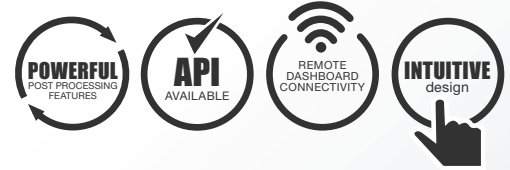


# VISION

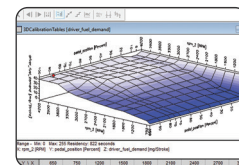
One tool,  
endless  
possibilities



VISION Calibration and Data Acquisition Software is a powerful collection of toolkits that can be seamlessly grouped together in combinations to provide an integrated customizable application that is capable of the entire range of calibration and data acquisition functions including data collection from electronic control units and external sources, measurement of relationships between inputs and outputs, realtime calibration and modification of closed loop control systems, time alignment and analysis of all information, management of calibration data changes, and programming of electronic control units (ECUs).

VISION Base is available at no charge and provides core setup features, configuration of ATI hardware and the ability to acquire and view data from ATI data acquisition hardware using Data Lists, Recorder Objects, CAN Monitors and CAN Trace Objects. All additional functionality is added to VISION Base in the form of toolkits. Experience VISION with a free copy of VISION Base.

Easily add toolkits to provide functionality that has been developed based on ATI's extensive history of working side-by-side with customers. ATI has gained critical insight to how development engineers work and how to present functionality in the most intuitive and convenient manner.



3D Calibration Tables and dial gauges are key graphical representations of calibration data and measurements available within VISION.



## VISION Base Features

- Configure and acquire data from ATI data acquisition hardware
- View and collect data with functional Data List and Recorder Objects
- Utilize CAN Monitors and CAN Trace Objects available for use with ATI devices (only including ATI CAN Network Interfaces)
- Device Manager to describe and organize hardware components
- Vehicle Manager that makes it easy to create vehicle specific setups

Select the individual Toolkits needed or chose from one of ATI's Toolkit packages that offer popular groups of functionality.

## The VISION Difference

VISION's approach is unique. Designed and developed with direct input from ECU development customers, VISION functionality is structured based on how engineers want to work rather than how a programmer builds software. VISION focuses on customizability, efficiency, expanding compatibility, performing multiple functions at once, and programmability to simplify repetitive tasks. The sole purpose of VISION's flexibility is to speed up the development process.

Evidence of ATI's success is the fact that new customers only require minimal training upon start up. This is demonstrated by the fact that the vast majority of VISION users do not see the need for on-site support. All customers benefit from ATI's customer service team that not only answers questions in record time, but act as the advocate for the customer by adding product improvement suggestions directly to the local development group.

VISION development is structured to provide VISION users a platform that is more responsive to their very dynamic development environments. The most recent introduction of VISION Tool Suite provides an advanced expansive framework to which functionality can be added in the form of plug-ins. With functionality independence and the ability to accommodate enormous volumes of data, VISION Tool Suite enables the addition of functions such as MDF4 recorder analysis, editing of A2L files, new ATI hardware configuration utilities, automated script generation, and virtually any new feature requirement in the future.

The VISION Client Services Tray provides services that are normally not accessible or easily accessible to typical application users. The evolution of Windows security was the basis for the creation of Client Services. This isolates users from many of the traditional Windows application management limitations. VISION Client Services deliver these extended features such as licensing using a file rather than codes, assigning VISION Rapid Prototyping versions to MATLAB versions and configuring the Recorder Catalog or Remote Dashboard. All these activities can be accomplished without launching VISION.

