Beyond Automotive

Measurement, Calibration & Diagnostics Portfolio Overview
Over 25 years of connecting innovation, products and people

Accurate Technologies Company Timeline

- **1992**: Company founded
- **1992**: US Office opened
- **1992**: IGTM 1000 Timing Measurement
- **1994**: Injector / Coil Driver modules
- **1994**: Injector / Coil Driver modules
- **1995**: SmartTach Speed Measurement
- **1995**: SmartTach Speed Measurement
- **1997**: Ozone Data Acquisition
- **1997**: Ozone Data Acquisition
- **1998**: VISION 1.0 & VISION HUB Calibration Software
- **1998**: VISION 1.0 & VISION HUB Calibration Software
- **2000**: United Kingdom Office opened
- **2000**: United Kingdom Office opened
- **2001**: SmartTach Speed Measurement
- **2001**: SmartTach Speed Measurement
- **2002**: EDAQ Data Acquisition
- **2002**: EDAQ Data Acquisition
- **2002**: Apollo Pro Data Analysis Software
- **2002**: Apollo Pro Data Analysis Software
- **2003**: Apollo Pro Data Analysis Software
- **2003**: Apollo Pro Data Analysis Software
- **2004**: CANLab 1.0 Bus Analysis CANverter
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- **2007**: CANLab 1.0 Bus Analysis CANverter
- **2007**: CANLab 1.0 Bus Analysis CANverter
- **2008**: M5 Memory Emulator
- **2008**: M5 Memory Emulator
- **2009**: M5 Memory Emulator
- **2009**: M5 Memory Emulator
- **2010**: M5 Memory Emulator
- **2010**: M5 Memory Emulator
- **2011**: ROM2CAN Emulator
- **2011**: ROM2CAN Emulator
- **2012**: M6 Memory Emulator
- **2012**: M6 Memory Emulator
- **2013**: M6 Memory Emulator
- **2013**: M6 Memory Emulator
- **2014**: M6 Memory Emulator
- **2014**: M6 Memory Emulator
- **2015**: M6 Memory Emulator
- **2015**: M6 Memory Emulator
- **2016**: DLX Datalogger
- **2016**: DLX Datalogger
- **2017**: DLX Datalogger
- **2017**: DLX Datalogger

Over 25 years of connecting innovation, products and people
More than 25 years
of advanced technology, successful collaborations and valued partnerships

ATI - Your Global Measurement, Calibration and Diagnostics Partner

With a quarter of a century of experience in developing cutting-edge software and hardware solutions for the measurement, calibration and diagnostics (MCD) sector, Accurate Technologies Inc.'s (ATI's) extensive product portfolio is used globally by major OEMs and Tier One clients across a wide variety of automotive powertrain formats. ATI also manages numerous clients in the defense, marine and aerospace sectors, where the company’s innovative approach and high levels of customer service and support are vital factors in the firm's success story.

Since the company was formed in 1992, its central objective has been the same - to create advanced, user-friendly products that enhance both productivity and efficiency for powertrain and vehicle manufacturers, testers, calibrators and suppliers. Headquartered in a purpose-built, state-of-the-art 120,000 sq ft development and manufacturing facility in Novi, Michigan USA, customer support is provided globally by ATI subsidiary offices in China, France, Germany, India, Japan, Sweden, and the United Kingdom.

Combining unrivalled market knowledge and a complete understanding of what really matters to you, the customer, ATI is dedicated to delivering innovative value added MCD solutions, always with an emphasis on the ease of use.
Over 25 years as reliable hands-on service partners
ATI is a product-based company, but its business philosophy is that of a Service Organization.

Rather than selling a static product to everyone, ATI develops MCD software and hardware solutions that are designed from the outset to adapt to customer processes and requirements. ATI’s service-led approach is adopted by all aspects of the company’s activity; including new product development, worldwide employee recruitment to most importantly, its renowned customer service.

