Ordering a Pump System Only**

Any pump system, carrying case, and connection fittings for an HPC50 Series calibrator may be ordered separately from the gauge. Enter HPC50-NONE followed by the Pump System part number and the Carrying Case option code.

**SAMPLE PART NUMBERS**

- HPC50-NONE-GWX-W ..... System G pump system with a waterproof carrying case.

**PUMP SYSTEMS OVERVIEW**

Pump System	Part Number	Pressure Range	Pneumatic	Hydraulic	Hand Pump	Bench Top	Included Pump	Case Options		
								Aluminum	Waterproof (Pelican Case)	
System A	AXX	0 to 30psi /2 bar	■		■			■	(or)	■
	AHX	0 to 580 psi /40 bar	■		■			T-970-CPF		■
System B	BXX	-25 inHg to 30 psi /-0.85 to 2 bar	■		■			■	(or)	■
	BHX	-27 inHg to 580 psi /-0.91 to 40 bar	■		■			T-975-CPF		■
System C	CXX	0 to 3000 psi /200 bar		■ (Oil)	■			■	(or)	■
	CHX	0 to 5000 psi /350 bar		■ (Oil)	■			T-620H-CPF		■
System D	DOX	0 to 5000 psi /350 bar		■ (Oil)		■		■		
	DWX	0 to 5000 psi /350 bar		■ (Water)		■			■	
System E	EOX	0 to 10 000 psi /700 bar		■ (Oil)		■		■		
System F	FOV	0 to 15 000 psi /1000 bar		■ (Oil)		■		■		
	FWV	0 to 15 000 psi /1000 bar		■ (Water)		■			■	
System G	GOX	0 to 15 000 psi /1000 bar		■ (Oil)		■				■
	GWX	0 to 15 000 psi /1000 bar		■ (Water)		■				
System H	HOX	-27 inHg to 580 psi /-0.91 to 40 bar	■		■					■
		0 to 5000 psi /350 bar		■ (Oil)	■			T-620H-CPF		