VISION XP

The Industry Standard Data Recorder

- **8 or 16 differential isolated analog channels**
- **Wide input span selection of 50 mV to 1000 V**
- **High performance 16-bit amplifiers with 0.05% accuracy**
- **Signal conditioning for many common transducers**
- **Programmable anti-alias filtering**
- **Synchronous sampling across all channels**
- **Continuous to disk recording at rates up to 100 kS/s per channel**
- **Deep recording memory of 72 GB**
- **Up to 10,000 user-defined triggers to record or bookmark selected events**
- **Integrated 10.4" TFT color display with real-time scrolling waveforms**
- **Onboard review and measurements**
- **Direct export of files in over 20 3rd party file formats**
- **Built-in Ethernet connection and wireless (802.11g and 802.11b)**
- **Software options for networked use**
- **Support for single-page, multi-page, and continuous feed paper output**
- **Integrated sound channel for voice annotation of test parameters**

VISION XP DATA RECORDER

Taking a New Look at the Way You Record Data

Vision XP boasts superb specifications for specific features such as high-speed recording, deep memory and excellent amplifier performance. Its true strength, however, lies in the smooth combination of these features into a single, integrated solution.

Vision XP is a fully integrated system which is ready to go, right out of the box. No messing around with plugging in boards or trying to resolve Windows device driver conflicts. No need to write your own software interface before collecting data. Vision's simple, intuitive software is easy to learn. Vision XP provides an all-in-one solution for your data acquisition needs.

Vision XP Example Applications

Monitoring engine valve seat pressures and exhaust emissions

Vision XP enables high sample rate recording on all channels, including using an external clock to synchronize data collection to the shaft rotation. The XY display makes it easy to track cylinder pressure vs. crank angle. The RPM input makes it easy to record the engine speed.

Monitoring substation switching events

Vision XP's isolated inputs are important for safety in high voltage applications. You can record from 8 to 64 channels at 100kS/s simultaneous sampling for several hours. Multi-channel triggering can be set up to monitor for several different events simultaneously and the full disk pre-trigger buffer allows you to save up to a full 72GB of data before a trigger event. Vision XP can be left in a remote location and the VisionNet software used to setup and control the system remotely.

The LDS-Nicolet Vision XP integrates high-speed, direct to disk recording with real-time display and plotting features into a portable, rugged Data Acquisition system.

LDS

NICOLET

All-in-One Solution

The Vision XP integrates the best features of traditional data acquisition technologies with advanced PC networking functions, creating a portable, paperless recorder unlike anything else on the market. The Vision XP recorder enhances LDS-Nicolet's reputation for high signal resolution (16-bit resolution with better than 0.05% accuracy) and synchronous phase-aligned recording. At LDS-Nicolet, we know that data integrity always comes first.

Deep Recording Memory

Vision XP provides 8 or 16 input channels streamed continuously to an internal hard disk at sampling rates up to 100 kS/s per channel. Because data is stored directly to disk, not a RAM buffer, data storage capacities are measured in GBytes rather than Mbytes, limited only by available hard disk space. Put in perspective:

- 4 channels at 100 kHz for over 24 hours
- 8 channels at 2 kHz for over 25 full days
- 16 channels at 100 Hz for more than 8 months

Convenient and Easy to Use

Vision XP's intuitive push-button user interface is easily learned, with shortcuts available when using an optional mouse and keyboard. Data is displayed during acquisition on a smoothly-scrolling 10.4" color display. Parameters such as RMS, duty cycle, or peak-to-peak values may be calculated on the fly or post-run using Vision XP's comprehensive cursor and calculator functions. And the Vision XP's integrated 100-base-T Ethernet connection provides a smoothly scrolling display, comprehensive setup and data transfer features over a user's LAN network to get the data where you need it, when you need it. LDS's PC-based analysis software uses our patent

pending StatStream technology to open and display GByte-sized recording files in seconds. The rugged, portable enclosure and ability to acquire data even while enduring shocks of up to 20 g makes the Vision XP the perfect choice for a wide range of portable applications in aerospace, process maintenance, transportation, medical, pulp and paper, metals manufacturing and electrical fields.

