MARS LABS

Partners in Precision Performance

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Company Overview

Mars Labs, LLC has been serving the data acquisition needs of the automotive industry since 1999. Our industry-focused practice features concentrated areas of expertise and understanding of the test environment. We have the ability to be innovative in our approach, act quickly in our decision-making, and be flexible in our delivery of services. Our clients benefit from cutting-edge technical expertise and a thorough understanding of their industry and their business. They also have the advantage of working with a small engineering firm that combines the staff and resources of a large firm with a philosophy of personal responsibility for our clients.

Testing Types

- Durability & Fatigue
- Vehicle Dynamics & Handling
- Noise, Vibration & Harshness
- Acoustics
- Shock
- Physical Simulation
- Material Testing

Product Overview

The foundation of the Mars Labs product line is "Titan", a high performance, scalable data acquisition platform implemented in a compact and highly efficient package. Titan Data Acquisition Systems offer universal signal conditioning, low power consumption, convenient SD memory card storage, and easy-to-use software. Systems can be purchased as a complete test kit, including custom cables and accessories. The Titan platform supports up to 16 analog sensor channels, plus digital channels, and is easily expanded into larger systems (up to 1024 channels) simply by adding more devices. Our Titan Control Software (TCS) application is a versatile software package optimized for use with the Titan hardware. TCS provides a comprehensive environment for the configuration, acquisition, automation, display, analysis, and storage of analog and digital sensor data. TCS does not require a user license and there is no limit on installations. Titan products are designed, manufactured, and assembled in the US. Please also visit our Products page to learn more about our products and services.

Industries Served

- Aerospace
- Automotive
- Construction Vehicles
- Energy Monitoring
- Military Vehicles
- Motorcycle
- Mechanical Engineering R&D
- Power Tools
- Road & Bridge
- Universities

Industrial

Transportation

Our Clients Include

Aberdeen Proving Grounds
American Axle Manufacturing
Army Research Lab
Aurora Flight Sciences Corporation
Engineering Systems Incorporated
Fiat Chrysler Automobiles
Ford Motor Company
Haldex Brake Products Corporation
Harley-Davidson
Lawrence Technological University
Metalsa
National Technical Systems, Inc.
Naval Air Systems Command
Redstone Arsenal
SAF Holland
SRAM LLC
Stanley Black & Decker
Yuma Proving Grounds

Our Services

Product Customization

We provide customization of off-the-shelf products and software to meet specific client requirements. Mars Labs products and services can be tailored meet special client needs.

Consultation

We provide scientific and engineering consultation for all facets of test instrumentation and configuration, including test methodology, specification development, product selection and customization, training and ongoing support.

TITAN Products

The Mars Labs TITAN family is a flexible, scalable line of data acquisition products that provide custom solutions for high or low speed applications. Products can be mixed or matched to provide up to 1024 analog channels of data acquisition and storage, plus digital channels. The TITAN family consists of:

TITAN Mini-Recorder

TITAN / TITAN II Mini-Recorder

For analog recording up to 16 channels

Portable, compact data acquisition solutions with direct data recording. Titan Mini-Recorders offer industry standard input adapters to support a wide range of sensor connections (custom input configurations are available). A high-performance analog processor section provides signal conditioning, gain, anti-alias filtering and A/D data conversion, and a recording module provides direct data recording to standard SD memory cards. TITAN Mini-Recorders include an expansion slot for increased functionality via optional expansion cards.

TITAN Digital Pod

TITAN Digital Pod / Mini-Digital Pod

Adds digital input to Titan Mini-Recorders

The TITAN Digital Pod provides a digital input interface for Titan Mini-Recorders, supporting multiple digital sensors including GPS, CANBus, Wheel Force Transducers, and Inertial Measurement Units (IMUs). The Mini-Digital Pod is an expansion card version of the Digital Pod, adding self-contained digital sensor support to Mini-Recorders

TITAN DAC

TITAN Digital Analog Converter (DAC) / Mini-DAC

Provides analog conversion from Titan Mini-Recorders

The Titan DAC provides seamless integration with Titan Mini-Recorders to provide an analog output for monitoring and control applications. The Mini-DAC is an expansion card version of the TITAN DAC, adding a self-contained analog output to Mini-Recorders.

