

 **AstroNova**<sup>®</sup>  
Test & Measurement

*Measurement Has Never Been This Easy™*



*Data Acquisition, Oscilloscope, Power Analyzer*



## AstroNova Test & Measurement Capture Critical Data Accurately & Reliably

Since 1969, AstroNova Test & Measurement has been a pioneer in the data acquisition industry. Building a strong legacy with our high quality, U.S. made products, our customers have come to rely on us for all their data recording requirements.

As engineers, we understand the importance of your data capture applications, which is why we design our products with both precision and user experience in mind. Through the years, we have developed a reputation for our accurate, turnkey products and unrivaled technical support engineers, known for providing expert support whenever it is needed.

Our company is committed to innovation and adaptation, ensuring we meet the ever-changing needs of our customers. Our customers know they can look to us for products that offer revolutionary solutions for data acquisition. Whatever our customers' data acquisition requirements, we offer the total solution for their tailored applications.

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## AstroNova Data Acquisition Systems Comparison Chart



	DXS-100 Daxus	DDX-100 SmartCorder	TMX
<b>Operation</b>	Standalone, connected to a PC, or distributed	All-in-one	All-in-one
<b>Display</b>	External PC	Built-in 15" touch panel	Built-in 17" touch panel
<b>Maximum Sample Rate</b>	200 kS/s/ch	200 kS/s/ch	800 kS/s/ch and 50 MS/s/ch with optional 2-ch scope card
<b>Input module slots</b>	2	2	3 (6 with TMX-E or TMX-R)
<b>Max. Channels</b>	48 per system, up to 480 networked	48 per system, up to 480 with DXS-100	Up to 96 with TMX-E or TMX-R
<b>Dimensions</b>	12.8" W x 7" D x 4.7" H (324mm W x 180 mm D x 120mm H)	11.8" H x 14.4" W x 6.6" D (300mm H x 366mm W x 168mm D)	14.5" H x 19" W x 7.5" D (368 mm H x 48.3 W x 19.1cm D)
<b>Weight</b>	7 lbs (3.2kg)	18.5 lbs (8.4 kg) with 2 modules	37 lbs (15.8 kg) with 3 modules
<b>Input Power</b>	14-24 VDC or 100-240 VAC with included adapter, 12-72 VDC with optional adapter	100-264 VAC	100-264 VAC or 24 VDC
<b>Internal Storage</b>	500 GB hard drive standard, up to 1.6 TB SSD (optional)	500 GB hard drive standard, up to 1.6 TB SSD (optional)	1 TB capture drive standard, up to 1.6 TB SSD (optional)
<b>Connectivity</b>	Ethernet USB (for WiFi or transferring data and setups) Optional WiFi adapter Optional GPS and CAN inputs	Ethernet USB 3.0 Optional WiFi adapter Optional GPS and CAN inputs	Ethernet USB 3.0 (4) VGA (for external monitor) Optional Video Capture Optional CAN inputs
<b>Input module types</b>	Universal inputs (isolated) High Voltage (isolated) Voltage (non-isolated) Power (isolated) Strain and bridge (isolated) RTD & resistance (isolated) Thermocouple (isolated) Events (digital input) ICP & piezoelectric (isolated) Digital IO, relay, & counter	Universal inputs (isolated) High Voltage (isolated) Voltage (non-isolated) Power (isolated) Strain and bridge (isolated) RTD & resistance (isolated) Thermocouple (isolated) Events (digital input) ICP & piezoelectric (isolated) Digital IO, relay, & counter	Universal inputs (isolated) High Voltage (isolated) Voltage (non-isolated) Power (isolated) Strain and bridge (isolated) RTD & resistance (isolated) Thermocouple (isolated) Events (digital input) ICP & piezoelectric (isolated) Digital IO, relay, & counter
<b>Typical applications</b>	Distributed applications Condition monitoring Test cells	Field Test and Troubleshooting Maintenance Power Monitoring	R&D Verification and Validation Troubleshooting and repair



## Why Choose AstroNova Test & Measurement?

- Innovative** AstroNova (formerly Astro-Med) has been developing innovative Test & Measurement products since 1969.
- Easy-To-Use** Designed with the user in mind from firmware to software, all-in-one data acquisition systems are easy to use, saving time and money.
- Reliability** Constructed for durability and portability, products are rugged and ideal for mobile use.
- Flexibility** Our systems support a wide variety of sensors. Universal input modules reduce the cost of testing by providing the flexibility to connect multiple sensor types to a single module.
- Commitment** We are committed to providing total customer satisfaction. Our technical support engineers are available for on-site training and startup assistance whether on-site or via remote conference calls and video calls.
- Collaboration** Our approach is partnering with our customers to understand their needs first, then propose solutions based on their unique challenges.

## Supported Throughout Your Equipment's Lifetime

### Technical Support

Our worldwide Field Sales Engineer team is available to visit your facility for one-on-one consultation to review your specific application and recommend the correct set-up for your production needs.

Our dedicated Sales and Support Engineers are ready to answer any questions and provide 24/7 support through our intuitive paging system at our facility in the USA, ensuring a response around the clock. To help you get started, AstroNova includes easy-to-use, quick-start guides with each system. On-site start-up assistance is available upon request.

### Repair

If needed, AstroNova is prepared to repair your equipment. Our return process makes repairs quick and simple. Upon arrival of your device, your feedback will be reviewed, device examined and a recommended course of action will be determined. During the repair process, a device can be loaned to keep you up and running.

### Upgrade

AstroNova is continuously evolving. By innovating and enhancing devices, we allow you to do more and perform better. In doing so, we give you a chance to be a part of technology evolution and upgrade your equipment. Whether it is hardware or software, we will ensure your devices remain current to meet your ever-changing requirements.

### Warranty

AstroNova Test & Measurement equipment is covered by a one-year warranty on all parts and labor. An extended warranty is available for an additional fee.





# DAXUS® DXS-100



Part Number #42870000

## Distributed and Stand-Alone Data Acquisition

The DAXUS® DXS-100 is a versatile data acquisition solution for local or distributed measurements. Units can be connected directly to a host PC, operate as stand-alone high-speed data loggers, or deployed as part of a distributed measurement system spanning large distances. The built-in hard drive and internal battery ensure data is saved during network or power outages. Its small size and rugged packaging make it ideal for use in the lab, field, or production environment.

- Stand-alone or networked operation
- 200 kS/s per channel max sample rate
- Up to 48 channels per unit and 480 channels networked
- GPS, IRIG, NTP synchronization
- Rechargeable battery operation
- 500 GB standard or up to 1.6 TB solid state drive
- Rackmount kit available
- On-board signal processing reduces post processing with no latency
- WiFi, Ethernet, and cellular capable

## Product Overview

### Acquire

Daxus units feature two slots that accept a variety of input modules. Each system can acquire up to 48 channels with sampling rates up to 200 kS/s per channel or as low as one sample per minute for long term monitoring. Multiple Daxus units can be stacked to increase the number of channels, and all inputs can be synchronized by sharing clock signals or via GPS or IRIG2.

The Daxus system supports three different sampling rates per channel which allow you to acquire high speed and low-speed data simultaneously and reduce file sizes. You can also create triggers to start and stop recording based on any input channel, event (e.g. external trigger signal), or a specific date and time.

The Utility / DIO port contains alarm inputs, alarm outputs, programmable outputs, and inputs for external sample clocks eliminating the need for a separate digital I/O module. Optional interfaces include IRIG for synchronizing data across multiple units, GPS for time and location, and CAN for vehicle applications. Selecting these options does not require you to give up a slot for input modules.

The Daxus architecture provides advanced digital signal processing (DSP) technologies that allow you to configure custom filters and perform frequency measurements on a per channel basis.

Reduce testing costs and increase flexibility with the UNIV-4 universal input module. The UNIV-4 alleviates that need for dedicated modules by allowing you to perform voltage, DC bridge, thermocouple, RTD, and IEPE accelerometer measurements in a single module.

### Visualize

All systems come with the easy to use Daxus application software for the PC which allows you to configure systems, view data in real-time, review saved data, and transfer or copy data from the Daxus to your PC. In networked applications, you can connect to any unit from any PC on the network. Reviewing or transferring data during a capture does not interrupt the current acquisition.

**Scope Mode** is a powerful feature that allows you to acquire and save data at low sample rates while capturing high speed snapshots based on user defined triggers. This is particularly useful for capturing intermittent signals or analyzing the timing between signals. Icons on the real-time display indicate when a scope capture has occurred and trigger events are embedded in the data file. High-speed data from scope captures is saved in separate files and can be viewed in a scope-like display with high time-base resolution and cursor measurements without interrupting long term trending.

### Analyze

Daxus provides powerful tools to help you analyze data quickly and easily.

The **derived channel** feature allows you to create up to six calculated channels or combine any four channels based on user-defined equations. Derived channels are calculated in real-time and can be displayed and recorded along with the original input channels in real-time or review mode. You can also apply advanced filtering options post-capture.

To aid in analyzing acquired data,  **cursors** provide built-in measurements such as average, Min-Max, Peak-Peak, slope, RMS, Sum, Std Deviation, and others. You can also configure **Fourier Transform Windows** for viewing and analyzing frequency content in real-time.

**Advanced counter functions** based on DSP technologies allows many common frequency measurements and eliminates the need for a separate counter / timer module – regardless of the input module type. Available functions include frequency, duty cycle, edge separation, quadrature encoder, gated pulse counter, pulse width, and more.

**User notes** can be added during an acquisition and are saved as part of the data file for later review.

Analysis and control functions can be extended and automated using Python scripting or LabVIEW.



Two Daxus systems mounted inside of a rack



Back of the Daxus system

## Store

With Daxus, all data is stored locally on an internal hard drive and streamed across the network on demand. This ensures that critical data is always captured regardless of network reliability. Choose from a 500 GB hard disk drive (standard) or optional solid-state drives for rugged environments and faster read/ write speeds.

Store derived channels, events, and notations along with measurement data to reduce post-processing and recall important events. Export only the channels or timeframe selected to ASCII using the application Daxus software. AstroNova also provides the free AstroVIEW X software for viewing data from any AstroNova data acquisition system and exporting to other common file formats.

The built-in Lithium-Ion battery automatically charges when the system is connected to power and provides backup power for continued operation and no loss of data in the event of a power outage.

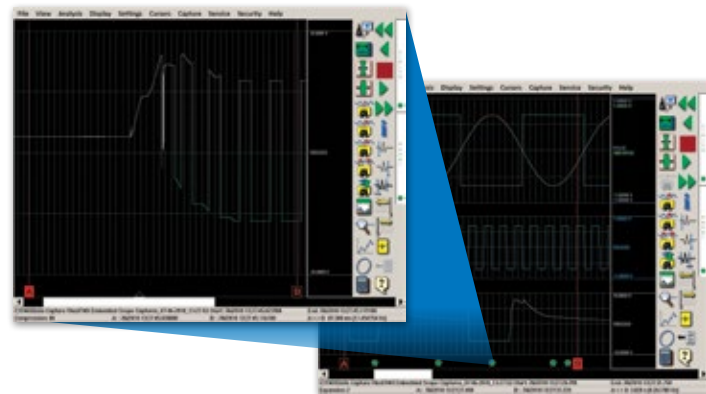
## Print

Daxus PC software enables the user to print data to a PDF file or printer in real-time, scope, or review modes.

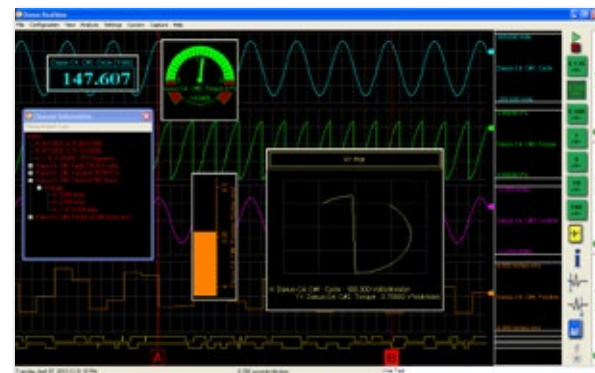
## Configure

Each Daxus chassis features two slots for signal input module, to configure your Daxus system wide variety of input modules.

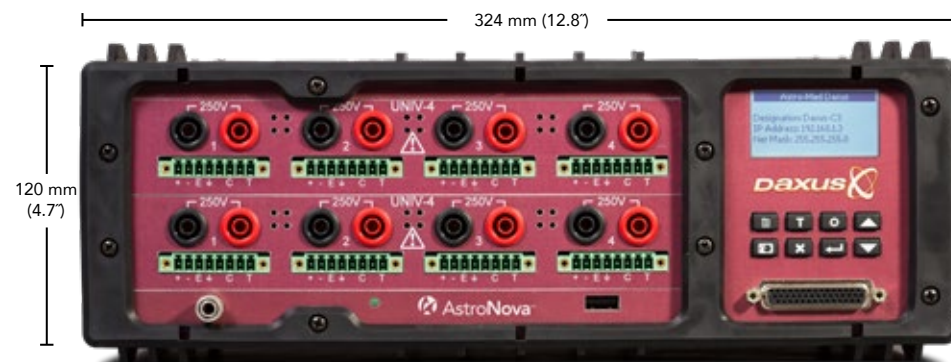
**Channel meters** provide a way to view any channel as a digital readout, bar meter, moving needle, or analog gauge making it easy to view current values at a glance. Visualize the relationships between inputs by plotting them in **XY plots**. Channel meters



Displaying the embedded scope mode



and **XY plots** can be sized and placed anywhere on the display for easy viewing. For viewing data on the go, AstroNova offers the **Daxus mobile app** which allows viewing data in real-time, review data files, and receive alerts on a smartphone or tablet.

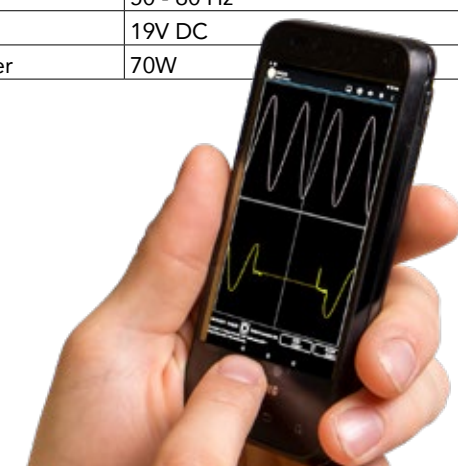


# Daxus® DXS-100 System Specifications

System	
Connectivity	Gigabit Ethernet (10/100/1000Base-T), WiFi optional
Input Module Slots	2
Link Ports	Multiple unit synchronization for higher channel counts
Digital I/O	8 Digital, alarms, programmable I/O
Data Acquisition	
Recording Method	Internal disk drive
Maximum Sample Rate	200 kS/s per channel
Minimum Sample Rate	1 sample/100 seconds
Multiple Sample Rates	up to 3 different rates, simultaneously
Total Capacity	500 GB (400 GB or up to 1.6 TB SSD)
General	
Maximum Channels	48 Expandable to 480
Pre-capture Filter	Lowpass, highpass, bandpass, bandstop
Advanced DSP	RMS, Integration, Differentiation
Post-capture Filter	Lowpass, highpass, bandpass, bandstop
Counter Modes, DSP	Gated time frequency counter, cycle based frequency counter, pulse counter, pulse width detector, period width detector, duty cycle detector, quadrature counter, edge separator (module dependent)
Math Functions	Addition, Subtraction, Multiplication, Division, Trigonometric, Statistical and other general math functions
Calibration	Semi-automated to external reference
Additional Features	
GPS	For time and location
IRIG Timestamp	IRIG timecodes IRIG A,B,E,G,NASA 36
CAN Bus	Support for CAN signal acquisition, 2 Can Bus Networks
Wireless	With USB to WiFi Adapter Only
Unit DC Power	
Input Voltage	9-36 VDC or 43-101 VDC
Power Consumption	60 W Max (35W Typical)
Unit AC Power (Adapter Included)	
Input voltage	100-240 VAC
Frequency	50 - 60 Hz
Output voltage	19V DC
Maximum Power	70W

Battery	
Battery Type	Lithium Ion (rechargeable)
Charge Time	4 Hours
Battery Life	20 minutes on single charge
Physical	
Enclosure	Aluminum
Dimensions (inches)	324 mm W x 180 mm D x 120 mm H (12.8" W x 7" D x 4.7" H) with endcaps
Weight	3.2 kg (7 lbs.)
Compliance	
Safety	EN 61010-1:2010, UL 61010-1:2012, CSA C22.2:2012
EMC	FCC Part 15, Subpart B, Class A, EN 61326
Power Harmonics	IEC1000-3-2
Environmental	
Operating Temp	32 to 104 °F (0 to 40 °C)
Storage Temp	-20 to 60 °C (-4 to 140 °F)
Operating Humidity	10% to 90% non condensing
Shock	MIL-810-F Method 516.5, Procedure I*
Vibration	MIL-810-F Method 514.5, Procedure I*