## Available VISION Functionality

- Live graphical views
- Additional data analysis tools
- Third party device compatibility
- Electronic control unit communication support such as ASAM CCP/XCP and ATI Interfaces
- Importing/Exporting multiple file formats (MATLAB®, MDF, HDF and ASCII)
- API (application program interface)
- OBD II vehicle diagnostics support for vehicle comparisons
- J1939 Monitor support
- Support of other third party devices
- ECU rapid prototyping
- Supports auto-saving of commonly used file types



## VISION Calibration and Data Acquisition Solution

### Data Acquisition

VISION offers complete DAQ solutions that can provide powerful yet convenient features for data analysis, data collection and connection to devices acquiring data. Use VISION's Project Manager to simplify test setup in a tree structure format that easily allows the addition, removal, and configuration of measurement devices. VISION recorders or screens can then be tailored to collect, manage, and analyze data in the manner and format that best fits individual needs

### Data Analysis

Essential elements of any data analysis tool include the ability to analyze and view data in a way that highlights results, differences, or specific events. ATI's VISION enables comparisons, highlighting or auto detecting of data or events, overlaying, and even partial exporting to save time and maximize throughput.

Use Virtual or Calculated channels to enhance information or Layout Templates to expedite set up of similar tasks or tests. VISION offers still another level of convenience by allowing analysis and changes to analysis while still on-line. There is no longer the need to start or stop your application to make changes.

VISION's powerful post analysis features include importing/exporting in popular file formats (MATLAB, MDF, HDF and ASCII), use of x-y plots to plot one variable against another, and file overlays to view data from more than one file at a time. Add files to current plots and open files relative to one another so that all files can be viewed together. The data analysis capabilities of VISION make it a versatile calibration measurement tool for many industry applications.

VISION Data Analyzer (VDA) is designed to accommodate large data sets made possible by the ASAM MDF4 format. Open MDF4 files in the Data Analyzer using templates and take advantage of the analysis of VISION. When using the magnifying glass on a recorder or stripchart in VISION, .rec files will open in VISION and MDF files will open in VDA.



### Post-Analysis Features

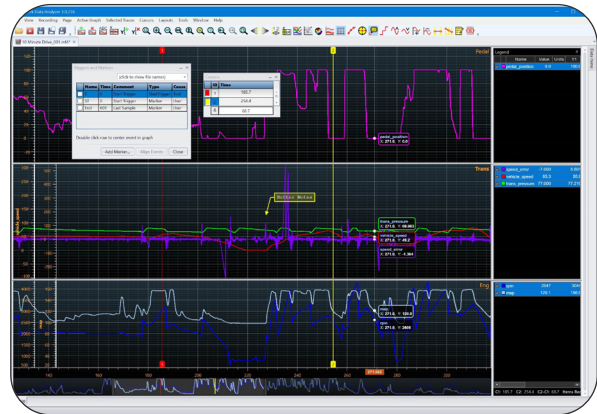
- Support of recorder file overlay for comparisons between different recorder files
- Statistical analysis including: means, peaks, medians, standard deviations, etc. for each channel
- Display trace data in both graphic and tabular form
- Create line and XY plots
- Digital, line and step line modes
- Simultaneous view of multiple graphs
- Create multiple views of the same data set
- Create Templates for quick formatting of data
- Independent or grouped Y-Axis scaling
- Create calculations based on recorded data
- Import/Export other recording file formats
- Export segments of recorded data
- Quick and easy plot navigation and formatting
- Define and review recording event markers in MDF recordings
- Review metadata within MDF data recordings
- Easily remove data items from data graph
- Drag and drop data items between data viewer legends
- Recorder views and controls any available screen recorder



## VISION Data Analyzer

VISION Data Analyzer (VDA) 3.0 and up is a software application from ATI for viewing and analyzing recorded data using the industry standard ASAM MDF4 file format. As a 64-bit Windows application it supports large file sizes generated by either ATI or 3rd party software.

