

# APMi Series

## Intrinsically Safe

### Advanced Pressure Module



# Expand Your HPC50 Pressure Calibrator

## Now Measure up to 4 Pressures at Once!

**T**HE CRYSTAL APMi intrinsically safe pressure modules, with integrated CPF\* female connections offer the functionality and flexibility to read up to 4 pressure inputs with a single HPC50 calibrator. In addition to the two installed modules in the HPC50 Series, two APMi pressure modules can be connected to the device. This provides the flexibility to either expand the range of the HPC50, view all four pressure readings at the same time, or to read two different differential pressures.

The APMi is engineered to deliver the same high level of accuracy whether in the lab or in the field. When combined with the APMi pressure module and pump systems, the HPC50 is a powerful calibration tool.

♦ U.S. Patent No. 8,794,677

### Key Features

- ▶ **Accuracies to 0.035% of Reading.**  
Performance to meet almost any calibration and measurement task.
- ▶ **Eight Ranges Available.**  
Full coverage from vacuum to 15 000 psi / 1000 bar.
- ▶ **Rugged Construction.**  
Machined stainless steel housing. Engineered for rough field use – almost unbreakable.
- ▶ **Self-Contained, Intelligent Module.**  
Calibration data is stored in the module, so any module can be combined with any HPC50 calibrator. No need to “calibrate” the module to an indicator.



Crystal APMi offers seamless integration with the Crystal HPC50 Series.

“When combined with the APMi pressure module, the HPC50 Series Calibrator is a powerful calibration tool.”



**AMETEK**  
SENSORS, TEST & CALIBRATION

# Lab Accuracy in the Field

## Active Temperature Compensation



Count on the same accuracy at any temperature, between -20 and 50°C.

## Calibrate with Confidence Anywhere



Take measurements with up to 0.035% of reading accuracy. Crystal Engineering calibration facilities are A2LA accredited, (#2601.01) which is internationally recognized by ILAC.

## Combine with Our Ready To Go Pump Systems



Combine the APMi pressure modules with the HPC50 calibrator and any of our pump systems. From small pneumatic hand pumps to a precision, hydraulic pressure comparator capable of generating up to 15,000 psi (1000 bar), we have the perfect kit for your application.

## FITTINGS FOR LiFE™



Crystal Pressure Fittings are machined in high-strength 316 Stainless Steel to operate to 10 000 psi / 700 bar.

- ▶ Purpose designed for testing.
- ▶ Self-venting weep hole alerts you before you disconnect from a pressurized system.
- ▶ Seamless connection to pneumatic and hydraulic pump systems.

## Removable CPF Adapter

- ▶ Shifts everyday thread wear to a replaceable adapter fitting.



# Specifications

## Accuracy

### psi (Gauge Pressure)

#### ► 18 to 28° C

0 to 30% of Range:  $\pm(0.01\%$  of Full Scale)

30 to 110% of Range:  $\pm(0.035\%$  of Reading)

Vacuum\*:  $\pm(0.05\%$  of Full Scale\*\*)

#### ► -20 to 50° C

0 to 30% of Range:  $\pm(0.015\%$  of Full Scale)

30 to 110% of Range:  $\pm(0.050\%$  of Reading)

Vacuum\*:  $\pm(0.05\%$  of Full Scale\*\*)

\* Applies to 300 psi / 30 bar / 3 MPa and lower ranges only.

Vacuum Range = -14.5 psi / -1.0 bar / -1MPa.

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

### psiA (Absolute Pressure with HPC50 BARO Option)

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

10 psi / 1 bar / 100 kPa Range: **Gauge Accuracy + 0.005 psiA**

30 psi / 3 bar / 300 kPa Range: **Gauge Accuracy + 0.005 psiA**

100 psi / 10 bar / 1MPa Range: **Gauge Accuracy + 0.002 psiA**

*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.*

*All models indicate vacuum, but vacuum specification applies only where specified.*

**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 using the same APMi module.*

## Sensor

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

(FINGER TIGHT) **316 stainless steel**

**and Viton® (internal o-ring)**

(15 psi / 1 bar / 100 kPa)

**316 stainless steel and Viton**

Diaphragm Seal Fluid . . . . . **Silicone Oil**

Connection . . . . . **Crystal CPF Female**

*All welded, with a permanently filled diaphragm seal.*

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

*1/4" male NPT adapter is included unless BSP, M20 or 15KPSI is specified.*

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

## Output

Pressure Resolution . . . . . **up to 6 digits**

Display Update . . . . . **up to 10 per second**

*Pressure resolution and display update are the maximum values available.*

*The resolution of your Crystal device may be different.*

## Pressure Overload

Overload Alarm . . . . . **"+OL" in display at 110% F.S.**

## Operating Temperature

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

*< 95% RH, non-condensing. No change in accuracy over operating temperature range, except as noted in the accuracy specifications. Gauge must be zeroed to achieve rated specification.*

