HIGH FREQUENCY DATA RECORDERS

THE ////DASH HF SERIES

DASH 8HF

- 8 high voltage (250 Vrms) analog inputs
- 8 TTL event inputs
- 2 MHz sample rate per channel
- 200 kHz bandwidth per channel

DASH 20HF

- 4 high voltage (250 Vrms) analog inputs
- 16 differential (35 Vrms) analog inputs
- 500 kHz sample rate per channel
- 100 kHz bandwidth per channel

DASH 32HF

- 32 differential (35 Vrms) analog inputs
- 8 TTL event inputs
- 500 kHz sample rate per channel directly to hard drive
- 100 kHz bandwidth per channel

AI® Astro-Med®,Inc

TEST & MEASUREMENT PRODUCT GROUP

Measurement has never been this easy

DASH HF

High Speed Data Recording Family

Easy to work with...Hard to work without!

THE DASH 8HF, DASH 20HF AND DASH 32HF ARE POWERFUL, PORTABLE DATA ACQUISITION RECORDERS ENGINEERED SPECIFICALLY FOR CAPTURING HIGH FREQUENCY DATA AND TRANSIENT SIGNALS.

These versatile systems provide either isolated high voltage analog inputs, differential low voltage analog inputs or a combination of both, along with eight event inputs streaming directly to a dedicated 250 GByte hard drive. Data is sampled at user selectable sample rates up to 2 MHz with a bandwidth of 200 kHz per channel for the Dash 8HF and 500 kHz with a bandwidth of 100 kHz per channel for the Dash 20HF and Dash 32HF.

INTELLIGENT, VERSATILE DATA CAPTURE

The Dash HF family has a 250 GByte hard drive dedicated exclusively for capturing data. Sample rates can be varied, optimizing hard drive usage. The Dash HF family is the first of its kind that lets you capture trend data at slower sample rates while embedding higher sample rate scope captures at the same time!

POWERFUL INPUTS AND FILTERING

Unlike other data acquisition systems, the Dash HF family has a true continuous sample rate to hard drive. No special conditions are required to attain this sample rate! The wide bandwidth per channel lets you see critical high frequency and transient data, while dedicated 16-bit A/D converters for each channel gives you precise, high resolution data with no multiplexing.

GO ANYWHERE SYSTEM

The Dash HF family is comprised of compact, portable systems designed to go anywhere your testing sends you. The tough, small industrial grade package gives you the freedom to bring it on the production floor or out to a remote site.

HIGH SECURITY VERSION WITH REMOVABLE DRIVES

Each Dash HF series system is offered in a high security configuration designated the Dash HF-HS series. The high security versions include removable system and data capture drives – perfect for aerospace and defense applications where securing classified data is critical.

PC CONNECTION

The Dash HF family has integral GBit Ethernet, letting you quickly and easily export data to your PC for further analysis. An internal DVD+R drive makes it easier than ever to archive your data for later review.
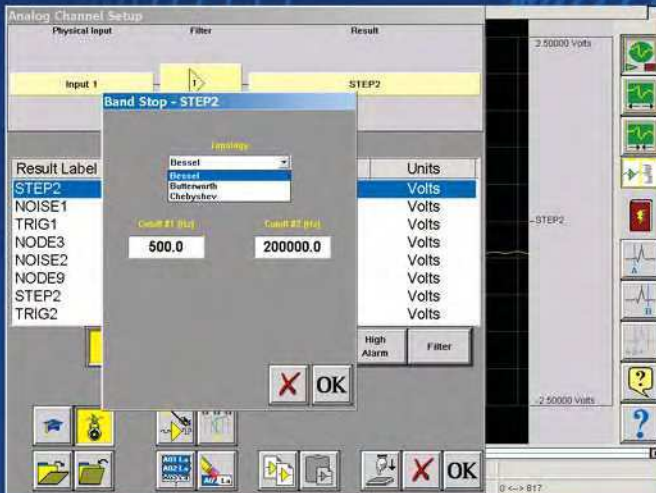
TOUCH-SCREEN DISPLAY

The Dash HF family's large 15-inch display gives you a clear color display of all of your waveform data. The intuitive touch-screen interface means that you will spend less time setting the system up and more time gathering data.