- Support ASAM MDF4 standard file format
- View and overlay multiple recordings
- Create and share layout templates to view multiple files the same way
- Intuitive navigation and extensive pan and zoom functionality
- Spend your time analyzing data rather than configuring software
- Export entire/partial data sets
- Meticulously recrafted as 64 bit for large files



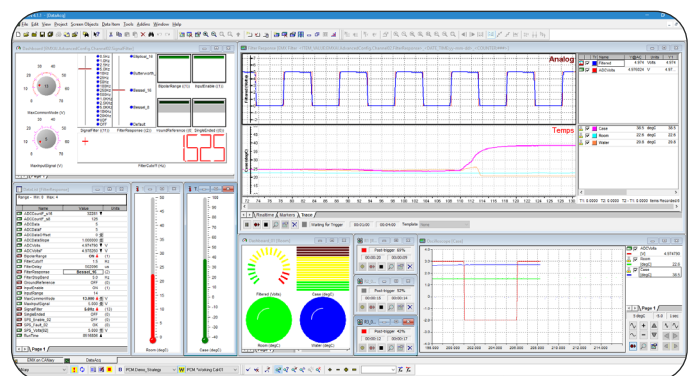
## VISION Data Collection

For data acquisition and analysis, VISION's screens can be tailored to collect, manage, and analyze data in the manner and format that best fits individual needs. Objects are included to display data for thorough analysis and can be arranged to fit proper test environments. Select from a collection of customizable display objects such as stripchart recorders, dials, gauges, and dashboards. Change colors, fonts, sizes and other appearance aspects of each individual object.

Create and display customized virtual dashboards on secondary displays and other mobile devices connected to the same network to remotely monitor a VISION session. In addition the Remote Dashboard is also capable of automating and executing some common functions of the VISION software host environment. The Remote Dashboard offers convenient, adaptable, location-independent viewing and interaction with your important VISION data.

## Viewing Features During Collection or Analysis

- Support for 'floating' independent sampling rates per channel
- Record any data available to VISION including calibration items
- Pause stripchart display while continuing to record data
- Monitor data in real-time
- Tabular, 2D, or 3D display of curves and maps
- Customizable gauges, dials, switches and others to view data
- Specialized views such as Poke, CAN Replay, OBDII, Text Screen Objects
- Customize all screen objects to view data
- Remote dashboard for mobile devices monitors VISION that is running on a host computer
- Live calculated data based on formulas applied to available data items
- Stream MDF directly to disk allowing for larger data sets



## Interfacing and Managing DAQ Devices

VISION is not a closed system. It can adapt to legacy systems or tools that customers may already use. Convert files to / from VISION for data sharing or, in many cases, use hardware supplied by other vendors.

VISION offers recording, monitoring and analysis capabilities of a broad range of ATI and third party CAN data acquisition device data and data from supported electronic control unit (ECU) interfaces.

## Compatible DAQ Products

- All ATI hardware such as ATI ECU interfaces, EMX Data Acquisition modules, EDAQ and DLX
- ATI Plug and Play Ethernet via the Ethernet EMX and A8 Ethernet Serial Interface
- Third party CAN interfaces such as Kvaser CAN and CAN FD Interfaces
- Third party CAN data acquisition device data
- Monitor and record data from supported ATI electronic control unit interfaces including CCP and XCP protocols, ATI serial interfaces and memory emulators

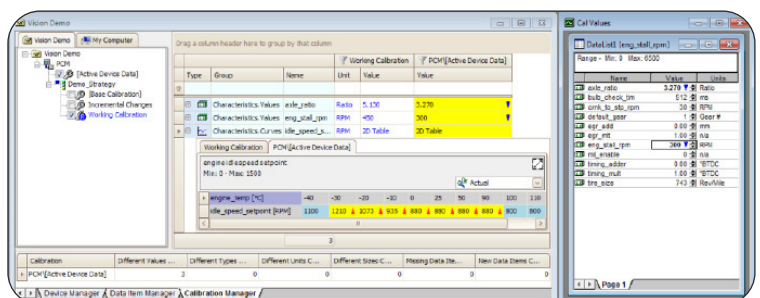
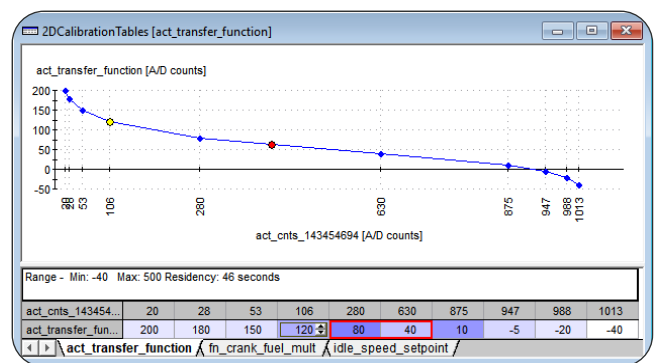
## VISION Software Calibration (CAL) Calibration and DAQ

