AstroNova™
Test & Measurement

//////TMX®

High-Speed Data Acquisition System

Easiest Data Acquisition Systems on the Market

The TMX features a high resolution, 17" touch screen display, as well as pre-defined set up options, making test setup a breeze. With the TMX, you will be up and running in no time.

See for Yourself! Check out our online video demo at: tm.astronovainc.com

No matter your test requirements, the TMX offers a configuration to meet your needs, accepting a wide variety of inputs in one system.

With the TMX, you can easily create and switch among multiple setup configurations.

SERVICE & SUPPORT

AstroNova's world-class customer service and technical support teams are available 24/7. Located locally around the world, you can be confident the AstroNova team is behind you.

Quick & Easy Setup

The TMX's modular inputs eliminate the need to purchase extra signal conditioners. Accepting a variety of inputs, the TMX lets you mix and match different sensors within one test, connecting pressure sensors, strain gauges, thermocouples, high voltage and other signals to one system. The TMX automatically converts data to Engineering units, providing your data in units of pressure, strain, temperature, voltage, and more.

Should your requirements change later, the TMX allows for growth, giving you the option to add more channels by simply installing input modules.

SYNCHRONIZED DATA CAPTURE

Long Term Trending

The TMX captures it all, whether your test runs for 100 milliseconds or 100 hours. With its dedicated, 1 TB hard drive for data capture, the TMX is ideal for long-term trending and high-speed event detection. Powerful Embedded Scope Capture and intelligent triggering provide low speed trending while simultaneously monitoring and storing highly sampled, time-synchronized events.

The TMX enables you to stack thousands of data captures on the hard drive.

Embedded Scope Captures

Using the powerful embedded scope capture and intelligent triggering, the TMX provides low speed trending while simultaneously monitoring and storing highly sampled time transients or events. The TMX will time stamp and embed important data into the trend recording, ensuring all details of critical data are captured.
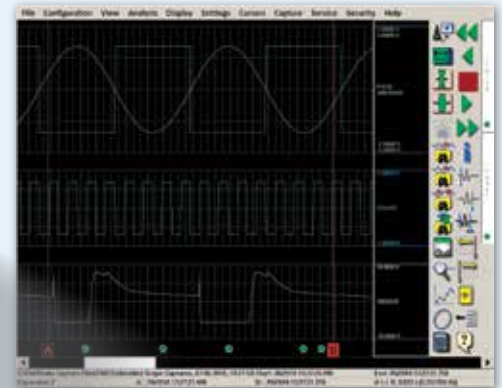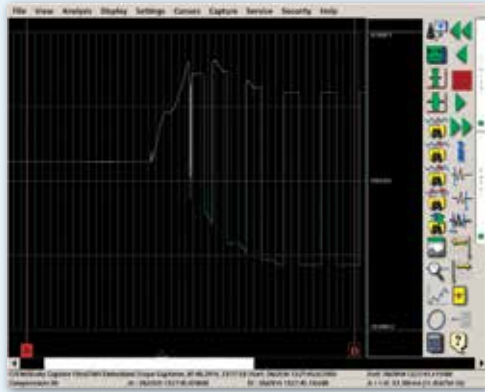
Multiple Sample Rates

Up to four sample rates can be used per TMX data capture, Allowing you to manage file size by assigning higher sample rates to critical signals and lower sample rates to trending signals.

Triggering

The TMX contains advanced triggering capabilities start and/or stop a recording based on changes in your input signals. The circular data buffer of the TMX allows you to set and record large amounts of pre-trigger data. Window, level and slew triggering allow you to set up trigger conditions precisely for your application, while logical AND and OR triggering ensure that you trigger only on events that are important to you.

