

Features and Benefits

- **All-In-One Functionality**
 - Data Recording
 - Transient Capture
 - Real-Time FFT
- **Powerful, Easy to Use**
- **Review While Recording**
- **Seamless Integration with Perception**
- **Large 15 inch Touch Screen Display**
- **Modular Signal Conditioning**
 - High Voltage Isolation
 - Accelerometer Inputs
- **Continuous Recording**
 - For 16 simultaneous channels
 - Recording rates to 200 kS/s per channel
- **Transient Recording with flexible triggering**
- **Real-Time Digital Filters**
- **Removable Hard Drive**
- **DVD RW**
- **Portable and Field Ready**



A NEW DIMENSION IN DATA ACQUISITION AND ANALYSIS

Data acquisition applications are typically studied in the dimension of time – however, there is also the dimension of frequency that offers additional insights. A data recorder that can do both »Time and Frequency« – like the new Dimension4i – provides greater understanding.

Modularity provides the opportunity to grow

Dimension4i offers several modular signal conditioners. The idea is to provide an instrument platform that can adapt to your unique testing needs. Modularity has also been designed into Dimension4i in the way data is archived and accessed. Data can exist on removable hard drives or be stored on a built-in DVD drive, or on the network. Modularity, however, is not limited to hardware – the Dimension4i software can also be tailored to your specific needs.

Ease of operation puts you ahead of the challenge

Dimension4i was designed with the philosophy that ease of understanding is as important as ease of use. The high resolution, 15 inch touch screen display is the foundation of the instrument's highly intuitive graphical user interface. The logical sequence of work flow guides you from setup to report generation and data export, quickly and painlessly. Isolated inputs allow care free measurements regardless of the signals and their relative potential to ground.



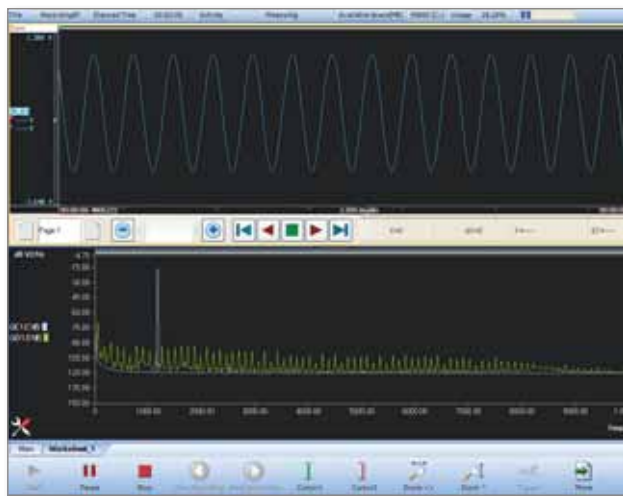
HBM Genesis HighSpeed products were previously sold under the Nicolet brand. The Nicolet brand is owned by Thermo Fisher Scientific Inc. Corporation.



DESIGNED-IN VERSATILITY

Dimension4i was developed with the understanding that today's users need instrumentation that is as flexible as their own responsibilities are varied. Dimension4i can exist as a fully functioning data recorder, providing signal conditioning for a variety of transducer types and logging signals to the system's hard drive at rates up to 200 kS/s on all channels. It can also become a high speed transient recorder, capturing a critical event. If you need to perform frequency domain measurements, it becomes a fully functioning FFT analyzer, processing single or cross channel analysis at 84 kHz real-time bandwidth and supporting ICP® and TEDS transducer standards. Dimension4i is the first legitimate cross over product, developed by a team of design and application engineers that has been there, done that.

Time and frequency domain data simultaneously captured and displayed as the user chooses.



UNPARALLELED USABILITY

It goes without saying that today's multi-tasking users require instrumentation that is easy to operate. Dimension4i was designed from the ground up with these goals in mind. The 15 inch high resolution touch screen provides a rich environment for the intuitive combination of simulated hard key and soft key functions. The hard key arrangement is customizable to suit one's most common tasks. Users ease through test setup, display customization, measurement, analysis, data export, and report generation in a logical, yet non-tedious sequence. A built-in jog-shuttle wheel is available to accelerate common operations such as data scrolling, cursor movement, and advancing through numerous archived data records. Additional off-line analysis and advanced reporting are managed using our powerful Perception Viewer software. The user can choose the method with which they wish to navigate: screen touch, mouse, or stylus.



FEATURE RICH HARDWARE

Dimension4i is an extremely modular system that allows you to choose the configuration that best suits your measurement needs. 24-bit analog digital converters, isolation, anti-aliasing filters, and more ensure unparalleled data accuracy.



