

RH850 Specific Debug/Trace Features

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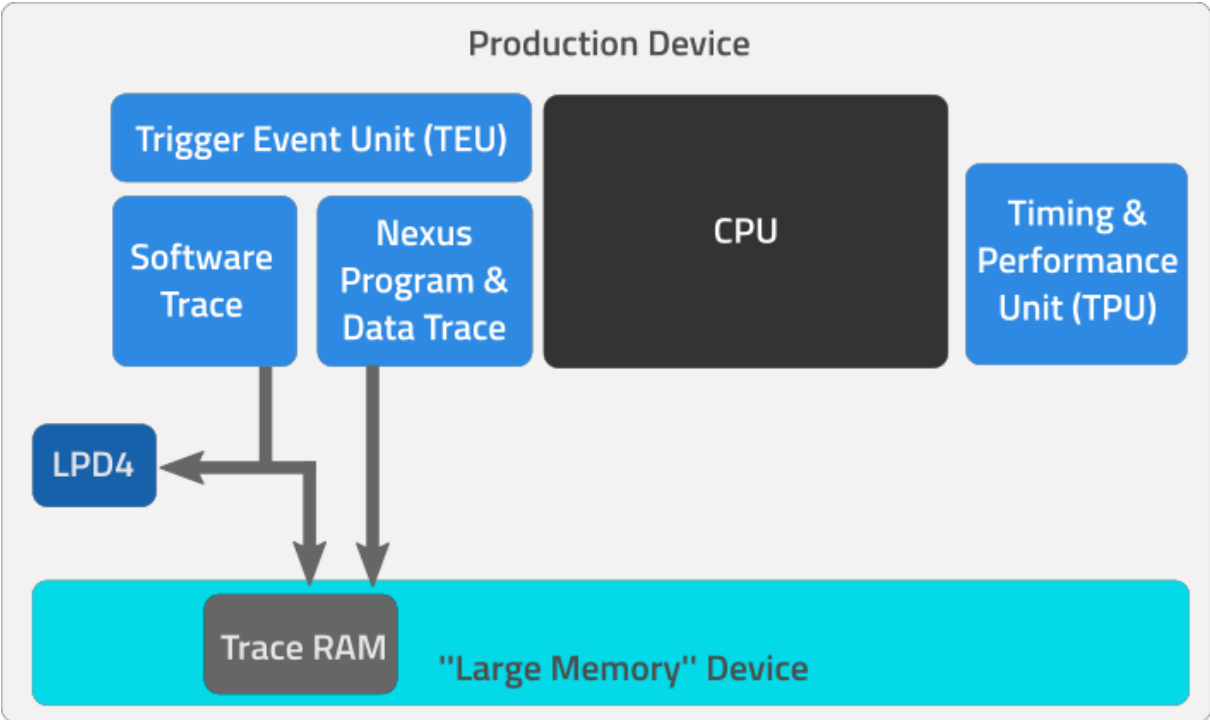
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Table of Contents

- 1 Specific Debug/Trace Features 2
 - 1.1 Software Trace 3
 - 1.2 Timing & Performance Measurement Unit (TPU)..... 4
 - 1.3 ADIO & CAN Trace..... 5
- 2 Technical support 6
 - 2.1 Contact Region Support 6
 - 2.2 Email the International Support Team..... 6
 - 2.3 Call the International Support Team..... 6

1 Specific Debug/Trace Features



Simplified Block Diagram of the RH850 Trace Architecture (without Nexus/AURORA Port)

1.1 Software Trace

Software Trace is a RH850-specific trace solution based on Code Instrumentation. Software Trace messages are generated when the CPU executes dedicated instructions, DBCP, DBTAG and DBPUSH. The Software Trace messages can either be stored in an On-Chip trace RAM (if available) or can be streamed out via the LPD4 interface, operating in Software Trace streaming mode.