Menu selections in 5 languages

The LDS-Nicolet Vision XP, a portable data recorder

Unique Approach to Storage

Most DAQ systems record data directly to a standard desktop PC, but there can be many pitfalls with this approach. First, getting an interface board installed and working seamlessly with Windows® is always a challenge. Your application has to compete with other programs for the PC's resources, so your data throughput and integrity are always at risk. Data storage capabilities are limited by the available RAM, severely limiting the amount of data you can reliably save. Meanwhile, trace displays are often shaky or non-existent due to the heavy demands on PC system resources.

Vision XP provides a fully integrated system designed specifically for data acquisition. Vision XP's hardware is optimized to stream high-speed data directly to a dedicated hard drive, limited only by available disk space on the 72 GB acquisition drive. Other DAQ systems use a hard disk only to transfer data from RAM post-run, or for recording only at greatly reduced rates. Vision XP reserves the PC's resources to provide its smoothly scrolling display, printing and network communications.
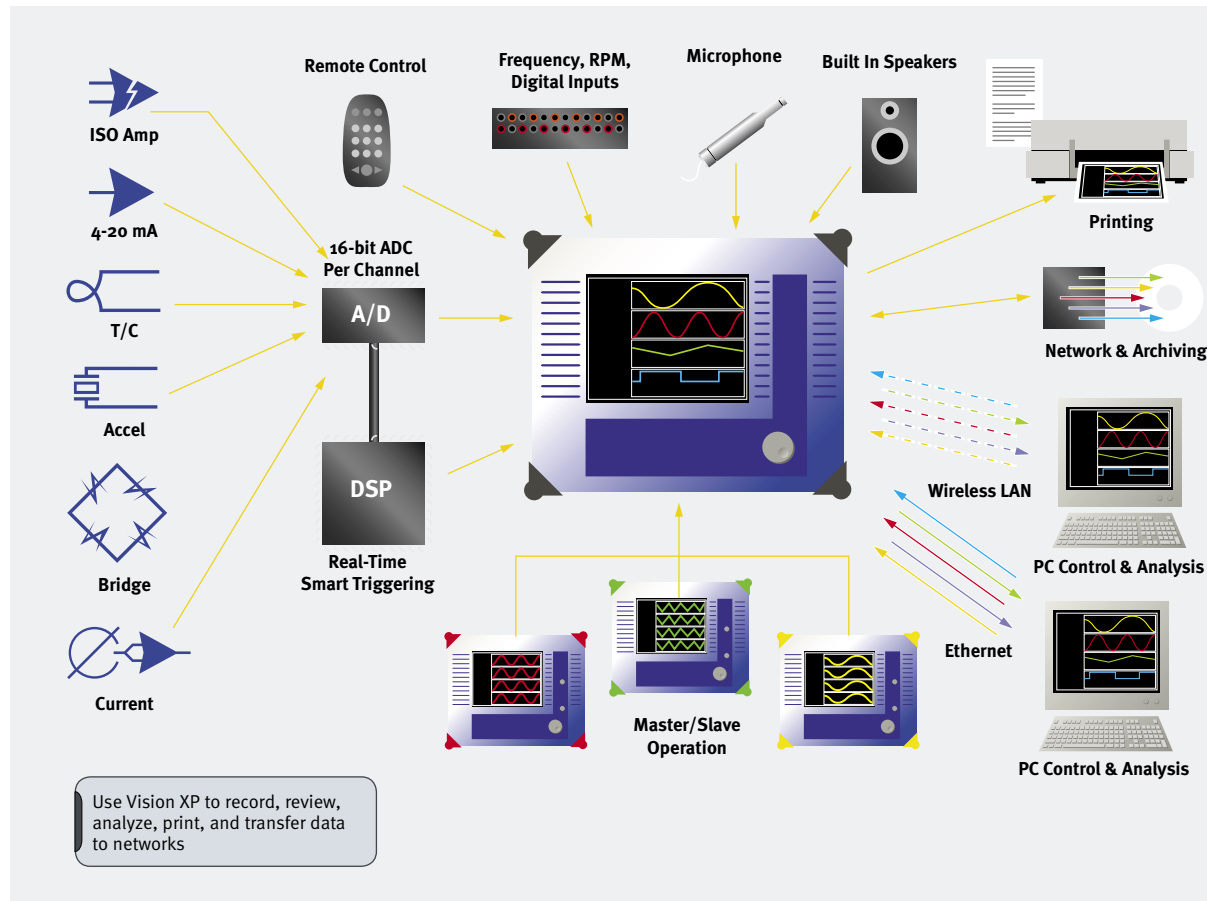
In addition to comparisons with disk based recording instruments, Vision XP excels in comparison to DAT or AIT tape recorders in a number of ways:

Vision XP's hard disk acts as a circular "first-in-first-out" (FIFO) buffer so the user can set up tests to store data only on specific levels, trigger conditions, or front panel mark inputs. This enables long duration monitoring and almost unlimited pre-trigger memory without fear of reaching the end of the tape or disk just prior to a critical event. You can decide to store the events of interest and not the entire record.

Stored data can be reviewed and analyzed onboard the Vision XP immediately. The jog/shuttle knob allows the user to scroll through the data, while the SEARCH function helps you jump directly to the events of interest in long records. Vision XP enables immediate transfer to a PC for off-line analysis without time-consuming file conversions or file transfers, as the data is stored directly to a computer readable media.

Intuitive recording controls

Use Vision XP to record, review, analyze, print, and transfer data to networks

MEASUREMENT INSTRUMENTS – VISION XP

High-Speed Display & Analysis

Sure, you can capture a huge amount of data with the Vision XP recorder. But the real question is, how do you keep from being overwhelmed by such a large recording? The Vision XP system is specially designed for high-speed display, playback and review. In addition to the high-speed raw data streaming to disk, Vision XP creates a parallel lower-resolution data path to drive the smoothly scrolling traces across the display panel. These displayed traces can also be sent over an Ethernet connection for real-time displays on a networked PC. Of course, all the raw data is saved to the acquisition disk and is used for all parameter calculations.

When analyzing your data files later, Vision XP (and Perception Viewer) initially open only the low-resolution display file, which displays an overview of Gbyte-sized files in a matter of seconds. As you zoom into finer detail, only the raw data corresponding to the display is required from the recorded file. You have full access to all your raw data when it is required, but your PC system resources are not stretched to overflowing. Other analysis packages require that the entire file be opened into the PC memory, leading to L-O-N-G and S-L-O-W display updates and strict file size restrictions.

Recorded data is quickly reviewed using the front panel jog/shuttle knob, allowing forward and backward playback similar to video editing. The helpful SEARCH feature helps you locate an event of interest, such as trigger event, channel max or min, voicemark, or specific recording time. For offline analysis, you may transfer entire recordings, or select only the events of interest with the cursors.

Designed For In-Field Use

The rugged, portable Vision XP system is designed to take data out in the field, not just in a laboratory. Rubber corners insulate the main body from many sources of shock and vibration, such as automobile body vibration during a road test. The internal frame is designed for stiffness, and shock mounting of components such as hard drives improves the Vision XP's ruggedness compared to oscillographic recorders and PC-based Data Acquisition systems.
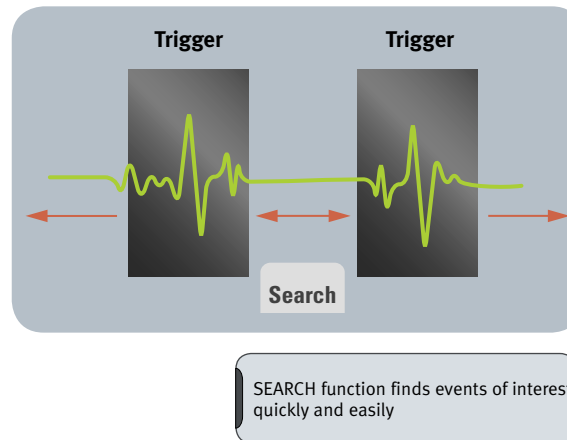
SEARCH function finds events of interest quickly and easily

Input adapters for many common transducers

Signal Conditioning

Vision XP provides signal conditioning and power to a wide array of signal transducers using dedicated input adapters, or "dongles". Power to the dongles is supplied via a third jack between each pair of input banana connector jacks.