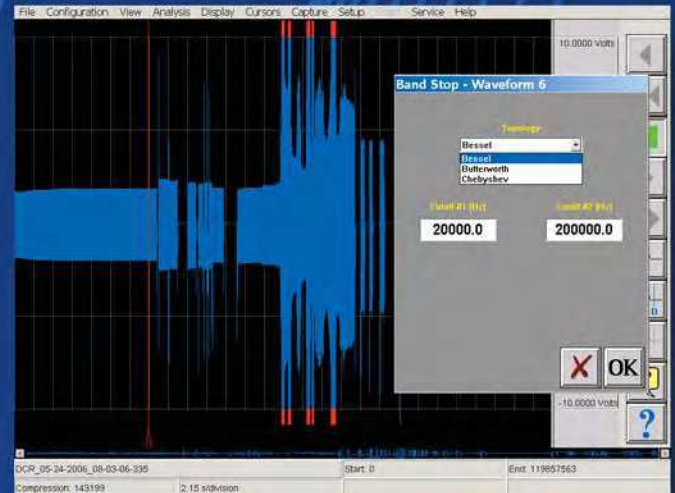**Astro-Med, Inc**
TEST & MEASUREMENT PRODUCT GROUP

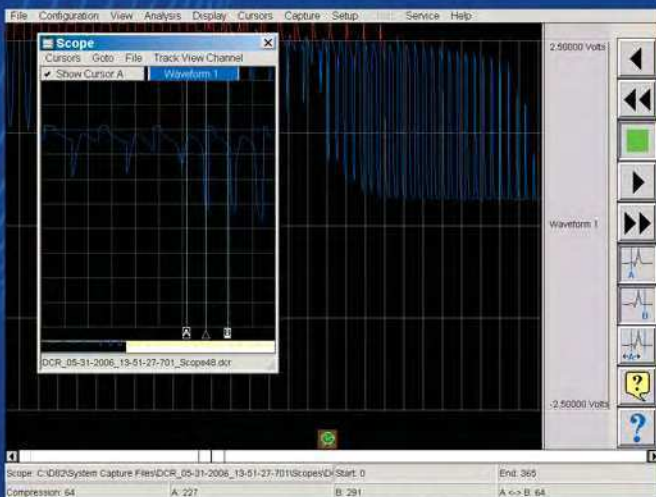# Powerful, Functional and Easy to Operate!

POWERFUL FILTERING

The Dash HF family provides the most flexible data filtering options available. The raw unfiltered data is stored to the hard drive, allowing you the choice of pre or post data acquisition filtering. You can even filter real-time data while capturing raw data to the hard drive. The integrated filtering provides Bessel, Butterworth and Chebyshev filter topologies. With the Dash 8HF, Dash 20HF and Dash 32HF you can view, record and analyze only the data you want!
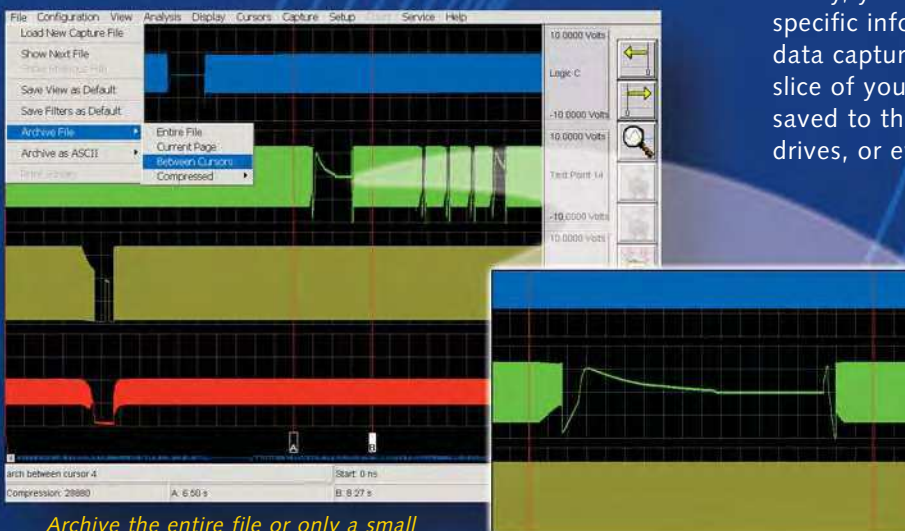

Choose from hundreds of different filter combinations!

