VISION Calibration and Data Acquisition Software

ATI VISION Software is an integrated calibration and data acquisition tool that collects signals from the ECU and external sources, measures relationships between inputs and outputs, enables real-time calibration and modification of closed loop control systems, time aligns and analyzes all information, manages calibration data changes, and programs the ECU.

VISION provides customer-driven features and content from ATI's extensive history of working side-by-side with customers to gain critical insight to how development engineers work.

ATI's 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. For the physical access to ECUs, VISION supports the full range of hardware interfaces.

Features

Setup
- Utilizes a Device Manager to describe and organize hardware components and ECU strategies and calibrations
- Provides a Vehicle Manager that makes it easy to create vehicle specific setups
- Provides user configurable views for calibration and measurement data
- Allows for an unlimited number of views
- Allows purchasing only what is needed via Toolkits

Calibration
- Batch processes of calibration changes
- Marks calibratable items to track changes
- Allows offline calibration without an ECU
- Tracks ECU cell usage of tables and maps
- Allows realtime comparison to the Base or a Reference calibration
- Provides integrated Calibration Manager
- Provides a wide range of editing methods: formula bars, drag and drop, manual, and spinners

Recording Data
- Allows the use of multiple recorders simultaneously
- Pauses while recording data for analysis
- Provides independent sampling rates per channel
- Records any data available to VISION including calibration items
- Saves in ASCII, MATLAB®, MDF and HDF formats

Display Objects
- Tabular, 2D, or 3D display of curves and maps
- Gauges, dials, switches, and slider display
- Display of running point during measurement
- Graphic multi-dimensional calibrations
- Format data lists to your requirements
- Calculate residency values indicating length of time spent in given areas

Post Processing
- Create multiple views of the same data set
- Wide range of formatting options
- Create calculations based on recorded data
- Create Template for quick formatting of data
- Overlay recordings for comparison
- Export segments of recorded data
- Merge calibrations

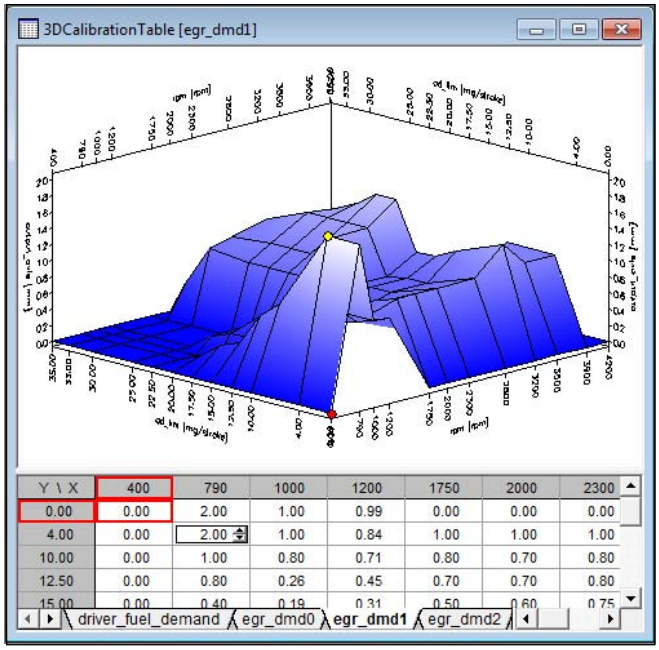
VISION Calibration and Data Acquisition Solution

Data Acquisition (DAQ)

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. The VISION Project Manager is used to simplify the test setup in a tree structure format that easily allows the user to add, remove, and configure measurement devices. Objects and screens are included to display data for thorough analysis and can be arranged to fit proper test environments.

Advanced Analysis Features

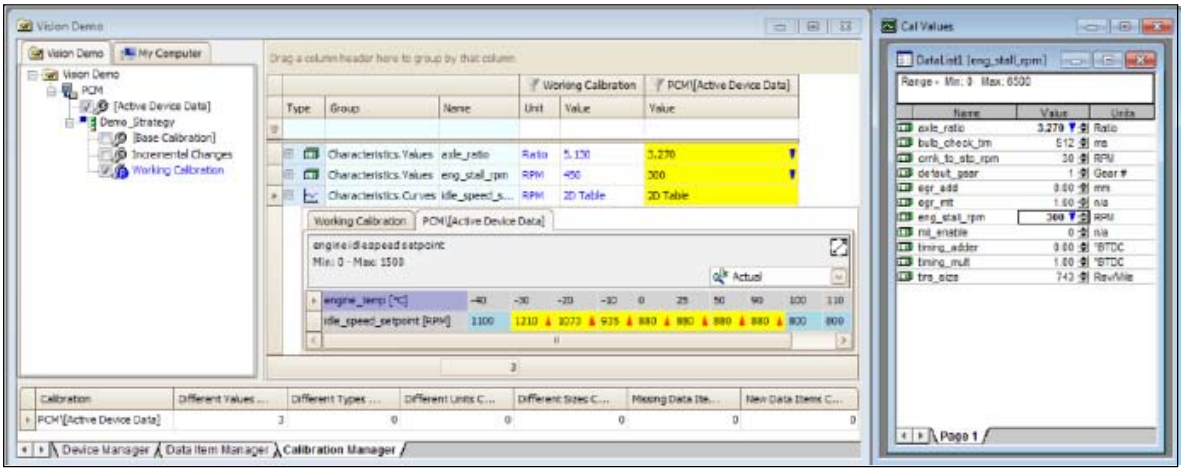
- Dials and gauges that provide the ability to customize acquisition screens
- Support of file overlay for comparisons between different recorder files
- Multiple data recorders each with a trigger running simultaneously
- Statistical analysis including: means, peaks, medians, standard deviations, etc. for each channel
- Display trace data in both graphic and tabular form
- Simultaneous view of multiple graphs
- Layout templates
- Normalized traces
- Import/Export capability of other file formats
- Find-in-Files
- Calculated/virtual channels
- Integration with calibration and RP tools