VISION provides a wide range of calibration screen objects such as 2D and 3D Calibration Tables, which are key graphical representations of multi-dimensional calibrations that can be edited in various ways. Editing methods include adjustment formulas, keyboard shortcuts, and automated scripts. Additional features include the ability to transpose axes, rotate map views, interpolate cells and map slice views. Use all of these features off or on line.

Calibrating in real-time requires an interface to the ECU. ATI's VISION provides the support for the entire range of ECU interfaces. Select from ATI hardware or third party devices and VISION provides seamless ECU monitoring, calibration and flashing of ECU data. Perform calibration and data acquisition in real-time in a single user interface.

## Available Calibration Functionality

- Calibrate off-line without an ECU or on-line with appropriate ECU interface toolkit
- Graphic multi-dimensional view of calibrations
- Wide range of calibration data item editing methods: formula bars, drag and drop, manual, and spinners
- Batch processes of calibration changes
- Display ECU running point during measurement
- Display the percentage of time spent in each cell of an ECU table or map
- Mark calibratable items to track changes
- Use Calibration Manager for dynamically comparing, merging or creating calibrations
- Calibration Maturity parameter associated with data items / Track maturity levels of calibration data items
- View/edit ASAM ASAP2/A2L files with A2L Explorer in VISION Tool Suite
- Create/edit/import/export ATI, DCM, A2L, Vector, MATLAB, VAT2000 or ASAM CDF calibration file formats using applicable VISION toolkits



## API Scripting to Expand your VISION Application

For those who want to automate tasks, have novel approaches to accomplish tasks or have invented entirely new functions beyond the native capabilities of VISION, the VISION API provides the ultimate in customization flexibility. Use Microsoft Excel, MATLAB or free options such as VBScript or Microsoft Visual Studio Express to quickly automate tasks. The Automated Test Sequence editor is a visual scripting environment for easily creating or modifying scripts to interact with the VISION application without specific programming knowledge. Scripts (.ats files) can be built to perform the simple task such as starting VISION, loading project files into VISION, toggling VISION online state, or starting a recorder. More extensive scripts can be built that include performing actions such as enabling and auto-syncing devices, adding/configuring strategy files, adding and activating calibration files, opening screen files, or writing to Data Items.

## VISION Software Options

### Extended Software Support

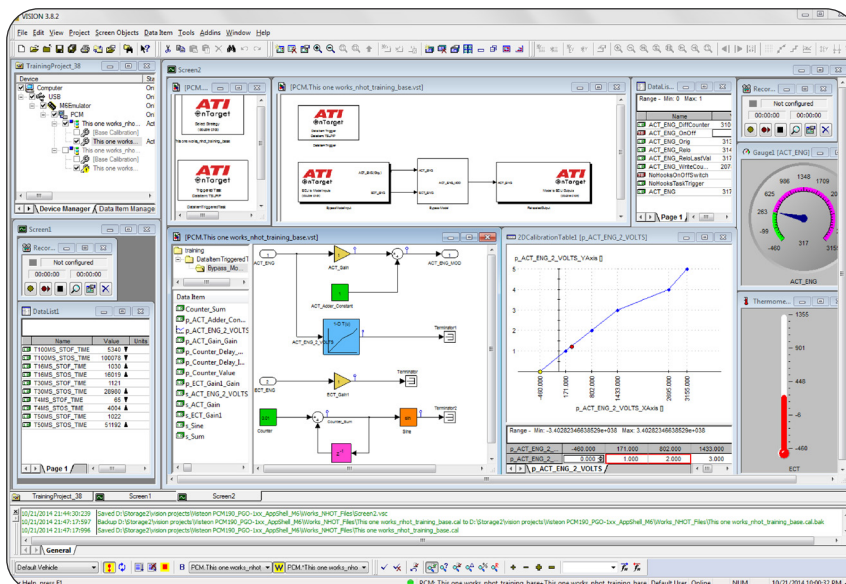
VISION also supports interfaces to some vehicle-oriented standards or third party software that are essential for many applications involved in vehicle electronic control unit development. One major category comprises support of Society of Automotive Engineer (SAE) standards including J1939 that covers CAN networks for medium/heavy duty vehicles and on-board diagnostics (OBD) that refers to the vehicle's self-diagnostic and reporting network.