Custom filtering lets you see only the data that you want.

Scope captures with cursor measurements give you immediate information about your data.

Functional and Versatile FEATURES!

TREND RECORDING

High frequency scope captures can be embedded in standard data captures, allowing you to see detailed transients and trend data in the same record.

EASY DATA EXTRACTION

With a dedicated 250 GByte hard drive for data capture, the Dash HF series allows you to record more data than you have before! The Dash 8HF, Dash 20HF and Dash 32HF allow you to export only the data that you want. With the versatile data handling features of the Dash HF family, you can export much smaller files that contain the specific information you want. You can archive an entire data capture file, a particular screen of interest or just a slice of your data. The data can be kept on the recorder or saved to the DVD drive, optional USB flash and hard drives, or even a network drive.

Archive the entire file or only a small slice – it's up to you!

Zoom windows let you see incredible waveform detail.

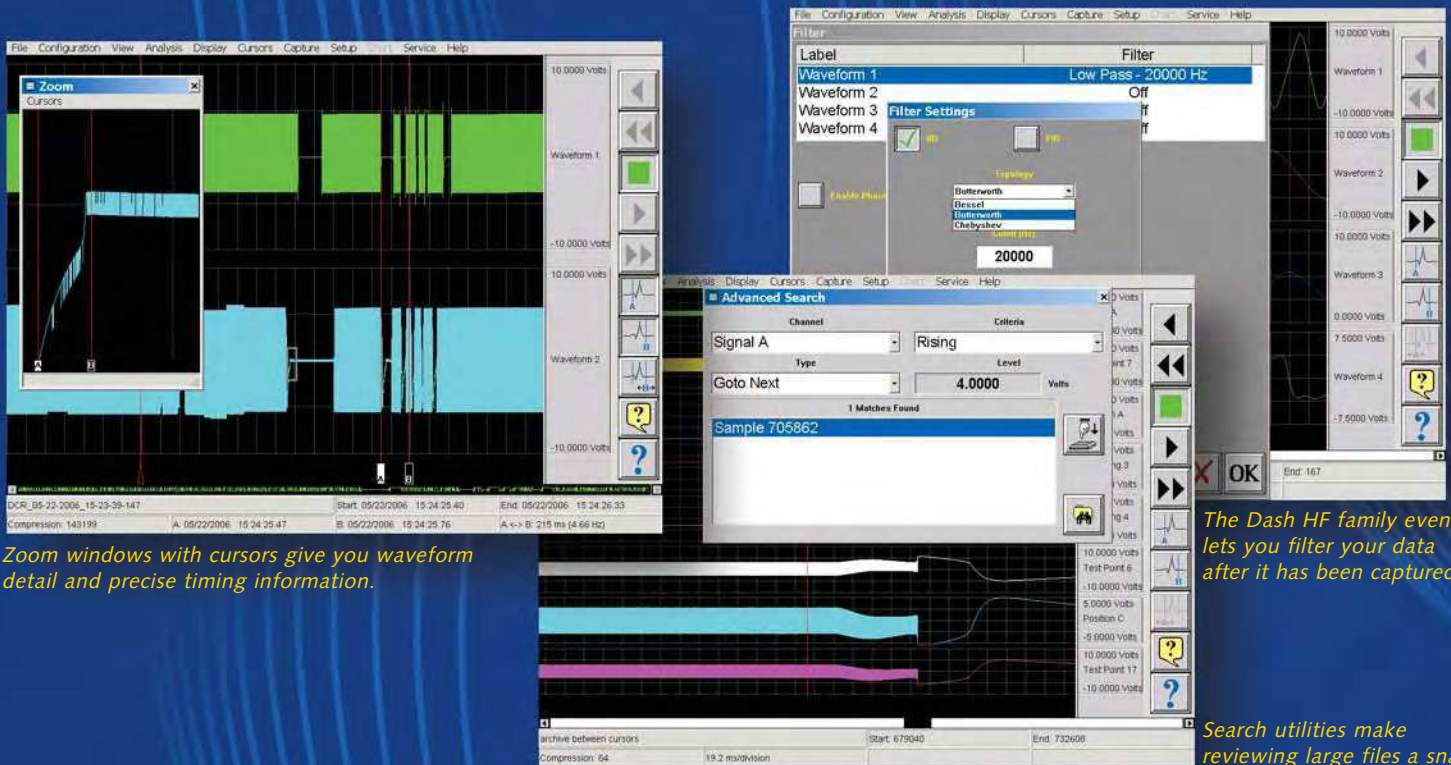# Data Review and Analysis at your fingertips!