System modularity allows Dimension4i to expand with the user's requirements.

A built in PC is optimized to complement the acquisition and analysis power of the system. Two hard drives are available for system software and data storage. The SATA compatible data drive is housed in a locking, removable bay for data security, transportability, and pain free after-care. It can be connected to an external PC for data transfer. A built-in DVD RW drive comes standard, providing another way to archive data. Data Export is also easily accomplished using the on-board Ethernet network connection, or direct connection to a USB peripheral using one of the five USB ports available on Dimension. There is also a PCI expansion slot providing additional PC peripheral adaptation.



REAL-TIME FILTERING

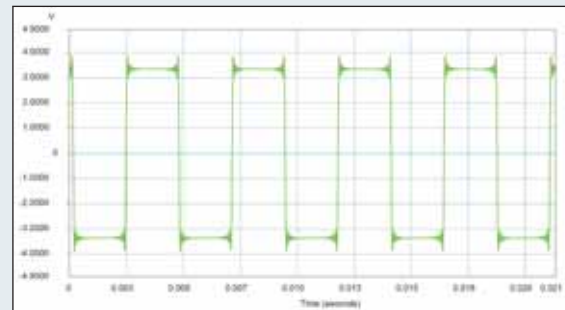
Often times we encounter test conditions that yield less than desirable measurement results due to out of bandwidth factors. In these cases, the application of the appropriate filter can salvage an otherwise indiscernible signal. One can always connect to an external filter device, but this is a bulky and expensive addition. Dimension4i's unique Real-Time Digital Filtering feature allows the user to select from a wide array of digital filtering options that can be applied, independently, to each of the input channels during data acquisition. These include low pass, high pass, band pass, and band stop filters, with selectable filter algorithms.



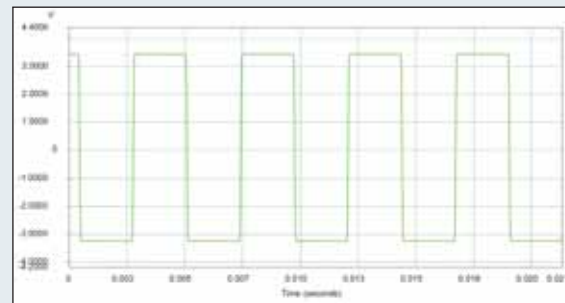
Real-time Digital Filters can be applied independently to any or all channels.

ELIMINATING THE RIPPLE!

The incorporation of Sigma Delta analog to digital converters is quite common and is becoming ubiquitous in data acquisition instrumentation today. There are some significant advantages with this approach including fast analysis, low noise, and reliable anti-alias filtering. Unfortunately, what is not considered by most suppliers is the significant overshoot and subsequent filter ringing problems that occur when digital filter decimation techniques are confronted with signals with step response characteristics. The result is not pretty. The resultant ringing or ripple error can be as large as 10% of the original step function signal. Dimension4i solves this problem with the integration of a Ripple Elimination Filter (patent pending) that applies advanced digital signal processing algorithms to remove this critical error.



Step response showing ripple error inherent in Sigma Delta based DAQ systems.



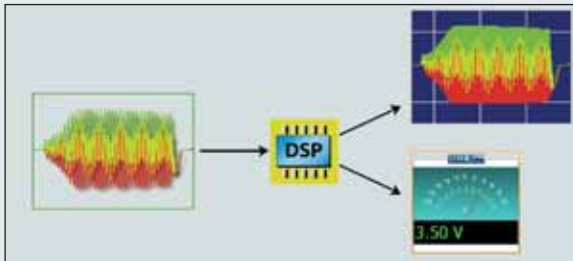
The ripple error resolved with the application of Dimension4i's Ripple Elimination Filter (patent pending).



Our Technology Gives You a Head Start

STATSTREAM DISPLAY TECHNOLOGY

Genesis HighSpeed's exclusive, patent pending StatStream display technology accelerates your measurement task with dedicated hardware and firmware. While recording, StatStream pre-processes a display summary at the full resolution of the Dimension4i monitor.



When reviewing your stored files, the embedded StatStream data enables an accurate, detailed overview of any size file in seconds. Unlike competitive systems, the Dimension4i has no need to inspect GigaBytes of information just to display the last kiloByte. As you zoom in, more detail is displayed while always maintaining the highest visible resolution.