*Applies to all modules.*

## Storage Temperature

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

## Enclosure

Dimensions . . . . . **2.9 x 1.1 in (74.0 x 27.0 mm)**

Weight . . . . . **0.39 lbs (176.0 g)**

## Intrinsic Safety Approvals



**Ex ia IIC T4/T3 Ga**

**FTZU 18 ATEX 0043X**



**Ex ia IIC T4/T3 Ga**

**IECEx FTZU 18.0012X**

## Entity Parameters

Uo = 4.95 V

Io = 731 mA

Po = 880 mW

CI = 83.5 µF

LI = 32.2 µH

Co = 9.2 µF

Lo = 12 µH

## CE Statement



We declare that the APMi is in accordance with the Electromagnetic Compatibility Directive per our declaration(s).

# Accuracies, Ranges, and Resolutions

psi	bar	kPa/MPa	Overpressure	psi	kg/cm2	inHg	inH2O	mmHg	mmH2O	kPa	bar	mbar	MPa
10PSI			3.0 x	0.0001	0.00001	0.001	0.01	0.01	0.1	0.001	0.00001	0.01	
	1BAR		3.0 x	0.0001	0.00001	0.001	0.01	0.01	0.1	0.001	0.00001	0.01	
		100KPA	3.0 x							0.001	0.00001	0.01	
30PSI			3.0 x	0.001	0.0001	0.001	0.01	0.01	1	0.01	0.0001	0.1	0.00001
	3BAR		3.0 x	0.001	0.0001	0.001	0.01	0.01	1	0.01	0.0001	0.1	0.00001
		300KPA	3.0 x							0.01	0.0001	0.1	0.00001
100PSI			2.0 x	0.001	0.0001	0.01	0.1	0.1	1	0.01	0.0001	0.1	0.00001
	10BAR		2.0 x	0.001	0.0001	0.01	0.1	0.1	1	0.01	0.0001	0.1	0.00001
		1MPa	2.0 x							0.01	0.0001	0.1	0.00001
300PSI			2.0 x	0.01	0.001	0.01	0.1	0.1		0.1	0.001	1	0.0001
	30BAR		2.0 x	0.01	0.001	0.01	0.1	0.1		0.1	0.001	1	0.0001
		3MPa	2.0 x							0.1	0.001	1	0.0001
1KPSI			2.0 x	0.01	0.001	0.1				0.1	0.001		0.0001
	100BAR		2.0 x	0.1	0.001	0.1				0.1	0.001		0.0001
		10MPa	2.0 x							0.1	0.001		0.0001
3KPSI			1.5 x	0.1	0.01	0.1				1	0.01		0.001
	300BAR		1.5 x	0.1	0.01	0.1				1	0.01		0.001
		30MPa	1.5 x							1	0.01		0.001
10KPSI			1.5 x	0.1	0.01					1	0.01		0.001
	700BAR		1.5 x	0.1	0.01					1	0.01		0.001
		70MPa	1.5 x							1	0.01		0.001
15KPSI*			1.3 x	0.1	0.01					1	0.01		0.001
	1000BAR*		1.3 x	0.1	0.01					1	0.01		0.001
		100MPa*	1.3 x							1	0.01		0.001

Resolutions shown are the maximum resolutions available. The resolution of your Crystal device may be different.

\* CPF adaptor fitting is not included. 1/4" medium pressure tube system is compatible with HIP LM4 and LF4 Series, Autoclave Engr SF250CX Male and Female Series. [See our CPF data sheet](#) for additional adapter fittings.

## Ordering Information

Model	P/N	Fitting	Interface Cable Length
APMi	_____	_____	_____
		NPT.....omit	1 m / 3.3 ft ..... (omit)
		G 1/4 B.....-BSP	3 m / 10 ft.....3M
		M20x1.5 ... -M20	10 m / 33 ft.....10M

### SAMPLE PART NUMBERS

APMi30PSI ..... 30 psi APMi with a 1/4" NPT male pressure fitting and 1 meter cable.  
 APMi700BAR-BSP-3M ... 700 bar APMi with a 1/4" BSP male pressure fitting and 3 meter cable.  
 APMi10MPa-M20-10M... 10 MPa APMi with an M20x1.5 male pressure fitting and 10 meter cable.

## Accessories and Replacement Parts

### MPM-1/4MPT CPF Male to 1/4" Male NPT Fitting

Included as standard

### MPM-1/4BSPM CPF Male to 1/4" Male BSP Fitting

Included with -BSP

### MPM-M20x1.5M CPF Male to M20 Male Adapter



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**Crystal**  
**pressure**

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