

## ICE In-Circuit Emulator

- Timing Analyzer
- Emulation Memory
- Memory Banking
- ICE Module
- State and Performance Analyzer
- Emulation Controller
- System Controller

TRACE32-ICE is a state of the art In-Circuit Emulator, which offers unlimited hardware breakpoints and up to 16MByte dual-ported emulation memory. The real-time trace and trigger work up to the max. speed of the CPU. The analyzer offers selective trace as well as performance analysis and statistic functions.

The system offers an interface to all programming languages for most compilers and a multitask debugger for a wide range of RTOS. TRACE32 works with the highest variety of host interfaces. The communication link to the

host is done by the printer port, a fibre optic interface or ethernet allowing a high speed transfer.

TRACE32-ICE is universal In-Circuit Emulator and supports a wide range of 8- to 32-bit microprocessors and microcontrollers. Its modular architecture allows:

1. to adapt the emulator to your project requirements

2. to integrate the emulator in any project environment

3. to adapt the emulator easily to different CPUs

4. to support new CPUs in record time

## TRACE32-ICE Features

### Universal Emulator for 8- to 32-bit Microprocessors

TRACE32-ICE supports a wide range of microprocessors and microcontrollers at 3.3V or 5V.

### Open Software Architecture

TRACE32-ICE works seamlessly with

- Most programming languages (C, C++, ADA, Pearl etc.)
- Most third party compilers in all object file formats
- A wide range of RTOS
- Third party debuggers
- Third party CASE tools

### Interface to all Hosts

TRACE32-ICE can be linked to a PC, any workstation or mainframe. Software drivers are available for all standard operation systems and all graphical user interfaces.

- Parallel, fibre optic and ethernet interface
- Same "Look and Feel" on all supported host systems
- Fast download

### Scalable Tool Chain

TRACE32-ICE is the high end tool of Lauterbach's TRACE32 tool chain. We also offer:

- TRACE32-ICD  
ROM monitor based debugger  
Debug interface based debugger (BDM, JTAG etc.)
- TRACE32-ICD TRACE  
TRACE32-ICD enhanced by trace and trigger capabilities
- TRACE32-FIRE  
Full featured RISC Emulator

The uniform, compatible GUI for all products of the TRACE32 series makes it easy to migrate to a more complex tool or to use different complex tools side by side in the same project.

### Up to 16 MByte Dual Ported Emulation Memory

- The emulation memory access time of 15ns allows zero-waitstate emulation up to the max. speed of the processor.
- The dual-port technology allows on-the-fly access to the emulation memory to display and modify runtime variables.

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## Banking Support

TRACE32-ICE supports even very complex banking systems up to 16MByte:

- Max. 256 banks
- With external bank logic
- With internal bank logic
- Banked EPROM

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## Shadow RAM

The Shadow RAM allows to monitor real-time variable and memory for special CPUs.

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## Unlimited Hardware Breakpoints

TRACE32-ICE provides up to 16MByte dual ported break memory.

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## Powerful, Integrated High Level Language Debugger

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### Multitask Debugger

TRACE32-ICE provides symbolic debugging of complex multitask applications and the detailed analysis of the real time behaviour of the system. It

supports internally developed and a wide range of off-the-shelf realtime kernels.

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### Code Coverage

Up to 16 MByte Flag memory traces all CPU access in real time for a comprehensive code coverage, for a stack depth verification or for the detection of unused or uninitialized variables.

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### Up To 4 MFrame Trace Buffer

- Up to 344 trace channels
- Up to 50 MHz
- Time Stamp

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### Real Time Trace and Trigger

The multilevel trigger system allows to use advanced trigger sequences to find even complex errors in record time.

- External trigger inputs
- Trigger outputs to trigger external devices.

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## Performance Analysis

TRACE32-ICE offers comprehensive performance analysis on program, function or module base or on areas defined by the user.

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## Statistic Functions

TRACE32 allows detailed analysis of:

- Functions
  - Min. and max. time
  - Passes
  - Include and excled time
- Link analysis
  - Callers
  - min. and max. times
  - Calls
- Duration
  - Execution time
  - Response time
- Distance

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## Powerful Graphical Analysis Functions

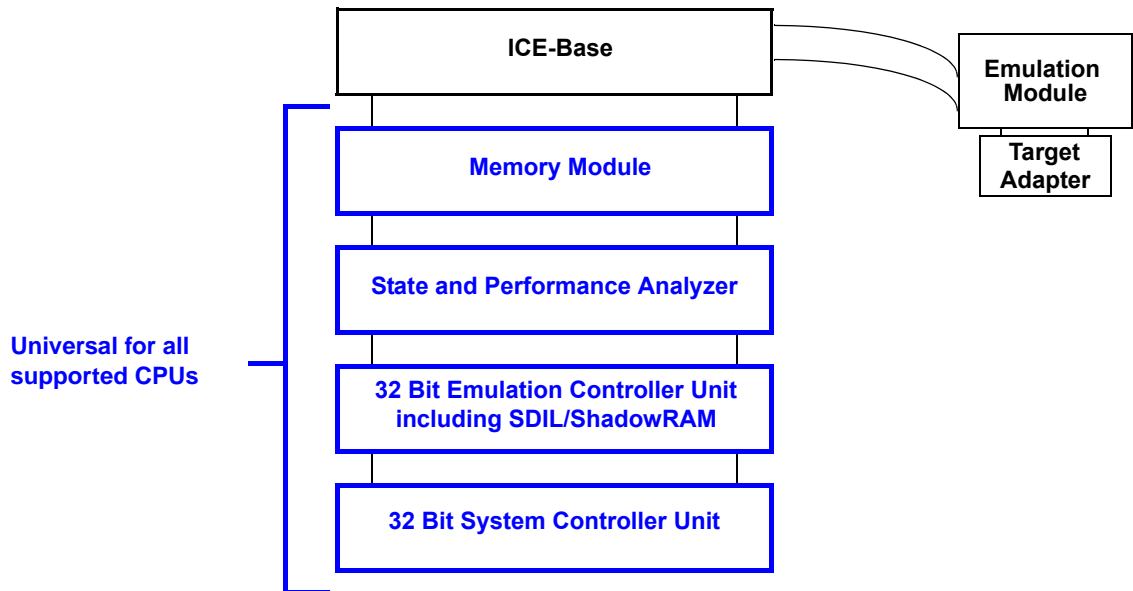
Most statistic and runtime analysis can also be displayed in a graphical way to offer an intuitive interpretation.