ATI - A distinctive business philosophy for an independent Corporation

- ATI functions as a product based company, but with a service organization mentality
- Being independent, ATI supports all ECU suppliers equally without conflicts of interest
- ATI is run for engineers, by engineers, with swift reactions to users’ ongoing requirement changes

ATI Product Quality - Products exclusively manufactured at its US facility

- Comprehensive manufacturing processes using state-of-the-art equipment
- Manufacturing processes implement a continuous improvement model
- Partnered with industry leading qualified suppliers
- Total ownership and safeguards of both ATI and customer intellectual property
- Single location housing both engineering and manufacturing facilities offers rapid issue resolutions and customer request integration

Partnerships are central to ATI’s business philosophy

Every customer - irrespective of size - is a potential long-term collaboration as they benefit from ATI’s ongoing support, training and software product updates.
ATI’s Product Portfolio
An Integrated MCD Toolchain

ATI’s range embraces hardware, software and associated 3rd party products across an integrated toolchain designed to maximize productivity, efficiency and development capabilities for ECU module and / or powertrain development.
ATI’s Product Portfolio

An Integrated MCD Toolchain

Ignition Timing Meter

Data Acquisition Devices

Serial Interfaces

Dataloggers

CAN Interfaces

I/O Modules

Kvaser CAN bus Interfaces & Loggers

ECU Calibration, Data Acquisition & Diagnostics

SmartTach Module

HV Measurement Modules

ECU Rapid Prototyping

PICOTURN Turbocharger Speed Measurement

Data Analysis

CANLab Multi-bus Network Analysis
Software Portfolio
VISION is an innovative, user-friendly, powerful, comprehensive software solution that is available in numerous versions incrementing in toolkit functionality. VISION offers a wide range of capabilities ranging from basic data acquisition to post-analysis, ECU calibration and ultimately the rapid prototyping of module functionality using patented No-Hooks technology.

VISION offers fully integrated calibration and data acquisition capabilities including signal collation from ECUs and external sources, plus measurement and the real-time calibration and modification of closed-loop control systems. In addition VISION time aligns data and facilitates the analysis of information, manages calibration changes and enables flashing of the ECU.

VISION now includes a ‘Remote Dashboard’ feature which enables users to remotely view and monitor VISION on secondary displays including smartphones and tablets. Powerful and versatile, Remote Dashboard is also capable of automating and executing some common functions of the VISION software host environment.

Key VISION Software features include:
- ECU Flashing, Calibration and Rapid Prototyping packages
- Data Acquisition and Data Analysis packages
- Intuitive GUI design
- Powerful API and post processing features
- Model based calibration available

3D Calibration Tables and dial gauges are key graphical representations of calibration data and measurements available within VISION.
VISIONview is a customizable, yet easy to use tool for post-data analysis of recorded data. Essential elements of any data analysis tool include the ability to manipulate and view data in a way that highlights results, differences, and specific events. ATI’s VISIONview enables comparisons, overlaying, and detection of data or events while easily handling data sets with 1000+ channel counts.

VISIONview’s powerful post-data analysis features include the use of XY plots to graph one variable against another, and file overlays to view data from multiple files on the same graph. Use VISIONview’s Calculated Channels to enhance information, layout templates to expedite set up of similar tasks or tests, and the convenient Recorder Catalog for recording management. Import/export in popular file formats (MATLAB, MDF, HDF and ASCII) including the ability to export a reduced data set for focused analysis.

VISIONmeasure adds the ability to view data during collection from ATI’s EMX DAQ devices. Collection and analysis are supplemented with a wide range of customizable display objects that enable viewing real-time data as it is acquired by ATI’s range of data acquisition devices.

Select from a collection of customizable display objects such as stripchart recorders, oscilloscopes, LEDs, gauges and thermometers. Change colors, fonts, sizes and other appearance aspects of each individual object.

