The INCA product family is an integrated environment for measurement, calibration and diagnostics. The tools are used for ECU development and test as well as validation and calibration of electronically controlled systems on the test bench and in the vehicle.

INCA offers a wide variety of functions ranging from precalibration of function models on the PC, ECU back programming, measurement data analysis, calibration data management to automated optimization of ECU parameters. The generated calibration and measurement data can be processed and evaluated continuously.

ECU calibration can be prepared offline and performed online during continuous operation. INCA supports a great number of compact, automation-capable measurement devices and interface modules which allow the access to ECU buses and sensors. Signals from the ECU, as well as from fuel lines J1939, CAN, FlexRay, and measurement devices are synchronously acquired, displayed and recorded. The numerous improvements and innovations of the new version 7.0 increase the efficiency and performance of the tools on one hand. On the other hand, INCA V7.0 offers new possibilities for integrating tools and data in the development environment of the customer.

Standards and open interfaces

For the seamless integration into the development environment, INCA comes with a number of open interfaces. INCA V7.0 is compliant with the new specification for exchanging measurement data, ASAM MBD, and with the latest versions of the ASAM standard MCD-2 and MCD-3 for measurement and calibration specifications and INCA MCD (test bench interfaces). INCA V7.0 is the only tool currently on the market which supports the parallel connection to automation and autopilotization on the test bench according to the ASAM MCD-2 V2.2 specification.
Open, efficient, and reliable

The new “Instrument Development Kit” allows the extension of the INCA experi-
ment environment to a parameter control and display element. The supplied instruc-
tions, examples, and a configuration wizard facilitate the development of specific in-
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of customized file formats and layouts. The new ECDM interface to the enterprise cali-
bration data management allows the ex-
tension of the data directly between
INCA and data base systems.

Sharing one configuration
With INCA V7.0 it is always possible to
share a configuration with other users or
companies. The settings of the user options can be
quickly and easily adapted between different PCs. Differences in the user options can be
handled as usual in the table view or directly in the
configuration dialog of the INCA experiment.

For connecting ECUs via CAN or Ethernet
to INCA, ETAS provides the Integration
Package XCP-IP free of charge. XCP-IP
contains source code for the XCP-EU dri-
ver, a comprehensive documentation and
a configuration tool. The XCP-EU driver
supports ECU measurement, calibration, flash programming and bypassing.

Easy integration in the tool and ECU
environment


during a test drive, INCA V7.0 lets you
capture position data using a GPS mouse
synchronously to the acquisition of ECU
data. GPS data can be expected and
interpreted as slide controls and an animated road map.

Figure 1: Variable measurement criterion selection (top), Instrument configuration (bottom) and configuration of the display and the measurement range of the selected variable in the complete experiment or in the individual instrument (bottom)
Differences in the user options on different computers. In the new INCA version, the change of calibration data directly between INCA and data base systems.

New hardware options
INCA V7.0 offers complete support of all interfaces of the modules ES920, ES921, and ES925. For new ECU and bus interface modules such as the USB CAN bus module ES581, and the interfaces of the modules ES910, ES920 and ES925, so that they can be used for ECU function development, for measurement and calibration purposes quickly and in high quality. The new INCA add-ons for extending the experiment environment through the new virtual and display elements. The example above shows animated graphics (simple and instrument clusters) as well as route contrasts and an animated road map.

Easy integration in the test and ECU environment
For connecting ECUs via CAN or Ethernet to INCA, ETAS provides the Integration Package XCP-IP free of charge. XCP-IP contains source code for the XCP ECU driver, a comprehensive documentation and a configuration tool. The XCP-IP driver supports ECU measurement, calibration, flash programming and bypassing.

INCA - The easy way to the optimum experiment
The quick way to the optimum experiment
The configuration dialog of the INCA experiment environment has been revised completely in the new version. The new dialog allows the direct configuration of control and display elements of the experiment when selecting the calibration values and measurement signals. Existing INCA experiments can be fully and quickly adapted using the new dialog. The multiple selection option enables the quick and consistent configuration of display settings of different labels.

INCA V7.0 for extending the experiment environment through the new virtual and display elements. The example above shows animated graphics (simple and instrument clusters) as well as route contrasts and an animated road map.

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New hardware options

The new EHOOKS tools from ETAS provide a simple activation or deactivation of hooks.