\*With solid state drive option



View real-time data with the Daxus mobile app



# Daxus® Options and Accessories

Part Number	Model	Description
<b>Chassis &amp; Modules</b>		
42870000	DXS-100	DXS-100 multi-channel data acquisition system with built-in hard drive
32950005	ISEV-4 DAX	4-Channel Isolated Voltage Module (accepts up to 250 Vrms)
32950000	UNIV-4 DAX	4-Channel Universal Module up to 250Vrms, DC Bridge, Thermocouple, RTD and IEPE/ICP Inputs
32950030	IHVM-4 DAX	4-Channel High Voltage Module (accepts up to 600 Vrms or 1000 VDC)
32950035	IHVM-4P DAX	4-Channel High Voltage Power Measurement Module (accepts up to 600 Vrms or 1000 VDC)
32950010	ITCU-16 DAX	16-Channel Thermocouple Module for Daxus with CJC and Open Thermocouple Detection
32950020	NIDX-16 DAX	16-Channel Non-Isolated Differential Module, +/- 40V Screw Terminal Inputs, 10V Analog Outputs
27432050	BLNK-D DAX	Blank Module (covers 1 module slot)
<b>Options</b>		
31862964	DAX-SSD400	DAX-SSD400 Solid-State Drive Option, 400 GB
31862968	DAX-SSD800	DAX-SSD800 Solid-State Drive Option, 800 GB
31862966	DAX-SSD1600	Optional Solid-State Drive (SSD) Upgrade, 1.6 TB
42662100	DAX-IR/GPS	DAX-IR/GPS IRIG A, B, E, G, NASA 36 time codes with GPS location and timing
42662200	DAX-CAN/GPS	DAX-CAN/GPS CAN Bus Interface with GPS location and timing
32930000	DAX-OCBB	Options Card Breakout Box provides two analog outputs, two relays, two CAN Bus ports, one IRIG input and two general purpose I/O's
<b>Accessories</b>		
27535000	DAX-ANT	DAX-ANT GPS Antenna
27537000	DAX-WIFI	DAX-WIFI Wireless USB Adaptor
32950502	ADP-T	Thermocouple Adapter for UNIV-4
32950503	ADP-R	RTD Adapter for UNIV-4
32950501	ADP-I	IEPE Adapter for UNIV-4
32940000	DCP-12	DCP-12 Power Module, 9-36V DC Input Voltage
32940100	DCP-72	DCP-72 Power Module, 43-101V DC Input Voltage
42798100	DAX-RACK	DAX-RACK Rack-mount kit for Daxus
<b>Software</b>		
14004910	DAX-SW	Daxus Offline Software additional license for one user
14180100	DAX-SWSL	Daxus Offline Software site license (5 users)
14004930	FDAS	FlexPro 9 Data Analysis Software (Standard Edition)
14180200	FDAS-PRO	FlexPro 9 Data Analysis Software (Professional Edition)
<b>Service</b>		
EW-DAX	EW-DAX	12-Month Extended Warranty with Quick-Swap Loaner
<b>Cases</b>		
42737000	SC-DAX	SC-DAX Soft Carry Case for Daxus
41047300	HC-DAX	HC-DAX Hard Pelican Transport Case
<b>Lead Sets and Probes</b>		
13442000	GL-40	General Use Lead Set contains 2 each — probe handles, right angle to straight plug test lead, test clips, and medium alligator clips (1 red, 1 black)
13441003	LC-40	Test Leads/Clips pair of test leads and pincer clips (1 red, 1 black)
13441201	LC-40S	Test Leads/Spades pair of test leads with spade connector for # 8 screw
26487100	CLM-420A	4 to 20 mA Current Loop Adaptor for current loop measurements
24661201	SL261	Current Probe reads AC or DC current, 100 A maximum
24661200	MR411	Current Probe reads AC or DC current, 600 A maximum
24661100	MR521	Current Probe reads AC or DC current, 1500 A maximum
24661300	MN255	Current Probe reads AC current, 240 A maximum
24661400	SR759	Current Probe reads AC current, 1200 A maximum
24661500	JM875	Current Probe reads AC current, 3000 A maximum
24661600	FP300A	Flexible Current Probe reads AC current, 300 A maximum
24661700	FP3000A	Flexible Current Probe reads AC current, 3000 A maximum
24661620	FP6000A	Flexible Current Probe reads AC current, 6000 A maximum
25765000	ADP-4810	High Voltage Probe reads up to 1000 Vrms
10532211	BNC-BAN-I	Connector insulated Female BNC to standard insulated double Banana plug
12360007	CABLE-BNC	Cable, Male BNC to Male BNC, 12" (30.5 cm) length



**ADP-I, ICP P/N: 32950501**  
IEPE Adapter for UNIV-4 Module



**ADP-T, TC P/N: 32950502**  
Thermocouple Adapter for UNIV-4 Module



**ADP-R, RTD P/N: 32950503**  
RTD Adapter for UNIV-4 Module



**DAX-OCBB P/N: 32930000**  
Options Card Breakout Box



**ADP-4810 P/N: 25765000**  
High Voltage Probe Reads Up to 1000 Vrms



**CLM-420A P/N: 26487000**  
4 to 20 mA Current Adapter for Current Loop Measurements



**SL261 P/N: 24661201**  
Current Probe Reads AC or DC Current, 100 A Maximum



**MR411 P/N: 24661200**  
Current Probe Reads AC or DC Current, 600 A Maximum



**MR521 P/N: 24661100**  
Current Probe Reads AC or DC Current, 1500 A Maximum



**MN255 P/N: 24661300**  
Current Probe Reads AC Current, 240 A Maximum



**SR759 P/N: 24661400**  
Current Probe Reads AC Current, 1200 A Maximum



**JM875 P/N: 24661500**  
Current Probe Reads AC Current, 3000 A Maximum



**FP300A P/N: 24661600**  
Flexible Current Probe Reads AC Current, 300 A Maximum



**FP3000A P/N: 24661700**  
Flexible Current Probe Reads AC Current, 3000 A Maximum



**FP6000A P/N: 24661620**  
Flexible Current Probe Reads AC Current, 6000 A Maximum



**GL-40 P/N: 13442000**  
General Use Lead Set



**SC-DAX P/N: 42737000**  
Soft Carry Case for Daxus



**HC-DAX P/N: 41047300**  
Hard Case for Daxus



# SMARTCORDER® DDX-100



Part Number #42960100



## Compact, Lightweight & Intelligent Data Acquisition

The SmartCorder® DDX-100 is a compact, lightweight and extremely portable all-in-one data acquisition system. As the successor to the Dash series, the DDX-100 includes everything needed to acquire, visualize, analyze and store data in one device. Weighing just 18.5 lbs. (8.6 kg), it is AstroNova's lightest all-in-one system.

- 200 kS/s per channel max sample rate
- Up to 48 channels, expandable to 480 with Daxus
- On-board signal processing reduces post processing with no latency
- GPS, IRIG, NTP synchronization
- AC or rechargeable battery operation
- Automate common tasks with Python or LabVIEW
- 500 GB standard or optional 1.6 TB solid state drive

## Product Overview

The SmartCorder® DDX-100 is the perfect data acquisition system for testing, troubleshooting, and monitoring in the field, in the lab, and on the plant floor.

With the DDX-100, users can capture up to 48 channels and record weeks or even months of data at a time. For higher channel count applications, the DDX-100 can be combined with Daxus data distributed data acquisition systems to record hundreds of channels of synchronized data.

The DDX-100 comes complete with intuitive software, making it easy for users to get up and running quickly. The on-board signal processing allows for real-time calculations, allowing users to save time and make decisions faster.

Equipped with the IHVM-4P input module, the DDX-100 is ideal for power quality measurements and is capable of performing 16 power measurements using only 4 inputs.

### Acquire

The DDX-100 features two slots that accept a variety of input modules. Each system can acquire up to 48 channels with sampling rates up to 200 kS/s per channel or as low as 0.01 samples per second for long term monitoring. The number of channels is expandable to 480 using AstroNova's Daxus distributed data acquisition platform, and all inputs can be synchronized by sharing clock signals or via GPS or IRIG.

The DDX-100 supports three different sampling rates per channel which allows users to acquire high speed and low speed data simultaneously, reducing file sizes.

With the ability to create intelligent triggers to start and stop recording based on any input channel, event (e.g. external trigger signal), or specific date and time, users can record only the data they want. Pre and post-trigger buffer sizes are configurable and triggers can be set to automatically re-arm for capturing multiple events, can also be triggered. Data captures manually.

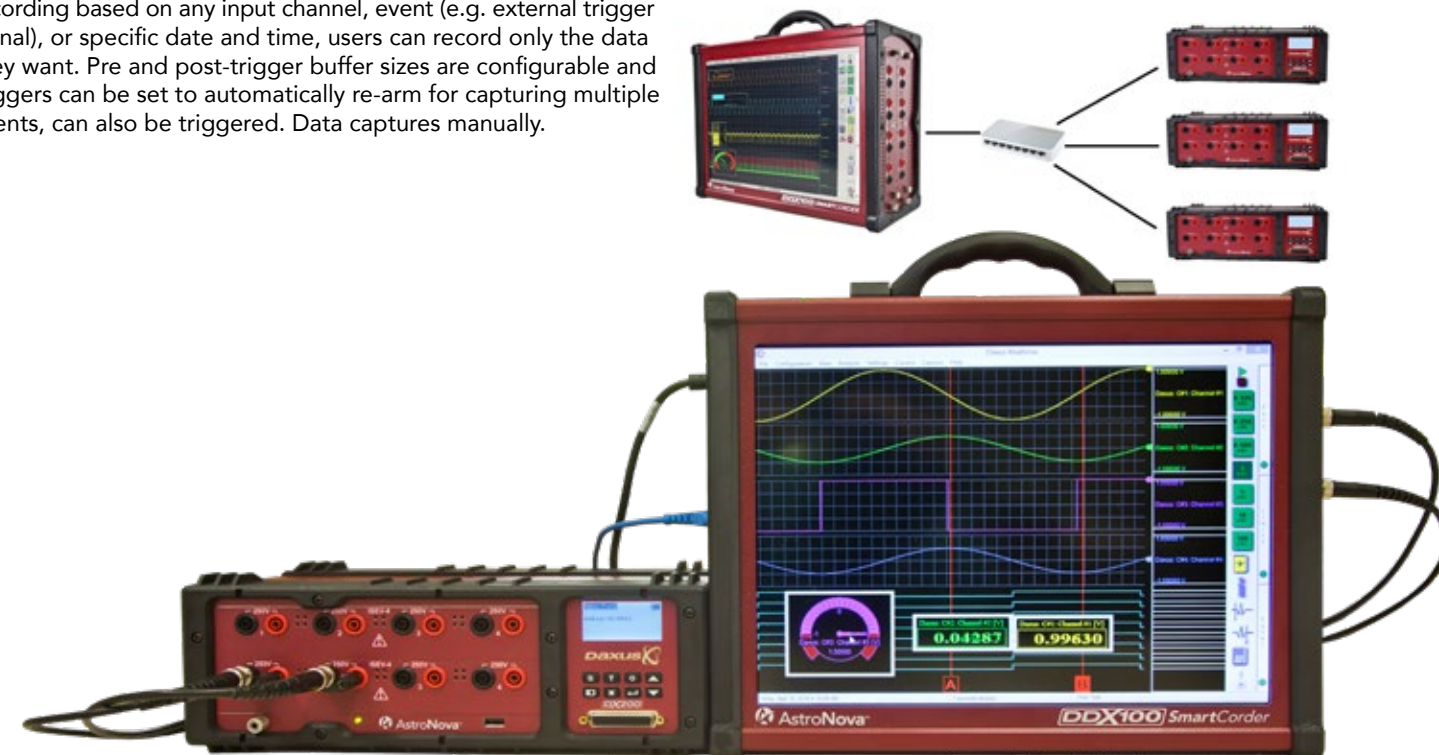
The **Utility/DIO port** contains alarm outputs and inputs as well as programmable outputs and inputs for external sample clocks, eliminating the need for a separate digital I/O module. Optional interfaces include IRIG for synchronizing data across multiple units, GPS for time and location, and CAN (up to 16 channels). Selecting these options does not require users to surrender a slot for input modules.

### Expandable for Increased Capability

The Daxus family of data acquisition systems is designed for compatibility. SmartCorder DDX-100 and Daxus easily integrate to:

- Increase Channel Counts
- Provide Networked Recording Capability
- Record Signals from Multiple Locations
- Record Dozens of Signals in a Single Application
- Combine for Distributed Data Acquisition

**Channel meters** allow users to view any channel as a digital readout, bar meter, moving needle, or analog gauge, making it easy to view current values at a glance. Users are able to visualize the relationships between inputs by plotting them in XYY plots. Channel meters and XYY plots can be sized and placed anywhere on the display for easy viewing.



## Analyze

The DDX-100 provides powerful tools to help users analyze data quickly and easily. The built-in digital signal processing (DSP) capabilities allow users to create derived channels, apply custom filters, and perform frequency or counter measurements on a per-channel basis.

The derived channel feature provides users with the ability to create calculated channels based on user-defined equations and up to four input channels. Derived channels are calculated in real-time and can be displayed and recorded along with the original input channels in real-time or review mode.

To aid in analyzing acquired data, cursors provide built-in measurements such as average, Min-Max, Peak-Peak, Slope, RMS, Sum, Std Deviation, and more. Users can also configure Fourier Transform windows for viewing and analyzing frequency content.

Advanced counter and timing functions provide common frequency measurements and eliminate the need for a separate counter/timer module, regardless of the input module type. Available functions include frequency, duty cycle, edge separation, quadrature encoder, gated pulse counter, pulse width, and more.

**User Notes** can also be added during an acquisition and are saved as part of the data file for review.

Data Review allows users to review captured data while still recording. The user-defined cursors offer the option to perform measurements in real-time, scope and review modes. Select from standard measurements including average, Min-Max, Peak -Peak, Slope, RMS, and others.

Users can review data on their PC using the optional DDX Offline Software, with the option to extend and automate analysis and control functions using Python scripting and LabVIEW.

## Store

With all data stored locally on an internal hard drive, users have the option to choose from a 500 GB hard disk drive (standard) or up to a 1.6 TB optional solid state drive (recommended).

The DDX-100 comes with a built-in Lithium-Ion battery that automatically charges when the system is connected to power and provides backup power for continued operation (45 minutes typical) with no loss of data.

Storing derived channels, events and notations, along with measurement data, users can easily reduce post-processing and recall important events. Using the included application software, users are also able to export only the channels or time frame selected to ASCII.

AstroNova provides free AstroVIEW X software for viewing data from any AstroNova data acquisition system on a PC with the option to export to other common file formats.

## Print

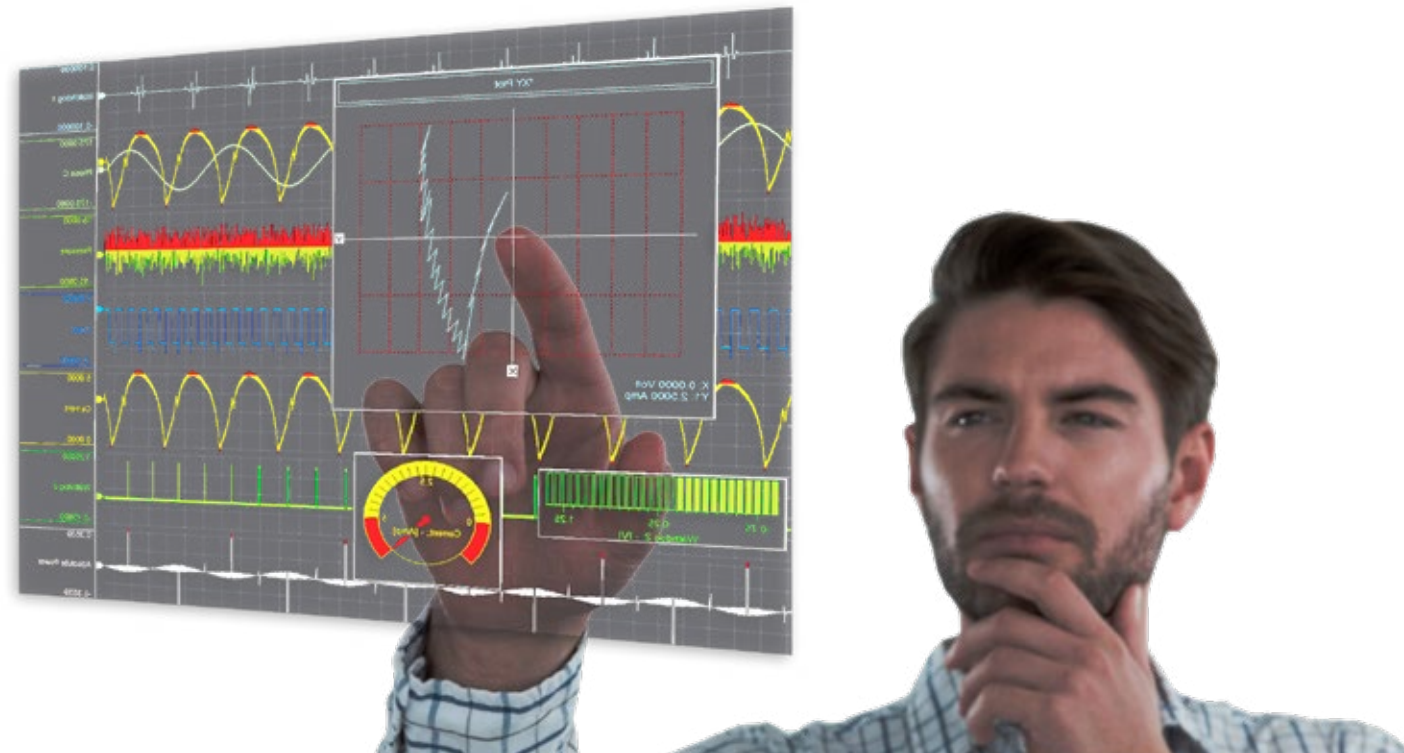
The SmartCorder DDX-100 software enables users to print data to a PDF file in real-time, scope, or review modes.