TITAN 8-Port CPU

TITAN CPU Channel Multiplexers

Connect multiple Mini-Recorders for systems that require more than 16 channels

Titan CPU Channel Multiplexers allows you to create large channel-count systems (up to 128 analog channels, plus digital channels) by combining multiple Mini-Recorders. The 8-Port CPU08 supports up to 8 Mini-Recorders and provides power, sync, and data connections on single Ethernet cables, simplifying wiring. Titan 7-Port and 4-Port CPUs support multiple Mini-Recorders via standard USB connections, and support full Mini-Recorder scan rates (up to10K for Titan, up to 25K for Titan II). Titan CPUs work with both Titan and Titan II devices.

TITAN CPX Expander

TITAN CPX Expander

Combine multiple Titan CPUs for very large channel-count systems

The Titan CPX Expander allows you to connect up to three Titan CPUs to create large channel-count systems of up to 384 analog channels plus digital channels.

TITAN / TITAN II MINI-RECORDER

Titan Mini-Recorders feature on-board signal conditioning, programmable gain and filtering, and A/D conversion, simplifying the connection of sensors and transducers, and eliminating the need for extra equipment. Designed for a high level of noise immunity, each channel has an individual input amplifier to achieve high accuracy, superior inter-channel isolation, and low temperature drift. It also features sensor Balance and input Calibration (Rcal / Vcal) loopback functions to facilitate ease of setup and to ensure data integrity. Data recording options include recording directly to a PC via USB (Titan/Titan II) or Ethernet (Titan II), to a Titan CPU, or locally to an SD memory card. Mini-Recorders feature an Auxiliary Digital Input that supports either a GPS sensor or Digital Pod, and an expansion slot to add functionality via optional expansion cards.

Key Features:

High performance analog front end with full Balance and Calibration loopback

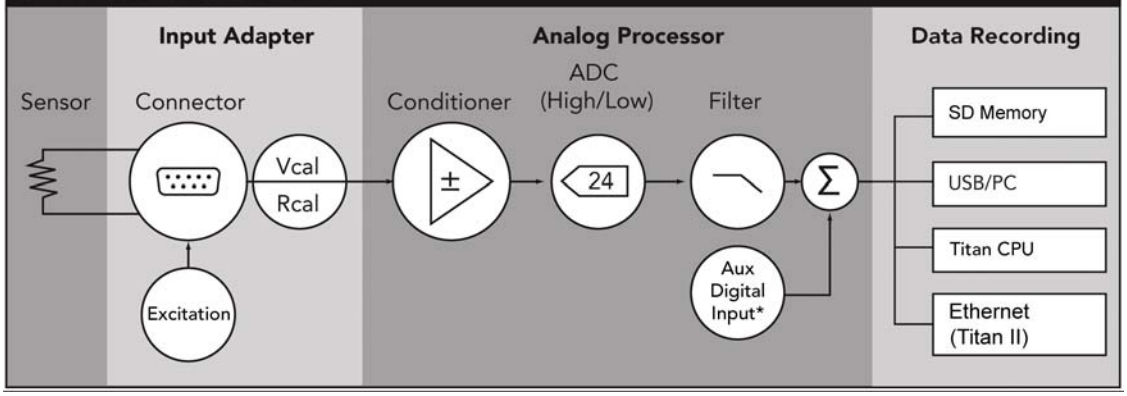
Programmable Gain and Filter

Compact size, low weight

Low power consumption (<3.25 Watts typical)

Expansion Slot

SIGNAL FLOW DIAGRAM



* Supports a GPS sensor or a Titan Digital Pod

Input Adapter

Titan Device Type	Input Connection	Sensor Support / Features: Strain Gauge – Full Bridge	Strain Gauge – Bridge Completion	Thermocouple	Differential Voltage +/- 32V	ICP	Tachometer / Totalizer	Programmable Excitation	Excitation
ADF	(1) DB37	16	N	16	16	0	0	N	2.048V
BMS	(16) DB9	16	Y	16	16	16	1	Y	2 - 11.5V per channel
BSG	(16) Bendix (PT0202A)	16	Y	16	16	0	1	Y	
TCx*	(16) Mini-TC	0	N/A	16	0	0	0	N	N/A

* Thermocouple available in Type J (TCJ), Type K (TCK), or Type T (TCT) configurations

Analog Processor

Available in Low speed and High speed versions:

Low speed = up to 1200 samples per second per channel
High speed = up to 10,000 samples per second per channel
Very high speed = up to 50,000 samples per second per channel (Titan II)

Data Recording

Records to a PC, a Titan CPU or an SD/SDHC memory card

Power

11-32 VDC

TITAN DIGITAL POD & MINI-DIGITAL POD

The Titan Digital Pod adds digital input capability to Titan Mini-Recorders, supporting multiple digital sensors including GPS, CANbus, Wheel Force Transducers (WFT), Inertial Measurement Units (IMU), and Serial data.

