

DIFFERENTIAL PRESSURE

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

Full Scale Range of Both Sensors MPa	The Greater of (+/-)				% of DP Reading
	psi	mbar	inH ₂ O	mmH ₂ O	
100 (kPa)	0.00015	0.01	0.004	0.1	0.035%
300 (kPa)	0.0005	0.04	0.014	0.4	
1	0.0015	0.10	0.04	1.0	
3	0.005	0.4	0.14	4.0	
10	0.02	1.0	0.4	10.0	
30	0.05	4.0	1.4	n/a	
70	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 300 kPa.
(The 100 kPa 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: **± 0.5 mbar, ± 0.00725 psi**

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

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

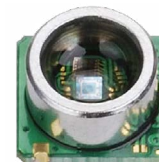
- HPC51 or HPC52
- ISO 17025 Accredited Calibration Certificate, NIST Traceable
- 3 x AA batteries
- Your choice of adapters (1/4" NPT, 1/4" BSP, or 1/4" M20)
- Protective Boot—required for Intrinsic Safety
- Test Leads, red and black with clips
- Velcro strap
- User manual
- Mini-USB Cable

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 Ω**
 Voltage Burden @ 20mA: **< 0.10 V**
 Voltage Burden @ 50mA: **< 0.250 V**
 HART Resistor: **250 Ω**

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**

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 Ω**
 Open State Resistance: **> 100K Ω**
 Sample Rate: **10 Hz**

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



ATEX IEC IECEx ATEX and IECEx Scheme Entity Parameters

The HPC50 has these specific entity parameters:

mA/V port	APMi/ATMi ports
U _i = 28 V	U _o = 4.95 V
I _i = 94 mA	I _o = 731 mA
P _i = 654 mW	P _o = 880 mW
C _i = 3 nF	C _i = 83.5 μ F
L _i = 0	L _i = 32.2 μ H
	C _o = 9.2 μ F
	L _o = 12 μ 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: **40 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 (MPa)	Over-pressure	Display Resolution			
			MPa	kPa	bar	mbar
100KPA	100(kPa)	3.0 x		0.001	0.00001	0.01
300KPA	300(kPa)	3.0 x	0.00001	0.01	0.0001	0.1
1MPA	1	2.0 x	0.00001	0.01	0.0001	0.1
3MPA	3	2.0 x	0.0001	0.1	0.001	1
10MPA	10	2.0 x	0.0001	0.1	0.001	
30MPA	30	1.5 x	0.001	1	0.01	
70MPA	70	1.5 x	0.001	1	0.01	

(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 option for Systems A, B, and C only.
					System C.... -CXX	The Waterproof Case is the only option for Systems G and H.
					System C.... -CHX	
					System D.... -DOX	
					System D.... -DWX	
					System E.... -EOX	
					System F.... -FOV	
					System F.... -FWV	
					System G.... -GOX	
					System G.... -GWX	
					System H ... -HOX	

SAMPLE PART NUMBERS

- HPC51-10MPA Single Sensor (10 MPa) HPC50 with a 1/4" male NPT pressure fitting.
- HPC52-30MPA-70MPA-BARO-BSP ... Dual Sensor (30 MPa/70 MPa) HPC50 with the BARO option and a 1/4" male BSP pressure fitting.
- HPC52-10MPA-70MPA-GWX-W Dual Sensor (10 MPa/70 MPa) HPC50 with a 1/4" male NPT pressure fitting; a System G pump system; and a waterproof carrying case.

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.






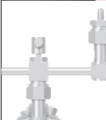


► **Ordering a Pump System Only**

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	■		■			■	■
	AHX	0 to 580 psi /40 bar	■		■			(or)	■
System B	BXX	-25 inHg to 30 psi /-0.85 to 2 bar	■		■			■	■
	BHX	-27 inHg to 580 psi /-0.91 to 40 bar	■		■			(or)	■
System C	CXX	0 to 3000 psi /200 bar		■ (Oil)	■			■	■
	CHX	0 to 5000 psi /350 bar		■ (Oil)	■			(or)	■
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)	■			(and) T-620H-CPF	