

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 data graphically on a high resolution screen.

No need to stop a test to analyze data on a PC.

Live 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.
- nVision modules are complete and independent: Each contains dedicated signal conditioning and a microcontroller.
- Modules can be removed, exchanged, and even calibrated without the base.
- Fully temperature compensated from -20°C to 50°C.
- ATEX/IECEX intrinsically safe.
- Log and display 500,000 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 or trends in real time.



CRYSTAL



nVision is a **very** accurate field pressure calibrator that records and displays data **graphically**, on a large (255 x 160 pixel) backlight display. Temperature, voltage and current can also be measured and recorded—depending on which modules you choose.

nVision give you the ability to examine data on screen—no PC required. Compare pressure with temperature on a single screen for **leak and static tests**. Or use the scrolling and zooming features to observe the repeatability and high speed performance of **pressure safety valves** (with an accuracy never possible before).

However, with a PC, a USB cable, and CrystalControl software (free), you can monitor and **download the data from an ongoing test without interrupting recording!** Any current and all previously recorded data can be viewed, and/or saved for a **permanent record** of a test. CrystalControl includes several Excel spreadsheet report formats, or design your own.

Test reports have never been easier, faster or more accurate! nVision!

SPECIFICATIONS

Operating & Compensated Temperature Range	-20°C to 50°C (-4°F to 122°F) ^{1, 2}
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 IEC 60529
Battery Life	> 200 hours

Specifications include all effects of linearity, hysteresis, repeatability, temperature, and stability for one year.

- 1 Pressure sensor must be zeroed to achieve rated specification.
- 2 No change in accuracy over operating range for all modules.

Certifications



II 1 G Ex ia IIB T4 Ga
SIRA 09ATEX2008X



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

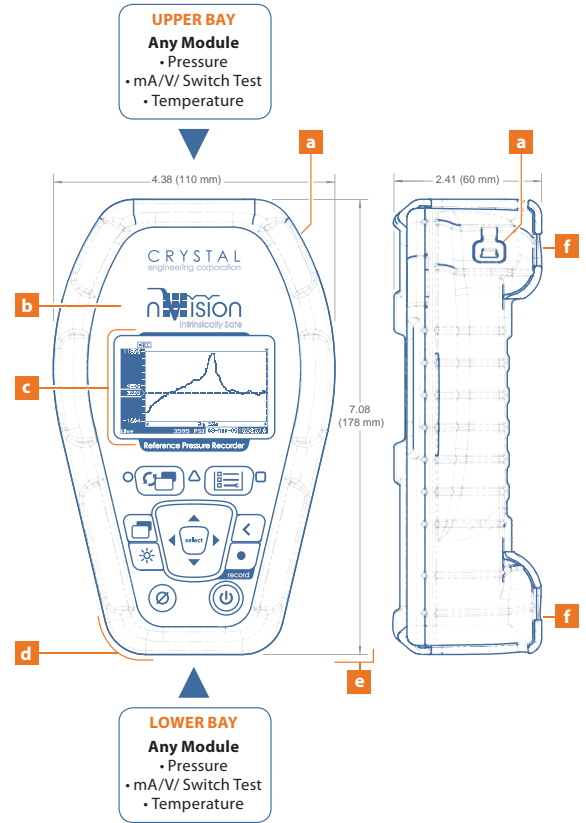


Rating subject to battery type used. For details see Approved Battery Table in Power Section (pg. 4).

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 ³	Connect to your nVision with 6' [1.8m] cable (P/N 3951)

³ **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. Record Rate selectable up to 10 readings per second
- d** Weight: 680g (1.5 lbs) including one each PM and RTD100 modules, 4AA battery module, and protective boot
- e** Dimensions: 178mm (7.0") H x 110mm x (4.3") W x 58mm (2.3") D
- f** M4x0.7 [8mm (0.30")] deep threaded insert mounting locations (4 places)

HOW TO ORDER

Product ID	Power	Module: Upper ⁴	Module: Lower ⁴	BARO Module?	= nVISION Part Number
NV	4AA				
		PM	PM	No: (omit)	
		MA20 ⁵	MA20 ⁵	Yes: -BARO	
		RTD100	RTD100		

SAMPLE PART NUMBERS

NV-4AA-30PSI-3KPSI-BARO ... nVision with 30 PSI pressure module (upper) and 3000 PSI pressure module (lower) with BARO module option

NV-4AA-RTD100-10KPSI ... nVision with RTD100 Temperature module (upper) and 10 000 PSI pressure module (lower)

⁴ If ordering a nVision or nVision lab with only one module installed, please enter "BNKPLT" in the empty module slot

⁵ Warning: Do not install two MA20 modules simultaneously. Permanent damage may occur.

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. **HIP and Autoclave**

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

Accuracy

30% to 100% of Full Scale	$\pm(0.025\%$ of Reading), $\pm(0.05\%$ of Reading), or $\pm(0.1\%$ of Reading) ⁶
0 to 30% of Full Scale	$\pm(0.0075\%$ of Full Scale), $\pm(0.015\%$ of Full Scale), or $\pm(0.03\%$ of Full Scale)
Vacuum	For 300PSI, 30BAR, 3MPa, 30KG and lower pressure modules 0 to -99.9 kPa (-14.5 PSIG): $\pm(0.06\%$ of Full Scale)(typical), where F.S. = -14.5 PSIG, -1.0 bar, -99.9 kPa, -1.02 kg/cm ²
Media Compatibility	Liquids and gases compatible with 316 stainless steel
Connection ⁷	Crystal CPF System: Medium Pressure Female (MPF) (1/4" medium pressure tube system with 7/16-20 threads. O-ring material: Viton 90)

⁶ See Pressure Measurement, Part Number, & Units Resolution table on the following page.