# SmartCorder® DDX-100 System Specifications

System	
Display	15" touch panel with 1024x768 resolution
Connectivity	Gigabit Ethernet (10/100/1000Base-T), Wi-Fi optional
Input Module Slots	2
Data Acquisition	
Recording Method	Internal disk drive
Maximum Sample Rate	200 kS/s per channel
Minimum Sample Rate	1 sample/100 seconds
Multiple Sample Rates	Pp to 3 different rates simultaneously
Total Capacity	500 GB (400 GB or up to 1.6 TB SSD)
General	
Maximum Channels	48 Expandable to 480
Pre-capture Filter	Lowpass, highpass, bandpass, bandstop
Advanced DSP	RMS, Integration, Differentiation
Post-capture Filter	Lowpass, highpass, bandpass, bandstop
Counter Modes, DSP	Gated time frequency counter, cycle based frequency counter, pulse counter, pulse width detector, period width detector, duty cycle detector, quadrature counter, edge separator (module dependent)
Math Functions	Addition, Subtraction, Multiplication, Division, Trigonometric, Statistical and other general math functions
Calibration	Semi-automated to external reference
Additional Features	
GPS	For time and location
IRIG Timestamp	IRIG timecodes IRIG A,B,E,G,Nasa 36
CAN Bus	Support for CAN signal acquisition, 2 Can Bus Networks
Wireless	With USB to WiFi Adapter Only

Unit Power	
Input Voltage	100-240 VAC, 50/60 Hz (47 Hz to 63 Hz)
Maximum Power	120 Watt Max. (90 Watt typical)
Battery	
Type	Lithium-Ion (rechargeable)
Charge Time	4 hours
Battery Life	Up to 1 hour on a single charge (45 minutes typical)
Physical	
Dimensions (inches)	11.8" H x 14.4" W x 6.6" D (300 mm H x 366 mm W x 168 mm D)
Weight	18.5 lbs. (8.4 kg) including signal input modules
Compliance	
Safety	EN 61010-1:2010, UL 61010-1:2012, CSA C22.2:2012
EMC	FCC Part 15, Subpart B, Class A, EN 61326
Power Harmonics	IEC1000-3-2
Environmental	
Operating Temp	32 to 104 °F (0 to 40 °C)
Storage Temp	-20 to 60 °C (-4 to 140 °F)
Operating Humidity	10% to 90% non condensing
Shock	MIL-810-F Method 516.5, Procedure I*
Vibration	MIL-810-F Method 514.5, Procedure I*

\*With solid state drive option



SmartCorder® DDX-100 can be configured to measure 8 channels of "Universal" signals including Voltage (250 VRMS or DC), Thermocouple, DC Bridge, RTD and IEPE Accelerometer inputs. High Voltage (600 VRMS or DC) or up to 32 channels of 40 VFS are also available.





# SmartCorder® DDX-100 Options and Accessories

Part Number	Model	Description
<b>Chassis &amp; Modules</b>		
42960100	DDX-100	Multi-Channel Data Acquisition System Chassis accepts up to two Input Modules (Windows 10)
32950605	ISEV-4 DDX	4-Channel Isolated Voltage Module (accepts up to 250 Vrms)
32950600	UNIV-4 DDX	4-Channel Universal Voltage Module for up to 250 Vrms, DC Bridge, Thermocouple, RTD and IEPE
32950630	IHVM-4 DDX	4-Channel High Voltage Module (accepts up to 600 Vrms or 1000 VDC)
32950635	IHVM-4P DDX	4-Channel High Voltage Power Measurement Module (accepts up to 600 Vrms or 1000 VDC)
32950610	ITCU-16 DDX	16-Channel Thermocouple Module for DDX-100 with CJC and Open Thermocouple Detection
32950620	NIDX-16 DDX	16-Channel Non-Isolated Differential Module, +/- 40V Screw Terminal Inputs, 10V Analog Outputs
32950690	BLNK-D DDX	Blank Module (covers 1 module slot)
<b>Options</b>		
42662100	DAX-IR/GPS	DAX-IR/GPS IRIG A, B, E, G, NASA 36 time codes with GPS location and timing
42662200	DAX-CAN/GPS	DAX-CAN/GPS CAN Bus Interface with GPS location and timing
32930000	DAX-OCBB	Options Card Breakout Box provides two analog outputs, two relays, two CAN Bus ports, one IRIG input and two general purpose I/O's
41284004	DDX-SSD400	Optional Solid-State Drive (SSD) Upgrade, 400 GB Capture Drive & 400 GB System Drive
41284008	DDX-SSD800	Optional Solid-State Drive (SSD) Upgrade, 800 GB Capture Drive & 400 GB System Drive
41284016	DDX-SSD1600	Optional Solid-State Drive (SSD) Upgrade, 1.6 TB Capture Drive & 400 GB System Drive
<b>Accessories</b>		
27535000	DAX-ANT	DAX-ANT GPS Antenna
27537000	DAX-WIFI	DAX-WIFI Wireless USB Adaptor
32950502	ADP-T	Thermocouple Adapter for UNIV-4
32950503	ADP-R	RTD Adapter for UNIV-4
32950501	ADP-I	IEPE Adapter for UNIV-4
<b>Software</b>		
14004912	DDX-SW	DDX-100 SMARTCORDER Offline Software
14004930	DDX-SWSL	DDX-100 SMARTCORDER Offline Software Site License (5 Users)
14180100	FDAS	FlexPro 9 Data Analysis Software (Standard Edition)
14180200	FDAS-PRO	FlexPro 9 Data Analysis Software (Professional Edition)
<b>Service</b>		
EW-DDX	EW-DDX	12-Month Extended Warranty with Quick-Swap Loaner
<b>Cases</b>		
41047200	SC-DDX	Soft Carry Case for DDX-100 SMARTCORDER
41047220	HC-DDX	Hard Pelican Carry Case for DDX-100 SMARTCORDER
<b>Lead Sets and Probes</b>		
13442000	GL-40	General Use Lead Set contains 2 each — probe handles, right angle to straight plug test lead, test clips, and medium alligator clips (1 red, 1 black)
13441003	LC-40	Test Leads/Clips pair of test leads and pincer clips (1 red, 1 black)
13441201	LC-40S	Test Leads/Spades pair of test leads with spade connector for # 8 screw
26487100	CLM-420A	4 to 20 mA Current Loop Adaptor for current loop measurements
24661201	SL261	Current Probe reads AC or DC current, 100 A maximum
24661200	MR411	Current Probe reads AC or DC current, 600 A maximum
24661100	MR521	Current Probe reads AC or DC current, 1500 A maximum
24661300	MN255	Current Probe reads AC current, 240 A maximum
24661400	SR759	Current Probe reads AC current, 1200 A maximum
24661500	JM875	Current Probe reads AC current, 3000 A maximum
24661600	FP300A	Flexible Current Probe reads AC current, 300 A maximum
24661700	FP3000A	Flexible Current Probe reads AC current, 3000 A maximum
24661620	FP6000A	Flexible Current Probe reads AC current, 6000 A maximum
25765000	ADP-4810	High Voltage Probe reads up to 1000 Vrms
10532211	BNC-BAN-I	Connector insulated Female BNC to standard insulated double Banana plug
12360007	CABLE-BNC	Cable, Male BNC to Male BNC, 12" (30.5 cm) length



**ADP-I, ICP P/N: 32950501**  
IEPE Adapter for UNIV-4 Module



**ADP-T, TC P/N: 32950502**  
Thermocouple Adapter for UNIV-4 Module



**ADP-R, RTD P/N: 32950503**  
RTD Adapter for UNIV-4 Module



**DAX-OCBB P/N: 32930000**  
Options Card Breakout Box



**ADP-4810 P/N: 25765000**  
High Voltage Probe Reads Up to 1000 Vrms



**CLM-420A P/N: 26487000**  
4 to 20 mA Current Adapter for Current Loop Measurements



**SL261 P/N: 24661201**  
Current Probe Reads AC or DC Current, 100 A Maximum



**MR411 P/N: 24661200**  
Current Probe Reads AC or DC Current, 600 A Maximum



**MR521 P/N: 24661100**  
Current Probe Reads AC or DC Current, 1500 A Maximum



**MN255 P/N: 24661300**  
Current Probe Reads AC Current, 240 A Maximum



**SR759 P/N: 24661400**  
Current Probe Reads AC Current, 1200 A Maximum



**JM875 P/N: 24661500**  
Current Probe Reads AC Current, 3000 A Maximum



**FP300A P/N: 24661600**  
Flexible Current Probe Reads AC Current, 300 A Maximum



**FP3000A P/N: 24661700**  
Flexible Current Probe Reads AC Current, 3000 A Maximum



**GL-40 P/N: 13442000**  
General Use Lead Set



**FP6000A P/N: 24661620**  
Flexible Current Probe Reads AC Current, 6000 A Maximum



**SC-DDX P/N: 41047200**  
Soft Carry Case for DDX-100

# UNIV-4



## Universal Module

The UNIV-4 is a 4-channel universal input module that measures voltage, temperature, strain, pressure, acceleration, current, and more. This module accepts voltages up to 250 Vrms and a wide variety of sensors including thermocouples, RTD's, bridge-based sensors, and accelerometers. Ideal for mixed signal applications, the UNIV-4 provides maximum flexibility for acquiring different types of inputs with a single module.

- 4 Universal inputs
- Accepts thermocouple, RTD, bridge based sensors, and IEPE type sensors
- Simultaneous sampling at up to 200kS/s/ch
- 16-bit resolution
- High accuracy
- Built-in counter and timer functions
- 250 VRMS or DC Cat II isolation



ADP-I, ICP  
Part Number:  
32950501



ADP-T, TC  
Part Number:  
32950502



ADP-R, RTD  
Part Number:  
32950503

Part Number #32950000



UNIV-4 for  
DAXUS®  
**DXS-100**

Part Number #32950605

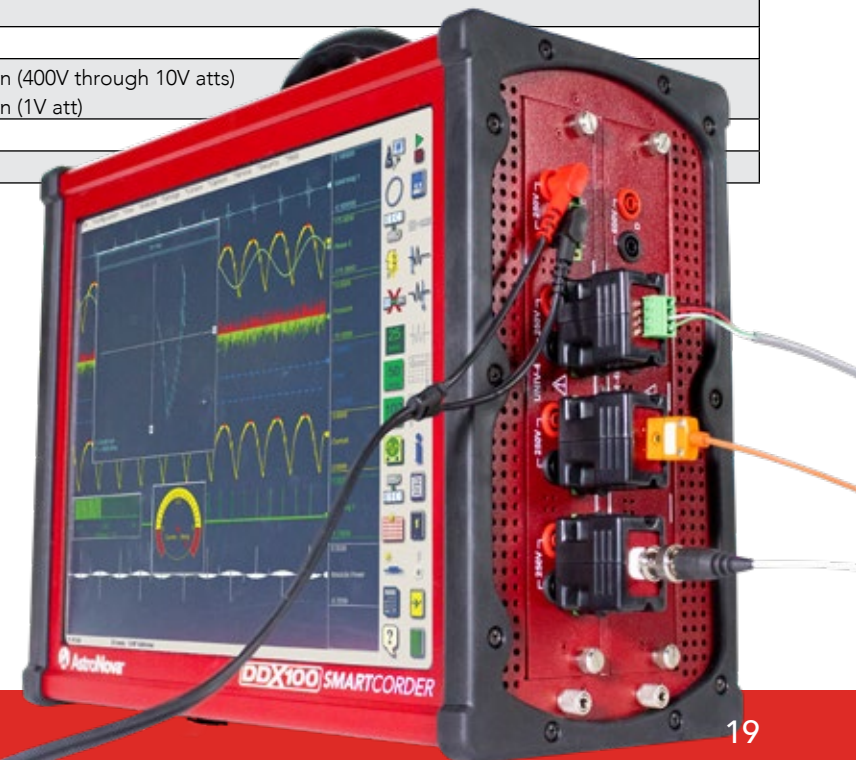


UNIV-4 for  
SMARTCODER®  
**DDX-100**

## UNIV-4 Specifications

COMMON SPECIFICATIONS	
Channels Per Module	4
Rated Isolation	250 VRMS or DC, CAT II (iso-common to chassis and other iso-commons)
Frequency Counter Capability	All channels. Software selectable.
Counter Modes	Gated time frequency counter, cycle-based frequency counter, pulse event counter, gated pulse event counter, quadrature counter, pulse width detector, period width detector, duty cycle detector, edge separation detector.
Frequency ctr range (menu)	Up to 80 KHz
Frequency ctr range (spec'd)	2 - 40 KHz
Frequency ctr accuracy	± 0.07% of Measurement + .002 Hz
Min counter input amplitude	25% of span for freq and pulse counters, 90% of span for all other modes
Pulse counter range	4000000000 maximum. (16 bit display resolution)
Pulse width accuracy	.002% of measurement + .00167% of span + 0.7 µs
Pulse width range	25 µs - 2500000
Edge separation accuracy	.002% of measurement + .00167% of span + 0.7 µs
Edge separation range	25 µs - 5000000 µs
Period width accuracy	.001% of measurement + .00167% of span + 0.7 µs
Period width range	25 µs - 100000 µs (10 Hz - 40 KHz)
Duty cycle accuracy	.5% (Inputs in the 1 Hz - 5 KHz range with 5% - 95% duty cycles)
Counter Timebase	50 MHz
Cold Start Drift	0.1% of attenuator (60 min.)

SINGLE ENDED INPUT	
Connector	Guarded banana jacks (red/black)
Input	Single-ended, AC/DC coupled
Sample Rate	200 kS/s/ch
A/D	16 bit SAR (one per channel)
Anti-Aliasing Filter	4 pole Bessel
Bandwidth	40 KHz (-3dB)
AC Coupled 3dB Point	< 0.54 Hz (0.47 Hz typ)
Off Ground Measurements	Yes
Zero Suppression	Digital.
Attenuator Ranges	1, 10, 100, 200 and 400 Volt
Measurement Ranges	± 400 V (400 VFS or 800 VFS w/ zero offset), ± 200 V (200 VFS or 400 VFS w/ zero offset), ± 100 V (100 VFS or 200 VFS w/ zero offset), ± 10 V (10 VFS or 20 VFS w/ zero offset), ± 1 V (1 VFS or 2 VFS w/ zero offset. 0.1V min span)
Max Rated Input	250 Vrms or DC, Cat II
Max Transient Input	± 800 V peak (not to exceed 250Vrms)
DC Accuracy (25°C)	± 0.06% of attenuator
Overshoot	< 0.25%
Intrinsic Noise (pk-pk)	< 0.02% of attenuator + .02% of span (400V through 10V atts) < 0.16% of attenuator + .02% of span (1V att)
IMR at 60 Hz	Better than -80 dB
Min Input Impedance	> 1 Megohm



