RAPITA Systems
A DANLAW Company

Product brief

Continuous tracing with the RTBx data logger

RTBx

The **RTB**x data logger provides a cost-effective, easy-to-use solution for collecting long streams of verification data from tests run on embedded targets. **RTB**x is target-independent, supporting a wide variety of target architectures.

You can use the **RTB**x to analyze your software for timing and scheduling behavior and code coverage, for example by using tools from the Rapita Verification Suite (RVS).

RTBx connects to output ports (LVDS or TTL) on your target hardware and collects timestamped data while your application runs. As instrumentation point (ipoint) identifiers are sent to the output port, **RTB**x timestamps and records them, producing a trace of ipoint/timestamp pairs.

Use cases

- Automatically collect trace data for timing and scheduling analysis, code coverage and system/unit level testing.
- Collect trace data on targets that have limited connectivity and require long test runs.
- Collect trace data on advanced processors including multi-core processors.
- Replace obsolete CodeTest probes.

Benefits of the RTBx

RTBx can help you collect trace data from long test runs while your source code runs on-target.

RTBx has been designed to provide a tracing solution for the most complex challenges faced while collecting trace data from embedded systems, while still being easy to use.

By using **RTB**x you can:

- Integrate data collection into your testing environment with minimal effort. **RTB**x is simple to set up and can be managed remotely from any web browser. Once configured, it can be run automatically in a continuous build environment.
- **Collect trace data from long and large test runs**. The high data capacity and tracing rate of **RTB**x means you can use it around your existing test environment, rather than having to adapt your tests to fit the hardware.
- Use a single solution with different target hardware. Because **RTB**x offers **target-independent** data collection, you can use a single piece of hardware across multiple projects and targets.
- **Minimize target overheads**. **RTB**x collects data from targets using as few as a single processor instruction, letting you minimize execution time overheads on your target.
- **Use a complete tracing solution**. The **RTB**x provides everything needed to manage trace data; flexible strategies to collect data, and filtering and compression while it is collected.

Why use the RTBx?

The **RTB**x data logger is a significant upgrade to debuggers and logic analyzers for the collection of timing data, because:

- You can use a single tool across multiple projects. **RTB**x is target-independent, unlike some debuggers, which are restricted to a single CPU family.
- **RTB**x has a massive data storage capacity (500 Gigabytes), which logic analyzers lack. Equipping logic analyzers to store large amounts of data can become extremely expensive.
- While some logic analyzers are complex to set up for both data collection and export, it is easy to configure **RTB**x.

Models

Multiple models of **RTB**x are available or planned. See Table 1 to decide which one best meets your needs.

Purchasing options

You can buy **RTB**x, or rent it for a minimum of 3 months. If you have rented an RTBx, you can buy it for a discounted rate.

FAQs

Q: Will RTBx support my processor running at x MHz?

A: This depends on the number of CPU cycles it takes to output successive ipoints, and the rate ipoints are written at. For example, **RTB**x 2220 can collect trace data via an I/O port with a minimum separation of 4 ns (250 MHz). This model can therefore support a 1 GHz CPU that outputs trace data once every 4 cycles.

Q: What is the "maximum sustained tracing rate"?

A: This is the maximum tracing rate that can be sustained over time, calculated from the number of ipoints the **RTB**x can process per second. **RTB**x can support a higher tracing rate for short periods of time, provided that the minimum separation between instrumentation points is met.

Q: How do I connect RTBx to my target?

A: We supply standard data cables, an adapter, and flying leads to connect **RTB**x to LVDS or TTL I/O ports. If your target hardware uses non-standard pins or electrical signalling, we provide advice on the best way to connect **RTB**x to your target, and can develop high performance custom cables to meet your needs.

Q: What if I don't have a spare I/O port?

A: You can connect **RTB**x to an address bus that runs at up to 250 MHz. To do this, you must reserve a range of addresses for ipoints, with one bit reserved to indicate that the value on the address bus is an ipoint. The ipoint instrumentation writes a value to a specific address in that region to denote a specific ipoint. This approach reduces the maximum trace duration of **RTB**x.

Table 1. RTBx specification by model

Specification	**RTBx 2220**	**RTBx 2320***	**RTBx 2240***	**RTBx 2340***
Signal input	Up to 32 bit		Up to 64 bit	
Maximum sustained tracing rate (million ipoints/second)	250	720	250	720
Minimum ipoint separation	4 ns	2 ns	4 ns	2 ns
Sampling frequency	250 MHz	720 MHz	250 MHz	720 MHz
Storage capacity†	500 GB			
Typical continuous tracing duration	Days			
Electrical signal	LVDS/TTL‡			
Case dimensions	Standard 19" rack mount (3U), 431.8 x 431.8 x 133.33 mm			
Rackmount server rail depth	Min. 650 mm, Max 970 mm			

* Currently under development. Specification of the final model may change.

† Additional capacity available on request.

‡ Using an adapter.

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