The list of signal conditioning dongles includes:

- Bridge circuits for strain gage or load cell transducers (5V excitation)
- Constant-current (ICP®-type) accelerometers
- Temperature measurements via thermocouples or PT100 devices. Cold junction compensation for J, K, E, and T type thermocouples is provided, plus linearization for both T/Cs and PT100 devices
- Phase-to-phase 480 VAC rms measurement
- High-precision 4-20 mA shunt adapter for process applications
- 300 Amp current probe (Hall effect, AC or DC currents)

Vision XP supports single sheet and continuous feed printers and a real-time writer

Analog Performance

LDS-Nicolet has long been recognized for its exceptional signal fidelity. Vision XP packages research-quality performance into a portable, general-purpose data recorder. Each channel has its own 16-bit digitizer with a 20 kHz analog bandwidth. A digital signal processor (DSP) chip for each channel provides digital filtering and real-time calculations of important parameters such as RMS, duty cycle, or standard deviation of your signals. Synchronous sampling across all channels guarantees phase alignment of the signals, including channels from separate Vision XPs in multiple- unit configurations. The wide input range of 50 mV to 1000 V combines with the isolated, true differential signal path to support a wide range of applications.

In addition to the analog channels, Vision XP provides 8 TTL status bit inputs and one 5 MHz counter channel for RPM or frequency. Any analog or digital channel may be defined as a Trigger or Trigger Qualifier channel for simple or complex triggering options. Finally, a microphone input jack allows users to record and play back voice comments about their test conditions to aid during playback and analysis of the acquired data.

Data Acquisition Specifications

The Vision XP's unique architecture supports 16 channels at 100 kS/s each streaming continuously to the 72 GB hard drive. In Continuous mode, all data is saved during a test, with triggered events bookmarked to find with the SEARCH function afterwards. Or, you may select the Transient scope-like mode to record data only on user-defined trigger conditions or front panel marker inputs. A special "circular buffer" mode enables long duration monitoring, using the hard drive as a circular first-in first-out (FIFO) buffer.

Vision XP's sampling rates range from 100 kSamples/second down to 1 Sample per second. Data collection may be synchronized to engine crankshaft positions or other periodic signals with the External Clock mode. Display data as scrolling waveforms, scope-like transient displays, or as XY pairs with user defined axes.

Fast Transfer For Easy Backup

For transferring data to an external PC or network, the standard 100 Mbps Ethernet connection and the wireless LAN connection are powerful tools, with data transfer speeds reaching 1 Mbyte per second. If you don't have access to an Ethernet network, Vision XP can transfer data over its integrated USB port to a variety of backup devices such as a USB memory stick or HD.

Multiple-Unit Configurations

For applications requiring greater than 16 channels, LDS's VisionNet Plus software provides remote operation for multiple Vision XP systems over an Ethernet network. Up to 4 Vision XPs may be linked in Master/Slave mode for synchronous sampling across 64 analog channels, 32 TTL status bits, and 4 counter channels. The user can even record voice comments from the remote PC for storage with the data! Data from multiple units may be merged into a single recording file for storage and post-run analysis.