Dedicated Hard-Drive

Unlike Windows-based systems, the TMX features a 1 TB hard drive dedicated solely for capturing data. Removable drives allow your data to be easily transferred and stored securely, leaving no proprietary data on the machine.
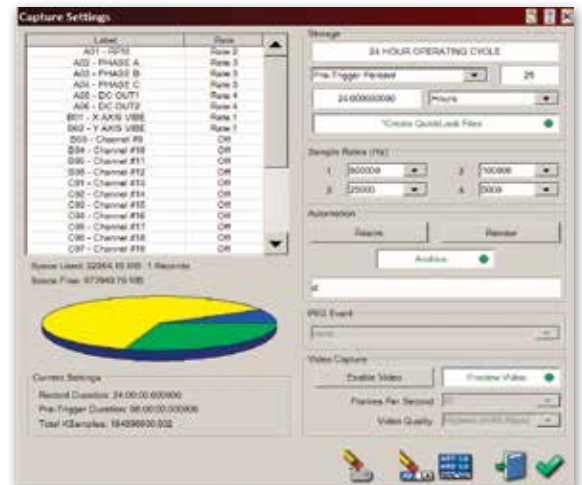
AstroNova's powerful BackChannel™ technology provides precise correspondence of analog, audio, video and data bus inputs, without relying on Windows® to synchronize your data.

FLEXIBLE INPUTS AND DATA PROCESSING

The modular, field-configurable TMX accepts all of your inputs, including analog, video, audio, IRIG, CAN bus and more, all in one system.

The TMX uses modular analog inputs, easily configuring the system for any testing application. The TMX has many optional modules including Voltage, High-Voltage, Thermocouple, Bridge, Digital I/O and others.

IRIG/GPS

The TMX-IR IRIG/GPS time option provides precise time-correspondence of data, video and all TMX inputs with other devices.

Video

The TMX can record 30 frames per second video perfectly harmonized with your analog data. Each frame is linked to a sample point giving you in-depth detail of any test.

Audio Notes

Save audio annotation into your data capture giving you a verbal account of your test.

Bus Inputs

The TMX CAN bus input option allows your critical bus data to be displayed and recorded along with your analog signals.

Filtering

The TMX provides the most flexible data filtering options available. Raw, unfiltered data is stored to the hard drive, allowing you the choice of pre- or post- data acquisition, low pass, high pass, band pass, and band stop filtering using Bessel, Butterworth or Chebyshev topologies.

Advanced DSP filtering displays real-time analog data as an RMS measurement, ideal for power monitoring applications. The integration and differentiation filter functions provide useful tools for acceleration and deceleration measurement applications.

Hardware Counters

The TMX analog input modules all contain hardware counters providing Frequency to Voltage (time and cycle based), Pulse Counter, Duty Cycle, Pulse Width and Period Detector measurements.

DISPLAY

Real-Time Viewing & Setup

The TMX displays a large 17" color screen allowing you to view data in real-time and post capture. Operation of the TMX is quick and easy with intuitive touch-screen display, interface icons and menus for straightforward setup and operation. The TMX is easily customized to fit your exact needs.

Meters/Gauges/Bar Graphs

The advanced channel meters offer a variety of options to visually indicate channel activity. View your data numerically or in other visual representations such as a gauge or horizontal/vertical bar, needle and LED readouts.

Cursor Measurements

Placing cursors on the touch screen allows for quick measurements of Time, Sample Point, Average, Min/Max & Peak-Peak Slope, RMS, Sum, Sum of Squares, Variance, Standard Deviation & Area.

Scope Mode

Scope mode acts like a digital storage oscilloscope, providing high time-base resolution for viewing high-frequency signals. Scope mode is useful for timing and synchronization analysis, transient capture, and high-speed testing. It can be used while continuously capturing data and monitoring signals on the display.