DATA REVIEW

The Dash HF family gives you complete control of viewing & analyzing your data with its simple touch-screen interface. From changing settings to making data measurements, it's as easy as touching the screen.
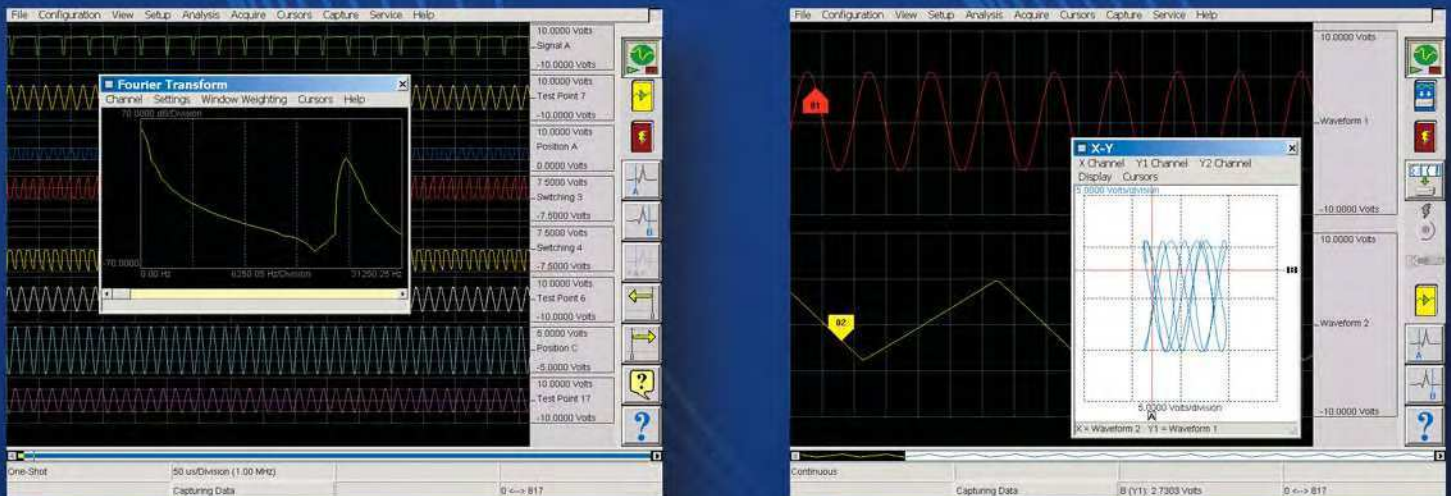
SCROLL, SEARCH AND ZOOM

Once your high speed data has been captured, the Dash HF family makes it easier than ever to review large amounts of data. View an entire capture on one screen, or use the scroll function to move back and forth through your data. You can also use the Advanced Search feature that lets you to go right to events of interest. Searches can be performed on all channels, and can be based on rising or falling signal levels on any channel.

When you see data of interest, you can select a zoom window for close up review and use on-screen cursors to give you precise measurements. Use the post data capture filters to view your signals without any unwanted noise.

Zoom windows with cursors give you waveform detail and precise timing information.

The Dash HF family even lets you filter your data after it has been captured.

Search utilities make reviewing large files a snap!

DATA ANALYSIS

The Dash 8HF, Dash 20HF and Dash 32HF have review capability that includes both FFT and XY plot functions, giving you access to your data in the frequency domain and spectral plotting of up to three channels.

State-of-the-Art System for your High-Speed Data Applications!