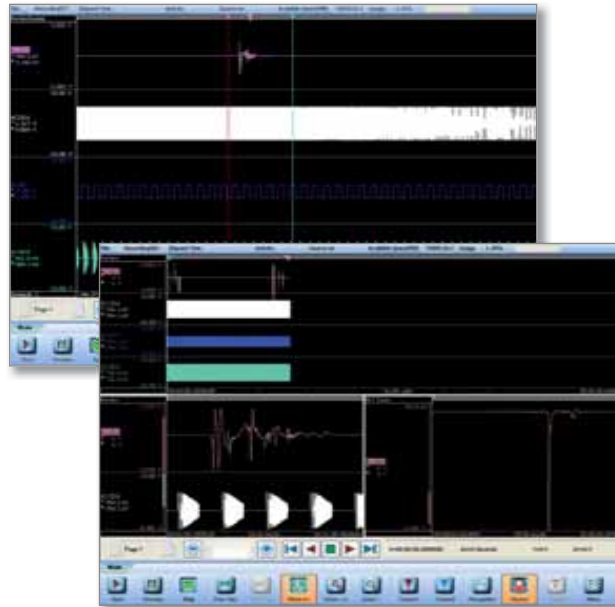
Review benchmark

(16 channels at 100 kS/s each = 3.2 MByte/s)

Acquisition time	Recording size	Load & display time
100 seconds	320 MB	25
10 minutes	1.92 GB	35
100 minutes	19.2 GB	45
10 hours	115.2 GB	45

TIME DOMAIN EXCELLENCE

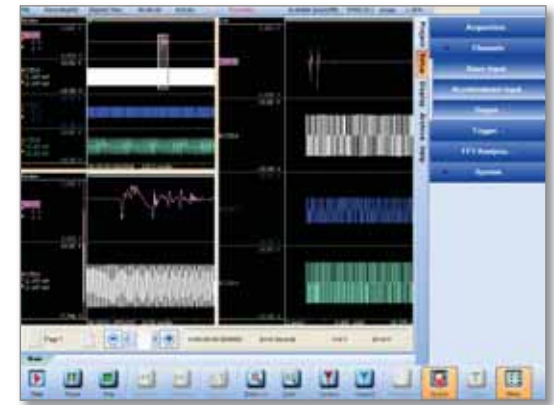
Dimension4i carries forward the tradition of superior time domain measurement excellence that has made our technology the unquestioned choice for generations of engineers and technicians. Whether the requirement is for extended data recording, or instantaneous capture of a transient event, Dimension4i's feature rich profile will do the job, quickly and painlessly.



Dimension4i can record all channels at 200 kS/s, gap free.

REVIEW DATA WHILE RECORDING

When recording an extended data file, Dimension4i's Review While Recording display allows data analysis before the recording is complete. Scroll through the saved data, zoom in, use the cursors... all while data recording continues.



32 BIT SIGNAL PROCESSING POWER FOR REAL-TIME FREQUENCY DOMAIN APPLICATIONS

Native to Dimension4i's architecture are 32 bit floating point Digital Signal Processors, capable of extremely fast and accurate data manipulation. This is what makes the Dimension4i truly unique - the ability to do analysis in real-time, such as FFT and cross channel measurements.



Substantial Data Capture Capabilities

ADVANCED DATA CAPTURE TOOLS

When triggering is needed, Dimension4i offers a full range of triggering options that can be applied independently to each acquisition channel. The selections include edge, slope, pulse, zone, window, frequency, and period with versatile pre- and post-trigger selection options.



Dimension4i also features both normal marker and voice marker channels when one wishes to apply an index locator to the recording file. After a recording, the system can then provide a quick search to advance to each marked location in the recording.

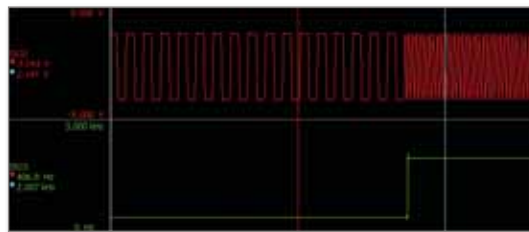
Multiple sampling rates allow Dimension4i to record and capture events on different channels at different sample rates. This can be very useful in cases where it is desirable to set one input module sampling at a high speed to capture a rapidly changing event (such as a pressure change, or voltage spike), while simultaneously recording a channel that is not so dynamic (such as a thermocouple) at a slower sample rate in a different input module. This can greatly reduce the file size as you only capture what you need.

SIGNAL CONDITIONING WITHOUT COMPROMISE

All of this is pointless unless you have signal amplifiers that can provide highly accurate, conditioned signals to the system. Dimension4i offers a variety of high precision, modular signal conditioning choices, including high voltage isolation and accelerometer modules. Each module is completely self contained and requires no additional software installation or configuration.



Dimension4i's channels can be used to record Frequency, RPM or RMS data directly. Simply put the channel in that mode and the frequency, RPM or RMS value will be saved rather than the input voltage.



