



Graphical Support for MIL-STD-1553

Developed by AP Labs to support the laboratory testing of avionics equipment, the MIL-STD-1553 icons provides generic Bus Monitor (BM), Bus Controller (BC), and Remote Terminal (RT) functionality within the VMEwindow™ environment.

Using the popular SBS Engineering Advanced Bus Interface (ABI) MIL-STD-1553 VME interface boards, the Bus Monitor (BM), Bus Controller (BC), and Remote Terminal (RT) icons provide the interface between elements of VMEwindow and the 1553 bus. The SBS ABI provides simultaneous and independent Bus Controller (BC) and Remote Terminal (RT) simulation as well as dual function (sequential, map) Bus Monitoring (BM)

Traffic on the 1553 bus is processed by the ABI hardware and converted by the BM icon into a standard raw stream that can be connected to a wide variety of other VMEwindow icons. Parameters within any raw stream can be inserted into 1553 messages by the BC icon. The BC icon also logs and reports errors detected in RT status words. These errors include inter-message gap time violations, no RT response and message length errors. A generic Remote Terminal (RT) icon is also provided which supports 31 RTs with 32 sub-addresses per RT on each 1553 bus. A VMEwindow stream may be input to the RT icon in order to provide dynamic data simulation.

Bus Monitor (BM) Functionality

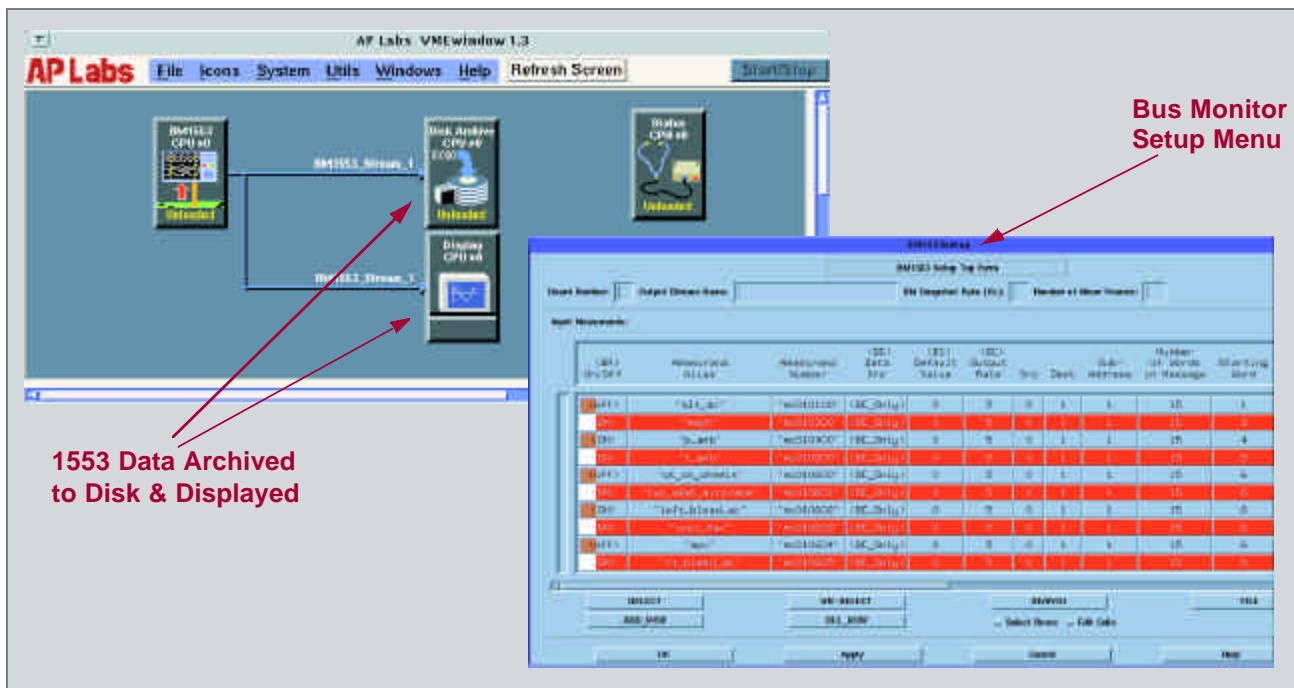
- Acquires user-specified 1553 data.
- Generates raw streams for processing by other VMEwindow icons.
- Allows user to archive acquired data to SCSI disk, or across the network to a Unix disk.

Bus Controller (BC) Functionality

- Transmits command & data messages to Remote Terminals (RT) on the A-Bus or B-Bus.
- Supports BC -> RT and RT -> BC transfers.
- Converts VMEwindow streams to 1553 messages.
- Logs bus errors detected in RT status words.
- Performs multiple retries on failed bus prior to switching.

Remote Terminal (RT) Functionality

- Supports up to 31 remote terminals, with 32 sub-addresses per RT
- Transfers data bidirectionally between 1553 bus and VMEwindow icons.



1553 Data Archived to Disk & Displayed

Bus Monitor Setup Menu

Bus Controller



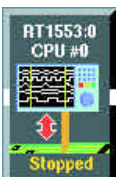
The **BC** icon generates both receive (BC->RT) and transmit (RT->BC) command messages for multiple Remote Terminal (RT) on either the A-bus or the B-bus. The BC icon detects 1553 bus errors (inter-message gap time, no RT response, etc.) and RT status word errors. The BC icon allows the user to specify the source of data for one or more measurands within a receive message. Data sourced from VMEwindow input stream, constant, or DDI is formatted by the BC icon into 1553 messages (receive message). Transmit command messages (no data) are also created by this icon.

Bus Monitor



The **BM** icon supports the acquisition of MIL-STD-1553 data and measurands and is capable of acquiring data on both the A-bus and B-bus. This icon allows the user to specify one or more measurands for acquisition. A measurand may occupy one or more bits (up to 32 bits) within a single 1553 data word (16 bits), with discrete measurands occupying a single bit within a 1553 data word. In addition, one or more measurands may be packed into a single 1553 data word. The final measurand data is then formatted into a VMEwindow compatible stream for output to other icons, with the resultant data words placed into a current value table (CVT).

Remote Terminal



The **RT** icon simulates up to 31 RTs, each with 32 subaddresses. VMEwindow data that is directed to the RT icon is stored in user selectable subaddress transmit buffers that are sent to the 1553 bus in response to 1553 transmit commands. Data from the 1553 bus that is received by the RT icon is formatted into a VMEwindow stream which can be connected to a wide variety of other icons. The user may select any combination of multiple RTs, subaddresses, and words within subaddress for both transmitting and receiving 1553 data. The RT icon additionally indicates when 1553 mode commands are received.

The statements in this data sheet are not intended to create any warranty, expressed or implied. Equipment specifications and performance characteristics are subject to change without notice. AP Labs and VMEwindow™ are trademarks of Advanced Processing Laboratories, Inc.