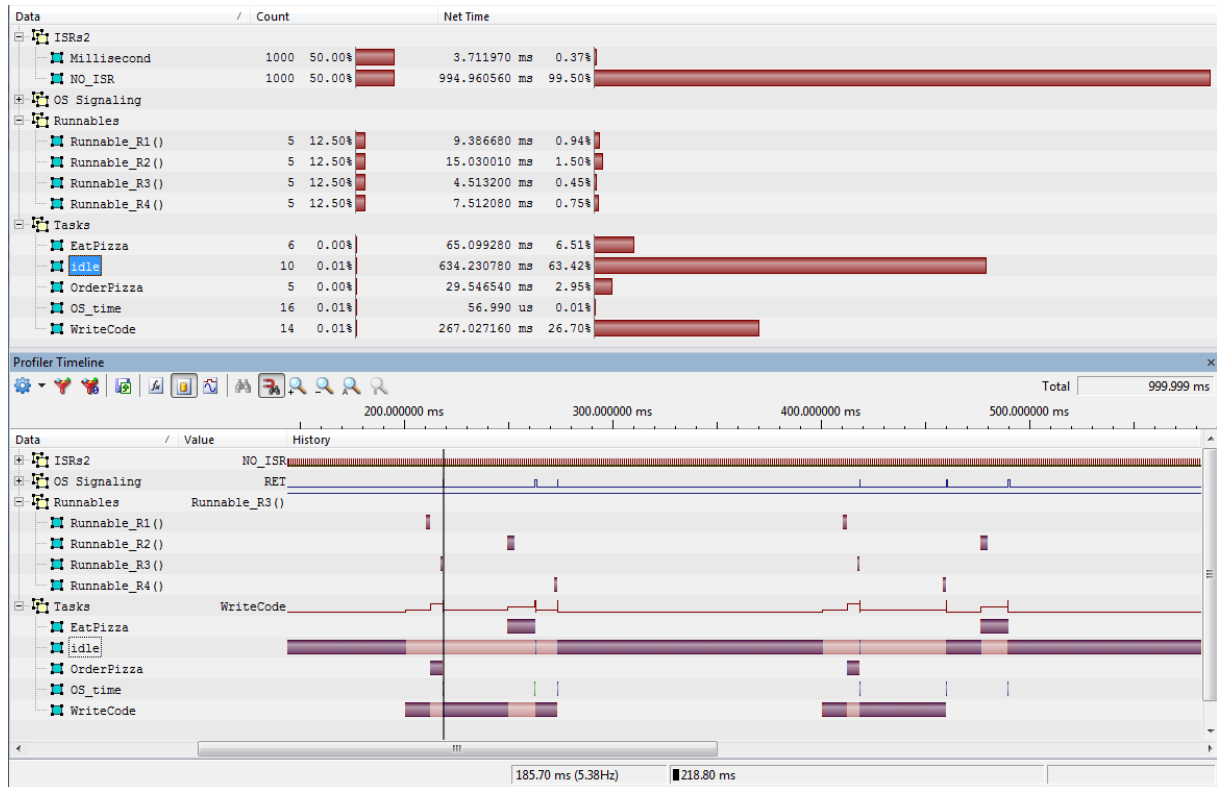


Figure 1: Sample AUTOSAR OS and Runnable Profile recorded via Software Trace

1.2 Timing & Performance Measurement Unit (TPU)

Features:

- On-Chip Counter Structure to measure Time (Clock Cycles) and Performance Metrics
- Can be controlled (start/stop) by means of Trigger Event Unit (TEU)
- Counter increment by Stop Events or Debug Clock (JTAG / LPD Clock)
- Optional CPU Break on Counter Threshold and/or Overflow
- Two Sub-Units: Time Measurement & Performance Measurement

Sample TPU Measurement: Measure Runtime of Function "EE_RUN_Runnable_R1"

- Number of Calls
- Min/Max Execution Time per Call
- Accumulated Execution Time (to calculate average Execution Time)

Unit 0	Unit 1	Unit 2	Unit 3
Accumulated Execution Time	Minimum Execution Time	Maximum Execution Time	Number of Function Calls

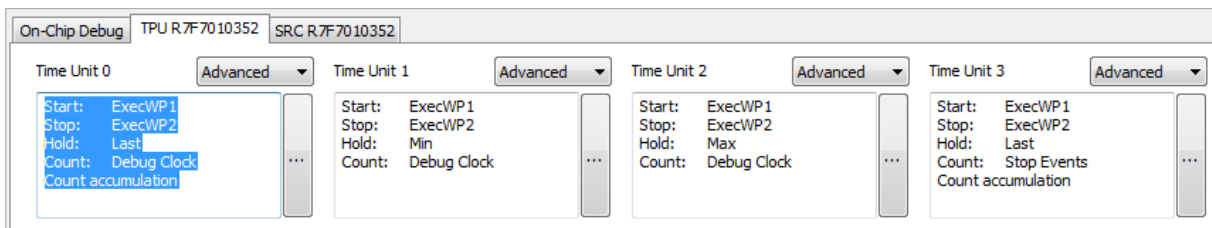


Figure 2: Sample TPU Measurement Configuration

1.3 ADIO & CAN Trace

A trace recording via the Nexus port allows a time correlation with Analog/Digital or CAN/LIN bus signals captured by means of the ADIO and/or CAN/LIN Add-On Module of the iC5700.