Multiple Vision XPs linked with a PC in a VisionNet Plus network

Input Specifications

Analog Channels	8 or 16	Offset	0.03% FSR
Bandwidth	20 kHz	Noise	<0.05%
Resolution	16-bit	Linearity	0.02%
Range	50 mV to 1000 V	MSE	0.10%
Isolation	500 Vrms	CMRR, <10V	105 dB
Filtering	Autotracking AAF	Digital Channels	8 TTL, 1 Counter
Gain	0.05% FSR	Digital Modes	Status, RPM, Frequency

Vision XP Applications

Vision XP systems are used in a wide variety of applications across many industries. A few typical applications are listed here along with key features of the Vision XP required for that test:

AUTOMOTIVE & TRANSPORTATION

In-vehicle road load tests

- Signal Conditioning for strain gages and accelerometers
- Isolated amplifiers to prevent ground loops
- Voice channel to annotate test conditions
- Fast data review (hundreds of Mbytes in seconds)

Power monitoring on electric trains

- Isolated amplifiers
- Current clamp signal conditioners for 300A currents
- Triggered recording on current spikes
- High channel count through Master/Slave operation

ELECTRICAL POWER GENERATION

- Monitor forces on rotating turbine blades for hydroelectric power
- 480 Vrms 3-phase monitoring
- High current measurements using a Hall Effect probe or Rogowski coil
- T/C measurements on power lines with isolated inputs

AEROSPACE

Measuring signal strength of radio antennae for tracking satellites

- High sensitivity to extract weak signals from noise
- Search for maximum signal strength during a recording
- High channel count to track multiple antennae with multiple degrees of freedom
- Data available to multiple users over PC network

Measuring recovery time of aircraft auxiliary power units

- High resolution and high speed
- Real-time parameter display
- Portable and self-contained

Analysis of rocket engine firing signatures

- High channel count via Master/Slave operation
- Simultaneous sampling at high speeds
- Remote operation over fiber optic Ethernet network
- Isolated amplifiers, including thermocouples mounted on power lines

MANUFACTURING APPLICATIONS

Rolling steel mill

- External control by process controller using Vision API
- External clock synchronizes data to tested area on steel rolls
- Isolated inputs to minimize ground loops
- Real-time parameter extraction
- Networked data transfer from manufacturing line to lab for analysis

**Leak detection for air conditioner compressors**

- 5 kS/s sampling for several days
- Outlying data bookmarked for fast search
- Fast review of very large data files
- Generate standardized reports with FlexPro
- Real-time continuous-feed paper output

Software Options

Vision XP may be linked to a PC network over its 10/100 Mbps Ethernet connection or its wireless LAN connection for setup, control, display, and analysis of data from a remote PC. A variety of software packages are available for real-time operation or post-run analysis.

Perception Viewer
Use Perception Viewer for post-run viewing of Vision XP data on a PC. Large data files are opened very quickly for playback and analysis, including report generation. Users can search for triggers, peak levels, specific times or other key criteria. Many common calculations are provided such as RMS, signal period or energy. In addition, the Perception analysis option allows you to analyze your data with functions ranging from basic math to frequency analysis. Perception features one-touch data transfer to FlexPro and PTrAn analysis software, or you can export data in over 20 common file formats (Matlab, nCode, DADiSP, etc.)
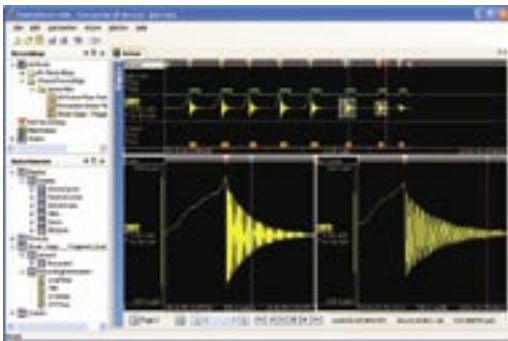
Display with Perception

FlexPro
FlexPro is a 32-bit, multi-channel analysis and reporting software capable of handling large data sets in different time bases. It offers over 100 analysis functions in both time and frequency domains. FlexPro's advanced report generation feature allows you to place 2-D or 3-D plots, result tables and company logos in a report effortlessly. The active folder principle allows you to set up a template of both diagrams and functions which update every time a new signal is acquired. Cursor measurements, scrolling and zooming can all be done directly from the report.
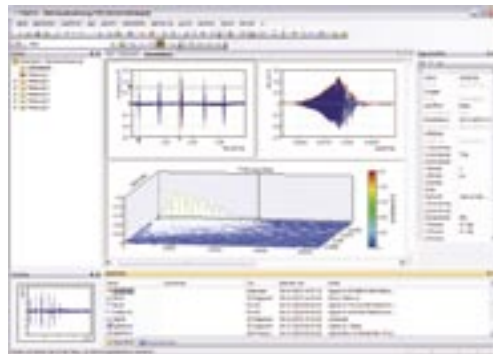
Example of FlexPro's powerful analysis functions