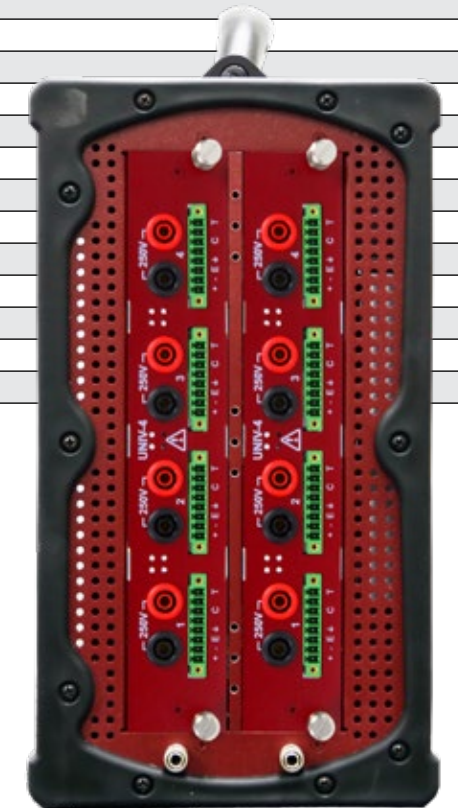
Different inputs with  
a single module

# UNIV-4 Specifications

DIFFERENTIAL INPUT	
Connector	8 wire screw terminal
Input	Differential, DC coupled
Sample Rate	200 kS/s/ch
A/D	16 bit SAR (one per channel)
Anti-Aliasing Filter	4 pole Bessel
Bandwidth	35 KHz
Measurement Ranges	± 1000 mV, ± 100 mV, ± 20 mV
Max Transient Input	± 20 V (no damage)
Common Mode Voltage	± 10 V
Zero Suppression	digital.
DC Accuracy (25°C)	± 0.06% of attenuator
Overshoot	< 0.25%
Intrinsic Noise	< 0.02% of attenuator + .02% of span (1000 mV Att), < 0.05% of attenuator + .02% of span (100 mV Att) < 0.18% of attenuator + .02% of span (20 mV Att)
Input Impedance	> 300 KΩ (150 KΩ balanced to isolated common)
CMR at 60 Hz	> 85 dB
Excitation	DC Voltage - adjustable, 0.1 to 10 V. 30 mA maximum
Excitation Accuracy	0.05 V voltage mode
RESISTANCE INPUT (32950503 ADP-R option)	
Connector	4 wire screw terminal
Input	Differential, DC coupled
Sample Rate	2.5 samples/sec
A/D	24 bit SigmaDelta (one per channel)
Anti-Aliasing Filter	Inherent
Measurement Ranges	0 to 1500 Ω
Max Transient Input	± 20 V (no damage)
Accuracy	0.03% of measurement + 0.04 Ω
DCVM INPUT	
Connector	8 wire screw terminal
Input	Differential, DC coupled
Sample Rate	2.5 samples/sec
A/D	24 bit SigmaDelta (one per channel)
Anti-Aliasing Filter	Inherent
Measurement Ranges	-10 mV to + 100 mV
Max Transient Input	± 20 V (no damage)
Common Mode Voltage	± 10V
Zero Suppression	Digital.
DC Accuracy (25°C)	20 V (no damage) 0.04% of attenuator
Intrinsic Noise (pk-pk)	< 0.005% of attenuator
Input Impedance	> 300 KΩ (150 KΩ balanced to isolated common)
RTD INPUT (32950503 ADP-R option)	
Connector	4 wire screw terminal
Input	Differential, DC coupled
Sample Rate	2.5 samples/sec
A/D	24 bit SigmaDelta (one per channel)
Anti-Aliasing Filter	Inherent
Measurement Ranges	Pt100(385) -200 to 800°C, Pt100(3916) -200 to 630°C (-200 to 800 on menu)
Max Transient Input	± 20 V (no damage)
Resolution	0.01 °C
Supported RTD Probe types	Pt 100 - 385 (DIN 43760, IEC751 and ASTM 1137), Pt 100 - 3916 (JIS C1604), Pt 100 - 3926 (reference grade) – future
DC Accuracy (25°C)	Pt 100 - 385 0.04% of measurement + 0.1°C, Pt 100 - 3916 0.1% of measurement + 0.2°C
Linearization	Yes

# UNIV-4 Specifications

THERMOCOUPLE INPUT (32950502 ADP-T needed for internal CJC)	
Connector	Type U miniature thermocouple
Input	Differential, DC coupled
Sample Rate	2.5 samples /sec
A/D	24 bit SigmaDelta (one per channel)
Anti-Aliasing Filter	Inherent
Specified Range Type J:	-210 to 1200°C
Specified Range Type K:	-200 to 1372°C
Specified Range Type E:	-200 to 1000°C
Specified Range Type T:	-200 to 400°C
Specified Range Type N:	-200 to 1300°C
Specified Range Type B:	600 to 1820°C (250 to 1820 on menu)
Specified Range Type R:	0 to 1767°C (-20 to 1768 on menu)
Specified Range Type S:	0 to 1767°C (-20 to 1768 on menu)
Specified Range Type C:	0 to 2316°C
Max Transient Input	± 20 V (no damage)
Common Mode Voltage	± 10V
Resolution	0.01°C
Thermocouple types	J,K,E,T,N,B,R,S,C
IEPE (LIVM) INPUT (32950501 ADP-I option)	
Connector	Isolated BNC
Input	Single Ended, AC coupled with constant current excitation
Sample Rate	200 kS/s/ch
A/D	16-bit SAR (one per channel)
Anti-Aliasing Filter	4 pole Bessel
Measurement Ranges	± 10 V (1 to 20 VFS)
Max Transient Input	± 30 V (no damage)
Accuracy (25°C)	± 0.1% of attenuator
Overshoot	< 0.25%
Intrinsic Noise (pk-pk)	< 0.02% of attenuator + .02% of span
Min Input Impedance	> 1 Megohm
IMR at 60 Hz	Better than -85 dB
Excitation	4.5 mA DC current
Excitation Accuracy (25°C)	20%
Excitation Compliance Voltage	20V (Approx 24V open circuit voltage)
Excitation Protection	Short Circuit Protected
Coupling Time Constant	10 s (± 30%) (10µF / 1MΩ)
Rated Isolation	30 Vrms or 60 VDC



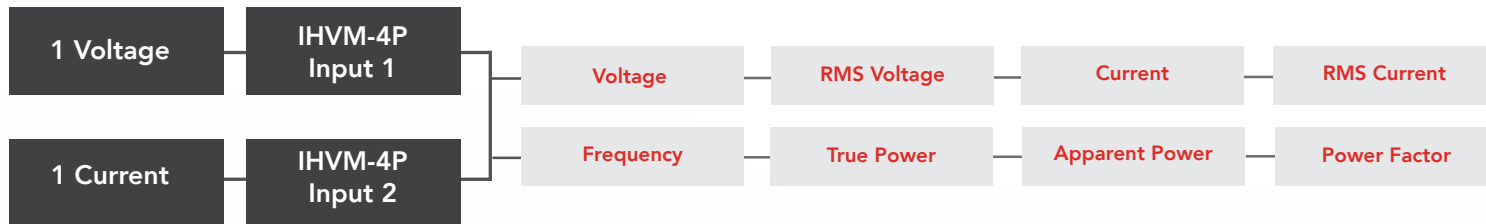
# IHVM-4P



## 4-Channel Isolated High Voltage Power Module

4-Channel Isolated High Voltage Module accepts up to 600 Vrms or 1000 VDC (Cat III) or 1,000 Vrms or DC (Cat II) with 16 selectable measurements including power quality.

- Acquire 8 power quality measurements with only one pair of voltage and current
- 4 high voltage inputs (up to 1,000 V)
- Multiple input ranges provide maximum resolution
- Simultaneous sampling up to 50 kS/s/ch
- 16-bit Resolution
- Built-in counter and timer functions



Part Number #32950035



IHVM-4P for  
DAXUS®  
**DXS-100**

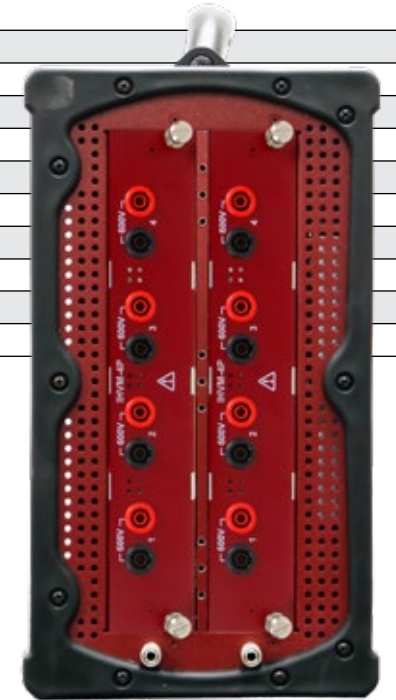
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IHVM-4P for  
SMARTCORDER®  
**DDX-100**

## IHVM-4P Specifications

INPUTS	
Input Channels Per Module	4
Viewable Channels Per Module	16 (includes processed math channels)
Connector	Guarded banana jacks (red/black)
Input	Differential, DC coupled
Bandwidth	14 kHz (-3dB)
Rated Isolation	600 VRMS or DC, Cat III (channel to chassis and other channels), 1000 VDC, Cat II (channel to chassis and other channels)
Sample Rate	50 kS/s/ch
A/D	16 bit SAR (one per channel)
Anti-Aliasing Filter	4 pole Bessel
Cold Start Drift	< 0.02% att + .02% span (60 min.)
Off Ground Measurements	Yes
Zero Suppression	Digital.
Attenuator Ranges	40, 200 and 1000 Volt
Measurement Ranges	± 1000 V (1000 VFS or 2000 VFS w/ zero offset), ± 200 V (200 VFS or 400 VFS w/ zero offset), ± 40 V (40 VFS or 80 VFS w/ zero offset.)
Minimum Span	2VFS
Max Rated Input	600 Vrms or DC, Cat III, 1000V DC, Cat II
DC Accuracy (25°C)	± 0.06% of attenuator
Overshoot	< 0.1%
Intrinsic Noise (pk-pk)	< 0.047% of attenuator + .013% of span (40V att), < 0.013% of attenuator + .02% of span (200V att), < 0.005% of attenuator + .024% of span (1000V att)
IMR at 60 Hz	Better than -75 dB
Crosstalk	Better than -80 dB
Minimum Input Impedance	> 10 Megohm
ADVANCED PROCESSING	
Power Calculations	True power, apparent power, power factor, cycle based RMS voltage and cycle based RMS current (Power Mode)
Math Functions	Differentiation, integration, time based RMS, Cycle Based RMS (Std Mode)
COUNTER TIMER FUNCTIONS	
Frequency Counter Capability	All channels. Software selectable.
Counter Modes	Gated time frequency counter, cycle based frequency counter, pulse width detector, period width detector, duty cycle detector.
Counter Modes (Power Mode)	Cycle based frequency counter (0.1 Hz resolution, 1.0 Hz minimum)
Frequency Ctr Range (Menu)	Up to 20 kHz
Frequency Ctr Range (Spec'd)	2 – 12 kHz (Standard Mode)
Min Counter Input Amplitude	± 0.07% of Measurement + .002 Hz (Standard Mode)
Pulse Counter Range	4000000000 maximum. (16 bit display resolution)
Pulse Width Accuracy	.002% of measurement + .00167% of span + 0.7 μs
Pulse Width Range	25 μs – 2500000
Edge Separation Accuracy	.002% of measurement + .00167% of span + 0.7 μs
Edge Separation Range	25 μs – 5000000 μs
Period Width Accuracy	.001% of measurement + .00167% of span + 0.7 μs
Period Width Range	25 μs – 100000 μs (10 Hz – 30 KHz)
Duty Cycle Accuracy	.5% (Inputs in the 1 Hz - 5 kHz range with 5% - 95% duty cycles)
Counter Timebase	50 MHz



# IHVM-4



## 4-Channel Isolated High Voltage Module

The IHVM-4 is a high voltage input module for the Daxus® DXS-100 and SmartCorder® DDX-100 data acquisition systems. The IHVM-4 is ideal for high voltage measurements at up to 200 kS/s.

- 4 high voltage inputs (up to 1,000 V)
- Multiple input ranges provide maximum resolution
- Simultaneous sampling up to 200 kS/s/ch
- 16-bit Resolution
- Built-in counter and timer functions



GL-40  
P/N: 13442000



IHVM-4 for  
DAXUS®  
**DXS-100**



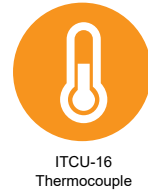
IHVM-4 for  
SMARTCORDER®  
**DDX-100**

## IHVM-4 Specifications

INPUTS	
Input Channels Per Module	4
Viewable Channels Per Module	16 (includes processed math channels)
Connector	Guarded banana jacks (red/black)
Input	Differential, DC coupled
Bandwidth	35 kHz (-3dB)
Rated Isolation	600 VRMS or DC, Cat III (channel to chassis and other channels), 1000 VDC, Cat II (channel to chassis and other channels)
Sample Rate	200 kS/s/ch
A/D	16 bit SAR (one per channel)
Anti-Aliasing Filter	4 pole Bessel
Cold Start Drift	< 0.02% att + .02% span (60 min.)
Off Ground Measurements	Yes
Zero Suppression	Digital.
Attenuator Ranges	40, 200 and 1000 Volt
Measurement Ranges	± 1000 V (1000 VFS or 2000 VFS w/ zero offset), ± 200 V (200 VFS or 400 VFS w/ zero offset), ± 40 V (40 VFS or 80 VFS w/ zero offset.)
Minimum Span	1VFS (2VFS when counters are in use)
Max Rated Input	600 Vrms or DC, Cat III, 1000V DC, Cat II
DC Accuracy (25°C)	± 0.06% of attenuator
Overshoot	< 0.25%
Intrinsic Noise (pk-pk)	< 0.18% of attenuator + .05% of span (40V att), < 0.045% of attenuator + .02% of span (200V att), < 0.015% of attenuator + .025% of span (1000V att)
IMR at 60 Hz	Better than -70 dB
Crosstalk	Better than -80 dB
Min Input Impedence	> 10 Megohm
COUNTER TIMER FUNCTIONS	
Frequency Counter Capability	All channels. Software selectable.
Counter Modes	Gated time frequency counter, cycle based frequency counter, pulse event counter, gated pulse event counter, quadrature counter, pulse width detector, period width detector, duty cycle detector, edge separation detector.
Frequency Ctr Range (Menu)	Up to 80 kHz
Frequency Ctr Range (Spec'd)	2 – 30 kHz
Frequency Ctr Accuracy	± 0.07% of Measurement + .002 Hz
Min Counter Input Amplitude	25% of span for freq and pulse counters, 90% of span for all other modes
Pulse Counter Range	4000000000 maximum. (16 bit display resolution)
Pulse Width Accuracy	.002% of measurement + .00167% of span + 0.7 μs
Pulse Width Range	25 μs – 2500000
Edge Separation Accuracy	.002% of measurement + .00167% of span + 0.7 μs
Edge Separation Range	25 μs – 5000000 μs
Period Width Accuracy	.001% of measurement + .00167% of span + 0.7 μs
Period Width Range	25 μs – 100000 μs (10 Hz – 30 kHz)
Duty Cycle Accuracy	.5% (Inputs in the 1 Hz - 5 kHz range with 5% - 95% duty cycles)
Counter Timebase	50 MHz



# ITCU-16



## Thermocouple and Low-Voltage Module

The ITCU-16 is a high-accuracy 16-channel thermocouple input module for the Daxus® DXS-100 and SmartCorder® DDX-100 data acquisition systems. The ITCU-16 is ideal for high channel count applications requiring high accuracy.

- Direct connectivity with standard Mini-TC connectors
- High accuracy (<1 deg C typical)
- High resolution (24-bit)
- 300 Vrms, Cat II rated isolation
- Open thermocouple detection (OTD)
- 50/60 Hz noise rejection
- High sample rate mode (50 samples/sec)
- Cold junction compensation



Part Number #32950010



ITCU-16 for  
DAXUS®  
**DXS-100**

Part Number #32950610



ITCU-16 for  
SMARTCORDER®  
**DDX-100**

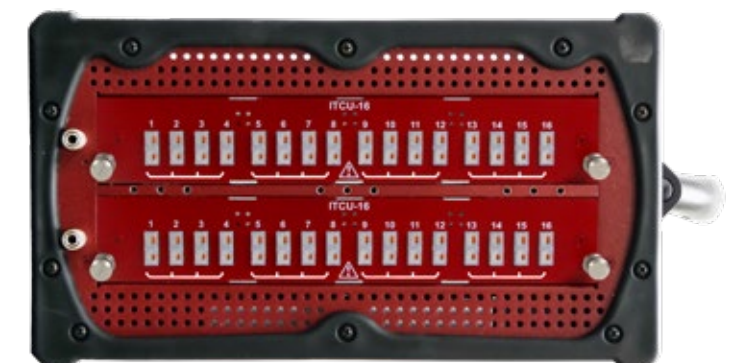
## ITCU-16 Specifications

GENERAL	
Channels Per Module	16
Connector	Type U miniature thermocouple
Rated Isolation	300 VRMS or DC, Cat II group to chassis and group to group.
Isolation voltage	3500 VDC group to chassis and group to group.
Update rates	1.0 Hz (Slow), 10 Hz (Medium), 50 Hz (Fast) (approx)
Absolute Max Input	+/- 10V (60 seconds - between any input terminal of a group of 4 channels)
A/D	Muxed 24 bit Sigma Delta (one per group of 4 channels)
Anti-Aliasing Filter	Inherent
50 Hz / 60 Hz Notch Filter	(1.0 Hz rate only)
Resolution	0.01 °C
Open thermocouple detection	Yes
Thermocouple types	J,K,E,T,N,B,R,S,C
IMR	> 110 dB @ DC
Linearization	NIST ITS-90
Frequency Counter Capability	No
Cold Start Drift	+/- 0.0025% of attenuator
Cold Junction Compensation	Selectable internal or external
Compensation Error	Included in accuracy specification

MEASUREMENT RANGES	
Type J	-210 to 1200 °C
Type K	-200 to 1372 °C
Type E	-200 to 1000 °C
Type T	-200 to 400 °C
Type N	-200 to 1300 °C
Type B	600 to 1820 °C (250 to 1820 on menu)
Type R	0 to 1767 °C (-20 to 1768 on menu)
Type S	0 to 1767 °C (-20 to 1768 on menu)
Type C	0 to 2316°C
Voltage	100 mv

INTRINSIC NOISE	
J,K,E,T,N,C (pk-pk)	< 0.2 °C (1.0 Hz Update Rate)
B (pk-pk)	< 0.1 °C (1.0 Hz Update Rate)
R,S (pk-pk)	< 0.23 °C (1.0 Hz Update Rate)
Voltage	< 0.0009 % of attenuator (1.0 Hz Update Rate)

ACCURACY (@25 °C) (1.0 Hz Update Rate)	
Type J (<0)	+/- 2.0 °C
Type J (0 to 1200)	+/- 0.9°C
Type K (<0)	+/- 2.5 °C
Type K (0 to 1372)	+/- 0.9 °C
Type E (<-100)	+/- 2.5 °C
Type E (-100 to 1000)	+/- 1.0 °C
Type T (<-100)	+/- 2.5 °C
Type T (-100 to 400)	+/- 1.0 °C
Type N (<-50)	+/- 2.0 °C
Type N (-50 to 300)	+/- 0.9 °C
Type B	+/- 1.0 °C
Type R	+/- 2.0 °C
Type S	+/- 2.0 °C
Type C (W5ReM26Re)	+/- 2.5 °C
Voltage	+/-0.01% of attenuator



# NIDX-16

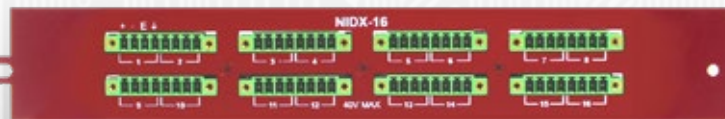


## 16-Channel Non-Isolated Differential Voltage Module

The NIDX-16 input module provides 16 non-isolated differential voltage inputs and two analog (voltage) outputs for the Daxus® DXS-100 and SmartCorder® DDX-100 data acquisition systems. Connections for this module are made via screw terminals.