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## Powerful Batch Language

TRACE32-ICE offers a powerful batch language for automatic set ups and automatic testing. It is supported by its own debugger.

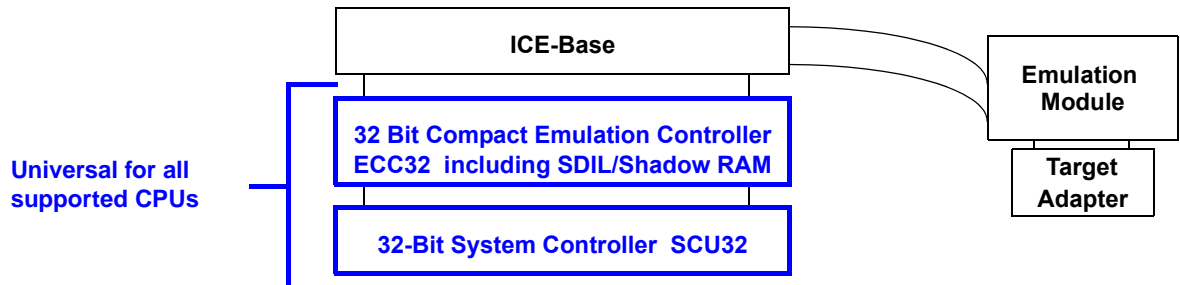
## System Architecture TRACE32-ICE



TRACE32-ICE uses a modular technology and consists of the following parts:

- 32 Bit System Controller SCU32 (universal)**  
 The System Controller is the interface between the host and the emulator. It contains the host interface card, the power supply and the main controller for the emulator.
- 32 Bit Emulation Controller ECU32 (universal)**  
 The Emulation Controller Unit contains all part of an emulator, which are independent form the specific CPU e.g.memory mapper, trigger logic, universal counter, pulse generator.It also includes the connectors for the static emulation memory card and the shadow RAM.
- State and Performance Analyzer HA120 (universal)**  
 The High Speed State Analyzer consists of the trace memory, a programable trigger unit and a performance analyzer unit.
- Emulation Memory Module SRAM (universal)**  
 The SRAM allway offers all 3 types of memory for TRACE32-ICE:
  - Overlay/emulation memory
  - Break memory for the hardware breakpoints
  - Flag memory to analyse read and write access to specific addresses
- ICE-Base**  
 The ICE-Base is the family module for a complete CPU family.
- Emulation Module with Target Adapter**

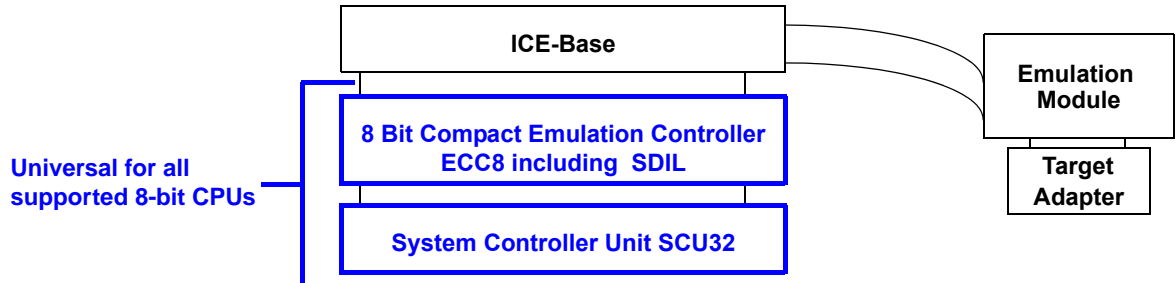
### TRACE32-ICE<sub>COMPACT32</sub>



TRACE32<sub>COMPACT32</sub> is a cost effective compact solution for all supported CPUs. The 32 Bit Compact Emulation Controller is a high integration of the 32 Emulation Controller ECU32 and the State

and Performance Analyzer HA120. The functionality of the integrated State and Performance Analyzer is especially adapted for the use small and medium sized projects.

### TRACE32-ICE<sub>COMPACT8</sub>



TRACE32<sub>COMPACT8</sub> is a cost effective compact solution for all supported 8-bit CPUs. It is entirely designed for the development of 8-bit target systems.

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## Disclaimer

The information presented is intended to give overview information only. Changes and technical enhancements or modifications can be made without notice.