Y \ X	400	790	1000	1200	1750	2000	2300
0.00	0.00	2.00	1.00	0.99	0.00	0.00	0.00
4.00	0.00	2.00	1.00	0.84	1.00	1.00	1.00
10.00	0.00	1.00	0.80	0.71	0.80	0.70	0.80
12.50	0.00	0.80	0.26	0.45	0.70	0.70	0.80
15.00	0.00	0.40	0.19	0.31	0.50	0.60	0.75

Calibration (CAL)

In addition to the wide range of Screen Objects available for DAQ data, 2D and 3D Calibration Tables 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 overlay tables, transpose axes, and insert text labels for later reference. Residency values are calculated indicating the length of time spent in given areas of maps and tables.



VISION Calibration and Data Acquisition Solution

Post Analysis - VISION Data Analysis and Viewer

Essential elements of any data analysis tool include the ability to manipulate 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 minimize throughput.

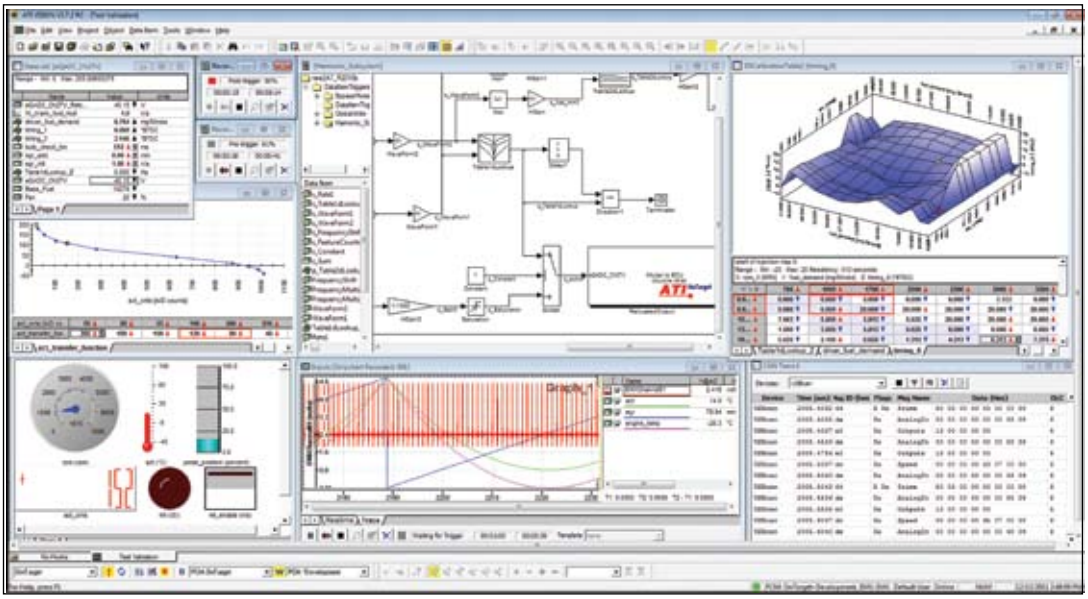
Use Virtual or Calculated channels to enhance information or Layout Templates to expedite set up of similar tasks or tests. VISION offers still another level of convenience by allowing analysis and changes to analysis while still on-line. There is no longer the need to start or stop your application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

Rapid Prototyping - No-Hooks

Perform software-centric algorithm rapid prototyping on existing ECUs using the No-Hooks toolkit with VISION. The patent-pending No-Hooks technology enables modification of RAM variables or prototyping of new features on the ECU. There is no need for high cost external bypass hardware, extra Hardware-in-the-Loop boxes or expensive (and time consuming) code changes.

For more information go to the Rapid Prototyping section.



VISION Calibration and Data Acquisition Solution

Hardware Options

ATI provides a wide range of hardware to complement calibration and data acquisition systems based on ATI's VISION™ software. Use ATI VISION hardware for features such as interfacing to accessories essential for test situations or adding extra communication channels.

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 such as CSM, Ipetronik SIM modules, and Campbell equipment. 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 and interference and the amount of wire needed.

Calibration Hardware
ECU Interfaces supported in VISION include ASAM CCP/XCP, serial network connection, and memory emulator. Serial Interfaces include ports provided by semiconductor companies such as AUD, RTD, or JTAG. The network communication support includes the ASAM standards, the Universal Calibration Protocol (XCP), and CAN Calibration Protocol (CCP), along with KWP2000 via K-Line. Memory emulator products plug directly into a microprocessor socket. 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
- SMB CAN Interfaces (CSM Dual-Scan, AD-Scan, Thermo-Scan, and Baro-Scan)
- IPETRONIK CAN based DAQ modules
- CAN/RS-232-based DAQ modules
- IMC CANSAS compact CAN-based DAQ modules
- CEASAR QIC modular CAN-based DAQ modules
- National Instruments DAQCard 700, 1200, and E-series
- SOMAT eDAQ hardware
- Kistler KiBox Combustion Analyzer

ECU Interfaces Supported

- CCP via CAN
- XCP via TCP/IP, UDP or CAN
- KWP2000 via K-Line
- KWP2000 via CAN
- ECU Memory Emulators
- ECU Serial Interfaces

Requirements	
Minimum PC Requirements	Microsoft Windows XP SP3 (32-bit or 64-bit) 1 GHz microprocessor 1 GB of RAM

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