CRYSTAL
engineering corporation

nVision

New Reference Pressure Recorder

VISUALIZE PRESSURE

The nVision is not just a new data-logging calibrator.

It's a field calibrator that can display recorded data graphically on a high resolution screen.

No need to stop a test to analyze data on a PC. Live or recorded data can be displayed graphically, with the ability to zoom into specific events, or zoom out to get a big picture of your test.

There's never been anything like this!

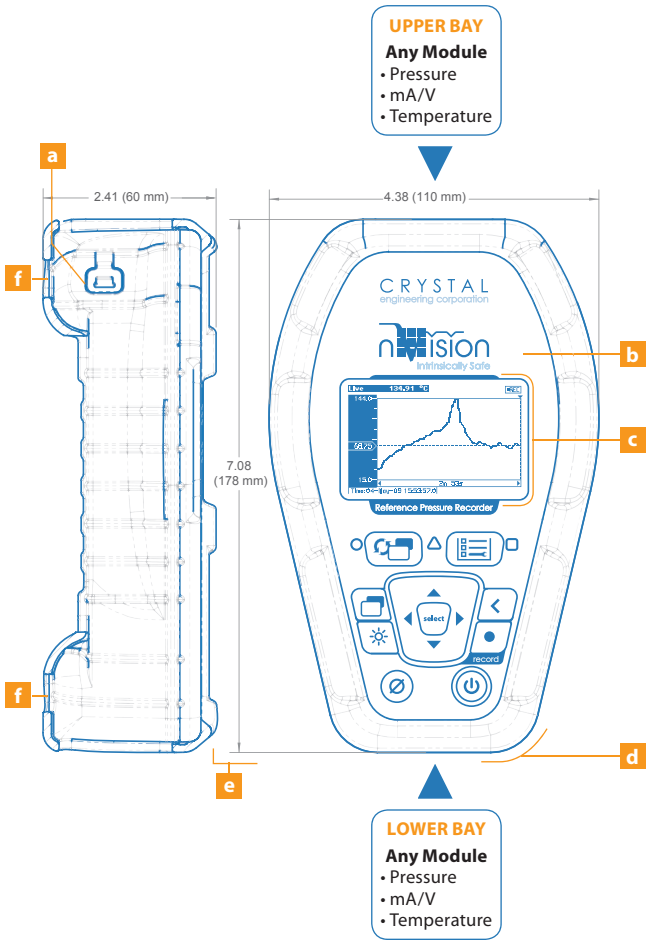
FEATURES

- Up to 0.025% of Reading accuracy.
- Field-serviceable modules: pressure, temperature, current and voltage.
- Temperature compensation from -20°C to 50°C.
- ATEX/IECEx intrinsically safe.
- Log and display 280,000 points at up to 10 readings/second on two sensor modules simultaneously.
- IP67 (enclosure 1m submersible up to 30 min).
- Uses Crystal's revolutionary new leak-free CPF fittings system.
- Interactive real-time graphing of measurements.
- Discover events (spikes) or trends (leaks) in real time.

www.crystalengineering.net

nVision from Crystal Engineering is a portable device with an array of pressure, current/voltage, and temperature measuring modules that may be installed in either or both available chassis bays. All sensor/source and power modules are field serviceable by the user.

The large 255 x 160 pixel backlit graphical display area is great for monitoring multiple channels simultaneously and can display up to 10 readings per second. For added annunciation of measurement limits, the product keypad has vivid LEDs incorporated. For downloading data and customizing the nVision to meet your needs, a mini USB B interface is included for data transfer or even powering the unit.



SPECIFICATIONS

Operating & Compensated Temperature Range	-20°C to 50°C (-4°F to 122°F)[1]
Storage Temperature Range	-40°C to 75°C (-40°F to 167°F)
Humidity Range	< 95% RH, non-condensing
IP Rating	IP67 (1 m immersion for 30 min) per ISO 60529

Certifications

ATEX: II 1 G Ex ia IIB T4 SIRA 09ATEX2008X

IECEx: II 1 G Ex ia IIB T4 IECEx SIR 09.0053X

Rating subject to battery type used. For details see Approved Battery Table in Power Section (pg. 4).

