SMARTCORDER®
DDX-100

Portable, Rugged, All-in-One Data Acquisition

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.

Product Overview

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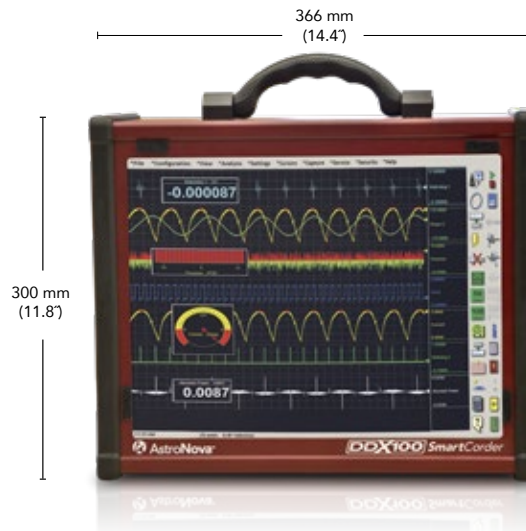
As the successor to the Dash series, the DDX-100 includes everything needed to acquire, analyze and store data in one device. Weighing just 18.5 lbs. (8.6kg), it is AstroNova's lightest all-in-one system.

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, giving users the opportunity 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.

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.

366 mm
(14.4″)

300 mm
(11.8″)

Setup

Customize the Control Panel to create one-touch icons for common menu items and test setups.

Setup Files make it easy to store and recall common test configurations. Users can also create setup files on a PC and transfer them to the SmartCorder DDX-100 with the optional DDX Offline Software.

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[1].

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 are able to 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. The trigger key on the front panel also offers the option to trigger 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.

The **NIDX-16 module** provides two analog outputs for powering transducers or generating waveforms to stimulate a unit under test. Users can output standard waveforms such as sine waves, square waves or user-defined custom waveforms. The optional breakout box provides two additional analog outputs.
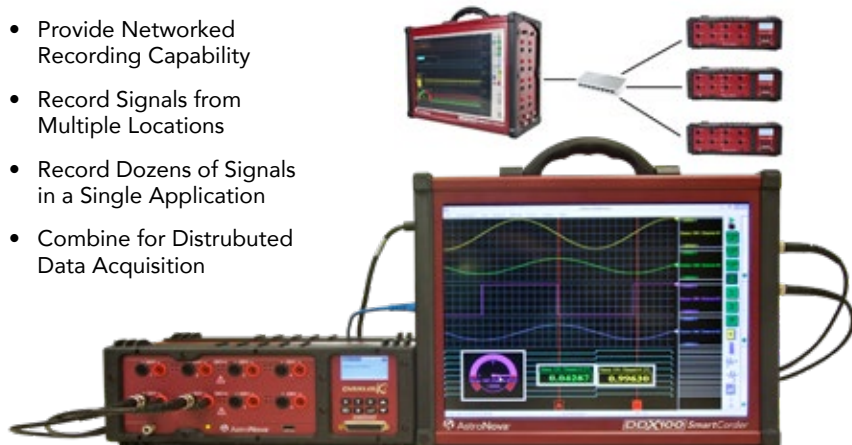
With the **UNIV-4 universal input module**, users are able to reduce testing costs and increase flexibility. The UNIV-4 alleviates the need for dedicated modules, allowing users to perform voltage, DC bridge, thermocouple, RTD, and IEPE sensor measurements in a single module.

