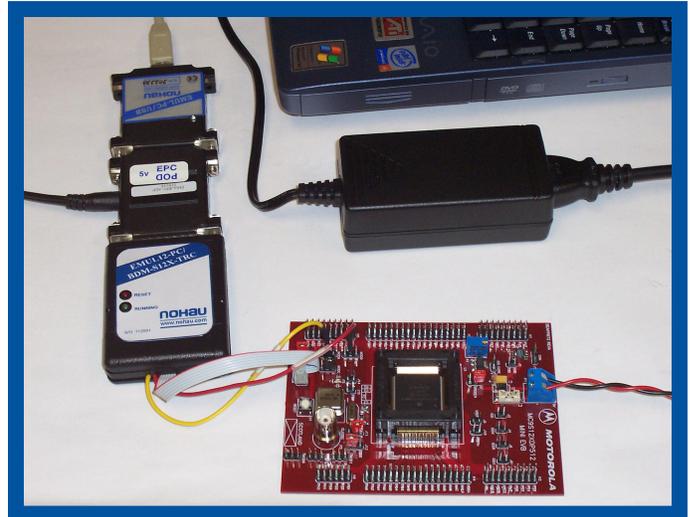# NOHAU

# EMUL12-PC/BDM-S12X-TRC and EMUL12-PC/BDM-S12X
## BDM Emulator for the Motorola S12X, S12 & HC12 Families

## Key Benefits

¨ All the Motorola S12X, S12 & HC12 parts are supported:
  The MC9S12XD family (MC9S12XDP512 supported first)
  The MC9S12 A, B, C, D, E, H, K and T families
  The HC12 (old generation) A, B, and D families
  Call Nohau concerning unannounced S12X and S12 parts.

¨ BDM operates to the maximum controller clock rate

¨ Seehau User Interface included; Windows 95 to XP

¨ High Level Language (HLL) support for C compilers

¨ Run-Time Data for real-time viewing via BDM

¨ Extensive debug support for the dual processors -
  S12X CPU and XGATE coproccessor

¨ EMUL12-PC/BDM-S12X-TRC supports the use of the
  internal S12X silicon trace and triggers

¨ Connects to the PC using USB or LPT

¨ Controls the target MCU using the built-in BDM interface
  and the standard 6-pin BERG connector

¨ May control MODA and MODB using flying leads

¨ Operates with 3V-5.5V targets. BDM pod is powered
  separately to draw only 1mA from the target VDDX.

¨ Built-in MCU Flash and EEPROM programming

¨ Easy upgrade path to full Nohau emulators - uses the same
  Seehau interface as the full emulator



## Product Overview

Nohau offers a BDM (Background Debug Mode) emulator in addition to its full emulators for the Motorola S12X, S12 and HC12 families. The BDM emulator offers economical debugging. Seehau is the Windows user interface from Nohau, and it is included with the BDM hardware. Seehau is powerful, with advanced debugging features, but still very intuitive and easy to use. Free Seehau updates are available to download on the web.

## Dual Processor - S12X CPU and XGATE Debug

The S12X has dual processors - the S12X CPU and the XGATE coprocessor. This requires special debug support, which is built into Seehau and includes: Go & Break for either S12X CPU code, the XGATE code, or both, and Single-stepping through either S12X CPU or XGATE code. Two source-windows are included to display the code of the S12X CPU and the code of the XGATE, and two register windows display the S12X CPU and the XGATE registers.



## Internal MCU Trace and Triggers Support

EMUL12-PC/BDM-S12X-TRC supports the use of the S12X internal Trace and Triggers. The internal S12X trace offers a small - 128 or 64 trace-frames memory, and some triggering capabilities of both the S12X CPU and XGATE coprocessor. The intenal MCU trace and triggers are not supported on the lower-end EMUL12-PC/BDM-S12X.

## Run-Time Data Windows

Run-Time Data Windows allow SFR and memory reads in real-time from the MCU (as it is running), to be displayed in Seehau. The data can be displayed in many numerical and graphical formats. Allows writing data to SFRs and memory in parallel with code execution.

## What's the Difference Between a BDM and a Full Emulator?

The full-emulator has a large 1-MIllion trace frames memory that allows to record a long history of all the executed instructions, bus activity, time stamp, Misc. Signals, and more information, as opposed to only 128 or 64 change-of-flow instructions, as in the case of the BDM internal trace. A full emulator also includes an unlimited number of hardware breakpoints, and extensive debug support for Resets, Power-Downs, Limp-Home and frequent speed changes, versus 2-4 hardware breakpoints and more limited special conditions debugging on the BDM. BDM emulators are often used in conjunction with full emulators for large projects.

## What Can You Do With a BDM?

You can load a program and single-step, or run the target processor. Source code is available for HLL debugging. Other options include setting breakpoints, viewing memory in real-time, and programmming FLASH and EEPROM with the built-in programmer. Variables, arrays and structires can be easily viwed in a variety of formats and in the Inspect/Watch window. The Nohau BDM emulator is more robust than monitors and simpler BDMs on the market, but has less features than a full emulator.
Nohau emulators are made in the USA and are supported with a worldwide network of representatives. See our website for more information or call us for the name of your local Nohau representative.

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*Cut Development Time*

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