- 16 voltage inputs (30 Vrms or ± 40 V DC max) and two voltage outputs (± 10V)
- Simultaneous sampling up to 20 kS/s/ch
- 16-bit resolution
- 0.04% accuracy (10V, 20V, and 40V attenuators)
- Built-in counter and timer functions
- Screw terminal or BNC connections with adaptor

Part Number #32950020



NIDX-16 for  
DAXUS®  
DXS-100

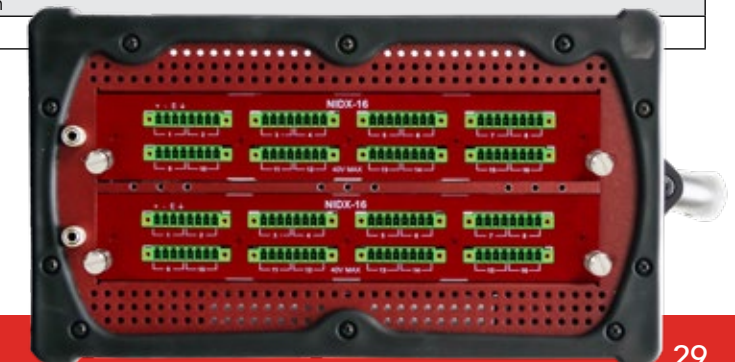
Part Number #32950620



NIDX-16 for  
SMARTCORDER®  
DDX-100

## NIDX-16 Specifications

ANALOG INPUTS	
Channels Per Module	16
Connector	8 wire screw terminals (8 connectors with 2 channels per connector)
Input	Differential, DC coupled
Bandwidth	4.5 kHz (-3dB)
Sample Rate	20 kS/s
A/D	16 bit SAR (one per channel)
Anti-Aliasing Filter	4 pole Bessel
Cold Start Drift	< 0.4% att (60 min.) - analog
Off Ground Measurements	Yes
Zero Suppression	Digital.
Attenuator Ranges	40, 20, 10, 5, 1, 0.5 Volt
Minimum Span	0.1 VFS
Measurement Ranges	± 40 V (40 VFS or 80 VFS w/ zero offset), ± 20 V (20 VFS or 40 VFS w/ zero offset), ± 10 V (10 VFS or 20 VFS w/ zero offset), ± 5 V (5 VFS or 10 VFS w/ zero offset), ± 1 V (1 VFS or 2 VFS w/ zero offset), ± 0.5 V (0.5 VFS or 2 VFS w/ zero offset)
Max Rated Input	30 Vrms or 40 VDC
Max Common Mode Voltage	± 60 V
DC Accuracy (25°C)	< 0.12% of attenuator (0.5V attenuator), < 0.10% of attenuator (1V attenuator), < 0.08% of attenuator (5V attenuator), < 0.04% of attenuator (10V, 20V and 40V attenuators)
Overshoot	< 0.5%
Intrinsic Noise (pk-pk)	< 0.05% of attenuator + 1mV (0.5V, 1V and 5V attenuators), < 0.04% of attenuator (10V attenuator), < 0.03% of attenuator (20V and 40V attenuators)
CMR at 60 Hz	Better than -70 dB (0.5 & 1V attenuators) Better than -65 dB (5V, 10V, 20V and 40V attenuators)
Min Input Impedance	> 500 Kohm
COUNTER TIMER	
Frequency Counter Capability	All channels. Software selectable.
Counter Modes	Gated time frequency counter, cycle based frequency counter, pulse event, counter, gated pulse event counter, quadrature counter, pulse width detector, period width detector, duty cycle detector, edge separation detector.
Frequency Ctr Range (menu)	Up to 8 kHz
Frequency Ctr Range (spec'd)	2 – 3 kHz
Frequency Ctr Accuracy	± 0.07% of Measurement + .002 Hz
Min Counter Input Amplitude	25% of span for freq and pulse counters, 90% of span for all other modes
Pulse Counter Range	4000000000 maximum. (16 bit display resolution)
Pulse Width Accuracy	.002% of measurement + .00167% of span + 0.7 μs
Pulse Width Range	100 μs – 335000 μs
Edge Separation Accuracy	.002% of measurement + .00167% of span + 0.7 μs
Edge Separation Range	100 μs – 5000000 μs
Period Width Accuracy	.001% of measurement + .00167% of span + 0.7 μs
Period Width Range	100 μs – 100000 μs (10 Hz – 3 KHz)
Duty Cycle Accuracy	.5% (Inputs in the 3 Hz - 3 KHz range with 5% - 95% duty cycles)
Counter Timebase	50 MHz
ANALOG OUTPUT	
Output Voltage Capability	Yes, two channels. One associated with ch 1-8 and the other ch 9-16.
Output Voltage Range	Up to ± 10V
Output Voltage Accuracy	± 0.04V
Output DAC Resolution/Speed	12 bit / 1 MHz maximum
Output Voltage Current	Up to 120 mA (Per output channel)
Output Voltage Modes	DC, Arbitrary, Sine, Square and Pulse Train
Arbitrary Memory Length	32K per channel



# ISEV-4



## 4-Channel Isolated High Voltage Module

The ISEV-4 input module provides four isolated voltage inputs with double banana connectors.

- 4 high voltage inputs (250 Vrms or  $\pm 400$  V DC)
- Simultaneous sampling at up to 200 kS/s/ch
- Full 16-bit resolution over the selected input range
- 0.04% accuracy (10V, 20V, and 40V attenuators)
- 250 Vrms or DC Cat II Rated Isolation
- Built-in counter and timer functions



ADP-4810 High Voltage Probe  
Part Number: 25765000

Part Number #32950005



ISEV-4 for  
DAXUS®  
**DXS-100**

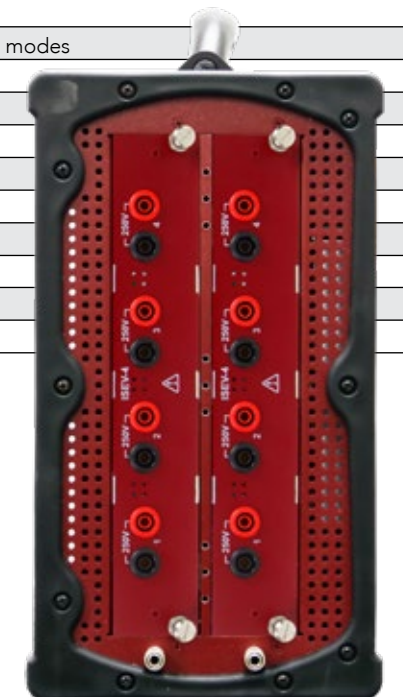
Part Number #32950605



ISEV-4 for  
SMARTCORDER®  
**DDX-100**

## ISEV-4 Specifications

ANALOG INPUTS	
Channels Per Module	4
Connector	Guarded banana jacks (red/black)
Input	Single-ended, AC/DC coupled
Bandwidth	40 kHz (-3dB)
Sample Rate	200 kS/s/ch
Rated Isolation	250 VRMS or DC, Cat II (iso-common to chassis and other iso-commons)
A/D	16 bit SAR (one per channel)
Anti-Aliasing Filter	4 pole Bessel
Cold Start Drift	< 0.1% of attenuator (60 min.)
AC Coupled 3dB Point	< 0.54 Hz
Off Ground Measurements	Yes
Zero Suppression	Digital.
Attenuator Ranges	1, 10, 100, 200 and 400 Volt
Measurement Ranges	$\pm 400$ V (400 VFS or 800 VFS w/ zero offset) $\pm 200$ V (200 VFS or 400 VFS w/ zero offset) $\pm 100$ V (100 VFS or 200 VFS w/ zero offset) $\pm 10$ V (10 VFS or 20 VFS w/ zero offset) $\pm 1$ V (1 VFS or 2 VFS w/ zero offset. 0.1V min span)
Max Rated Input	250 Vrms or DC, Cat II
Max Transient Input	$\pm 800$ V peak (not to exceed 250Vrms)
DC Accuracy (25°C)	$\pm 0.06\%$ of attenuator
Overshoot	< 0.25%
Intrinsic Noise (pk-pk)	< 0.02% of attenuator + .02% of span (400V through 10V atts) < 0.16% of attenuator + .02% of span (1V att)
IMR at 60 Hz	Better than -85 dB
Min Input Impedance	> 1 Megohm
COUNTER TIMER	
Frequency Counter Capability	Yes, all channels. Software selectable.
Counter Modes	Gated time frequency counter, cycle based frequency counter, pulse event, counter, gated pulse event counter, quadrature counter, pulse width detector, period width detector, duty cycle detector, edge separation detector.
Frequency Ctr Range (menu)	Up to 80 kHz
Frequency Ctr Range (spec'd)	2 – 40 kHz
Frequency Ctr Accuracy	$\pm 0.07\%$ of Measurement + .002 Hz
Min Counter Input Amplitude	25% of span for freq and pulse counters, 90% of span for all other modes
Pulse Counter Range	4000000000 maximum. (16 bit display resolution)
Pulse Width Accuracy	.002% of measurement + .00167% of span + 0.7 $\mu$ s
Pulse Width Range	25 $\mu$ s – 2500000
Edge Separation Accuracy	.002% of measurement + .00167% of span + 0.7 $\mu$ s
Edge Separation Range	25 $\mu$ s – 5000000 $\mu$ s
Period Width Accuracy	.001% of measurement + .00167% of span + 0.7 $\mu$ s
Period Width Range	25 $\mu$ s – 100000 $\mu$ s (10 Hz – 40 kHz)
Duty Cycle Accuracy	.5% (Inputs in the 1 Hz - 5 kHz range with 5% - 95% duty cycles)
Counter Timebase	50 MHz







# TMX<sup>®</sup>



## Full Featured, Easy to Use, All-in-One Data Acquisition

The TMX<sup>®</sup> is an all-in-one, out of the box DAQ solution designed to acquire, visualize and analyze data. Tested to MIL-STD-810F standards, it will withstand the rigors of field testing, production environments and lab work. With its user-friendly software, the TMX has proven itself year after year, becoming a trusted and reliable solution for critical industry-leading applications around the world.

- 800 kS/s per channel max sample rate
- 50 MS/s with optional scope card
- Up to 96 channels
- Audio and video inputs synchronized with analog and digital data
- GPS, IRIG, NTP synchronization
- Automate common tasks with Python or LabVIEW
- Available 18-ch TMX with 3 universal isolated voltage modules (TMX-18) and rack mount version (TMX-R)
- Enhanced security via Windows 10 and hard drive

## Product Overview

Rugged and easy-to-use, the TMX all-in-one data acquisition system is a complete solution with everything you need to acquire, visualize, and analyze data quickly. All TMX models offer a modular and scalable architecture allowing systems to be set for your specific application. Operation of the TMX is quick and effortless with its intuitive user interface, 17 inch multi-touch display and variety of input modules.

The TMX and its user-friendly software have proven itself year after year, becoming a trusted and reliable solution for critical applications around the world. It is ideal for a variety of uses including maintenance and troubleshooting, R&D, verification and validation. Tested to MIL-STD-810F standards, it will withstand the rigors of field testing, production environments and lab work.

### Acquire

The modular architecture of TMX allows for customization for your specific application.

TMX offers a variety of changeable input modules for acquiring high-voltage, temperature, pressure, strain, digital input, and more at rates up to 800 kS/s/ch synchronized with optional video and audio inputs.

Built-in signal conditioning simplifies signal connections and eliminates the need for additional hardware. The optional CAN interface also allows you to display and record CAN data along with analog and digital signals.

TMX systems are available in multiple configurations and the number of channels can be increased up to 96 with the TMX-E expansion chassis.

With full-featured software, TMX offers a wide array of advanced features. Setup is quick and effortless complete with icon and menu-based software.

### Features Include:

- Advanced triggering capabilities to start and stop recording based on changes in your input signals. Use AND/OR operators to ensure that you trigger only on events needed provide networked recording capability
- Embedded scope mode with intelligent triggering allows for long term trending and simultaneous capture of high-speed events. The two-channel scope card also extends sampling rate to 50 MS/s for both channels
- Up to four independent sampling rates per channel to optimize file sizes by assigning higher sample rates to critical signals
- Circular data buffer allows you to set and record large amounts of pre-trigger data
- Advanced filtering options such as low pass, high pass, RMS, band pass and band stop filtering

### Measure

The utility/DIO port provides an alarm output line that can be used to trigger an external process when user-defined alarm conditions occur. With the DIOC-16 module, you can control up to 8 analog and 32 digital outputs.

### Visualize

All TMX models come up with a 17" touch display for viewing data. This allows data to be viewed as a scrolling chart or a variety of indicators such as analog gauges, meters, bar graphs, and digital readouts on a per-channel basis. Scope Mode allows you to view high-speed data in a layout that is familiar to users of oscilloscopes.

Set your alarms to provide a visual indicator when signals exceed user-specified limits and control digital and analog outputs based on alarms.

For data review, the TMX allows you to review or transfer previously acquired data without interrupting the current acquisition. Our QuickLook data compression technology allows you to scroll through GB of data in seconds.

The TMX AstroDock accessory makes it easy to transfer and share large amounts of data.



## Analyze

The TMX platform provides powerful analysis capabilities that make it easy to analyze data anywhere.

Place cursors to automatically determine time between events and calculate average, Min/Max, RMS, Sum, Std. Deviation, and many other common statistics. You can also apply advanced filtering options or count user-defined events.

The derived channel feature minimizes the need for post-processing by allowing for custom channel creation using advanced real-time math functions and built-in digital signal processing (DSP) technologies. These channels can be stored along with sensor data and are available for post-processing modification.

TMX makes transferring data easy through built-in Ethernet and USB 3.0. For sharing data with colleagues, each TMX includes free AstroView X software, which allows reviewing and converting data into common formats.

With the TMX Offline software, create setups, transfer files, review, and analyze data on any Windows PC.

## Store

All TMX systems feature a dedicated 1 TB removable drive (solid-state drive optional available) to record data. Removable drives provide enhanced security by allowing you to exchange drives for recording classified and non-classified data easily. Additional drives can be purchased for archiving data.

The optional AstroDock unit provides an easy way to connect TMX data drives to a Windows PC.

## Print

Print screen captures of your data to a Windows-compatible printer via USB 3.0. For applications requiring printed charts, AstroNova offers the Real-Chart Network Printer, RC-300, printing up to 32 channels on 16.3" wide format chart paper. The Real-Chart Network Printer prints annotations for permanent record.

## Automate and Integrate

The TMX software supports Python scripting for automating common tasks and increasing productivity. Available LabVIEW drivers make it easy to communicate with and control TMX systems for integrated test procedures and test cell applications.