1. Requires optional IRIG interface DAX-IR/GPS

SmartCorder DDX-100
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 Distrubuted Data Acquisition

Product Highlights

- Gain an all-in-one solution with everything needed to portably acquire and analyze data

- Effortlessly operate with intuitive touch panel interface and easy-to-use software

- Acquire data at speeds up to 200kS/sec/ch (input module dependent)

- Utilize ample storage with a 500 GB hard drive standard or up to 1.6 TB solid state drive

- Obtain multiple sampling rates per channel for long term trending (up to 48 channels)

- Perform single and three phase power measurements with the IHVM-4P

- Use the UNIV-4 universal input module to acquire voltage, DC bridge, thermo couple, RTD, and IEPE sensors
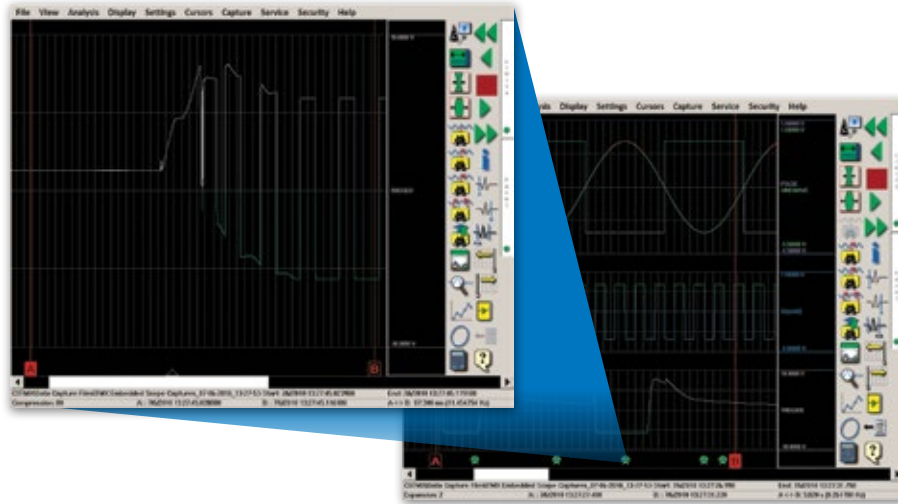
Visualize

The DDX-100 comes equipped with our easy-to-use DDX **application software**, which allows users to configure systems, view data in real-time, and review saved data. With this software, reviewing or transferring data during a capture will not interrupt the current acquisition.

The powerful **scope mode** feature allows users to acquire and save data at low sample rates while capturing high speed snapshots based on user-defined triggers. This feature 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 display with high time-base resolution and cursor measurements without interrupting long term trending.

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.
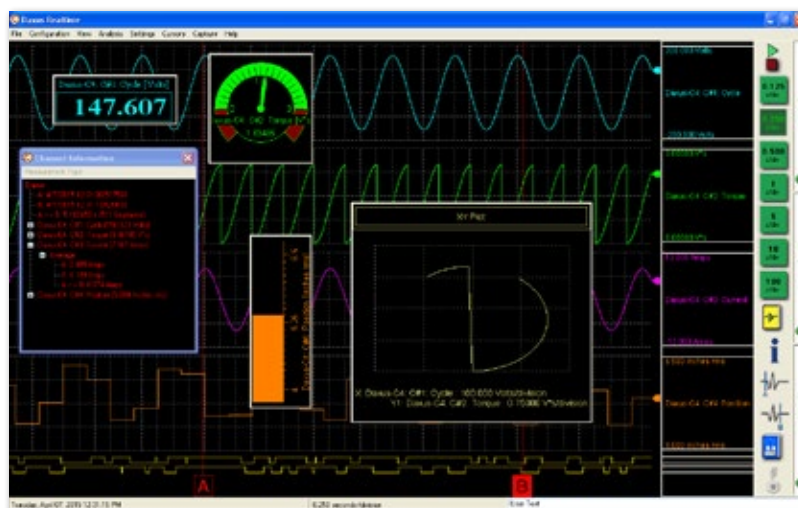
Analyze