Alarms

Alarms provide a visual indicator when signals extend below or above specified boundaries. These boundaries are defined by setting up low and high alarm levels. The utility / DIO port provides an alarm output pin that can be used to trigger an external process when alarm conditions for selected signals occur.
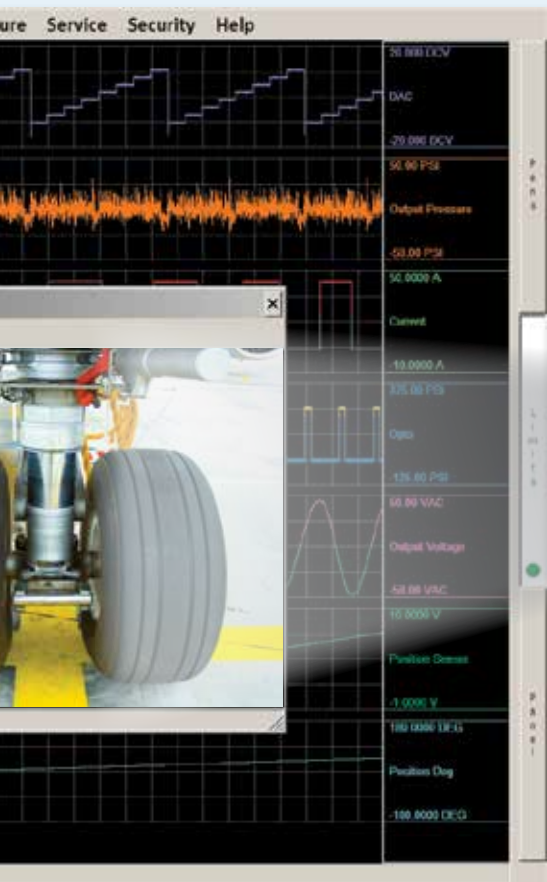
REVIEW & POST PROCESSING

QuickLook™

The innovative **QuickLook™** feature calculates compression and expansion factors while recording data, allowing you to review GB of data in seconds and scan through large data files quickly.

LookBack™

The TMX's unique **LookBack™** feature allows you to review data during capture and allows you to transfer previously recorded data without interruption to the active trend capture.

Exporting Data

The TMX offers a number of ways to archive and export captured data. Data can be exported in our packed binary format, minimizing file size, or a generic ASCII format, which is compatible with most analysis packages. For applications requiring transportable media, the TM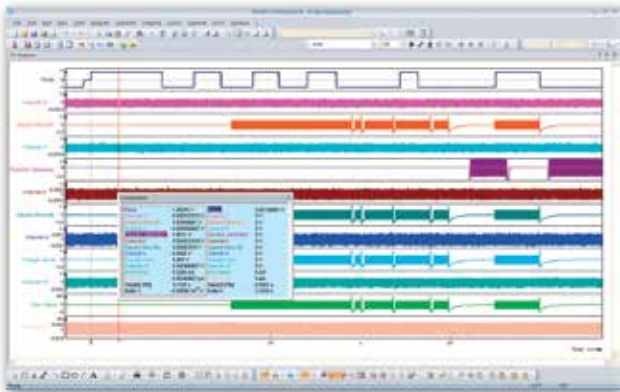X provides eight USB 2.0 ports. You have the option to connect an external hard drive, USB 2.0 Windows printer, or USB flash drive and archive GBytes of data at once.

The TMX has an integral 1000BaseT Ethernet port to make exporting data to your PC or network simple. Connect your TMX to a network and upload only the data of interest.

SOFTWARE

AstroVIEW® X

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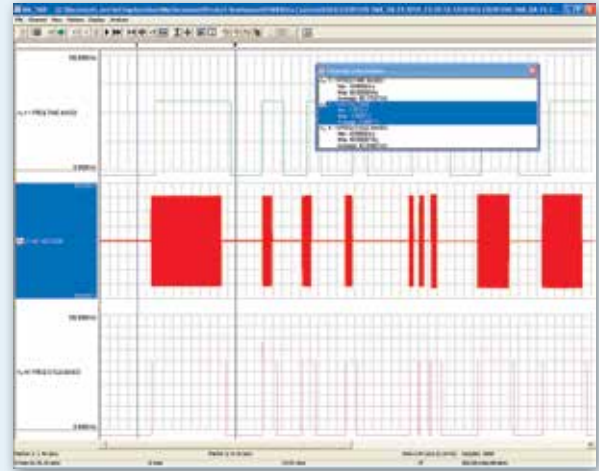
TMX Offline™