Key VISIONview features include:
- Create multiple views of the same data set
- Create calculations based on recorded data
- Create templates for quick formatting of data
- Overlay recordings for comparison
- Export segments of recorded data

Key VISIONmeasure features include:
- Simultaneous view of multiple graphs
- Import/Export capability with other file formats
VISIONdaq/daq+
Advanced monitoring & analysis

**VISIONdaq** features an enhanced set of capabilities compared to VISIONmeasure, including advanced recording, monitoring and analysis functionality for a broad range of industry standard third party CAN data acquisition devices.

**VISIONdaq+** adds additional support for acquiring time aligned data from a wide variety of ECU interfaces using commonly found ASAM CCP or XCP protocols to ensure the widest possible compatibility with legacy hardware.

**Key VISIONdaq features include:**
- Support for industry standard third party DAQ modules

**Key VISIONdaq+ features include:**
- Support for time aligned ECU interface data
- ASAM CCP and XCP compatibility

**Acquire, view and analyze data, exploit advanced features in conjunction with ATI or legacy DAQ hardware.**
**VISION Remote Dashboard**

Smarter. Safer. Portable.

**VISION Remote Dashboard** offers convenient, adaptable, location-independent, safer viewing and interaction with your important VISION data. Create and display customized virtual dashboards on secondary displays or virtually any device connected to a network.

Remote Dashboard is platform independent that only requires a HTML 5 compatible browser and provides much more functionality than displaying data. Advanced features such as Action Buttons, Recorder Panel and Script panel provide simple, intuitive remote interaction with VISION. Make calibration changes, control recorders and run scripts without the distraction of a keyboard and mouse, at your convenience.

Download Remote Dashboard Connect for use with VISION Calibration and Data Acquisition Software 5.X.

**Key Remote Dashboard features include:**

- Access VISION data remotely
- Customize virtual dashboards for secondary displays, including tablets and smartphones
- Execute common VISION software functions independent of location
- Monitor multiple remote locations at once
- Reduce in-vehicle distractions - improve user safety
- Convenient, easy to use and fully secure
- Adjust multiple calibration parameters with just one touch or with no-touch GPS triggered automation

Exploit Remote Dashboard’s ability to view, manipulate and execute VISION functions to enhance field test safety.
ATI offers an innovative, patented software-centric method for rapid prototyping production ECUs with its sector leading No-Hooks technology. Functioning as an extension of VISION Calibration and Data Acquisition Software, the primary benefit of No-Hooks is that it allows users to internally bypass Read-Only control variables in the ECU’s RAM with calibratable parameters.

As such, ATI’s No-Hooks enables users to explore a wide variety of advanced rapid prototyping applications including system validation and fault injection, all without requiring costly external hardware-in-the-loop (HIL) systems.

- Use only the standard files needed for calibration; the original ECU source code is not required
- Perform rapid prototyping; then calibrate and acquire data directly on your prototype within the same tool
- Calibrate the base strategy and the bypass model simultaneously

No-Hooks is fully integrated within ATI’s VISION Calibration and Data Acquisition Software.

Key No-Hooks Advanced ECU Rapid prototyping features include:
- Bypass ECU instruction code
- No source code needed
- Fast and cost effective
OnTarget enables the expanded capability to integrate custom model based control algorithms into existing ECU code.

In the No-Hooks tradition, there is no need for access to or modification of the ECU source code; all that is required are the ECU executable and description files.

- All the features of No-Hooks Rapid Prototyping
- Bypass variables with outputs from a Simulink® model, allowing the addition of an entirely new control algorithm to be added to the existing ECU code without modifying the original ECU source code
- Free ATI GNU compiler is available for a variety of micro-controllers
- Supports most microprocessors commonly used in ECU’s
- Cost effective for design and validation of new algorithms
- OnTarget is ideal for the prototyping and testing of new closed-loop functions and Function A/Function B comparison testing
- Harnesses the modeling abilities of Simulink combined with the calibration support of VISION

Key OnTarget features include:
- Original source code is not required
- Provides additional Simulink blocks to stitch models into existing code
- Integrates seamlessly with VISION
CANLab is a multi-bus network analysis tool that provides a complete solution for key industry standard network protocols such as Controller Area Network (CAN) including SAEJ1939 and Local Interconnect Network (LIN).