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-to-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.
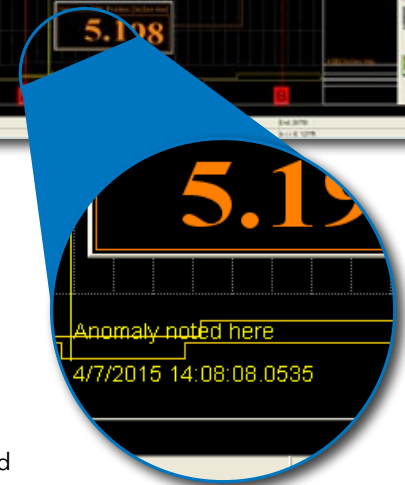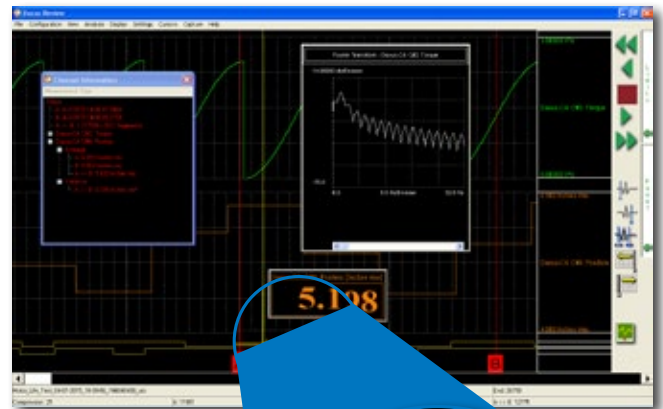
Store

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

The DDX-100 comes with a built-in **Li-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.

Configure Your System
Step 1: Choose your system

System	Part Number	Description
DDX-100	PN: 42960100	Multi-Channel Data Qcquisition System Chassis accepts up to two Input Modules (Windows 10

Step 2: Choose your input modules
Each DDX-100 features two (2) slots for signal input modules. To configure the DDX-100 system, select from the input modules below.

ISEV-4
P/N: 32950605

4-Ch Isolated Voltage Module accepts up to 250 Vrms or VDC (Cat II)

UNIV-4
P/N: 32950600

4-Ch Universal Module for Voltage, DC Bridge, Thermocouple, RTD, and IEPE transducers. Accepts up to 250 Vrms or DC (Cat II)

NIDX-16
P/N: 32950620

16-Ch Non-isolated Differential Voltage Input Module accepts up to 30 Vrms or 40 VDC. Two Analog Outputs. Screw terminal or BNC connections with adaptor

IHVM-4
P/N: 32950630

4-Ch High Voltage Module accepts up to 600 Vrms or DC (Cat III) or 1,000 Vrms or DC (Cat II)" to "4-Ch High Voltage Module accepts up to 600 Vrms or DC (Cat III) or 1,000 VDC (Cat II)
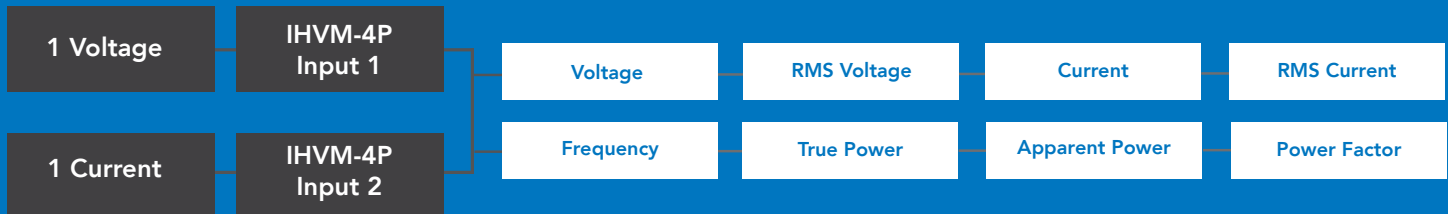
IHVM-4P
P/N: 3295063

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

Power Measurements with the IHVM-4P
Acquire eight power quality measurements with only one pair of voltage and current signal inputs.