# TMX<sup>®</sup> System Specifications

TMX Chassis	
Maximum Number of Modules	3 (TMX) or 6 with TMX-E
Event Inputs (TTL)	16
Color Display	
Type	Active matrix color LCD (TFT)
Viewing Area	13.3" H x 10.6" W Diagonal 17" (43.2 cm)
Resolution	1280px x 1024px
Touch	Full screen, resistive
Compliance / Environmental	
Operating Temp.	0°C to 40°C (32°F to 104°F)
Operating Humidity	10% to 90% non condensing
Storage Temp.	-20°C to 60°C (-4°F to 140°F)
Shock	MIL-STD-810F Method 516.5, Procedure I
Vibration	MIL-STD-810F Method 514.5, Procedure I
Safety	IEC 61010-1:2010 (3rd edition) IEC 61010-2-030:2010 EMC: IEC 61326-1 Ed. 2.0 (2012)

Physical	
Enclosure	Aluminum with armored end caps
Dimensions	14.5" H x 19" W x 7.5" D (36.8 cm x 48.3 cm x 19.1 cm) <i>(without handle)</i>
Weight	37 lbs. (16.78 kg) for TMX <i>(including 3 modules)</i>
Interface	
Ethernet	Gigabit Ethernet (10/100/1000 Base-T), RJ-45 connector
Display Port	For displaying data on an external monitor. VGA adapter included
USB 3.0	For external peripherals and file export <i>(4 ports per unit)</i>
Expansion Port	For connection of optional TMX-E
System Power	
Input Voltage Range	102 to 264 VAC or 24 VDC at 11A
Frequency Range	47 Hz to 63 Hz
Power Consumption	300W



## Modules

Over 8 Modules



Record 30 fps video synchronized with analog data



# TMX® Options and Accessories

Part Number	Model	Description
<b>Chassis</b>		
42880030	TMX	TMX Data Acquisition System (Includes 3 module slots)
42880430	TMX-R	Rack-mount TMX Data Acquisition System (includes 6 module slots, fits standard 19" rack)
42885000	TMX-E	Expansion chassis (provides 3 additional module slots, requires TMX unit for operation)
<b>Complete Systems</b>		
42880530	TMX-18	18-Channel TMX Data Acquisition System (fully equipped with 3 UNIV-6 input modules)
<b>Chart Printers</b>		
40775300	Real-Chart RC-300R	Real-Chart Network Printer (Rack Mount)
40775310	Real-Chart RC-300B	Real-Chart Network Printer in Benchtop Enclosure
<b>Input Modules</b>		
32850000	UNIV-6	6-Channel Universal Module Voltage and DC Bridge
32850030	IHVM-6	6-Channel High Voltage Module
32850035	IHVM-6B	6-Channel High Voltage Module, 10 MΩ input impedance
32850040	IBRM-6	6-Channel Isolated DC Bridge Module with internal half-bridge completion
32850050	IEPE-6	6-Channel Isolated Piezoelectric Sensor Module (for ICP® type sensors)
32850060	DIOC-16	16-Channel Digital I/O, Analog Output, Counter and Relay Module
32850020	NIDV-16	16-Channel Non-isolated Differential Voltage Module (accepts up to 35 Vrms)
32850010	ITCU-12	12-Channel Isolated Thermocouple Module with Cold Junction Compensation in each input
32850070	IRTD-12	12-Channel RTD Module supports direct connections of Pt 100 RTD
<b>Options</b>		
32884004	TMX-SSD400	Solid-state drive option, 400 GB Capture Drive & 400 GB System Drive
32884008	TMX-SSD800	Solid-state drive option, 800 GB Capture Drive & 400 GB System Drive
32884016	TMX-SSD1600	Option Solid-State Drive option, 1.6 TB Capture Drive & 400 GB System Drive
<b>Advanced Options</b>		
27300200	TMX-SC	TMX 50 MS/s 2-ch scope option
27300000	TMX-IR	IRIG Decoding Option supports IRIG A, B, E, G, NASA 36 time codes with GPS location and timing
14104110	TMX-TTLIRB	IRIG B TTL, provides IRIG B TTL time synchronization
14104300	TMX-CC	Compressed Capture for long-term recording with file size conservation while maintaining bandwidth
27300100	TMX-CB	CAN Bus interface to view and record CAN Bus data and other analog signals
42832500	AstroDock	PC Docking Station - use with TMX removable drives for data transfer. (drives and personal computer not included)
14104100	TMX-VA	Video/Audio Acquisition Upgrade provides 30 fps video and 44.1 kHz audio (camera not included)
26514001	TMX-M	Microphone/Headset for TMX-VA Audio Acquisition (requires TMX-VA option)
<b>Software</b>		
14004600	TMX-OS	TMX Offline Software (1 user)
14004601	TMX-OSSL	TMX Offline Software with Site License (5 users)
14180100	FDAS	FlexPro 9 Data Analysis Software (Standard Edition)
14180200	FDAS-PRO	FlexPro 9 Data Analysis Software (Professional Edition)
<b>Cases</b>		
HC-TMX	14710002	Hard Transport Case for TMX
SC-TMX	41047000	Soft Carry Case for TMX
<b>Additional Drives</b>		
26801570	TMX-SYS	Additional System Drive Enclosure (includes TMX Windows® 10 System in a removable cartridge)
26801350	TMX-DATA	Additional 1 TByte Data Capture Drive Enclosure (includes TMX data capture drive in a removable cartridge)
<b>Service</b>		
EW-TMX	Extended Warranty	Additional 12 months of warranty coverage



**LC-40 P/N: 13441003**  
Test Leads/Clips: Pair of Test Lead and Pincer Clips (1 red, 1 black)



**LC-40S P/N: 13441201**  
Test Leads/Spades: Pair of Test Leads with Spade Connector for # 8 Screw



**CLM-420A P/N: 26487000**  
4 to 20 mA Current Adapter for Current Loop Measurements



**SL261 P/N: 24661201**  
Current Probe Reads AC or DC Current, 100 A Maximum



**MR411 P/N: 24661200**  
Current Probe Reads AC or DC Current, 600 A Maximum



**MR521 P/N: 24661100**  
Current Probe Reads AC or DC Current, 1500 A Maximum



**MN255 P/N: 24661300**  
Current Probe Reads AC Current, 240 A Maximum



**SR759 P/N: 24661400**  
Current Probe Reads AC Current, 1200 A Maximum



**JM875 P/N: 24661500**  
Current Probe Reads AC Current, 3000 A Maximum



**FP300A P/N: 24661600**  
Flexible Current Probe Reads AC Current, 300 A Maximum



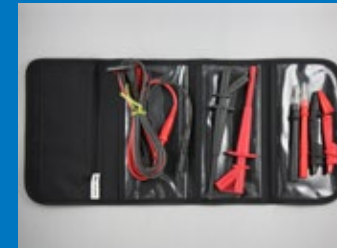
**FP3000A P/N: 24661700**  
Flexible Current Probe Reads AC Current, 3000 A Maximum



**FP6000A P/N: 24661620**  
Flexible Current Probe Reads AC Current, 6000 A Maximum



**ADP-4810 P/N: 25765000**  
High Voltage Probe Reads Up to 1000 Vrms



**GL-40 P/N: 13442000**  
General Use Lead Set



**ASTRODOCK P/N: 13441201**  
Test Leads/Spades: Pair of Test Leads with Spade Connector for # 8 Screw



**SC-TMX P/N: 41047000**  
Soft Carry Case for TMX



**HC-TMXE P/N: 41047020**  
Hard Case for TMX-E

# UNIV-6



## Universal Module

The UNIV-6 is a 6-channel input module for voltage and strain/bridge measurements. Modules accept voltages up to 250 Vrms (banana jack inputs) and support full bridge, half-bridge, and quarter bridge sensors. Provides maximum flexibility for acquiring different types of inputs with a single module.

- 6 voltage or strain/bridge inputs
- Simultaneous sampling at up to 800kS/s/ch
- 16-bit resolution
- 5 measurement ranges to maximize resolution
- Built-in counter and timer functions
- 250 VRMS or DC Cat II isolation

Part Number #32850000



Common Specifications	
Channels Per Module	6
Sample Rate	800 kS/s/ch (400 KS/s/ch when using TMX-E or TMX-R)
Rated Isolation	250 VRMS or DC, Cat II (iso-common to chassis and other iso-commons)
A/D	16-bit SAR (one per channel)
Frequency Counter Capability	Yes, first channel. Software selectable.
Anti-Aliasing Filter	4 pole Bessel
Counter Modes	Gated time frequency counter, cycle based frequency counter, pulse counter, pulse width detector, period width detector, duty cycle detector
Frequency ctr range (menu)	Up to 120 kHz
Frequency ctr range (spec'd)	2 - 100 kHz (48 Hz - 100 kHz for cycle based frequency counter)
Frequency ctr accuracy	+/- 0.07% of Measurement +.002 Hz
Min counter input amplitude	25% of span for freq and pulse counters, 90% of span for all other modes
Pulse counter range	64000000 maximum. (16 bit display resolution)
Pulse width accuracy	0.7 $\mu$ s +.00167% of span
Pulse width range	10 $\mu$ s - 40000 $\mu$ s
Edge separation accuracy	.002% of measurement + .00167% of span + 0.7 $\mu$ s
Edge separation range	25 $\mu$ s - 5000000 $\mu$ s
Period width accuracy	.02% of measurement + .00167% of span + 1.0 $\mu$ s
Period width range	5 $\mu$ s - 90000 $\mu$ s (11 Hz - 200 kHz)
Duty cycle accuracy	.5% (Inputs in the 15 Hz - 10 kHz range with 20% - 80% duty cycles)
Counter Timebase	50 MHz
Cold Start Drift	< 0.1% of attenuator (60 min.)
Single Ended Input	
Connector	Guarded banana jacks (red/black)
Input	Single-ended, AC/DC coupled
Anti-Aliasing Filter	4 pole Bessel
Bandwidth	100 kHz (-3dB) (400V, 200V and 50V attenuators) 90 kHz (-3dB) (10V and 1V attenuators)
AC Coupled 3dB Point	< 0.54 Hz
Off Ground Measurements	Yes
Zero Suppression	Yes
Attenuator Ranges	1, 10, 50, 200 and 400 Volt
Measurement Ranges	+/- 400 V (400 VFS or 800 VFS w/ zero offset), +/- 200 V (200 VFS or 400 VFS w/ zero offset), +/- 50 V (50 VFS or 100 VFS w/ zero offset), +/- 10 V (10 VFS or 20 VFS w/ zero offset), +/- 1 V (1 VFS or 2 VFS w/ zero offset. 0.1V min span)
Max Rated Input	250 Vrms or DC, Cat II
Max Transient Input	+/- 800 V peak (not to exceed 250Vrms)
DC Accuracy (25°C)	+/- 0.07% of attenuator
Overshoot	< 1.0%
Intrinsic Noise (pk-pk)	< 0.08% of attenuator + .08% of span (400V through 10V atts) < 0.17% of attenuator + .07% of span (1V att)
IMR at 60 Hz	Better than -75 dB
Min Input Impedance	> 1 Megohm
Differential Input	
Connector	4 wire screw terminal
Input	Differential, DC coupled
A/D	16 bit SAR (one per channel)
Bandwidth	50 kHz
Measurement Ranges	+/- 1000 mV, +/- 500 mV, +/- 50 mV
Max Transient Input	+/- 20V (no damage)
Common Mode Voltage	+/- 3V
Zero Suppression	Yes
DC Accuracy (25°C)	+/- 0.07% of attenuator
Overshoot	< 1.0%
Intrinsic Noise (pk-pk)	< 0.08% of attenuator + .09% of span (1000 mV & 500mV Atts) < 0.14% of attenuator + .08% of span (50 mV Att)
Input Impedance	> 300 K $\Omega$ (150 K $\Omega$ balanced to isolated common)
CMR at 60 Hz	> 85 dB
Excitation	DC Voltage - adjustable, 0.1 to 10 V. 30 mA maximum
Excitation Accuracy	0.05 V voltage mode

† CMV specification applies only when pins other than the + and - inputs are being used. When the Differential / DC Bridge inputs are used simply as a differential input, the isolation mode voltage of 250 V applies

# IHVM-6



## 6-Channel Isolated High Voltage Module

The IHVM-6 is a high voltage input module for the AstroNova TMX data acquisition systems. The IHVM-6 is ideal for high voltage measurements at up to 800 kS/s.

- 6 high voltage inputs
- Maximum 1,000 V input range
- 3 input ranges to maximize measurement resolution
- Simultaneous sampling at up to 800 kS/s/ch
- 16-bit resolution
- Built-in counter and timer functions

Part Number #32850030



Inputs	
Input Channels Per Module	6
Connector	Guarded banana jacks (red/black)
Input	Differential, DC coupled
Bandwidth	60 kHz (-3dB)
Rated Isolation	600 VAC RMS or 1000 VDC, Cat IV (channel to channel and channel to chassis)
Sample Rate	800 kS/s/ch (400 kS/s/ch when using TMX-E or TMX-R)
A/D	16 bit SAR (one per channel)
Anti-Aliasing Filter	4 pole Bessel
Off Ground Measurements	Yes
Zero Suppression	Yes, digital.
Attenuator Ranges	40, 200 and 1000 Volt (1 VFS to 2000 VFS)
Measurement Ranges	+/- 1000 V (1000 VFS or 2000 VFS w/ zero offset) +/- 200 V (200 VFS or 400 VFS w/ zero offset) +/- 40 V (1 to 40 VFS or 80 VFS w/ zero offset)
Minimum Span	2VFS
Max Rated Input	600 VAC RMS or 1000 VDC Cat IV
DC Accuracy (25°C)	+/- 0.07% of attenuator
Overshoot	< 1.0%
Intrinsic Noise (pk-pk)	< 0.11% of attenuator + .08% of span (40V att) < 0.04% of attenuator + .08% of span (200V att) < 0.02% of attenuator + .08% of span (1000V att)
IMR at 60 Hz	Better than -65 dB (40V and 200V attenuators) Better than -60 dB (1000V attenuator)
Crosstalk	Better than -80 dB
Min Input Impedance	> 4 Megohm (2 Megohm balanced to internal isolated common)
Counter Timer Functions	
Frequency Counter Capability	Yes, first channel. Software selectable.
Counter Modes	Gated time frequency counter, cycle based frequency counter, pulse counter, pulse width detector, period width detector, duty cycle detector.
Frequency ctr range (menu)	Up to 100 kHz
Frequency ctr range (spec'd)	2 - 30 kHz
Frequency ctr accuracy	+ 0.07% of Measurement + .002 Hz
Min counter input amplitude	25% of span for freq and pulse counters, 90% of span for all other modes
Pulse counter range	640000000 maximum. (16 bit display resolution)
Pulse width accuracy	0.7 μs + .00167% of span
Pulse width range	10 μs - 40000 μs
Period width accuracy	.02% of measurement + .00167% of span + 1.0 μs
Period width range	12.5 μs - 90000 μs (11 Hz - 80 kHz)
Duty cycle accuracy	.5% (Inputs in the 15 Hz - 10 kHz range with 20% - 80% duty cycles)
Counter Timebase	50 MHz

# ITCU-12



## Universal Thermocouple Module

The ITCU-12 is a 12-channel thermocouple input module for the AstroNova TMX data acquisition systems. The ITCU-12 is ideal for high channel count applications requiring high accuracy.

- 12 thermocouple inputs
- Supports all common thermocouple types
- Direct connectivity with standard Type U Mini-TC connectors
- High accuracy (<1 deg C J-Type)
- 16-bit resolution
- 250 Vrms or DC Cat II rated isolation
- 50/60 Hz noise rejection
- Cold junction compensation

Part Number #32850010



Channels per Module	12
Connector	Type U miniature thermocouple
Rated Isolation	250 VRMS or DC, Cat II.
Thermocouple types	J,K,E,T,N,B,R,S,C
Cold Junction Compensation	Yes
A/D	24 bit Sigma Delta (one per channel)
Anti-Aliasing Filter	Inherent
Resolution	0.01 °C
Bandwidth/Sample Rate	6 Hz update rate (TC sampled at 3 Hz) [1600 Hz / 800 Hz]
Absolute Max Input	+/- 10V
Specified Range Type K:	-200 to 1372 °C
Specified Range Type E:	-200 to 1000 °C
Specified Range Type T:	-200 to 400 °C
Specified Range Type N:	-200 to 1300 °C
Specified Range Type B:	600 to 1820 °C (250 to 1820 on menu)
Specified Range Type R:	0 to 1767 °C (-20 to 1768 on menu)
Specified Range Type S:	0 to 1767 °C (-20 to 1768 on menu)
Specified Range Type C:	0 to 2316 °C
Accuracy (25°C) J (<0) +/- 3.0 °C [+/- 3.0 °C]	
Accuracy (25°C) J (0 to 1200)	+/- 1.0 °C [+/- 1.5 °C]
Accuracy (25°C) K (<0)	+/- 2.5 °C [+/- 2.5 °C]
Accuracy (25°C) K (0 to 1372)	+/- 1.5 °C [+/- 2.0 °C]
Accuracy (25°C) E (<-100)	+/- 2.0 °C [+/- 2.0 °C]
Accuracy (25°C) E (-100 to 1000)	+/- 1.0 °C [+/- 1.5 °C]
Accuracy (25°C) T (<-100)	+/- 3.0 °C [+/- 3.0 °C]
Accuracy (25°C) T (-100 to 400)	+/- 1.0 °C [+/- 1.5 °C]
Accuracy (25°C) N (<-50)	+/- 1.5 °C [+/- 2.0 °C]
Accuracy (25°C) N (-50 to 1300)	+/- 0.8 °C [+/- 1.5 °C]
Accuracy (25°C) B	+/- 4.5 °C [+/- 4.5 °C]
Accuracy (25°C) R	+/- 4.0 °C [+/- 4.0 °C]
Accuracy (25°C) S	+/- 4.0 °C [+/- 4.0 °C]
Accuracy (25°C) C (W5ReM26Re)	+/- 2.5 °C [+/- 3.0 °C]
Accuracy (25°C) 100 Mv	+/- 0.05% of attenuator [+/- 0.35% of attenuator]
Cold Start Drift	+/- 0.002% of attenuator
Compensation Error	Included in above accuracy specification
Intrinsic Noise (pk-pk, J,N)	< 0.15 °C [ $< 2.0$ °C]
Intrinsic Noise (pk-pk, K,E,T)	< 0.10 °C [ $< 1.7$ °C]
Intrinsic Noise (pk-pk, B,R,S)	< 1.0 °C [ $< 5.0$ °C]
Intrinsic Noise (pk-pk, C)	< 0.5 °C [ $< 3.0$ °C]
Intrinsic Noise (pk-pk, 100 mV)	< 0.007 % of attenuator [ $< 0.04$ % of attenuator]
IMR	> 110 dB @ DC
Linearization	NIST ITS-90

Note: Specified accuracy does not include probe errors. Specifications in square brackets [] apply to 800 Hz TC input sampling. Fast mode sampling applies to V:1.8 system software and V:1.2 DSP software and above. Ext CJC option available for module purchases made after October 2012.