Support of popular databases and hardware with advanced post analysis is always included. CANLab can be used to view network activity, send and receive signals or messages, record and replay data, manipulate and analyze data, and check statistics, all in real-time:

- Accommodates most CAN hardware interfaces
- Offers analysis and scripting at no extra cost
- Provides a sophisticated strip chart recorder and replay
- No need to stop for changes - start or stop recording on the fly
- Connect or disconnect hardware without stopping the software

Key CANLab Multi-bus Network Analysis Software features include:

- Intuitive GUI design
- Log, send and replay CAN and CAN FD data
- Supports industry leading interfaces
- CCP/XCP/KWP Protocol Decoders

CANLab features dials and gauges for viewing signals that significantly improve the data analysis process. Recorded or 'live' signals and statistics can be graphed and analyzed simultaneously.
DAQ Hardware Portfolio
The **DLX** Datalogger offers a unique combination of functions, providing the features of a CAN interface, data acquisition module, and datalogger all in one compact package. Communication channels include CAN, K-line, and LIN that interface to ECUs or communicate with ATI data acquisition hardware.

The DLX brings a robust and cost effective datalogger and calibration interface to small engine development, including eight analog channels, one sensor power output, four thermocouple channels and four digital input/output channels. This combination ensures that ECU and instrumentation data are properly correlated for easy analysis. The small form factor and IP65 rating make the DLX ideal for space constrained applications.

ATI’s all-new VISION Data Analyzer enables users to view DLX Datalogger data stored in ASAM MDF4 version 4.1 file format without requiring an additional software utility to interpret MDF4 files - a first for data loggers in this segment.

### Key DLX Datalogger features include:
- Four digital input/output channels
- Four +/-5 V differential analog inputs
- Four 0 to 20 V single-ended analog inputs
- Four K-type thermocouple input channels
- Two high speed CAN 2.0B channels
- One ISO 9141 compliant K-Line channel
- Two LIN version 2.1 channels

Data is stored on the DLX in ASAM MDF V4 files that can be easily accessed by using the USB port or removing the SDHC card.
EMX Data Acquisition units provide an unprecedented level of high end measurement and redefine the cost per channel equation for the industry sector, offering unrivalled performance and reliability. Available in thermo, analog or combined channel variants, EMX modules feature compact, water-tight, IP67 rated, hard anodized billet aluminum housings and aerospace grade connectors. ATI’s innovative hardware architecture enables an extremely wide range of EMX configurations resulting from the ability to combine a variety of I/O types in compact packages to suit individual project requirements. Subsequently, ATI’s EMX modules are frequently used to replace existing high cost rack-sized units, delivering significant cost and performance benefits.

EMX modules incorporate advanced features including user configurable software filters, wide measurement ranges, channel isolation and built-in sensor power for analog channels. All EMX units are fully integrated into ATI’s renowned VISION Data Acquisition Software - which also provides powerful post analysis and standalone hardware configuration functionality. EMX units can also be configured to send measurement data in user defined CAN messages for use with any one of the significant number of third party applications capable of decoding CAN messages. EMX’s small size, ingress protection rating and wide operating temperature range allows installation of the modules closer to the signal sources in rugged environments, backed by the security of ATI’s 3-year warranty.
Key EMX DAQ module features include:

- Compact packages with extended temperature range
- Analog, thermo or combined units available to suit bespoke requirements
- Highly competitive cost-per-channel equation
- Configurable data acquisition rates, voltage range or thermocouple types by channel
- Advanced anti-aliasing hardware and high performance DSP software filters for accurate and reliable data
- Advanced selectable software filters (Bessel, Butterworth, Elliptical) with selectable stop band
- Hard anodized billet aluminum housings
- IP67 rated for installation in rugged environments
- Aerospace-grade connectors
- Pressure differential compensation via Oleophobic breather
- No physical switches or preset ranges required
- Supports multiple thermocouple types including B,E, J, K, N, R, S, T, selectable per channel
- 3rd party SW support using CAN communication or Plug and Play with VISION Software that provides an enhanced EMX experience