MODEL	ANALOG INPUT CHANNELS	TTL INPUT EVENTS	MAX SAMPLE RATE PER CHANNEL	ANALOG BANDWIDTH PER CHANNEL
Dash 8HF Dash 8HF-HS	8 Isolated - 250 Vrms	8 (0 - 5 V TTL)	2 MHz per channel	200 kHz (-3dB)
Dash 20HF Dash 20HF-HS	4 Isolated - 250 Vrms (Channels 1-4) 16 Non-Isolated Differential - 35 Vrms (Channels 5-20)	8 (0 - 5 V TTL)	500 kHz per channel	100 kHz (-3dB)
Dash 32HF Dash 32HF-HS	32 Non-Isolated Differential - 35 Vrms (Channels 1-32)	8 (0 - 5 V TTL)	500 kHz per channel	100 kHz (-3dB)

INNOVATIVE ARCHITECTURE ASSURES PRECISE DATA FOR YOUR HIGH SPEED APPLICATIONS

The Astro-Med, Inc. Test and Measurement Product Group has always been on the leading edge when providing solutions for your data acquisition needs.

The Dash HF family was developed specifically for applications requiring multiple channels, wide bandwidth and high sample rates. A wide range of frequencies can be recorded with the highest resolution.

Whether monitoring process control or recording high speed transients, the Dash HF captures everything.

Accessories for your Dash HF recorder

Note: The SCR-8 chart recorder is compatible with the Dash 8HF only. Please contact the factory about chart printing options for the Dash 20HF and Dash 32HF.

AVAILABLE ACCESSORIES

Astro-Med, Inc. offers many accessories to compliment your Dash HF series recorders.

- Thermal array chart recorder for strip chart printouts
- Current clamps and flexible probes (0-6000A)
- Voltage leads and patch cables
- Current loop adaptors and shunts
- Soft and hard shell carry cases
- AND MORE!!!

Please consult Astro-Med for more information on available accessories.

Taking your data offline has never been easier!

DATA EXPORT

The Dash HF family offers a number of ways to archive and export captured data. Data can be exported in our packed binary format – minimizing file size – or a generic ASCII format, which is compatible with most analysis packages. The built-in DVD drive provides archiving to CD or DVD. For applications requiring transportable media, the Dash HF family provides two USB 2.0 ports that open up a world of possibilities. Connect an external hard drive or USB flash drive, and archive GBytes of data at once. You can also connect a USB 2.0 Windows printer for printing screen shots from the recorder. The Dash HF family has an integral 1000BaseT Ethernet port to make exporting data to your PC as easy as ever. Simply connect your Dash 8HF, Dash 20HF or Dash 32HF to a network and upload only the data of interest.
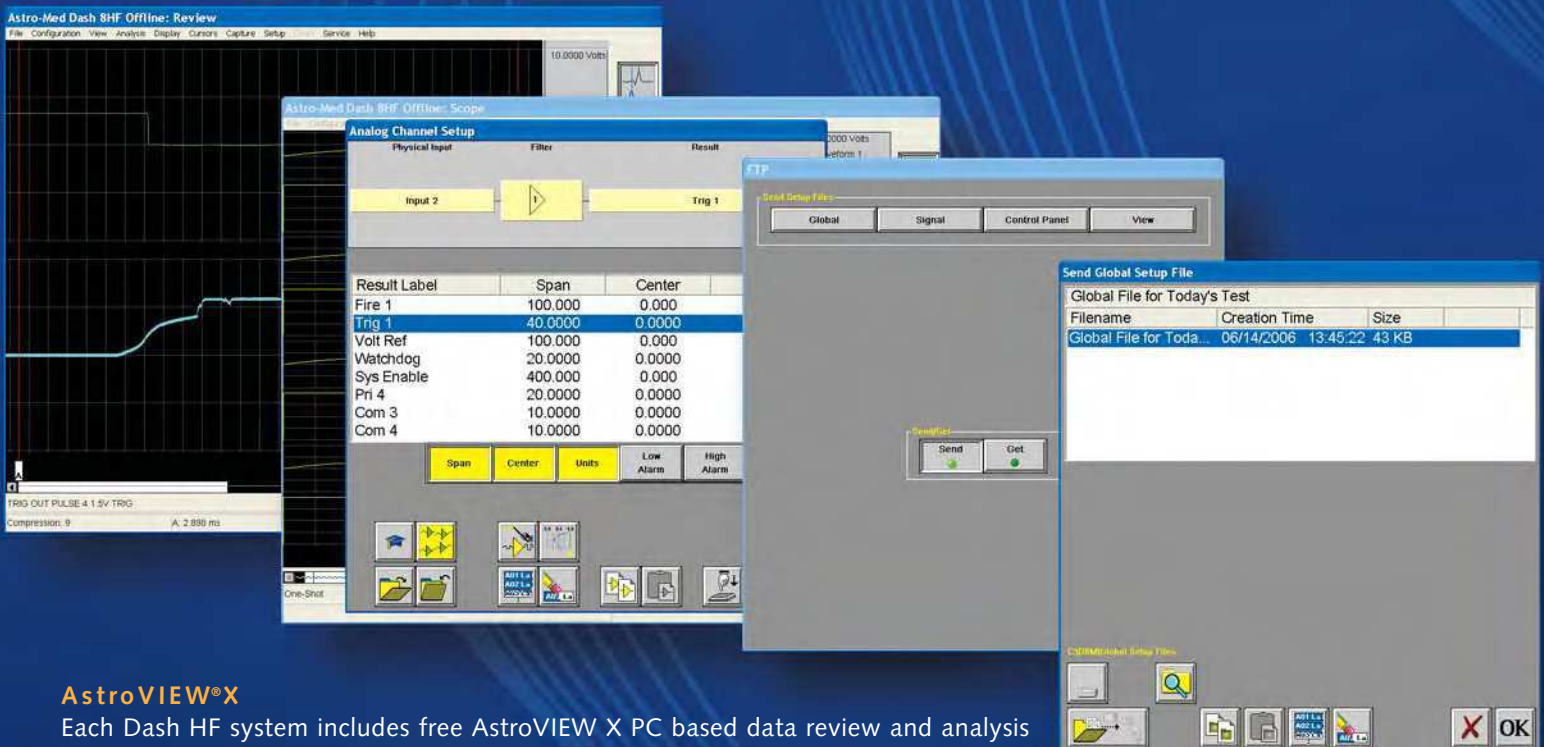