# NIDV-16



## 16-Channel Non-Isolated Differential Voltage Module

The NIDV-16 input module provides 16 non-isolated differential voltage inputs and 12V DC for powering external transducers. Connections are made via two 25-pin D-sub connectors.

- 16 voltage inputs (30 Vrms or 50 V DC max)
- Simultaneous sampling at up to 200kS/s/ch
- 16-bit resolution
- 9 input ranges to maximize measurement resolution
- Built-in counter and timer functions including quadrature event counter
- Screw terminal or BNC connections with adaptor

Part Number #32850020



Analog Inputs	
Channels Per Module	16
Connector	Two 25-pin D-sub male connectors
Input	Differential, DC coupled
Bandwidth	40 kHz (-3dB)
Isolation	No
Sample Rate	200 kS/s/ch (100 kS/s/ch when using TMX-E or TMX-R)
A/D	16 bit SAR (one per channel)
Anti-Aliasing Filter	4 pole Bessel
Cold Start Drift	< 0.5% att (60 min.)
Off Ground Measurements	Yes
Zero Suppression	Yes, digital
Attenuator Ranges	200, 400 and 800 mV; 2, 4, 5, 10, 25 and 50 V
Measurement Ranges	+/- 200 mV (80 to 160 mVFS or 400 mVFS w/ zero offset) +/- 400 mV (400 mVFS or 800 mVFS w/ zero offset) +/- 800 mV (800 mVFS or 1.6 VFS w/ zero offset) +/- 2 V (1.6 VFS or 4 VFS w/ zero offset) +/- 4 V (4 VFS or 8 VFS w/ zero offset) +/- 5 V (5 VFS or 10 VFS w/ zero offset) +/- 10 V (10 VFS or 20 VFS w/ zero offset) +/- 25 V (20 VFS or 50 VFS w/ zero offset) +/- 50 V (50 VFS or 100 VFS w/ zero offset)
Max Rated Input	30 Vrms or 50 VDC
Max Common Mode Voltage	+/- 60V
DC Accuracy (25°C)	+/- 0.07% of attenuator (800 mV, 2, 4, 5, 10, 25 and 50 V attenuators) +/- 0.1% of attenuator (400 mV attenuator) +/- 0.15% of attenuator (200 mV attenuator)
Overshoot	< 1%
Intrinsic Noise (pk-pk)	< 0.1% of attenuator + 4 mV
CMR at 60 Hz	Better than -60 dB
Min Input Impedance	> 500 KΩ (250 KΩ balanced to signal common)
Excitation	No
Auxiliary Power Output	Yes. 12V @ 200 mA (total of the two connectors)
Counter Timer	
Frequency Counter Capability	Yes, Software selectable on channels 1 and 2
Counter Modes	Gated time frequency counter, cycle based frequency counter, pulse counter, quadrature counter, pulse width detector, period width and duty cycle detector
Frequency ctr range (menu)	2 - 50 kHz
Frequency ctr range (spec'd)	2 - 40 kHz (48 Hz - 100 kHz for cycle based frequency counter)
Frequency ctr accuracy	+ 0.05% of Measurement + .002 Hz
Min counter input amplitude	25% of span for freq and pulse counters, 90% of span for all other modes
Pulse counter range	64000000 maximum. (16 bit display resolution)
Pulse width accuracy	1.5 μs + .00167% of span
Pulse width range	40 μs - 40000 μs
Edge separation accuracy	.002% of measurement + .00167% of span + 0.7 μs
Edge separation range	100 μs - 5000000 μs
Period width accuracy	.02% of measurement + .00167% of span with a maximum of 1.0 μs
Period width range	5 μs - 90000 μs (11 Hz - 50 kHz)
Duty cycle accuracy	.5% (Inputs in the 15 Hz - 10 kHz range with 20% - 80% duty cycles)
Counter Timebase	50 MHz

# TMX® Extended Module Options

## IRTD-12

Isolated RTD amplifier for Pt 100 Resistance Temperature Detectors (PRT's).

Connector	4 wire screw terminal (.150" pitch Phoenix)
Rated Isolation	150 VRMS or DC, Cat II (channel to chassis and channel to channel)
Bandwidth	6 Hz sample rate
Absolute Max Input	+/- 10V
Measurement Ranges:	Pt100(385) -200 to 800 C Pt100(3916) -200 to 630 C (-200 to 800 on menu) Pt100(3926) -200 to 630 C (-200 to 800 on menu) resistance 0 to 450 Ω
Minimum full scale	10 C
A/D	24 bit Sigma Delta (one per channel)
Anti-Aliasing Filter	Inherent
HW gain for span adjustment	No
Resolution	0.01 C
Accuracy (25°C)	0.05% of measurement + 0.1 C
Accuracy (resistance 25°C)	0.04% of measurement + 0.05 Ω
Cold Start Drift	< 0.2 Ω
Intrinsic	Noise (pk-pk) < 0.02 C
Intrinsic	Noise (resistance pk-pk) < 0.01 Ω
Linearization	yes
Connector	4 wire screw terminal
Supported RTD Probe types	Pt 100 - 385 (DIN 43760, IEC751 and ASTM 1137) Pt 100 - 3916 (JIS C1604) Pt 100 - 3926 (reference grade)
Excitation	1 mA constant current (+5%/-0%)
Channels Per Module	12
Frequency Counter Capability	No
Module Part Number	32850070
Note 1:	Specified accuracy does not include probe errors or 2-wire connection wire errors.
Note 2:	4-wire connection RTDs supported when through hole resistors (2 per channel) are removed from PCB.

## IHVM-6B

6 Channel Isolated High voltage differential input module with 10 MΩ input impedance.

Channels Per Module	6
Rated Isolation	600 VAC RMS or 1000 VDC, Cat IV (channel to channel and channel to chassis)
Sample Rate	800 kS/s/ch (400 kS/s/ch when expansion unit is in use)
A/D	16 bit SAR (one per channel)
Anti-Aliasing Filter	4 pole Bessel
HW gain for span adjustment	Yes
Counter Capability	Yes, first channel. Software selectable.
Counter Modes	Gated time frequency counter, cycle based frequency counter, pulse counter, pulse width detector, period width detector, duty cycle detector.
Frequency ctr range (menu)	Up to 100 KHz
Frequency ctr range (spec'd)	2 – 70 KHz (48 Hz - 70 KHz for cycle based frequency counter)
Frequency ctr accuracy	+ 0.07% of Measurement + .002 Hz
Min counter input amplitude	25% of span (0V center) for freq and pulse counters, 90% of span for others
Pulse counter range	64000000 maximum. (16 bit display resolution)
Pulse width accuracy	0.7 μs + .00167% of span
Pulse width range	10 μs - 40000 μs
Period width accuracy	.02% of measurement + .00167% of span with a maximum of 1.00 μs
Period width range	12.5 μs – 90000 μs (11 Hz – 80 KHz)
Duty cycle accuracy	.5% (Inputs in the 15 Hz - 10 KHz range with 20% - 80% duty cycles)
Connector	Guarded banana jacks (red/black)
Input	Differential, DC coupled
Bandwidth	50 kHz (-3dB)
Off Ground Measurements	Yes
Zero Suppression	digital.
Attenuator Ranges	40, 200 and 1000 Volt (1 VFS to 2000 VFS)
Measurement Ranges	+/- 1000 V (1000 VFS or 2000 VFS w/ zero offset) +/- 200 V (200 VFS or 400 VFS w/ zero offset) +/- 40 V (1 to 40 VFS or 80 VFS w/ zero offset)
Max Rated Input	600 VAC RMS or 1000 VDC Cat IV
Max Transient Input	+/- 2000 V peak
DC Accuracy (25°C)	+/- 0.07% of attenuator (40V and 200V attenuators) +/- 0.12% of attenuator (1000v att)
Overshoot	< 1.0%
Intrinsic Noise (pk-pk)	< 0.12% of attenuator + .08% of span (40V att) < 0.04% of attenuator + .08% of span (200V att) < 0.02% of attenuator + .08% of span (1000V att)
IMR at 60 Hz	Better than -60 dB
Cold Start Drift	< 0.005% att + .06% span (60 min.)
Min Input Impedance	> 10 Megohm (5 Megohm balanced to internal isolated common)
Module Weight	2.17 lbs (+/- 5%)
Module Part Number	32850035

## IBRM-6

6 Channel Isolated differential / bridge input module with software selectable bridge completion, shunt calibration and TEDS support.

Channels Per Module	6
Rated Isolation	250 VRMS or DC, Cat II (iso-common to chassis and other iso-commons)
Sample Rate	800 kS/s/ch (400 kS/s/ch when expansion unit is in use)
A/D	16 bit SAR (one per channel)
Anti-Aliasing Filter	4 pole Bessel
HW gain for span adjustment	Yes
Counter Capability	Yes, first channel. Software selectable.
Counter Modes	Gated time frequency counter, cycle based frequency counter, pulse counter, pulse width detector, period width detector, duty cycle detector.
Frequency ctr range (menu)	Up to 70 kHz
Frequency ctr range (spec'd)	2 – 40 kHz (48 Hz - 40 kHz for cycle based frequency counter)
Frequency ctr accuracy	+ 0.07% of Measurement + .002 Hz
Min counter input amplitude	25% of span for freq and pulse counters, 90% of span for all other modes
Pulse counter range	64000000 maximum. (16 bit display resolution)
Pulse width accuracy	1 μs + .00167% of span
Pulse width range	10 μs - 40000 μs
Period width accuracy	.02% of measurement + .00167% of span with a maximum of 1.00 μs
Period width range	20 μs – 80000 μs (12.5 Hz – 50 KHz)
Duty cycle accuracy	.5% (Inputs in the 15 Hz - 10 KHz range with 20% - 80% duty cycles)
Connector	10-wire screw terminal
Input	Differential, DC coupled
Bandwidth	50 KHz (40 KHz with spans less than 10 mVFS)
Measurement Ranges	+/- 1000 mV +/- 500 mV +/- 50 mV (2mV min span)

Max Transient Input	+/- 20 V (no damage)
Common Mode Voltage	+/- 12V
Zero Suppression	Yes, digital
DC Accuracy (25°C)	+/- 0.07% of attenuator
Overshoot	< 1.0%
Intrinsic Noise (pk-pk)	< 0.07% of attenuator + .14% of span (1000 mV att) < 0.08% of attenuator + .14% of span (500 mV att) < 0.1% of attenuator + .14% of span (50 mV att)
Input Impedance	> 300 KΩ (150 KΩ balanced to isolated common)
CMR at 60 Hz	> 85 dB
Excitation	DC adjustable, 0.1 to 10 V. 30 mA maximum
Excitation Accuracy	0.05 V
Excitation Output Noise	< 1.5 mV pp (50 KHz BW)
Bridge Auto Balance	yes – Up to 10% of attenuator (limited by maximum span)
Cold Start Drift	< 0.04% of attenuator + .1% of span (60 min.)
TEDS Capability	Yes, Class II
Internal ½ Bridge Completion	Yes – Software selectable
Shunt calibration	Yes – Software selectable external shunt calibration resistor
¼ Bridge Completion Provision	Yes – Dedicated location on screw terminal header
Module Weight	2.05 lbs
Module Part Number	32850040





## DIOC-16

16 Channel digital input, digital output, analog output, relay and counter/totalizer module.

<b>Channels Per Module</b>	16
<b>Connectors</b>	One 4-pin 5.08mm One 9-pin 5.08mm for high voltage digital inputs One 37-pin D-sub female for TTL digital inputs and outputs One 25-pin D-sub female for DAC outputs and aux voltage outputs
<b>Isolation</b>	Yes - High voltage digital inputs and relays only.
<b>Update Rate</b>	200 KHz Max (100 KHz when expansion unit is in use)
<b>Isolated Digital Inputs</b>	8 (Operation at 10V minimum, 150V maximum, 5 $\mu$ s min pulse width)
<b>Isolated Input Max Burden</b>	1 mA
<b>Isolated In Transient Protection</b>	250V
<b>Digital Inputs</b>	16 (TTL or switch closure with 4.7K pullup to 5V)
<b>Digital Outputs</b>	16 (TTL, +/- 7 mA)
<b>Digital Output Modes</b>	Direct (menu or host ) controlled or arbitrary digital pattern (DPAT) generator
<b>Number of 32-bit Counters</b>	8 pairs (16 total)
<b>Counter / Timer Modes</b>	Gated time frequency counter, cycle based frequency, pulse counter, gated pulse counter, quadrature counter (x1, x2, x4 encodings, with or without Z reset), pulse width detector, period width, duty cycle detector and edge separation timer.
<b>Frequency ctr range</b>	0.2 Hz – 500 KHz (47 Hz – 50 KHz for cycle based frequency counter)
<b>Frequency ctr accuracy</b>	+ 0.03% of Measurement + .0002 Hz
<b>Pulse counter range</b>	4000000000 maximum span. (16 bit display resolution)
<b>Pulse counter speed</b>	10 MHz maximum (50 ns min pulse width)
<b>Pulse width accuracy</b>	.003% of measurement + .00167% of span + 0.03 $\mu$ s
<b>Pulse width range</b>	1 $\mu$ s - 2500000 $\mu$ s

<b>Period width accuracy</b>	.002% of measurement + .00167% of span + 0.02 $\mu$ s
<b>Period width range</b>	1 $\mu$ s – 5000000 $\mu$ s (0.2 Hz – 1 MHz)
<b>Edge separation accuracy</b>	.002% of measurement + .00167% of span + 0.02 $\mu$ s
<b>Edge separation range</b>	1 $\mu$ s – 5000000 $\mu$ s
<b>Duty cycle accuracy</b>	.5% (Inputs in the 0.2 Hz - 100 KHz range with 20% - 80% duty cycles)
<b>Arbitrary Memory</b>	256 Ksmp divided into 4 equal sections. First shared with DPAT generator
<b>Analog DAC Outputs</b>	4
<b>DAC output voltage range</b>	+/- 10V (not inclusive of voltage drop across DAC output impedance)
<b>DAC output resistance</b>	50 ohm (In series with output)
<b>DAC output maximum current</b>	10 mA
<b>DAC output voltage accuracy</b>	+/- 0.05 V
<b>Output DAC resolution / speed</b>	12 bit / 1 MHz maximum
<b>Output DAC modes</b>	Menu or host selected DC, sine, pulse, triangle, arbitrary waveform generator.
<b>Relay outputs</b>	2, normally open contacts
<b>Relay withstand voltage</b>	1500 VDC (contacts to TMX chassis)
<b>Relay rated voltage / current</b>	250 VAC / 250 VDC / 10 Amp
<b>Auxiliary Power Output</b>	Yes. 5V @ 100 mA, 3.3V @ 100 mA, 15V and -15V @ 10 mA
<b>Module Part Number</b>	32850060



## IEPE-6

6 Channel Isolated differential / bridge input module with software selectable bridge completion, shunt calibration and TEDS support.