Standard Items included with each nVision

Soft Carrying Case	Durable, padded case with separate pockets for your nVision and accessories (P/N 4087)
Protective Boot	Shock resistant protection, low durometer, Skydrol Resistant (P/N 3985)
Calibration Certificate	Multi-temperature from our A2LA accredited Calibration Laboratory
CrystalControl	Configure your product to meet your needs. Data log all readings for display, analysis and archiving
USB A to mini USB B Cable[2]	Connect to your nVision with 6' [1.8m] cable (P/N 3951)

[1] *No change in accuracy over operating range. Sensor must be zeroed to achieve rated specification.*

[2] **WARNING: Do not use USB interface within a hazardous atmosphere (Um=6V)**

- **a** USB: mini USB B**
- **b** Impact resistant injection molded housing compatible with common industrial fluids, including Skydrol
- **c** Display: 255 x 160 pixel graphical display with integrated backlight. Display Rate selectable up to 10 readings per second
- **d** Weight: 680g (1.5 lbs) including one pressure sensor, AA battery module, and protective boot
- **e** Dimensions: 178mm (7.0") H x 110mm x (4.3") W x 58mm (2.3") D
- **f** M4x10 threaded insert mounting locations (4 places)

PRESSURE

Pressure Measurement: See PRESSURE MEASUREMENT, PART NUMBER, & UNITS/RESOLUTION for part number scheme

Pressure Modules: These pressure modules come in a myriad of pressure ranges to meet your needs. All specifications are 'of reading' to get the most out of your pressure measurement.

Accuracy

30% to 100% of Full Scale	±(0.025% of Reading), ±(0.05% of Reading), or ±(0.1% of Reading) *
0 to 30% of Full Scale	±(0.0075% of Full Scale), ±(0.015% of Full Scale), or ±(0.03% of Full Scale)
Media Compatibility	Liquids and gases compatible with 316 stainless steel
Connection †	Crystal CPF System: Medium Pressure Female (MPF) (1/4" medium pressure tube system with 7/16-20 threads)

* See Pressure Measurement, Part Number, & Units Resolution table on facing page.

† Fitting interfaces with the Crystal Pressure Fittings (CPF) System; finger tight to 10 000 psi from -20°C to 50°C with a 4:1 safety factor. System can interface wrench-tight with non-CPF medium pressure fitting, adapter, and piping systems: HIP LM4 & LF4 Series, Autoclave MAM4, SF250CS & SF250CX Series.

HIP and Autoclave Engineers 1/4" medium pressure fittings adapt with the new Crystal Pressure Fitting (CPF) line of products.

PRESSURE MEASUREMENT, PART NUMBER, & UNITS/RESOLUTION

	PSI	bar	kPa/MPa	kg/cm2	Overpressure	PSI	kg/cm2	inHg	inH20 [3]	mmHg	mmH20	kPa	bar	mbar	MPa
0.025% of Reading	30PSI				3.0 x	0.001	0.0001	0.001	0.01	0.1	1	0.01	0.0001	0.1	
		3BAR			3.0 x	0.001	0.0001	0.001	0.01	0.1	1	0.01	0.0001	0.1	
			300KPA		3.0 x							0.01	0.0001	0.1	
				3KG	3.0 x	0.001	0.0001	0.001	0.01	0.1	1	0.01	0.0001	0.1	
	100PSI				2.0 x	0.01	0.0001	0.01	0.1	0.1	1	0.01	0.0001	0.1	0.00001
		10BAR			2.0 x	0.01	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
				10KG	2.0 x	0.01	0.0001	0.01	0.1	0.1	1	0.01	0.0001	0.1	0.00001
	300PSI				2.0 x	0.01	0.001	0.01	0.1	1		0.1	0.001	1	0.0001
		30BAR			2.0 x	0.01	0.001	0.01	0.1	1		0.1	0.001	1	0.0001
			3MPA		2.0 x							0.1	0.001	1	0.0001
				30KG	2.0 x	0.01	0.001	0.01	0.1	1		0.1	0.001	1	0.0001
0.05% of Reading	1KPSI				2.0 x	0.1	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
				100KG	2.0 x	0.1	0.001	0.1				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
				300KG	1.5 x	0.1	0.01	0.1				1	0.01		0.001
0.1% of Reading	10KPSI				1.5 x	1	0.01					1	0.01		0.001
		700BAR			1.5 x	1	0.01					1	0.01		0.001
			70MPA		1.5 x							1	0.01		0.001
				700KG	1.5 x	1	0.01					1	0.01		0.001