Integral 10/100/1000BaseT for exporting data.

Internal DVD drive for data archive.

DASH 8HF, DASH 20HF and DASH 32HF OFFLINE

The Dash HF Offline software emulates the Dash HF system software on your own PC. For complete offline setup of the Dash 8HF, Dash 20HF or Dash 32HF, optional Offline software runs on any PC running Windows 2000 or XP. It lets you quickly and easily set up your Dash recorder on your PC, and transfer the setup file to the system via Ethernet, USB flash drive or DVD drive.

AstroVIEW®X

Each Dash HF system includes free AstroVIEW X PC based data review and analysis program. AstroVIEW X runs on any Windows PC and lets you upload and review data captured on your recorder. AstroVIEW X has built-in analysis and easily converts data into ASCII, Excel™, MathCAD™, DADiSP™ and other popular formats.

OVERVIEW SPECIFICATIONS

GENERAL

Event Inputs	8 (TTL)
A/D Resolution	16 bit (separate A/D per channel)
Anti-Aliasing Filter	4 pole Bessel
Pre-capture Filters	Low pass, high pass, band pass, band stop, RMS
Post-capture Filters	Low pass, high pass, band pass, band stop
User Engineering Units	Yes
Calibration	Semi-automated to external reference

INTERFACE

Ethernet	10/100/1000BaseT
DVD	Supports archive of data to CD-R, CD-RW, DVD-R, DVD+R & DVD+RW
VGA	For displaying data on an external monitor
USB 2.0 (2 ports per unit)	For external peripherals and file export
Link Ports	For synchronizing data captures on up to eight systems*

POWER

Input Voltage Range	100 to 264 VAC
Frequency Range	47 Hz to 63 Hz
Power Factor	0.99
Power Consumption	150 W maximum

PHYSICAL

Enclosure	Aluminum, with armored end caps
Dimensions	12.125" (30.8 cm) H x 16.0" (40.64 cm) W x 6.628" (16.84 cm) D (without handle)
Weight	22.5 lbs (kg)

COLOR DISPLAY

Type	Active matrix color LCD (TFT)
Viewing Area	15.0 inch / 38.1 cm (diagonal)
Resolution	1024 x 768
Touch	Full screen, resistive