Figure 3 shows a correlated Nexus Trace and CAN bus recording. The trace was recorded on a Sensor Fusion demonstrator platform, based on RH850/F1H, created within a cooperation project between the companies INCHRON, OpenSynergy and iSYSTEM. The profiler timeline shows a combined trace of CAN bus, program flow, microCOQOS Hypervisor virtual machines and multiple AUTOSAR OS Tasks.

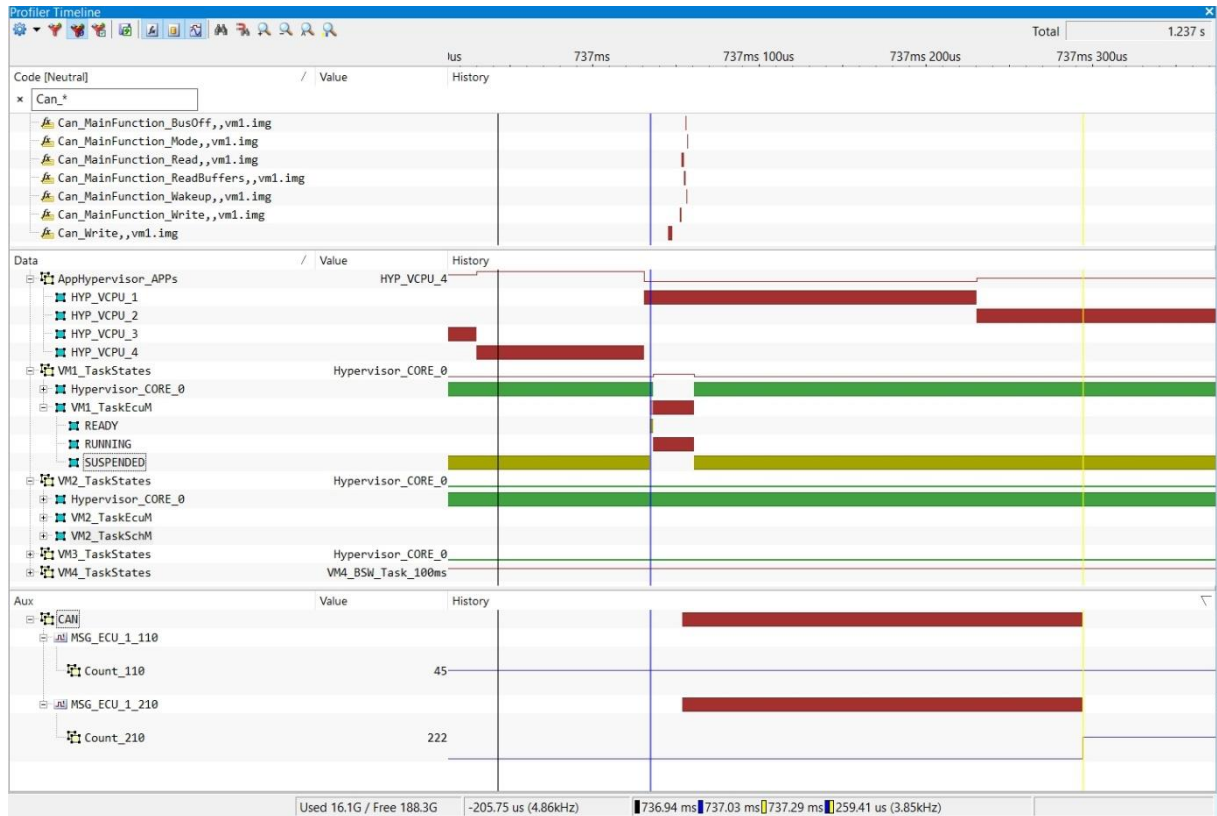


Figure 3: Profiler Timeline of a correlated RH850/F1H Nexus Trace and CAN Bus Trace

2 Technical support

2.1 Contact Region Support

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2.2 Email the International Support Team

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Our technical support team will respond to your email within 24 hours.

2.3 Call the International Support Team

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Germany	+49 8138 6971 30

Please note that the above telephone numbers are only available weekdays between 8 AM and 3 PM UTC+1.

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