⁷ 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 and LF4 Series, Autoclave Engr SF250CX Male and Female Series.

Modules are complete and independent

Each module contains dedicated signal conditioning and a microcontroller. Modules can be installed in either or both chassis bays, or removed, exchanged, and even calibrated without the nVision base.

7/16-20 MP
CPF Connection



Four 2mm jacks



M8 connector
cable or terminal
block. Works with
2-, 3-, or 4-wire
RTDs.



CURRENT, VOLTAGE & SWITCH TEST

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 supply voltages and has an auxiliary fixed output for use in switch open/closure testing. Each MA20 module comes with a super flexible silicone test lead kit (P/N 3952).

Current (mA) Input

Accuracy	$\pm(0.015\%$ of rdg + 0.002mA)
Range	0 to 55mA
Max Allowable Current	93.3mA
Resolution	0.001mA or 0.00%
Units	mA, % 4-20
Input Resistance	<17.2Ω
Voltage Burden @ 20mA	<0.35V
HART Resistance	250Ω

Voltage (VDC) Input

Accuracy	$\pm(0.015\%$ of rdg + 0.002 VDC)
Range	0 to 28VDC
Max Allowable Voltage	30VDC
Resolution	0.001VDC
Units	VDC

Switch Test

Switch Type	Dry Contact
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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):

Calibrated for Pt100 RTD/PRT (100 Ohms at 0°C Platinum Resistance Temperature Detector) sensors conforming to DIN/IEC 60751 (or IEC751) with US, Euro or Lab calibration curves. An RTD is not included, but each RTD100 includes P/N 3953 RTD Connection Kit.

Resistance Input

Range	0 – 400 Ohms range for use with 100 Ohm PRTs
Resolution	0.01 Ω
Accuracy	$\pm(0.015\%$ 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

PRESSURE MEASUREMENT, PART NUMBER, & UNITS/RESOLUTION

	PSI	bar	kPa/MPa	kg/cm2	Overpressure	PSI	kg/cm2	inHg	inH2O*	mmHg	mmH2O	kPa	bar	mbar	MPa			
0.025% of Reading modules	30PSI	3BAR			3.0 x	0.001	0.0001	0.001	0.01	0.01	1	0.01	0.0001	0.1				
			300KPA		3.0 x	0.001	0.0001	0.001	0.01	0.01	0.01	1	0.01	0.0001		0.1		
		100PSI	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	0.001	0.0001	0.01	0.1	0.1	1	0.01	0.0001		0.1	0.00001	
	300PSI	30BAR			2.0 x	0.001	0.0001	0.01	0.1	0.1	1	0.01	0.0001	0.1		0.00001		
			3MPA		2.0 x	0.01	0.001	0.01	0.1	0.1		0.1	0.001	1		0.0001		
		1000PSI	100BAR			2.0 x	0.01	0.001	0.1	1	1		0.1	0.001		1	0.0001	
				10MPA		2.0 x	0.1	0.01	0.1	1	1		1	0.01		1	0.0001	
	0.05% of Reading modules	1KPSI	100BAR			2.0 x	0.1	0.001	0.1				0.1	0.001		1	0.0001	
				10MPA		2.0 x	0.1	0.001	0.1				0.1	0.001		1	0.0001	
			3KPSI	300BAR			1.5 x	0.1	0.01	0.1				1		0.01	1	0.001
					30MPA		1.5 x	0.1	0.01	0.1				1		0.01	1	0.001
10KPSI		700BAR			1.5 x	1	0.01						1	0.01	1	0.001		
			70MPA		1.5 x	1	0.01						1	0.01	1	0.001		
		15KPSI	1000BAR			1.3 x	1	0.01					1	0.01	1	0.001		
				100MPA		1.3 x	1	0.01					1	0.01	1	0.001		
30KPSI		3000BAR			1.3 x	1	0.01						1	0.01	1	0.001		
			300MPA		1.3 x	1	0.01						1	0.01	1	0.001		
		100KPSI	10000BAR			1.3 x	1	0.01					1	0.01	1	0.001		
				1000MPA		1.3 x	1	0.01						1	0.01	1	0.001	

*Density of water can be set to 4°C, 60°F or 20°C/68°F with CrystalControl software.

POWER

Chassis Power: Modules:

AA Battery Module (P/N: 4AA)	Four size AA (LR6) batteries; user serviceable, non-rechargeable, estimated life: >200 hours
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Note: Chassis may be powered by the mini-USB connector.

WARNING: Do not use USB interface 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

SOFTWARE

Included with nVision

CrystalControl	Communicate, Configure, Data Log, and Update your nVision product
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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 ⁸
3952	Test Lead Kit; two 39" [1m] 2mm banana jack test leads with multi-purpose clip (Black, Red)
3953	RTD Connection Kit; one IP67 terminal block connector (RTD Module or RTD Sense Element is not included)

⁸ **WARNING:** Do not use USB interface within a hazardous atmosphere (Um=6V)

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