1 Voltage	IHVM-4P Input 1		Voltage	RMS Voltage	Current	RMS Current
1 Current	IHVM-4P Input 2		Frequency	True Power	Apparent Power	Power Factor

Step 3: Choose your Options and Accessories

Part Number	Description	Model
Options		
DDX-SSD400	Optional Solid-State Drive (SSD) Upgrade, 400 GB Capture Drive & 400 GB System Drive	41284004
DDX-SSD800	Optional Solid-State Drive (SSD) Upgrade, 800 GB Capture Drive & 400 GB System Drive	41284008
DDX-SSD1600	Optional Solid-State Drive (SSD) Upgrade, 1.6 TB Capture Drive & 400 GB System Drive	41284016
DAX-IR/GPS	IRIG Decoding Option supports IRIG A, B, E, G, NASA 36 time codes with GPS location and timing	42662100
DAX-CAN/GPS	CAN Bus interface to view and record CAN Bus data and other analog signals with GPS location and timing	42662200
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 via the GPS/CAN/IRIG interface above (15-pin D-Sub connection included)	32930000
DAX-WIFI	Wireless USB Adaptor	27537000
DAX-ANT	GPS Antenna	27535000
Software		
DDX-SW	DDX-100 SMARTCORDER Offline Software	14004912
DDX-SWSL	DDX-100 SMARTCORDER Offline Software Site License (5 Users)	14004930
FDAS	FlexPro 9 Data Analysis Software (Standard Edition)	14180100
FDAS-PRO	FlexPro 9 Data Analysis Software (Professional Edition)	14180200
Service		
EW-DDX	12-Month Extended Warranty with Quick-Swap Loaner	EW-DDX
Cases		
SC-DDX	Soft Carry Case for DDX-100 SMARTCORDER	41047200
HC-DDX	Hard Pelican Carry Case for DDX-100 SMARTCORDER	41047220
Lead Sets & Probes		
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)	13442000
LC-40	Test Leads/Clips pair of test leads and pincer clips (1 red, 1 black)	13441003
LC-40S	Test Leads/Spades pair of test leads with spade connector for # 8 screw	13441201
CLM-420A	4 to 20 mA Current Loop Adaptor for current loop measurements	26487100
SL261	Current Probe reads AC or DC current, 100 A maximum	24661201
MR411	Current Probe reads AC or DC current, 600 A maximum	24661200
MR521	Current Probe reads AC or DC current, 1500 A maximum	24661100
MN255	Current Probe reads AC current, 240 A maximum	24661300
SR759	Current Probe reads AC current, 1200 A maximum	24661400
JM875	Current Probe reads AC current, 3000 A maximum	24661500
FP300A	Flexible Current Probe reads AC current, 300 A maximum	24661600
FP3000A	Flexible Current Probe reads AC current, 3000 A maximum	24661700
FP6000A	Flexible Current Probe reads AC current, 6000 A maximum	24661620
ADP-4810	High Voltage Probe reads up to 1000 Vrms or 1400 VDC	25765000
BNC-BAN-I	Connector insulated Female BNC to standard insulated double banana plug	10532211
CABLE-BNC	Cable, Male BNC to Male BNC, 12" (30.5 cm) length	12360007

SmartCorder® DDX-100 System Specifications

System	
Display	15" touch panel with 1024x768 resolution
Connectivity	Gigabit Ethernet (10/100/1000Base-T), Wi-Fi optional
I/O Module Slots	2 (4-16 Channels per module)

Data Acquisition	
Channels	Up to 32 (2 input modules) or 48 (with 16 CAN inputs3), expandable to 128
Maximum Sample Rate	200,000 S/sec/channel
Minimum Sample Rate	1 sample every 100 seconds
Multiple Sample Rates	Yes, up to 3 different rates with simultaneous capture
Total Capacity	500 GB standard (400GB, 800GB, & 1.6TB SSD optional)
Time Stamp	Time & Date stamps stored with data
Alarms	Yes, low and high per channel
Events	Recorded with data
Filters	Low pass, high pass, bandpass, band stop, RMS
Modes	Capture and Scope
Triggering	One-shot, Triggered One-Shot, Continuous, Continuous Triggered, Periodic, and Time
Trigger logic	Trigger and Abort, AND/OR combinations
Pre-Trigger	1 to 100% of capture
Auto Re-Arm	Yes