24 BIT RESOLUTION FOR HIGHLY DYNAMIC PHENOMENA

Dimension4i also utilizes 24-bit analog to digital converters that are so critical in the characterization of highly dynamic phenomena commonly associated with vibration and acoustic measurements. Dynamic range is critical when one is trying to resolve small signals in the presence of large signals.

Other factors that need to be applied when performing frequency domain measurements include spectral resolution, FFT windowing, anti-alias filtering, and spectral averaging. With the integration and application of Dactron's expertise in frequency domain analysis, Dimension4i will give you peace of mind that the data analysis is accurate.



Simultaneous data recording and real-time FFT analysis.



Powerful On-Board Reporting and Data Export

DATA ARCHIVING

At the end of the day, when the data has been acquired and safely stored away, the only thing left to do is export the data and generate the test report. Sometimes this can be the most tedious and time consuming part of the job. Much time and attention has been paid to these very time critical functions in Dimension4i. In situations where the acquired data needs to be shared with others, and/or processed using other analysis tools, Dimension4i provides the powerful and fast Data Manager function to expedite this requirement. Data Manager allows the user to quickly sort, find, and export data files to a variety of locations, in many industry standard file formats.



Quick and easy data export using the flexible Data Manager function.

SIMPLE REPORT GENERATION

For fast and simple report generation, Dimension4i has its own on-board report generator for creating Quick Reports. A Quick Report is user configured to contain screen bitmaps, data meta files, and setup summaries in tabular format. Quick Reports can be printed directly to a network or local printer, or exported in Excel, MS Word, or PDF formats.



Pain free report generation using the Quick Report feature.

OFFLINE REVIEW, ANALYSIS AND REPORTING USING PERCEPTION VIEWER

When further analysis is needed or customized reports are required, the Perception Viewer software can take over. Perception Viewer is optimized for post-run viewing of Dimension4i data on a PC. It can be loaded directly on the integrated PC in Dimension4i or used on a different PC. The Post to Perception feature in Dimension4i makes it possible to transfer data to Perception with a single button click when Perception is loaded on the Dimension4i PC. Large data files can be opened very quickly for playback and analysis, including custom 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 provides a full suite of data analysis functions ranging from basic math to frequency analysis.



Transfer data from Dimension4i to Perception with the push of a button.



Unrivalled Usability

Much time and effort was made to create a user environment for Dimension4i that is easy to use and remember. First and foremost is the 15 inch high resolution touch screen. The user can fully operate the system using a finger, a stylus or a mouse. A jog shuttle wheel provides convenient and rapid control of operations that can be otherwise slow and tedious such as cursor movement, data scrolling, and advancing through data sets.

The Dimension4i software environment was designed with the notion that each user has a different comfort level and requirements. Commonly used operations are accessed as simulated hard keys, which can be arranged by the operator.

Users can customize the system operation and data appearance as they wish, and archive these settings in a project file for future use.

It's an unfortunate reality that most Data Acquisition systems today have been designed and developed by engineers that have not had the benefit of day to day experience using test instrumentation. Dimension4i was designed from the beginning by an experienced team that has vast experience with measurement applications. In addition, extensive customer inputs and feedback have been incorporated into the details. There is a natural flow to the operation of Dimension4i, and the most common operations are literally at your fingertips.



Channels can be setup using a spreadsheet or a graphical interface.



Complete test setups, including data display arrangements, are stored in and retrieved from Dimension4i using Project files.





The Path to the Future

Upgrade your Vision XP system to a Dimension4i

The Vision XP has been the data recorder of choice across all industries and applications. Since its introduction, thousands of Vision systems have been running reliably and dependably. Rest assured that your investment is sound and will continue to be supported by HBM. In the situation where you are seeking a growth path to our next generation product, Dimension4i can satisfy the capabilities of your Vision system, and more. Quite a bit more...

Dimension4i to Vision XP Comparison

Feature	Vision XP	Dimension4i
Intuitive User Interface	X	X
Voltage Isolation	X	X
16 Channels	X	X
Triggering and Markers	X	X
STATStream™ Display	X	X
Recording speed per channel	100 kS/s	200 kS/s
Display size	10.4 in	15 in
Recording capacity	72 GB	100 GB
Maximum resolution	16 bit	24 bit
Swappable input boards		X
Real Time FFT		X
Real-time digital filtering		X
Removable hard drive		X
DVD RW drive		X
On-Board report generation		X
USB 2.0 connectivity		X
Firewire connectivity		X



EASY TO EXPAND

Dimension4i's Plug & Play design allows new modules to be easily added. No system re-calibration is required as calibration data resides locally on the module itself.



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