<b>Channels Per Module</b>	6
<b>Rated Isolation</b>	250 VRMS or DC, Cat II (iso-common to chassis and other iso-commons)
<b>Sample Rate</b>	800 kS/s/ch (400 kS/s/ch when expansion unit is in use)
<b>A/D</b>	16 bit SAR (one per channel)
<b>Anti-Aliasing Filter</b>	4 pole Bessel
<b>HW gain for span adjustment</b>	Yes
<b>Counter Capability</b>	Yes, first channel. Software selectable.
<b>Counter Modes</b>	Gated time frequency counter, cycle based frequency counter, pulse counter, pulse width detector, period width detector, duty cycle detector.
<b>Frequency ctr range (menu)</b>	Up to 120 KHz
<b>Frequency ctr range (spec'd)</b>	2 – 70 KHz (48 Hz - 70 KHz for cycle based frequency counter)
<b>Frequency ctr accuracy</b>	+ 0.01% of Measurement + .002 Hz
<b>Min counter input amplitude</b>	25% of span for freq and pulse counters, 90% of span for all other modes
<b>Pulse counter range</b>	64000000 maximum. (16 bit display resolution)
<b>Pulse width accuracy</b>	0.7 $\mu$ s + .00167% of span
<b>Pulse width range</b>	10 $\mu$ s - 40000 $\mu$ s
<b>Period width accuracy</b>	.02% of measurement + .00167% of span with a maximum of 1.00 $\mu$ s
<b>Period width range</b>	20 $\mu$ s – 80000 $\mu$ s (12.5 Hz – 50 KHz)
<b>Duty cycle accuracy</b>	.5% (Inputs in the 15 Hz - 8 KHz range with 20% - 80% duty cycles)
<b>Connector</b>	Insulated BNC
<b>Input</b>	SE AC coupled w/ constant current excitation or SE DC coupled w/o
<b>excitation</b>	
<b>Coupling Time Constant</b>	10 s (+/- 20%) ( 10 $\mu$ F / 1M $\Omega$ )
<b>Bandwidth</b>	60 kHz (-3dB) 1V and 5V attenuators 65 kHz (-3dB) 10V attenuator
<b>Measurement Ranges</b>	+/- 10 V +/- 5 V +/- 1 V (0.1 VFS minimum span)
<b>Max Transient Input</b>	+/- 30 V (no damage)

<b>Accuracy (25°C)</b>	0.12 % of attenuator
<b>Cold Start Drift</b>	< 0.04% of attenuator + .07% of span (60 min)
<b>Min Input Impedance</b>	1 M $\Omega$ (SE DC coupled mode)
<b>Overshoot</b>	< 1.0%
<b>Intrinsic Noise (pk-pk)</b>	< 0.02% of attenuator + .14% of span (10 V att) < 0.05% of attenuator + .12% of span (5 V att) < 0.18% of attenuator + .1% of span (1 V att)
<b>IMR at 60 Hz</b>	> 90 dB
<b>Excitation</b>	4.5 mA DC current
<b>Excitation Accuracy (25 °C)</b>	20%
<b>Excitation Compliance Voltage</b>	20V (Approx 24V open circuit voltage)
<b>Excitation Protection</b>	Short Circuit Protected
<b>Integration</b>	Yes – Processing by DSP, menu selectable (1/80 th of the sample rate.)
<b>Differentiation</b>	Yes – Processing by DSP, menu selectable (1/8 th of the sample rate.)
<b>TEDS Capability</b>	Yes, Class I
<b>Module Weight</b>	2.1 lbs
<b>Module Part Number</b>	32850050

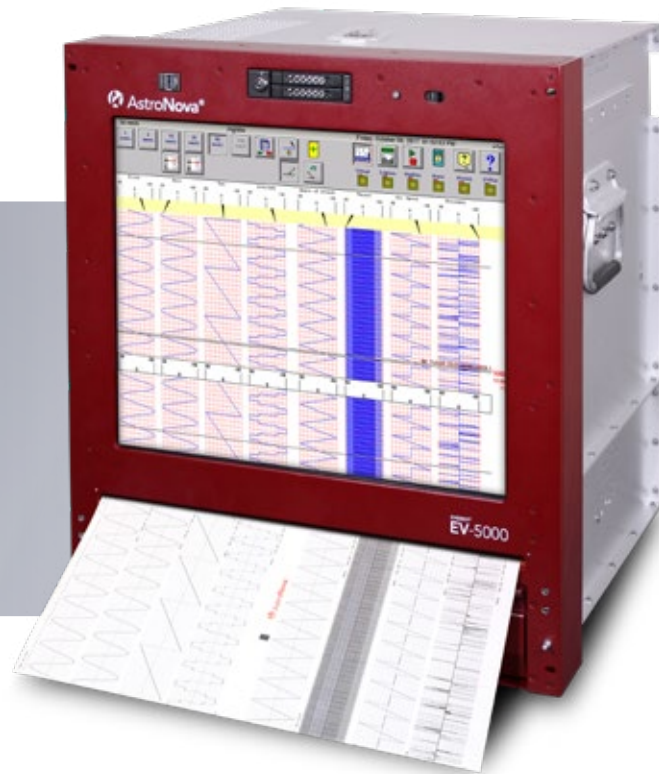
\* Isolation limited to 30 Vrms or 60V DC when non-insulated mating BNC connector used since hazardous voltage would otherwise be accessible.  
Internal Note: Class I TEDS operation is currently only expected to work with template 0 and template 25 sensors.



# EVEREST® EV-5000



8 Channel - Part Number #42956000  
16 Channel - Part Number #42956100



## Mission-Critical Data Acquisition

The EV-5000 is ideal for mission-critical data acquisition applications where digital storage and paper printouts are required. Accepting analog inputs, the EV-5000 is engineered to be a direct replacement for the field-proven Everest® series of chart recorders; retaining its best features and allowing for greater accuracy, faster data acquisition rates and increased data storage capacity.

- Print on standard 16.3" (414 mm) Z-fold chart paper at speeds up to 200 mm/s
- High capacity hard drive
- IRIG or GPS inputs
- 8 single-ended isolated or 16 differential analog inputs
- Enhanced security via Windows® 10
- Easily installs in industry-standard 19" racks
- Review historical data while recording
- Optional 32 channel digital signal inputs via Ethernet

## Product Overview

### Acquire

The Everest EV-5000 provides 8 single-ended isolated or 16 differential analog inputs. These inputs can be sampled at up to 200 kHz per channel with channel-to-channel and channel-to-ground isolation. Additionally, individual 16-bit analog-to-digital converters allow for simultaneous sampling of all input channels. The EV-5000 accepts IRIG and GPS inputs for synchronization and time-stamping of acquired data.

### Visualize

Waveform data is displayed using a waterfall chart on a high resolution 19" touch-screen display. The user interface is customizable with color-coding available for easy signal identification and color change for signals that exceed thresholds. Historical data can be viewed without interrupting the current acquisition.

### Analyze

Custom filters and increased signal quality can be created with user-programmable digital signal processing. The touch-screen capability allows for instant markings on points of interest and annotation for later review.

### Store

The 500 GB removable hard drive is easily accessible from the front of the unit and provides an additional layer of security. Easily exchange hard drives for recording of classified and non-classified data.

### Print

The EV-5000 uses our patented thermal array printing process to provide a highly detailed permanent record of tests. Additionally, EV-5000 paper charts include many features that make it easier to review acquired data:

- Print grids to eliminate paper skew
- Include annotations to highlight important events
- Label individual channels to identify important data
- Adjust trace thickness for readability

## Everest® EV-5000 System Specifications

Signal Inputs	
Channel configuration options	8 isolated single-ended or 16 non-isolated differential analog inputs
Isolated Single-Ended	
Max. channels	8
Sample rate	200 kS/s/ch
Band width	40 kHz (-3dB)
Min. input impedance	>1 MΩ
Input type	DC-coupled
Connector	Shrouded Banana or BNC
Max. rated input	± 250 V
Non-Isolated Differential	
Max. Channels	16
Sample rate	20 kS/s/ch
Band width	4 kHz (-3dB)
Min. input impedance	>500 KΩ
Input type	DC-coupled
Connector	D shell
Max. rated input	± 40 V
System & connection	
Power consumption	600W
Operating system	Windows® 10
Connection	Gigabit Ethernet (10/100/1000 Base-T) RJ45 connector USB 3.0

Screen	
Dimensions	19" diagonal
Resolution	1280 x 1024
Printed Charts	
Chart width	16.3" (414 mm)
Resolution	300 dpi (12 dpm)
Printing speed	up to 200 mm/sec
Speed accuracy	+/-2% maximum
Waveform size	170 mm max.
Grids	from 2 to 16 individual grids
Time marking tri-level	x1, x10, x100
Environmental Specs	
Temperature	40°F to 105°F (5°C to 40°C)
Operating/Storage Humidity	10% to 90% non condensing
Storage Temperature	-4°F to +140°F (-20°C to 60°C)
Compliance Safety	
EN 61010-1:2001, UL61010A-1, CSA C22.2 No.1010.1-92 EMC FCC Part 15, Subpart B, Class A EN61326 Power Harmonics IEC1000-3-2	
AstroNova is system certified to ISO9001	
Physical Specifications	
Dimensions	21" H x 19" W x 18.6" D
Weight	55 lbs. (25 Kg)

# EVEREST® VDiS



Part Number #14004080



## Everest® Visual Display Software

Developed for telemetry facilities and other applications requiring real-time data viewing, the Everest Visual Display Software (VDiS) is a powerful software application that transforms the PC into a virtual strip chart display.

The VDiS application supports either TCP or UDP protocols for digital signals via Ethernet. A complete digital data programming guide is included to get you up and running quickly. The open protocol of VDiS allows it to accept digital data from virtually any telemetry system. VDiS features several useful real-time display capabilities, including:

- Compatible with Windows® 10 and Windows® 7 operating systems
- Powerful Look Back feature stores data on your PC with post-processing conversion to CSV
- Real-time Display of up to 32 channels
- Display speeds from 1 mm/min to 200 mm/sec
- Discrete, overlap, or custom grid formats
- Numeric data and X-Y plot displays
- Compatible with third-party telemetry systems
- Customizable user interface
- Create view icons to instantly change which channels are displayed
- Combine with AstroNova Real-Chart RC-300 for printed charts in a modular system to provide both virtual and hard copy telemetry data.

## VDiS Display Features

### Real-time Display

Telemetry data can be monitored in real-time and simultaneously displayed in strip chart and x-y plot formats. Display screens are customizable and can be tailored for specific applications.

### Real-time with Look Back

The optional VDiS Look Back feature allows you to review previously viewed data while continuing to monitor real-time data on the same screen for comparison purposes.

### Numeric Data Display

Data can be viewed in a numeric format in parallel with strip chart displays. Information can be displayed in user-defined engineering units, giving real meaning to your data.

### Real-time X-Y Plot

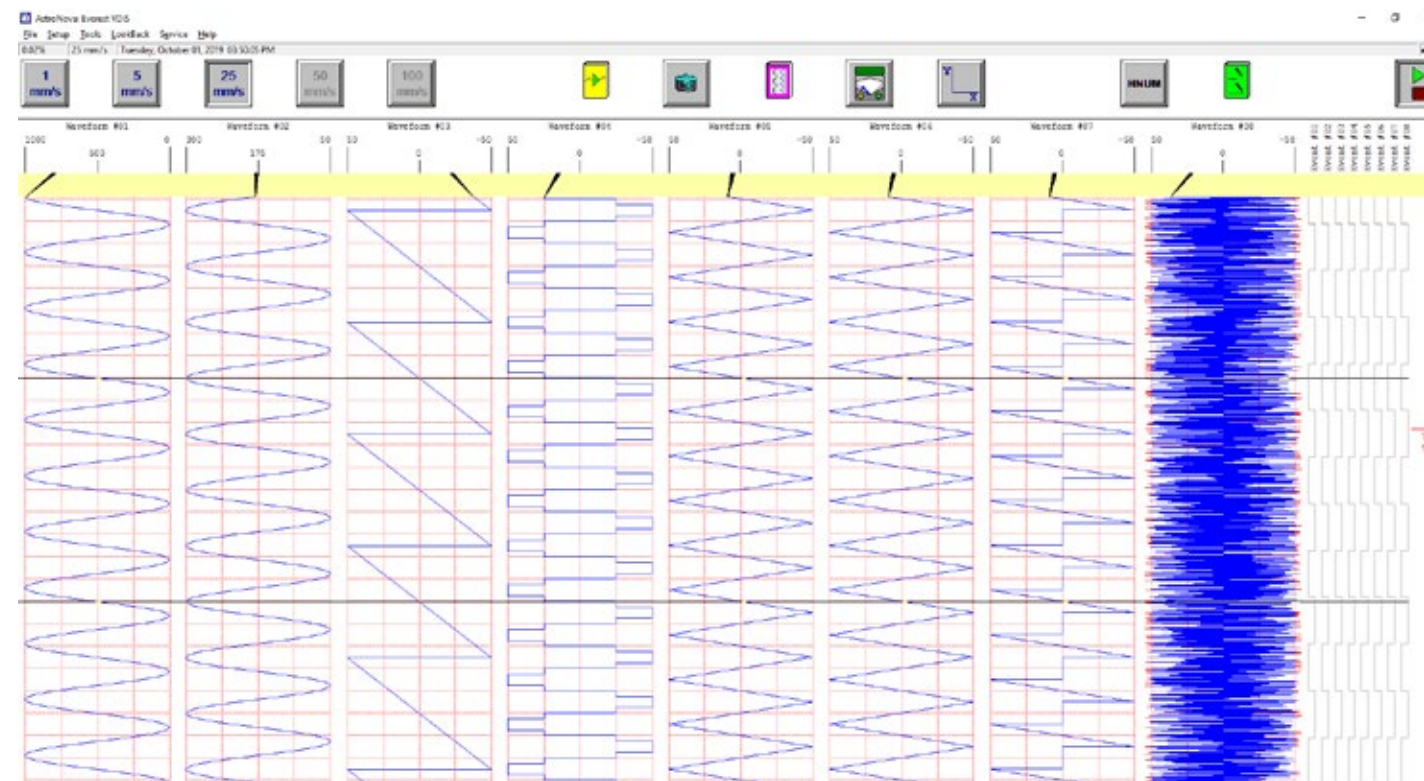
Four separate x-y plot windows are available, perfect for measuring phase relationships or phase angles.

### Display Icons

Instantly change displayed channels with customizable view icons on control panel.

### VDiS License Agreement

VDiS software is available as a single-user license or site license for multiple installations.



### Control Panel

The control panel is a customizable group of icon buttons located near the top of the display, below the menu bar. It can provide immediate access to virtually any function with one touch.

# REAL-CHART RC-300



Real-Chart RC-300R Part Number #40775300  
Real-Chart RC-300B Part Number #40775310

## Network Printer

The Real-Chart RC-300 is a powerful printing platform designed to provide hard copy recording of telemetry data. It's an ideal wide format printer for aerospace or other applications where hard copy records are essential. Its 16.3-inch print width supports printing of up to 32 waveforms on separate grids along with alphanumeric annotation and a system log. Signals can also be displayed on an external monitor during printing. Adding an external display along with a keyboard and mouse allows the user to control the Real-Chart RC-300 locally. Use the Real-Chart RC-300 with AstroNova VDiS software to provide both virtual and hard copy records of telemetry data in a modular system.

- 300 dpi Print Resolution with 16.3 Inch Wide Charts
- Control Multiple Real-Charts from Server via Ethernet
- Windows® 10 Operating System



The RC-300 RealChart can print real-time data from a TMX data acquisition system

Printing	
Recording Method	Direct Thermal
Chart Widths	16.3-inch (414 mm)
Resolution	300 dpi (12 dpm)
Chart Speed	1mm/min to 200 mm/sec
Speed Accuracy	+/-2%
Maximum Waveform Size	170 mm
Grids	From 2 to 32 individual grids
Time Marking	Tri-level (x1, x10, x100) mark on chart edge; Grid time line controlled by the host
Annotation	System log printed automatically with data and speed
Channel ID	Each channel labeled with channel number
Trace Thickness	User-adjustable
Paper	Z-fold pack (400 sheets per pack)
Interface	
Ethernet	10/100/1000 BaseT (RJ45 connector) accepts digital signals and host control commands
Video	HDMI Port
USB 3.0	2 ports connect a mouse and keyboard for local control
Power	
Input Voltage Range	102 to 264 VAC

Frequency Range	47 Hz to 63 Hz
Power Factor	0.99
Power Consumption	240W typical 500W maximum
Mechanical	
Configuration	Standard 19-inch rackmount or benchtop
Dimensions	7.0" H x 19.0" W x 21.2" D
Weight	37 lbs/16.78 kg without paper 42 lbs/19.05 kg with paper
Environmental	
Operating Temperature	40°F to 105°F (5°C to 40°C)
Operating/Storage Humidity	10% to 90% non-condensing
Storage Temperature	-4°F to 140°F (-20 to 60°C)
Compliance	
Safety	EN 61010-1:2001, UL61010A-1, CSA C22.2 No.1010.1-92

### Z-Fold Chart Paper Packs - C-72

AstroNova has manufactured high-quality chart paper for decades, specializing in thermal sensitive materials. This premium-grade paper is always in stock, ready for shipment and suitable for most printing recorders in the market.

We use only the highest quality base paper with low-friction to minimize printhead wear, ensuring you get the most life out of your hardware. AstroNova provides the perfect match between machine and media. Our chart paper is precision-engineered offering you quality without compromise.

For specific pricing and availability, please inquire with our customer service department.

394 Ft, 400 Sheets

Part Number: 41399000





 **AstroNova<sup>®</sup>**  
Test & Measurement

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