Advanced DSP Functions	
Math functions	Addition, Subtraction, Multiplication, Division, Trigonometric, Statistics, RMS, Differentiation, Integration, and other general math functions
Derived Channels	Up to 6 based on 4 signal inputs

Optional Interfaces	
GPS	Time synchronization and location
IRIG	IRIG A and B for time synchronization
CAN	Support for CAN signal acquisition, 2 ports (13 channels when GPS and/or IRIG options purchased or 16 when neither GPS or IRIG options purchased)

Power	
Input Voltage	100-240 VAC, 50/60 Hz (47 Hz to 63 Hz)
Power Consumption	120 Watt Max. (90 Watt typical)

Internal Battery	
Type	Li-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 (300mm H x 366mm W x 168mm D)
Weight	18.5 lbs. (8.4 kg) including signal input modules

Environmental	
Operating Temp	32°F to 104°F (0 to 40°C)
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

3 with the GPS/IRIG/CAN options card

SmartCorder® DDX-100 Input Module Specifications

UNIV-4

UNIV-4 Common Specifications

Connector Type	Guarded banana jacks, 8-wire screw terminal
A/D resolution	16-bit
Measurement range (single-ended)	0.1V to 250V
Measurement range (differential)	2mV to 1V
DC Accuracy	+/- 0.06% of attenuator
Channels Per Module	4
Rated Isolation	250 VRMS or DC, Cat II (iso-common to chassis and other iso-commons)

UNIV-4 Single Ended Input

Input	Single-ended, AC/DC coupled
Sample Rate	200 KHz
Bandwidth	40 KHz (-3dB) (400V, 200V and 100V Attenuators) 35 KHz (-3dB) (10V and 1V attenuators)

UNIV-4 Differential Input

Input	Differential, DC coupled
Sample Rate	200 KHz
Bandwidth	35 KHz

NIDX-16 Specifications

Connector Type	Guarded banana jacks
A/D resolution	16-bit
Measurement ranges	0.1V to 40V
DC Accuracy	< 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)
Channels Per Module	16
Input	Differential, DC coupled
Bandwidth	4 KHz (-3dB)
Sample Rate	20 KHz

ISEV-4 Specifications

Connector Type	Guarded banana jacks
A/D resolution	16-bit
Measurement ranges	0.1V to 250V
DC Accuracy	+/- 0.06% of attenuator
Channels Per Module	4
Rated Isolation	250 VRMS or DC, Cat II (iso-common to chassis and other iso-commons)
Sample Rate	200 KHz
Input	Single-ended, AC/DC coupled
Bandwidth	40 KHz (-3dB)

IHVM-4 Specifications

Connector Type	Guarded banana jacks
A/D resolution	16-bit
Measurement ranges	1V to 1000VDC or 600Vrms
DC Accuracy	+/- 0.06% of attenuator
Channels Per Module	4
Input	Differential, DC coupled
Bandwidth	35 KHz (-3dB)
Rated Isolation	600 VRMS or DC, Cat III (channel to chassis and other channels) 1,000 VRMS or DC, Cat II (channel to chassis and other channels)
Sample Rate	200 KHz

IHVM-4P Specifications

Connector Type	Guarded banana jacks
A/D resolution	16-bit
Measurement ranges	1V to 1000VDC or 600Vrms
DC Accuracy	+/- 0.06% of attenuator
Channels Per Module	4
Input	Differential, DC coupled
Bandwidth	14 KHz (-3dB)
Rated Isolation	600 VRMS or DC, Cat III (channel to chassis and other channels) 1,000 VRMS or DC, Cat II (channel to chassis and other channels)
Sample Rate	50 KHz

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. Onsite start-up assistance is also 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 also available for an additional fee.

Lease
Capital expense budget not available? We have you covered. AstroNova Test & Measurement collaborates with a leasing company allowing you to lease the devices you need to get started now. Get underway with a low down payment and reasonable monthly fee.

