

ECU Interfaces

ECU Interfaces are devices that connect to an ECU microcontroller directly - as a memory emulator or through the debug port interface - while ECU Protocol Interfaces communicate using Association for Standardisation of Automation and Measuring Systems (ASAM) standards, such as CCP or XCP. The method can be driven by what is supported on the microcontroller, by the ECU manufacturer, or the end user. ATI offerings support all approaches.

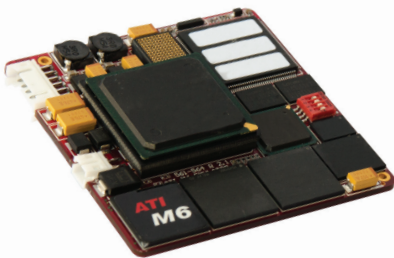
Serial Interface Modules

Serial Interfaces are designed to meet the needs of quickly evolving ECU microcontroller products. As microcontrollers evolve our Serial Interfaces allow access to more data quicker and through less pins at a reasonable cost. The **A8 Serial Interface Modules** are adaptable to support the latest microprocessors through their debug interfaces, such as OCDS, Nexus, and DAP2. The **A7 Serial Interface Modules** is our legacy device used to support some of the older microprocessors.



Memory Emulator Modules

Memory Emulator Modules were designed to connect directly to the ECU microcontrollers' address and data bus. The **M6 Memory Emulator** is a tailored solution for the calibration of ECUs based on the Freescale™ PowerPC MPC5xx and MPC5xxx families of microcontrollers. The **M5 Memory Emulator Modules** connection to the target ECU is via a low-cost Tool Adapter Board (TAB) that is customized to mate the M5 with the specific ECU under test. This makes the M5 a reusable universal module that can be used with a range of microprocessors and applications.



CAN Network

Calibration over an existing CAN bus or other networks has existed for over a decade and is supported by the Association for Standardisation of Automation and Measuring Systems (ASAM) standards, such as CCP or XCP. Traditionally the ECU already has an existing communication network making this interface the lowest cost approach. Typical data rates are about 40 to 60 data items every 10 msec and bandwidth may be limited for calibration. The **CANary Interface Module**, the **VISION Network Hub** and other third party CAN interfaces, such as Kvaser CAN hardware, will work for this application.





ECU Interface Comparison

Parameter	Communication Interface	Serial Interface	Memory Emulator
Typical Performance	40 to 60 data items every 10 msec	75 data items at 500 μ sec	30 to 40 data items every 1 msec
Impact on the ECU	Possible	Little to none	Little to none
Requirements for ECU	CAN Network	Debug port	Address and Data Bus
Data Acquisition	Synchronous	Synchronous Asynchronous	Synchronous
Calibration RAM location	On ECU	On ECU	On memory emulator
Cost	Low	Middle	High

Microprocessor Support Chart

Microcontroller Family	Interface	Interface Type	ATI Product
Freescale			
MPC5xx	Data and Address Bus	Parallel Memory Emulator	M5 ¹ , M6
MPC5xxx	Data and Address Bus; Standard Vertical Interface JTAG Interface	Parallel Memory Emulator Serial	M6V A7, A7B, A8
S12x	JTAG Interface	Serial	A7
Infineon			
TriCore TC17xx/TC2xx	OCDS Interface DAP2 Interface	Serial Serial	A7, A7B, A8 A8*
C166/167	Data and Address Bus	Parallel Memory Emulator	M5 ¹
Renesas			
V850	NBD Interface	Serial	A7, A7B
SH2/SH2A	AUD/AUD II Interface	Serial	A7, A7B
M32R	RTD and/or JTAG Interface	Serial	A7, A7B
RH850	JTAG Interface	Serial	A8*
V850E2	JTAG Interface	Serial	A7
ST Microelectronics			
ST10	Data and Address Bus	Parallel Memory Emulator	M5 ¹
Others			
All microprocessors	Controller Area Network (CAN) bus	CAN bus	CANary/VISION Hub
Various other microprocessors	Data and Address Bus	Parallel Memory Emulator	M5 ¹

¹ Requires Custom Tool Adapter Board (TAB)

* Under Development

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