DATA ACQUISITION RECORDING

Operational Modes	Scope, Review, Real-time (strip-chart)
Recording Method	Internal 250 Gbyte disk drive, optionally removable (HS version)
Total Capacity	Over 100 billion samples
Maximum Record	Up to the drive capacity
Data Stored	Raw (unfiltered) data saved to the drive
Time Stamp	Time and date automatically saved with data
Trigger Point	Amount of pre and post trigger is user adjustable
Auto Re-Arm	Automatic stacking of captures
File Information	Information on units, measurement range and sample rate saved with data

COMPLIANCE / ENVIRONMENTAL

Safety	EN 61010-1, 2nd Edition (2001), UL 61010-1:2004, 2nd Edition CAN/CSA C22.2 No. 61010-1:2004 2nd Edition
EMC	FCC Part 15, Subpart B, Class A; EN 61326-1 Class A
Power Harmonics	IEC1000-3-2
Operating Temperature	40 to 105 ºF (5 to 40 ºC)
Operating Humidity	10 % to 90 % non condensing

* Note: The Dash 8HF can only be linked to another Dash 8HF. However, the Dash 20HF and Dash 32HF can be linked together.

INPUT SPECIFICATIONS

SAMPLE RATE

Dash 8HF & Dash 8HF-HS	2,000,000 samples/second per channel (2 MHz)
Dash 20HF & Dash 20HF-HS	500,000 samples/second per channel (500 kHz)
Dash 32HF & Dash 32HF-HS	500,000 samples/second per channel (500 kHz)

BANDWIDTH

Dash 8HF & Dash 8HF-HS	200 kHz (-3 dB)
Dash 20HF & Dash 20HF-HS	100 kHz (-3 dB)
Dash 32HF & Dash 32HF-HS	100 kHz (-3 dB)

ISOLATED INPUTS
(Dash 8HF Channels 1 - 8 & Dash 20HF Channels 1 - 4)

Input Type	Isolated, AC/DC coupled
Isolated Input Connector	Guarded banana jacks (red/black)
Max Rated Input	250 Vrms or DC, Cat II
Max Transient Input	±800 V (not to exceed 250 Vrms)
Isolation	250 Vrms or DC, Cat II (channel to chassis, channel to channel)
Specified Ranges	100 mVFS to 800 VFS
Input Impedance	1 MΩ
Accuracy (25ºC)	±0.07 % of attenuator
Intrinsic Noise (pk-pk)	< 0.6 % of attenuator
IMR @ 60 Hz (Dash 8HF)	> 75 dB
IMR @ 60 Hz (Dash 20HF)	> 70 dB (400 V attenuator); > 75 dB (all other attenuators)
Frequency Counter	Dash 8HF (Channel 1 & 5)
	Dash 20HF (Channel 1)
Frequency Counter Accuracy	±0.005 % of measurement

NON-ISOLATED DIFFERENTIAL INPUTS
(Dash 20HF Channels 5 - 20 & Dash 32HF Channels 1 - 32)

Input Type	Differential, non-isolated DC coupled
Differential Input Connector	25-pin D-sub male connectors (8 channels per connector)
Maximum Rated/Transient Input	±50 VDC (35 Vrms)
Specified Ranges	80 mVFS to 100 VFS
Input Impedance	250 kΩ
Accuracy (25ºC)	±0.05 % of 800 mV; 2, 4, 5, 10, 25 and 50 V attenuators ±0.25 % of 80, 200, 400 mV attenuators
Dash 20HF Intrinsic Noise (pk-pk)	< 6.25 mV (80, 200, 400 and 800 mV attenuators) < 0.33 % of attenuator (2, 4, 5, 10, 25 and 50 V attenuators)
Dash 32HF Intrinsic Noise (pk-pk)	< 5.5 mV (80, 200, 400 and 800 mV attenuators) < 0.32 % of attenuator (2, 4, 5, 10, 25 and 50 V attenuators)
CMR @ 60 Hz	> 60 dB
Frequency Counter	Dash 20HF (Channel 5)
	Dash 32HF (Channels 1 & 17)
Frequency Counter Accuracy	±0.005 % of measurement

All trademarks are the properties of their respective owners.