The **TMX Offline software** gives you the ability to create setups as well as review data on your PC. This powerful and easy to use Windows based software gives you all the tools necessary to quickly configure the system, transfer files, review and analyze your data.
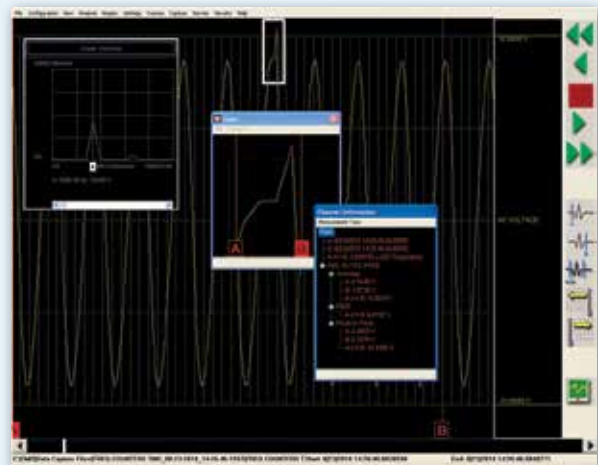
HARDWARE CONFIGURATIONS

TMX Portable Data Acquisition System

The **TMX** is designed to go anywhere your testing sends you. The tough, industrial grade package gives you the freedom to bring to the production floor or out to a remote site.

AstroDock™ PC Docking Station

The **AstroDock** is a two-drive docking station that accepts removable hard drives from any TMX recorder. The AstroDock connects to your PC via USB 2.0 and provides immediate review capability as well as direct transfer of data capture files. Insert a new capture drive in your TMX recorder and continue to record data while you review and archive on your PC.

TMX-E Expansion Box

The **TMX-E Expansion Box** for the TMX adds up to three additional modules for increased channel count.

The TMX-E Expansion Box requires the TMX base system for operation.

TMX-R Rackmount

The **TMX-R** is a high speed rackmount version of the TMX data acquisition recorder with all the same features and capabilities. The TMX-R is configured for installation in a standard nineteen-inch rack, and features six module slots.

TMX MAINFRAME

Mainframe Chassis
Maximum Analog Modules	3 (6 with optional expansion unit)
Maximum Analog Waveforms	48 (96 with optional expansion unit)
Event Inputs (TTL)	16
Derived Channels	+, -, x,÷, Exponential, Sin, Cos, Tan, √, Absolute Value

Data Acquisition Recording
Operational Modes	Scope, Review, Real-time (strip-chart)
Recording Method	Internal removable 1 TB SATA disk drive
Time Stamp	Time and date automatically saved with data
Trigger Point	Amount of pre and post trigger is user adjustable
Filtering	Low pass, high pass, band pass, band stop, RMS, integration & differentiation

Color Display
Type	Active matrix color LCD (TFT)
Viewing Area	17" (43.2 cm) diagonal
Resolution	1280 x 1024
Touch	Full screen, resistive

Compliance/Environmental
Operating Temp	40 to 105 °F (0 to 40 °C)
Operating Humidity	10 % to 90 % non condensing
Shock	MIL-STD-810F Method 516.5, Procedure I
Vibration	MIL-STD-810F Method 514.5, Procedure I

Physical
Enclosure	Aluminum, with armored end caps
Dimensions	14.5" (36.8 cm) H x 19" (48.3 cm) W x 7.5" (19.1 cm) D (without handle)
Weight (including 3 modules)	37 lbs (15.78 kg)

Interface
Ethernet	1000BaseT
VGA	For displaying data on an external monitor
USB 2.0 (8 ports/unit)	For external peripherals and file export
Expansion Port	For connection of optional TMX-E

