

Crystal
pressure

nVision Reference Recorder



AMETEK
TEST & CALIBRATION INSTRUMENTS

Your Multi-Purpose Recorder

Key Features

- ▶ **Records 1 Million Data Points**
- ▶ **Simple to Use**
Intuitive keypad takes seconds to learn.
- ▶ **Live Data Graphing**
- ▶ **Robust**
Drop tested from 5 feet.

Quick-change module bays. Switch modules anywhere.

Chemically-resistant and corrosion-proof.

Large, backlit display.

LED icons indicate recording status and overpressure.

BARO Option—Switch between absolute and gauge pressure.

Easily accessed mini-USB port.



Submersible in 1 meter of water for 30 minutes.

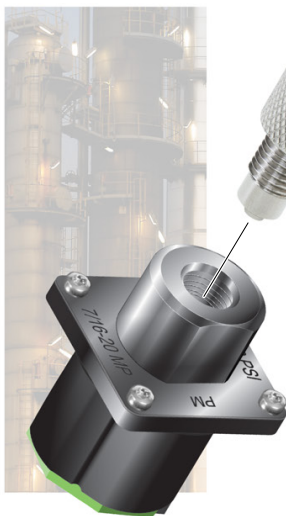
Ultra-Low Power Mode:
60 days of operation on 4 AA batteries.



Pressure

Temperature & Current

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Pressure Module (PM)

Measure, calibrate, and record up to 15 000 psi with up to 0.025% of reading accuracy, in the field.



Temperature Module (RTD100)

Works with 2-, 3-, and 4-wire Pt100 RTDs. Includes an IP67 rated, M8 connector terminal block.



Current, Voltage, and Switch Test Module (MA20)

Measures 4-20 mA and 10-50 mA loops, DC voltage, and switch state. Each MA20 module comes with a super flexible, silicone 2mm test lead kit.

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Modular Configuration

nVision modules put a complete test and calibration system in your toolbox.

- Pressure • Pressure**
Record two pressure inputs for up to 6 weeks, and low wet-wet differentials at up to 15 000 PSI static pressure.
Well Optimization // Hydraulic Fracturing // Artificial Lift // Christmas Tree // Pump Testing
- Pressure • Temperature**
Monitor and record pressure & temperature over the course of a test.
Hydrostatic // Pressure Vessel Testing
- Pressure • Current**
Show current and pressure on the same graph.
Documented Switch Testing // Pressure Transmitter Calibration



Always Seals, Always Safe

U.S. Patent No. 8,794,677



(CPF fitting not included)

- ▶ Purpose-designed for testing & calibration
- ▶ Self-venting weep hole alerts you before you disconnect from a pressurized system
- ▶ Shifts everyday thread wear to a replaceable adapter fitting
- ▶ 2 seals: Use fingers for an o-ring seal or use a wrench for a metal to metal cone seal, down to -40°C

FITTINGS FOR LIFE

Lab Accuracy in the Field

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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 0.025% of reading accuracy.
Certified by our A2LA/ILAC accredited calibration laboratory.



Accurate Low Differentials at High Static Pressure

No risk of sensor damage, at full static pressure, using high-accuracy differential mode.



RUGGEDNESS & High Accuracy

\$250,000 Saved in 6 Months

Before nVision, I had no way of testing my filters. I was replacing them every few months without knowing if I needed to.

Now, I test my filters at full line pressure and replace them only when necessary. Using nVision, we saved \$250,000 within the first six months.

We also had documentation to show concerned clients our filters were performing as expected.

We are now using nVision units to outfit our main compressor stations, track our general pipeline maintenance, and document our custody transfer activities.



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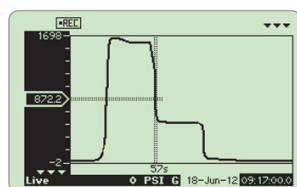
Visualize Your Data

See Changes As You Record

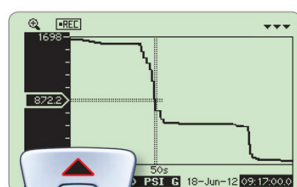
Skip the trip back to the lab. Examine your data in the field while you record your test.

Zoom and Pan Across Data

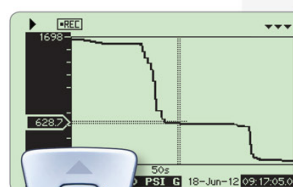
Take a closer look. Use the arrow keys to inspect the details of your last data run.



Original View



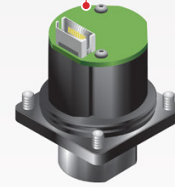
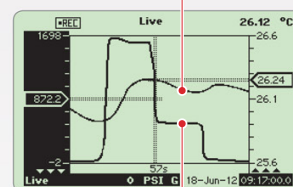
Zoom...



and Pan.

Multiple Data Views

View data from each module separately, or combine the data from both modules into one graph.