Key Features:

- Dual CANbus inputs, plus GPS and Serial Data Inputs
- CANbus support includes SAE J1939, ISO 15765 (ECU CAN), and multiple WFT protocols, including Kistler and Michigan Scientific
- IMU support (MicroStrain 3DM-GX3 or Mars Labs ACC10003 IMU)
- GPS support (Garmin LX18-5HZ or Mars Labs ACC10002 20Hz GPS sensor)
- Connects to Titan hardware via a single cable that provides combined power, communication, and synchronization
- Also available as an expansion card for the Titan Mini-Recorder

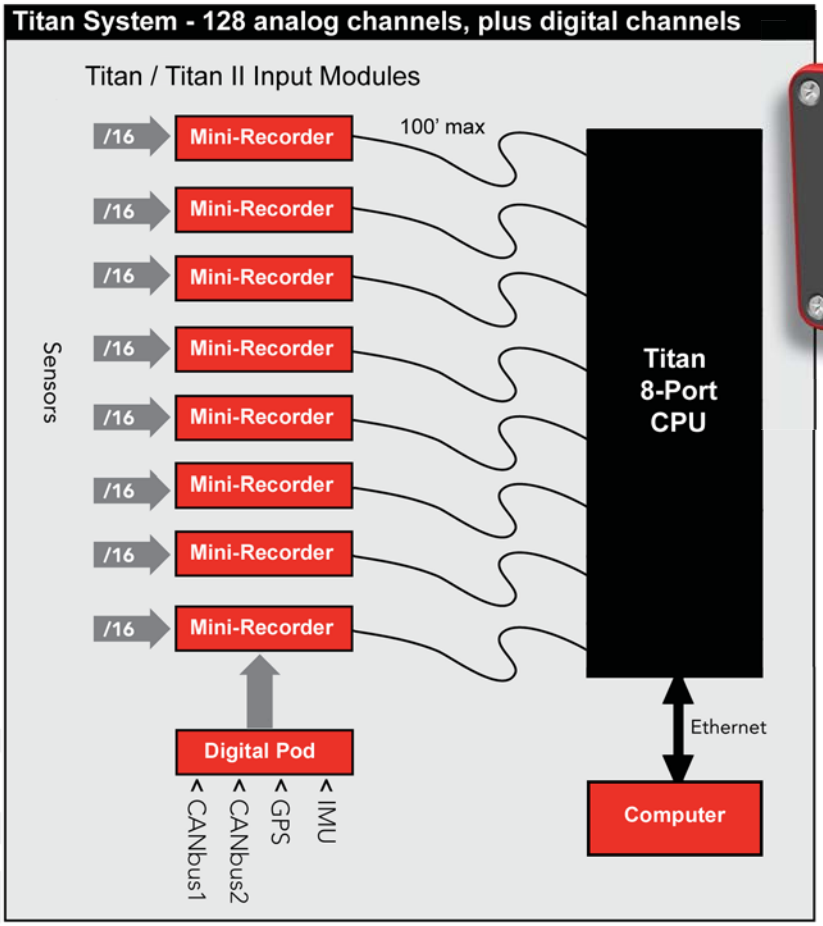
TITAN CPU CHANNEL MULTIPLEXERS & CPX EXPANDER

Titan CPU Channel Multiplexers allow you to easily configure large channel-count test systems using multiple Mini-Recorders. Data can be recorded directly to an SD Card or to a host PC through the CPU, and network operation of the CPU is available via TCP/IP.

The Titan 8-Port CPU provides connections for up to 8 Mini-Recorder devices (128 analog channels, plus digital channels) using industry-standard Ethernet cables, which provide communication, power and synchronization on a single cable, simplifying wiring.

Titan 7-Port and 4-Port CPUs support multiple Mini-Recorders totaling up to 112 analog channels for the 7-Port CPU (up to 64 analog channels for the 4-Port), plus digital channels, via standard USB connections. Full Mini-Recorder sample rates.supported

By combining multiple CPUs with a Titan CPX Expander, very large system configurations can be realized (up to 1024 analog channels, plus digital channels).