VisionNet
VisionNet software lets you control your Vision XP over an Ethernet network from a remote workstation. It provides full control of all Vision XP commands, including setup, real-time scrolling display, data transfer and analysis features. Monitor and control a Vision XP in a manufacturing plant from your desk. You can even record voice comments from your PC that are stored together with the analog data.

VisionNet Plus
When 16 channels isn't enough, connect multiple Vision XPs in Master/Slave configuration for up to 64 synchronized channels! VisionNet Plus provides PC-based setup and control software for up to 4 Vision XPs, then merges the data into a combined recording file for display and analysis. Ideal for users who require a portable system most of the time, with an occasional need for larger count systems.

Vision API
The Applications Programmers Interface (API) software provides a COM "toolkit" to create customized programs. Vision API enables the user to design their own specialized applications using Vision XP's acquisition and analysis capabilities in almost any programming language such as LabView, C++ or Visual Basic.

Vision XP — A Portable Data Aquisition System

Product Selection Guide

Hardware

Vision XP 8 Channel System
Vision XP 8 channel system with a 72 GB acquisition drive offers 9 GB storage/ channel, over 12 hours of storage at 100 kS/s. Includes isolated inputs 50 mV to 1000 V, 10.4" color TFT display, floppy drive, wireless LAN, 10/100 Mb/s Ethernet, serial/ parallel interfaces, sound channel with internal speakers and Vision software.

Vision XP 16 Channel System
Vision XP 16 channel system with 72 GB acquisition drive. Same as above except offers 4.5 GB storage/channel, over 6 hours of storage at 100 kS/s.

Accessories

Thermocouple Adapters	*Thermocouple single channel adapters with cold junction compensation and linearization. Available in Type J, Type K, Type T and Type E.*
Shunt	*4-20mA shunt, single channel*
RTD	*RTD, PT-100 temperature sensor, single channel*
ICP	*ICP accelerometer conditioner, single channel, provides 4mA excitation*
Strain Gage	*Single channel strain gage conditioner, 5V excitation for 120, 350 or 1000 ohm bridges*
480Vrms	*Phase to phase 480 VAC measurement adapter, single channel*
Current clamp	*Hall Effect AD/DC current microclamp, 0 to 300 Amps AC, single channel*
Input devices	*Complete package of I/O devices. Includes keyboard, mouse pad and microphone.*
BNC Adapter	*Insulated BNC to banana adapter, 10 per package*
Soft Case	*Soft sided carrying case with shoulder strap*
Hard Case	*Hard sided carrying case, includes the soft sided carrying case*

Software

VisionNet
Remote control of Vision XP over a network

VisionNet Plus
Master/Slave control of up to 4 Vision XPs over a network. Includes Data Viewer.

Vision API
Allows users to write custom programs which interface with Vision software.

Perception Viewer
Allows viewing and analysis of Vision files on your PC.

Five Seat Network License
Network license allows multiple users to access Perception through the network.

Perception Options:
  Multiple Exports
  Export data in over 20 3rd party file formats

  Analysis
  *Enables extensive analysis like +, -, *, /, Max, Min, RMS using a formula database*

  Reporting
  Enables professional reports to be generated incl displays, tables, text, graphics

FlexPro Standard
Provides extensive array of time-domain and frequency-domain analysis functions as well as reporting

FlexPro Professional
FlexPro Standard plus the Visual Basic for Application (VBA) development environment

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Nicolet
Dactron
Ponemah

LDS
TEST AND MEASUREMENT

SPX Corporation