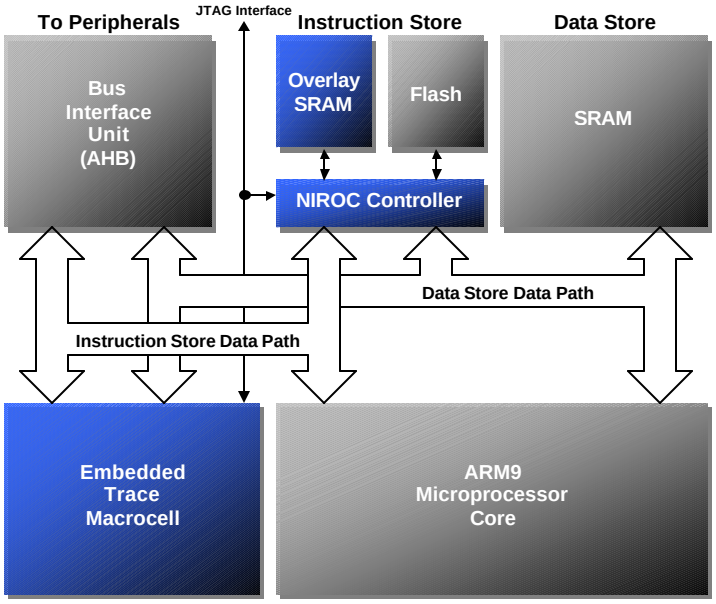
Non-Intrusive RAM Overlay Calibration (NIROC)

Product Overview

The Non-Intrusive RAM Overlay Calibration (NIROC) macrocell is designed to provide a real-time calibration solution for ARM9 microprocessor cores. Automotive powertrain applications involve large amounts of data which are used to define the operating parameters of the engine. These data are stored in "calibration tables" in instruction space. The values to be programmed into these tables are chosen during calibration. Traditional approaches to calibration have used parallel memory emulation technology. As system integration and system clock speeds increase, parallel emulation becomes difficult because of the added delays on the microcontroller's I/O paths. Also, the use of on-board flash for program storage makes the inclusion of an external bus interface on the I/O of a microcontroller (needed for parallel memory emulation) an unnecessary extra cost. Other calibration approaches include CAN and other serial port calibration protocols, but these require additional software to support the calibration activity and affect the operation of the system by using code space and processor throughput to support calibration. The NIROC macrocell provides a hardware solution for calibration, when used in conjunction with the ARM JTAG Controller and Embedded Trace Macrocell. Calibration with a NIROC-equipped microprocessor requires zero support code and incurs zero microprocessor overhead, leaving operation of a system under calibration completely unaltered from production operating conditions.

Features

- *Compatible with ARM9 Family Microprocessor Cores*
- *Sixteen Segments of RAM for Overlay of Flash Memory*
- *Non-Intrusive Modifications Of Calibration Table Data Via The JTAG Port (which can be driven by a Multi-ICE) Allows On-The-Fly Modification Of Calibration Data*
- *Instantaneous Bank Switching Of Overlay Segments To Ensure Coherent Calibration Table Changes*
- *Ram Overlay Accessible Via Microprocessor Core For Support of Legacy Serial Port Calibration (J1850, SCI, SPI, CAN)*
- *Control and Feedback Variable Monitoring Achieved Through the Embedded Trace Macrocell*
- *Embedded Trace Macrocell Allows Observation Of 16 Individual Variables, Or 8 Address Ranges Of Variables, Or Any Combinations*
- *Software Controls Trace Updates Of Variables, Which Can Be Asynchronous, Time-Synchronous, Or Position-Synchronous*



Non-Intrusive RAM Overlay Calibration Macrocell Block Diagram

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