Frequently Asked Questions

Title: 1553Px module [RT mode] How to simultaneously monitor messages
Date: 20 Aug 2020
Card/Board/Module: Exc1553Px family (e.g., M4K1553Px module)
Operating System: all

Question:

Can a single M4K1553Px device be used to simultaneously behave as multiple RTs and a Bus Monitor? I have only one 1553Px module, and I need it to simulate RTs and to simultaneously monitor data on the bus.

Do I need two M4K1553Px modules installed on the EXC-4000PCI card - one for the RT and one for the Monitor ? Or can I get by with only one module ?

Answer:

The simple answer is **yes**.

We have a feature called **Internal Concurrent Monitor** (**ICM**) in both BC and RT modes. This sets aside a section of memory on the module to act as a quasi-Monitor (within the confines of the BC or RT).

In the **ICM** memory area, we store a record of all message traffic on the bus. Effectively, we have a Monitor stored within the memory area of the RT. All data words that the BC sends over the bus to an RT (BC2RT message), and all data words transmitted by some RT over the bus (RT2BC or RT2RT messages) are recorded in the ICM, along with the command words & status words, and an attached timetag stamp (plus an additional internally built message status word).

Each message is stored sequentially in the buffer. Buffer size is defaulted to 409 blocks.

You can read more about this memory area in the User's Manual (hardware), chapter 5.

You can read up on the API functions used for monitoring in the Programmer's Reference (software). Use functions Get_Next_Message_RTM_Px or Get_Next_Mon_Message_Px.

Here is a snippet from the software manual:

Get_Next_Mon_Message_Px reads the message block following the message block read in the previous call to Get_Next_Mon_Message_Px.

This function can be used in all modes, instead of:

Get_Next_Message_Px in Monitor mode,
Get_Next_Message_BCM_Px in BC mode or
Get_Next_Message_RTM_Px in RT mode.

Bottom line: If you want to be an RT and still be able to get all of the message contents as individual messages (aka Monitor), you should be able to do this with a single module in RT mode, reading messages from the ICM. **This works for multi-function Px modules, as well as for single-function PxS modules.**

Please see our demo program demo_cmon.c which uses this methodology.