System Power
Input Voltage Range	100 to 264 VAC or 24 VDC @ 11 A
Frequency Range	47 Hz to 63 Hz

TMX OPTIONS—INPUT MODULE SPECIFICATIONS

UNIV-6 Universal Isolated Voltage Module With DC Bridge
UNIV-6 General Specifications
Channels (per module)	6
Maximum Sample Rate/Ch	800 kHz (400 kHz with TMX-E)
Isolation	250 Vrms or DC, Cat II

UNIV-6 Single Ended Voltage Input
Maximum Bandwidth	Up to 100 kHz
Input Type	Isolated, AC/DC coupled
Specified Ranges	100 mVFS to 800 VFS

UNIV-6 Differential Voltage Input/Bridge Measurements
Maximum Bandwidth	50 kHz
Input Type	Differential, DC coupled
Specified Ranges	10 mVFS to 2 VFS
Excitation	Isolated 10 V @ 30 mA

IHVM-6 Isolated High Voltage Module
Channels (per module)	6
Maximum Sample Rate/Ch	800 kHz (400 kHz with TMX-E)
Maximum Bandwidth	60 kHz
Input Type	Isolated Differential
Isolation	600 Vrms or 1000 VDC, Cat III

TMX OPTIONS—INPUT MODULE SPECIFICATIONS

IBRM-6 Isolated Bridge Module
Channels (per module)	6
Maximum Sample Rate/Ch	800 kHz (400 kHz with TMX-E)
Maximum Bandwidth	50 kHz
Input Type	Isolated Differential
Isolation	250 Vrms or DC, Cat II
TEDS Capability	Yes

IEPE-6 Isolated Piezo Electric Sensor Module
Channels (per module)	6
Maximum Sample Rate/Ch	800 kHz (400 kHz with TMX-E)
Maximum Bandwidth	Up to 30 kHz
Input Type	Isolated Differential
Isolation	250 Vrms or DC, Cat II
TEDS Capability	Yes

NIDV-16 Non-Isolated Differential Voltage Module
Channels (per module)	16
Maximum Sample Rate/Ch	200 kHz (100 kHz with TMX-E)
Maximum Bandwidth	40 kHz
Input Type	Differential, non-isolated DC coupled
Maximum Rated Input	± 50 VDC (35 Vrms)
Specified Ranges	80 mVFS to 100 VFS

ITCU-12 Isolated Thermocouple Module
Channels (per module)	12
Input Type	Type U miniature thermocouple (12 connectors)
Isolation	250 Vrms or DC, Cat II
Maximum Bandwidth	5 Hz update rate (TC sampled at 2.5 Hz)
Thermocouple Types	J, K, E, T, N, B, R, S

DIOC-16 Digital Input/Output Module*
Channels (per module)	16
Digital Inputs	16 (TTL or switch closure)
Digital Outputs	16 (TTL, +/- 7mA)
32-bit Counters	8 pairs (16 total)
Analog DAC outputs	4
Relay Outputs	2, normally open contacts

*Contact AstroNova for detailed specifications

TMX OPTIONS—ADVANCED

TMX-R Rackmount Version (Fits Standard 19" Racks)
Maximum Analog Modules	6
Maximum Analog Waveforms	96
Dimensions	15.75" (40 cm) H x 18.97" (48.2 cm) W x 17.15" (43.6 cm) D

TMX-VA Video/Audio Acquisition
Analog Input Type/Connector	Composite/BNC
Supported Video Formats	NTSC, PAL
NTSC Capture Rate	30 fps (frames per second)
PAL Capture Rate	25 fps (frames per second)
Audio Capture Rate	Up to 44.1 kHz

TMX-E Expansion Chassis (Requires Mainframe Chassis For Operation)
Maximum Analog Modules	3
Maximum Analog Waveforms	48
Dimensions	14.5" (36.8 cm) H x 19" (48.3 cm) W x 5" (12.8 cm) D
Weight (including 3 modules)	15 lbs (6.8 kg)

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