### Interfaces to Other Networks or Software

- J1939 Monitor with DTC Support Interface
- CAN OBD Interface
- AVL's IndiCom, Advanced Combustion Analysis Software
- AVL CRETA™ Calibration Data Management Software interface
- KiBox® Combustion Analysis Measurement System

## Rapid Prototyping - No-Hooks and OnTarget

Perform software-centric rapid prototyping on existing ECUs using the No-Hooks/OnTarget toolkits with VISION. The patent-pending No-Hooks technology enables the bypass of variables in the ECU's RAM that are normally only viewable or measurable. OnTarget uses NoHooks and integrates Mathworks Simulink® models into an existing ECU strategy. These bypass functions occur with the production ECU executables without requiring access to the ECU source code. There is no need for high cost external bypass hardware or expensive (and time consuming) code changes.



## VISION Hardware Options

ATI provides a wide range of hardware to complement calibration and data acquisition systems based on ATI's VISION software.

## Data Acquisition Hardware

ATI VISION collects and records measurements from a wide variety of sources that can be recorded for in-depth post analysis to correlate development and real world applications. Easily add, remove, and configure measurement devices supplied by ATI or choose from other third party measurement modules. VISION and ATI's hardware devices support both centralized device configurations, where data acquisition devices reside in one location for easy access, and distributed configurations, where modules are placed close to the actual signal sources to reduce noise, interference and the amount of wire needed.

## Electronic Control Unit Interface Hardware

ECU Interfaces supported in VISION include ASAM CCP/XCP and ATI interfaces. Serial Interfaces connect to ports provided by semiconductor companies such as AUD, RTD, or JTAG. Memory emulator products plug directly into a microprocessor socket. The network communication support includes the ASAM Universal Calibration Protocol (XCP) and CAN Calibration Protocol (CCP) standards, along with KWP2000 via K-Line. Using ASAM standards allows VISION to be compatible with any target ECU regardless of the module type or module manufacturer.

## Measurement Devices Supported

- ATI EMX Analog and Thermocouple DAQ modules
- ATI EDAQAI, EDAQT, and EDAQP DAQ modules
- CSM CAN based DAQ Modules
- CSM Serial Measurement Bus (SMB) DAQ Modules
- IPETRONIK CAN based DAQ modules
- CAN based DAQ modules
- IMC CANSAS compact CAN-based DAQ modules
- CEASAR QIC modular CAN-based DAQ modules
- SOMAT eDAQ hardware
- Kistler KiBox Combustion Analyzer
- AVL Drive Interface
- ETAS ES430 Lambda Meter

## CAN Interfaces Supported

- ATI DLX
- VISION Network Hub
- ATI CANary and CANary FD
- Kvaser
- Vector

## ECU Interfaces Supported

- ATI ECU Serial Interfaces
- ATI ECU Memory Emulators
- CCP and XCP via CAN or Ethernet
- KWP2000 via K-Line
- KWP2000 via CAN
- UDS (ISO-14229) on CAN
- OBDII on CAN
- xETK ECU Interfaces



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