AFTER 25 YEARS OF USE, I CONSIDER ASTRONOVA'S DASH 8X MODEL ONE OF THE BEST BUILT PIECES OF EQUIPMENT I'VE EVER SEEN.

I WISH EVERYTHING WE BOUGHT WAS ENGINEERED TO LAST LIKE THIS…

WE'D NOT BE WORKING ON SO MANY BROKEN PROJECTS IN LIFE."

TEST ENGINEER, FORTUNE 500 CHEMICAL COMPANY

AstroNova®
Test & Measurement

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, our all-in-one data acquisition systems are easy to use, saving time and money.

Reliability   Constructed for durability and portability, our products are rugged and ideal for mobile use over time.

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 value our customers and are committed to providing total satisfaction. Our technical support engineers are located at our facility in the USA and around the world with on-site training and startup assistance is available.

Collaboration   Our approach is partnering with our customers to understand their needs and propose solutions based on their unique challenges.

The AstroNova   Operating System
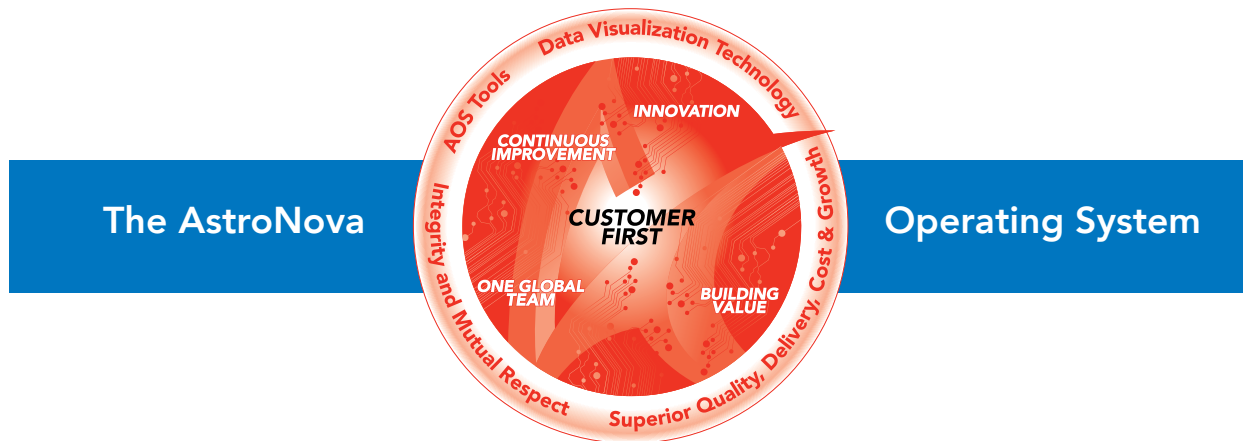
Other Data Acquisition Products Available from AstroNova

Real-Chart RC-300 provides high resolution, real time, wide format printed charts for up to 32 channels of data. Real-Chart works with TMX® or as a standalone network printer with digital data via ethernet.

Daxus® DX-100 is an ideal solution for distributed and rugged data acquisition with or without a PC. Multiple units can be stacked or networked for high channel count applications.

TMX® is an all-in-one data acquisition system providing an unmatched combination of features, ruggedness and ease-of-use. Durable in all environments.

AstroNova Worldwide Presence

World Headquarters
600 East Greenwich Ave.
West Warwick, RI 02893 USA
Toll-Free: 877-867-9783
Tel: +1 401 828-4000
daq@astronovainc.com
tm.astronovainc.com

China
Part D, Building No. 3 Plot Section
No. 81 Meiyue Road
Pilot Free Trade Zone
(Shanghai) 200131
Tel: +86 21 5868 3687
tm.astronovainc.cn

EMEA Headquarters
Waldstrasse 70
63128 Dietzenbach
Deutschland
Tel: +49 (0) 6074-31025-00
tm.astronovainc.de