[3] *Density of water can be set to 4°C, 60°F or 20°C /68°F with the keypad.*

CURRENT & VOLTAGE (Available June '09)

Current & Voltage Measurement: mA/V Module (P/N: MA20):

Intended for use with a 4-20mA loop measurement. This module is also capable of measuring 24VDC supply voltages. Additionally the module has an auxiliary fixed output for use in switch open/closure testing. Each MA20 module comes with P/N 3952 test lead kit.

mA (Current) Input	
Range	3 – 25 mA
Resolution	0.001 mA
Accuracy	±(0.015% of rdg + 0.002 mA)
Direct Impedance	15 Ω
HART Impedance	≤265 Ω

Voltage Input	
Range	0 – 30 VDC
Resolution	0.001 VDC
Accuracy	±(0.015% of rdg + 0.002 VDC)
Input Resistance	≥ 1 MΩ

Switch Detection	
State	Open & Closed Detection

WARNING: ATEX and IECEx certification does not allow the installation of two MA20 modules simultaneously in hazardous atmosphere

TEMPERATURE

Temperature Measurement: RTD Module (P/N: RTD100):

Supports Pt100 RTD or PRT (100 Ohms at 0°C Resistance Temperature Detector) sensors conforming to DIN/IEC 60751 (or IEC751) with US, Euro and Lab calibration curves. Each RTD100 comes with P/N 3953 RTD Connection Kit.

Resistance Input	
Range	0 – 400 Ohms range for use with 100 Ohm PRTs
Resolution	0.01 Ω
Accuracy	± (0.015% of rdg + 0.02 Ω)
Display	°C, K, °F, R, Ω
TCRs	0.003850 Ω/Ω/°C (IEC 60751), 0.003911 Ω/Ω/°C (US Industrial Std), 0.003926 Ω/Ω/°C
Wiring	2-, 3-, 4-wire support

POWER

Chassis Power: Modules:

AA Battery Module (P/N: 4AA)	Four size AA (LR6) batteries; user serviceable, non-rechargeable, estimated life: 200 hours

Note: Chassis can be powered remotely by the mini-USB connector on the side of the product

WARNING: Do not use USB interrface in a hazardous atmosphere

Approved Battery Table

Approved Battery Type	Ta=	Marking
Rayovac Max Plus 815	-20C to +50C	Ex ia IIB T4 Ga
Duracell MN1500	-20C to +45C	
Energizer E91, EN91	-20C to +50C	Ex ia IIB T3 Ga
Duracell MN1500		

REPLACE BATTERIES WITH APPROVED TYPE IN NON-HAZARDOUS LOCATIONS ONLY

Phillips hardware has knurled edges for simple & quick battery replacement

HOW TO ORDER

nVision Part Numbering order system:

NV ▶ 4AA ▶ Upper Chassis Module ▶ Lower Chassis Module = nVision Part Number

Example: **NV-4AA-RTD100-30MPA**

Note: Ordering MA20 for both upper and lower modules nulls ATEX and IECEx Scheme certification and is not recommended.

SOFTWARE

Included with nVision

CrystalControl	Communicate, Configure, Data Log, and Update your nVision product

REPLACEMENT PARTS

Accessories / Replacement Parts

4087	Soft Carrying Case; durable, padded case with separate pockets for your nVision and accessories
3985	Protective Boot; blue, Skydrol Resistant
3951	6' [1.8m] USB A to mini USB B Cable for nV Chassis**
3952	Test Lead Kit; two 6' [1.8m] 2mm banana jack test leads with multi-purpose clip
3953	RTD Connection Kit; one IP67 terminal block connector (RTD Module not included)

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ISO 9001 BUREAU VERITAS Certification

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