The EMX design is based on a modular chassis, available in thermo, analog or as a combination of channels, in a variety of size formats.
Serial / CAN Interface & CAN Product Portfolio
The A8 is ATI’s next generation of ECU serial interfaces, providing easy connectivity between a PC USB or Ethernet port and an Electronic Control Unit (ECU.) Connecting via the microprocessor’s debugger interface, the A8 enables data acquisition, calibration, and flashing functionality to the ECU’s microprocessor memory regions. Connecting through the debugger interface provides the capability of acquiring data and flashing the ECU at a significantly higher rate than via the CAN bus.

The A8 allows modification of the ECU memory without interrupting the ECU processor. Keeping up with technology, the A8 supports the latest microprocessors’ debug interfaces including JTAG, OCDS, Nexus, and DAP2. Additional processors can be supported based on customer requests. Built for automotive environments, the A8 is designed to be user-friendly, versatile and to deliver fast data throughput.

Key A8 Serial ECU Interface features include:
- Fully integrated ECU interface
- Acquire, calibrate and flash all-in-one
- High speed ECU data acquisition
- Dynamic data rates
- Plug and play USB or Ethernet connectivity
The **CANary** is a pocket-sized CAN interface for ATI’s VISION Calibration and Data Acquisition Software. Communicating via the Universal Serial Bus (USB) connection, it’s two CAN channels enable communication from VISION Software to ATI data acquisition hardware, ECU modules (using CCP or XCP) for calibration, and to other CAN-based products compatible with VISION Software.

The 4 channel **CANary FD** is designed for the increased data available on CAN FD networks, yet retains the features of the standard CANary. The CANary FD easily connects to the PC over USB, providing a simple method to acquire CAN FD data using VISION.

Supported devices include:
- ATI data acquisition hardware (EMX series, EDAQ series, Voltage Output Module (VOM), and Vehicle Information Display (VID))
- ASAM communication protocols (CCP/XCP) typically used for calibration, monitoring, and flashing of ECUs
- Generic CAN devices that utilize database files

**Key features for the compact CANary CAN Interface include:**
- 2 high speed CAN channels
- Both CAN channels handle high bus loads simultaneously
- Advanced time synchronization of ATI DAQ Hardware
- Micro robust design

**Key features for the compact CANary FD CAN Interface include:**
- 4 high speed CAN channels capable of CAN FD
- All 4 channels are galvanically isolated
- Capable of both ISO CAN FD and non-ISO CAN FD
- Supports ATI Optimized DAQ when using the CANary FD with VISION and ATI DAQ hardware
- Mechanically switchable CAN termination on each channel
- SAE J2534 drivers available
The CANverter is a compact and cost effective I/O module suitable for any high-speed physical layer CAN network. Used globally, this well-proven device can either send a message on a CAN bus or translate CAN data to an external acquisition system.

Produced in high-quality ABS plastic, CANverter’s light weight and compact size makes it portable and simple to install just about anywhere.

Features:
- Converts CAN bus data to analog voltages or digital signals or PWM output.
- Converts analog or digital inputs to CAN data
- Easy setup via the CANverter Configuration Software (using a .dbc or .uef database, drag and drop signals onto the desired pin for quick configuration)

Key CANverter I/O module features include:
- Bidirectional CAN to I/O conversion
- Compact and cost effective
- Supports CAN database files
- Easy drag and drop
ATI offers its own branded and standard **Kvaser CAN bus** interface products to complement its line of tools for any application requiring access to the CAN bus via a PC. These products provide a competitively priced, easy to use, flexible solution for network interfacing with VISION or CANLab Software. Kvaser’s product range is all based on the same API, CANlib. Write to just one API and use any product on any platform.