Key Features:

- Titan 8-Port: Supports up to 128 analog channels at 2500 samples per second per channel
- Titan 7-Port/4-Port: Supports up to 112 (7-Port) or 64 (4-Port) analog channels at:
  - 10K samples per second per channel (Titan),
  - 25K samples per second per channel (Titan II)
- Isolated power supply accepts 11-32 VDC
- Records data directly to an SD Card or to a host PC
- Network interface allows remote operation
- Titan devices can comunicate with the CPU up to 100 feet away (Titan 8-Port CPU)
- Compact size, low weight

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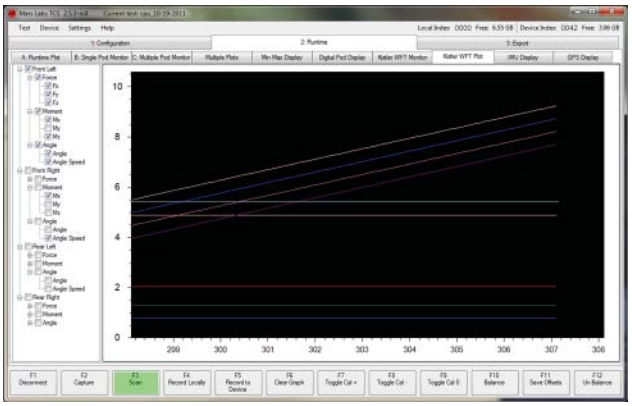
TITAN CONTROL SOFTWARE (TCS)

TCS is a versatile software application customized for use with Titan devices, providing for configuration, control, display and storage of sensor data from all Titan data acquisition hardware. The latest version of TCS incorporates many customer-requested and innovative new features, including:

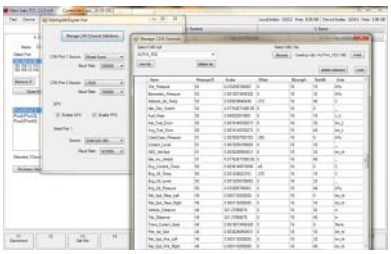


- Digital Sensor support
- Improved Peak Detection
- Alarm Indicators
- Connection Logger
- Sensor Import/Export
- User Metadata entry
- Expanded Triggering functions
- Sensor Database Management
- Pseudo (Calculated) Channel support with plotting and exporting
- Integrated firmware update capability
- Multiple file format support:
  WAV, CSV, TSV, RPCIII, MATLAB, HDF5
- Integrated User Manual with context-sensitive help

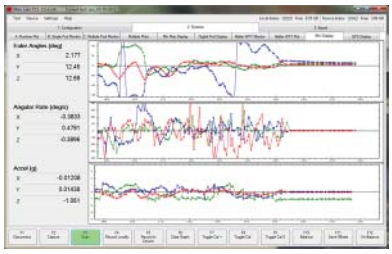
Sample Screens:

Titan Device Configuration

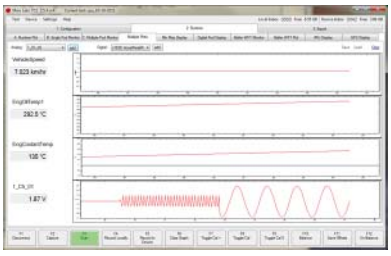
Sensor Database Management



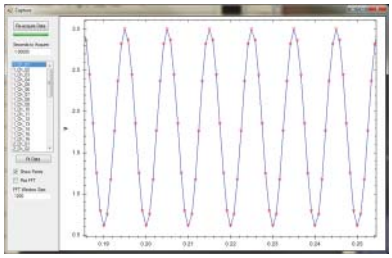
Realtime Data Plotting



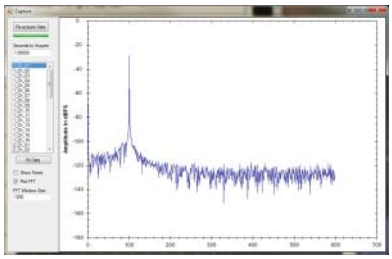
Multiple Plots (mixed data types)



Data Review



Data Analysis



MARS LABS

Mars Labs is an engineering-driven company focused on the data acquisition tools market. In addition to offering a standard line of high quality DAQ products, the company is committed to using customer feedback to develop innovative testing solutions. Mars Labs distinguishes itself both through the engineering excellence of its off-the-shelf products and through its willingness to enhance those products with customized software and services.