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Open, efficient, and reliable

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Technical Data

Item Characteristics Features

Data exchange ECU description ASAM MCD-2 MC
Interfaces ECU calibration ETK/XETK, CAN (CCP, XCP, KWP, UDS), K-Line (KWP2000, McMess), item characteristics

Measurement Acquired and online display of measurement data, calibration parameters (values, hysteresis, crosspoint), diagnostic data and current, number of beginning possibilities, online calculation and representation of several signals, ECU storage range in text and graphical representation, on-off enable and disable display.

Measurement & data analysis. Timestamp, trace display, data sheets, event trigger, analysis, report generation, data table analysis.

ECU diagnostics Building and expanding the test bench, memory and data reading by diagnostic events, revision of vehicle electronics, air bag disarming, 16 bit, 32 bit, CAN, CAN FlexRay, CANbus lines (LIN, CAN, FlexRay) or measured data lines (LIN, CAN, FlexRay).

Flash programming Flash programming of several ECUs, support of several hard disks (1D to 4D), calibration scenario editor, limited calibration RAM by the tool, support of derived signals, ECU storage dump in hex format, possibility of tool independent measurement devices, online calculation and representation of all measured data and comments, numerous trigger possibilities, online calculation and representation of all measured data and comments, numerous trigger possibilities.

Rapid prototyping Integration of experimental targets, same measurement devices on the PC, ECU flash programming, measurement data analysis, calibration data management, listing, comparing and copying calibration data.

Measurement and performance System requirements for the test bench and in the vehicle.

ETAS INCA V7.0 Integrated Measurement, ECU Calibration and Diagnostic Environment

The tasks of the INCA product family form an integrated environment for measurement, calibration and diagnostics. In the tests used for ECU development and test as well as for validation and calibration of electronically controlled systems on the test bench and in the vehicle. INCA offers a wide variety of functions ranging from preconfiguration of function models on the PC, ECU flash programming, measurement data analysis, calibration data management to automatic optimization of ECU parameters. The presented combination of calibration and measurement data can be processed and evaluated continuously.

ECU calibration can be prepared offline and performed online during continuous operation. INCA supports a great number of compact, automatic/semi-automated measurement devices and detection modules which allow the access to ECU buses and sensors. Signal flow via the ECU, as well as all bus interfaces (LIN, CAN, FlexRay) or measurement devices are synchronously acquired, displayed and recorded. The numerous innovations and improvements of the new INCA version 7.0 increase the efficiency and performance of the tools on one hand. On the other hand, INCA V7.0 offers new possibilities for integrating tools and data in the development environment of the customer.

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For more information on the INCA product family as well as for ordering information, please go to www.etas.com/INCA.

Technical Data (continued)

Item Characteristics Features

Applications Calibration Calibration data is available in a user-friendly setup form. A single click of the mouse allows the run-up of all ASAM ECU calibration functions. Management of formalized calibration (FIBEX) according to the ASAM MCD-2 MC for calibration data management.

Product 

ETAS Locations Worldwide

Technical Data

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<table>
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<tr>
<th>Item</th>
<th>Characteristics</th>
<th>Features</th>
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<tbody>
<tr>
<td>ECU collection</td>
<td>- Face-to-face interface for connecting calibration systems</td>
<td>- Easy configuration of test settings</td>
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<td>Data exchange</td>
<td>- ASCII, INCA, MATLAB, DIADEM-ATF, FAMOS, MATLAB®-M</td>
<td>- Flexible interface for connecting instruments</td>
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<tr>
<td>Measurement</td>
<td>- Acquisition and display of measurement curves, calibration parameters (scalars, trend, derived values, measured values, diagnostic functions)</td>
<td>- Easy integration of customer-specific interface modules</td>
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<tr>
<td>Diagnostic functions</td>
<td>- Reading and deleting the fault memory, triggering, analysis, scope and table display, statistical analysis</td>
<td>- Easy integration of compact diagnostic systems</td>
</tr>
<tr>
<td>Validation of services of ECU diagnostics</td>
<td>- Automated testing of functions on the test bench, on the VCI, on the ECU</td>
<td>- Easy integration of data base systems</td>
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<td>Flash programming</td>
<td>- Flash programming of several ECUs, support for tool independent programming of data</td>
<td>- Flexible interface for connecting instruments</td>
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<td>ECU test</td>
<td>- Verification with the calibration setup</td>
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