Control

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Your Device, Your Way

Customize, secure, and configure your nVision with CrystalControl software. Access, view, and export your data with DataViewer.

► Customizable Screens

Sort, enable, and assign numbers to screens to match the way you work.

► Custom Units

Disable the units you do not need and define a custom unit for your application.

► Safety Start-up Screen

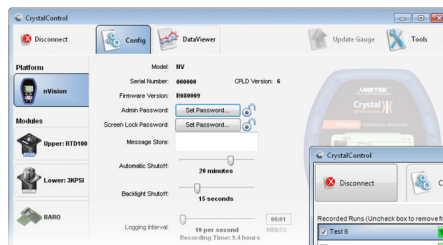
Prompt users to acknowledge a custom safety message with the press of a button, before using the nVision.

► Tamper-Proof Digital Records

Securely export your digital recording directly into an industry-standard, signed PDF.

► Record

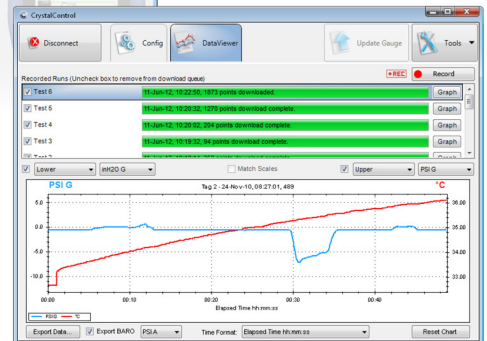
Start nVision recordings directly from your PC.



CrystalControl software is available as a free download at CrystalEngineering.net/nVision

DataViewer

Graph & zoom in on any data run. Format your graph, then export to a signed or unsigned PDF, CSV, or Excel file.



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Applications

Differential Pressure Gauge and Recorder



Orifice Plate

Measure and record low differentials at high static pressure directly across an orifice plate.



Filter Testing

Save money by testing filters for clogs and wear, before replacing them.



Differential Transmitters

Calibrate and validate a differential transmitter in the field.



Rotary Gas Meters

Testing a fluctuating input—like a rotary gas meter—is easy. nVision's dampening window stabilizes unstable readings.

Calibration and Test Tool



Custody Transfer

Field calibrate the high-accuracy equipment used in commercial transactions.



PRV, PSV, and Burst Discs

Capture and record relief valve seat and reseal pressure at 10 readings per second.



Deadweight Tester Replacement

Carry the accuracy of a deadweight tester anywhere you go.



Calibration and Maintenance

The nVision offers special test modes for quick, easy verification and in-field calibration with no special training.

Chart Recorder Replacement



Extended Recording

nVision replaces chart recorders with higher accuracy in a smaller, lighter, more rugged package, while saving data in a secure electronic format.





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Dear Pressure Gauge User,

At Crystal Engineering we believe perfection is possible. We hold in mind our mission to produce the products that make your work easier. nVision started with you—our customers—with your ideas, your phone calls, your requests for features. You told us what you needed. We built what you asked for.

The device we designed is task configurable, with two module ports, extensive data capacity, and intuitive controls.

We created sensor modules with lightning fast read rates and added Crystal's proprietary temperature compensation algorithms. We protected them against rough handling, over-pressure, and caustic chemicals. We made it easy to change modules in the field, so you can switch configurations and keep working.

Our final product? The industry's first Reference Recorder: as accurate as a deadweight tester—more portable than a chart recorder—and ruggedized for year-round service on a North Sea oil platform.

The nVision earned its name from its best feature. During or after a test, nVision graphs your latest recorded data on the LCD screen. Zoom in, pan across, and download data, even while you record. Then, use CrystalControl's DataViewer to prepare your report and export to a Tamper-Proof Digital Record.

One nVision does the work of many other tools. Carry it with you every day, or leave it on location for up to 60 days.

We take pride in all our products, and we believe the nVision is our finest yet. Contact us today for a demonstration unit. Use it once and we guarantee you won't want to return it.

Sincerely,

The Crystal Team

Safe & Reliable in Hazardous Environments



II 1G Ex ia IIB T4 Ga -or- Ex ia IIB T3 Ga

Ta = -20 to 50°C or -20 to 45°C (depending on type of approved battery used)



SIRA 09 ATEX 2008 X

This product conforms to the following standards:

EN60079-0: 2006 | EN60079-11: 2007 | EN60079-26: 2007



IECEx SIR 09.0053 X

This product conforms to the following standards:

IEC 60079-0: 2004 | IEC 60079-11: 2006 | EN60079-26: 2006



Crystal products include a factory calibration report that proves it meets its specifications over the operating temperature range. The products described herein, are calibrated in Crystal's accredited Calibration Lab (AZLA, Certificate #2601.01 ISO/IEC 17025) in an environmental chamber using fully automated equipment. Inclusion of the ILAC-MRA symbol does not imply certification or approval of the product itself, but rather refers to Crystal's accreditation as a calibration facility.