Select from three main product areas. USBcan units offer two channel USB interfaces for the CAN bus, while the Leaf series of products provide a single channel USB interface for CAN with a range of features and price points. Finally, products such as the Kvaser Memorator allow you to log data without a PC, and then use the PC to extract network messages. Professional versions of any Kvaser product offer Magisync™, Kvaser’s software time stamp, to time-align multiple CAN transceivers. Broader temperature ranges, higher speeds, increased bandwidth and higher levels of accuracy differentiate Kvaser’s professional products.

Compared to competitors, Kvaser interface and logger products offer these advantages:
- Kvaser’s universal, easy to use API for both software developers and the end client
- Free software, free updates and free support
- Swedish innovation and Italian product housing design
- Tailor-made to meet the needs of engineers
- Strong commitment to R&D investment
- ATI branded devices offer extra functions compared to Kvaser equivalents

ATI’s Kvaser range of CANbus interfaces and loggers offer D-sub, J-1939 and even 5-pin NMEA approved CAN connectivity.
ATI has developed unique products that satisfy specific test cell or dynamometer challenges. These highly accurate products measure engine timing (IGTM) or speed (SmartTach) in convenient ways to provide information that otherwise may not be available.

- Satisfy a unique need
- Rugged construction
- Resistant to extremes of temperature
- High levels of reliability

Specialty products that satisfy specific test cell or dynamometer challenges.

**SmartTach Module**
Universal speed measurement made easy with ATI’s SmartTach. The SmartTach takes pulse output from Engine position sensors, Dyno Encoders, Ignition drivers and other sources and provides a scaled analog speed output.

The SmartTach can easily handle missing tooth wheels and multi-strike ignition systems that cause problems with Frequency to Voltage conversions. Use the SmartTach to also measure frequency, pulse width or duty cycle.

**Ignition Timing Meter**
ATI’s Ignition Timing Meter (IGTM) is a precision timing measurement instrument designed for engine development and testing.

Measure ignition, camshaft or injector timing with an accuracy of +/-0.05 degrees for steady-state and transient testing. The IGTM-2000 provides an easy means for data acquisition systems to collect real-time measured ignition timing on spark ignited engines.
Comprehensive ongoing Training

ATI offers hands-on training to its customers globally. The courses offered are designed to gain a complete understanding of ATI's product concepts, functions, and features. Through instructor led demonstrations and hands-on simulations, attendees will be able to apply this newly-acquired knowledge directly to their skillset. ATI training classes can be conducted at any one of the ATI facilities listed globally or on-site at your convenience. To determine your training needs or to schedule training, please contact your local ATI office.

Examples of ATI's Most Popular Classes:

**Advanced VISION**
Focus on time-saving using the advanced features offered by VISION, including:
- Customization
- Calibration Manager
- Advanced table views and templates

**Rapid Prototyping Basics**
- No-Hooks software set up overview
- Perform real-world modification of ECU parameters and algorithms
- Discover RP functions that make this patented product unique
- Review real-world examples to expand the capabilities of your own processes

**Scripting**
- Overview of scripting
- Create individualized tools to automate custom activities or repetitive tasks
- Review examples of scripting techniques to improve productivity

**ECU Interfaces**
- Discover how serial interfaces are used in the calibration of and data acquisition from ECUs
- Review function and capabilities of each type of interface

**Introduction to CANLab**
This class covers initial set up and use of ATI's CANLab software. Learn more about using CAN with VISION, CAN Message functionality, and configuring CAN interface hardware. Practical examples include:
- Monitoring, recording, and sending CAN messages
- Filtering and replaying CAN messages
- Using CAN Database (dbc) files
- Overview of CANLab Scripting
In addition to free product training, ATI prides itself on delivering a reactive global support service that recognizes that your time is precious, enabling your team to maximize productivity with confidence. For longer-term projects a comprehensive on-site support service is also available on request globally for our major OEM and Tier One partners.

- Typical support emails answered within one hour
- Two week average repair
- On-site support available worldwide
- Free, ongoing product training
- Free, ongoing software updates and feature additions*

*Current ATI SW Maintenance and Support required

1. USA - Accurate Technologies Inc.
   Novi, Michigan
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