

Serial GigaBit Trace Interface

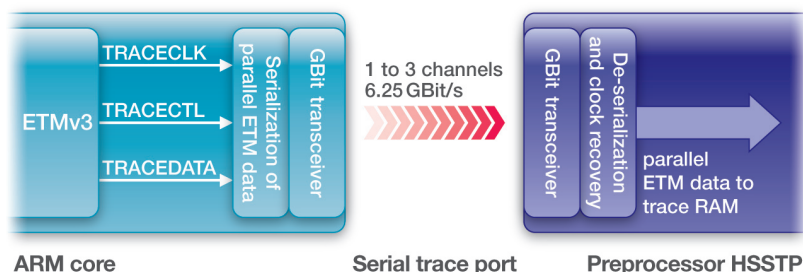


Fig. 1: Block diagram of HSSTP trace for the ARM ETM

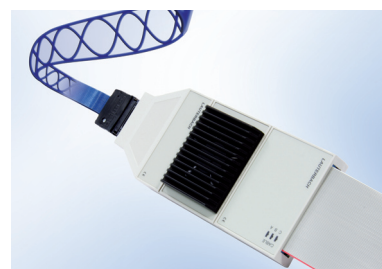


Fig. 2: Preprocessor HSSTP

Serial Trace interface resolves two issues at once:

1. Fewer pins are needed for serial transmission.
2. A differential transmission permits higher data rates.

Using only three trace channels, the contents of a complete DVD could be transmitted in less than 3 seconds. This is an impressive example of how fast the serial transmission performance actually is.

Lauterbach is convinced of the benefits of this concept and started work on its technologically ambitious high-speed serial trace project back in 2007. The trace has now been available and in use by customers since the middle of 2008.

Currently, Lauterbach supports the *High Speed Serial Trace Port* – HSSTP for short – from ARM. A development of the *High Speed Trace Port* of QorIQ (e500 Power Architecture) from Freescale is already in the planning stage.

The “Preprocessor HSSTP” (see Figure 2) is designed for a maximum of four high-speed channels. The following transmission rates are supported:

- 6.25 GBit/s per channel with up to 3 channels
- 3.125 GBit/s per channel with 4 channels

The trace data is provided via a custom connector system from Samtec (ERF8, 40 pins).

For transmission, ARM-HSSTP uses the *Xilinx Aurora Protocol*. The parallel trace data is 8b/10b coded and serialized on the ARM core. Differential GBit trans-

ceivers send the data flow by cable to the “Preprocessor HSSTP” from Lauterbach, which recovers the original parallel trace data from the serial transmission (see Figure 1).

The large volume of trace data obviously requires a correspondingly large trace memory. This is available from the PowerTrace II with a memory extension of up to 4 GBytes.

Parallel Trace Interfaces

In 2008, support for the parallel trace interfaces was expanded to several new processor families. The table below shows a summary.

Preprocessor AutoFocus II for Parallel Trace Interfaces

Preprocessor AutoFocus II for ARM ETM
Preprocessor AutoFocus II for CEVA-X
Preprocessor AutoFocus II for MicroBlaze
Preprocessor AutoFocus II for PPC4xx
Preprocessor AutoFocus II for SHx
Preprocessor AutoFocus II for StarCore
Preprocessor AutoFocus II for TeakLite-III
Preprocessor AutoFocus II for TMS320C55x
Preprocessor AutoFocus II for TMS320C64x+