DAP Streaming with Debug Cable for TriCore AURIX

2023-11-21 - Comments (0) - Trace

In addition to debugging, the DAP interface of the AURIX™ TriCore™ microcontrollers can also stream trace data off chip. This utilizes the onchip trace infrastructure and therefore requires a MCDS, MCDSlight or miniMCDS. This feature is referred to as DAP streaming. The bandwidth up to 30 MB/s is much lower than a serial AGBT or SGBT trace, but sufficient to stream filtered trace data.

DAP streaming has already been successfully used for profiling AUTOSAR Classic systems that work with the ORTI standard. However, it is becoming increasingly important for Classic systems using the ARTI standard. This standard, adopted in November 2022, relies highly on instrumentation and is designed for a medium-bandwidth trace interface, making it ideal for DAP streaming. The really good news now is that TRACE32 supports DAP streaming with its debug cables.

The solution is based on improved designs of both debug modules and debug cables, which now work in tandem to provide DAP streaming functionality.

- The debug modules PowerDebug PRO (available from 12/2014 to 04/2023), PowerDebug E40 (available since 06/2022), PowerDebug X50 (available since 04/2023), PowerDebug X51 and PowerDebug E50 (available since 02/2026) have been designed to enable low-bandwidth trace. This includes 64 MiB of memory that meets the real-time requirements of trace.

- The AUTO26 Debug Cable V3 (available since 04/2023) has been built to take advantage of this extra capability. Trace data can be transferred from the cable to the debug module's trace memory as quickly as it can be received from the DAP interface of AURIX™ TriCore™ microcontrollers. It is recommended to use DAPWide or DAP4 mode with a high clock rate for DAP Streaming.

In TRACE32, the command **Trace.METHOD CAnalyzer** can be used to switch to DAP streaming. Combining DAP streaming with TRACE32 streaming (TRACE32 command **Trace.Mode STREAM**) greatly increases the amount of recordable trace information. The trace information collected and buffered in the Debug Module is immediately transferred to a file on the host computer in this mode of operation.

A last small tip: With the TRACE32 function **MCDS.MODULE.NAME()** you can easily check which MCDS variant is deployed in your microcontroller under debug.

Lauterbach has been supporting DAP streaming since 2017 with its Debug Module/CombiProbe configuration. This support is still valid.

Commands: Trace.METHOD CAnalyzer, Trace.Mode STREAM

Supported core architectures: Infineon AURIX™ TriCore™ TC2xx , TC3xx, and TC4x

Minimum software by AURIX family:

AURIX™ Family	Minimum Software Requirement
TC2xx/TC3xx	TRACE32 Release 09/2023
TC4x	TRACE32 Release 02/2026