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Find the *Interface Technology IBE4080* at our website: *Click HERE*

IBE4080
Xtreme Bus Emulator



- *Software programmable for arbitrary bus emulation*
- *Real-Time decisions per clock cycle: 16 way branches from measurement handshakes, ALU Flags, Parity Flags*
- *Data and Clock frequencies up to 50 MHz.*
- *Data memories programmable 1 Meg x 40 bits or 2 Meg x 20 bits*
- *Arithmetic Logic Unit in data path*
- *Supports Parallel and Serial Bus requirements including MIL-STD-1553, RS232, RS422 etc.*
- *Available as single C size VXI module providing one or two XBEs in a single slot*
- *Interface for custom I/O modules for unique requirements*

The IBE4080 Xtreme Bus Emulator (XBE) allows various parallel and serial buses to be emulated by downloading of unique micro-code, which defines the bus protocol to be utilized. This allows not only the transfer of data over this emulated bus, but also allows the unit being tested to operate as if it was in an aircraft, receiving and sending real time data.

A key element in testing avionics Line Replaceable Units (LRUs) is the ability to provide flexible digital bus emulation. The Xtreme Bus Emulator (XBE) is programmed for real-time operation using an ATLAS-like programming language to describe the real-time operation of the digital bus protocol to be emulated. The data section of each board contains real-time reconfigurable data paths providing flexibility to implement a broad range of bus emulation requirements for parallel data, serial data, or any hybrid combination in-between.

The XBE protocol development software (included with the instrument) is both easy to use and fast. Protocol compile times are typically less than one second. Protocol source code has been simplified by the use of a common include file. The proofing of bus protocol code during TPS integration has become very quick and effortless. For example, while debugging a protocol the TPS programmer identifies the need for a timing change, edits the protocol source code, compiles the protocol code, and reruns the test with the new timing- all within one minute. The operation can often take place without powering down the LRU, thus saving time by avoiding rerunning the safe-to-turn-on tests.

The XBE can support many individual serial and parallel bus emulation applications for a broad range of avionics system test requirements included in the F-16, B-1B, C-17, C 5A, LANTIRN and Japanese F2. Also, the XBE is able to support new and changing LRU requirements without changes to the test station while using passive ITAs.

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*IBE4080 SPECIFICATIONS**

Interface:

- o 40 bi-directional data channels (20 differential)
- o 16 stimulus handshake channels
  (8 differential and 8 single-ended or 16 single-ended)
- o 16 measurement handshake channels
  (8 differential and 8 single-ended or 16 single-ended)
- o 4 bi-directional clock and strobes channels
- o TTL single-ended driver
  High > 2.0 volts
  Low < 0.8 volts
  Tri-state
- o TTL differential ..... RS422, 0 to +5.0 Volts

Data Section:

- o The data section is controlled by the micro-sequencer.
- o Data paths and direction can be changed in one micro-cycle
- o Data Memory 2 Meg x 20 or 1 Meg x 40
  (software configurable)
- o Data rates programmable from DC to 50 MHz

Data Formatting and Bit Testing:

- o ALU (Arithmetic Logic Unit), DC to 25 MHz
- o Pattern Recognition
- o Pattern Generation
- o Add, Subtract, Shift, Rotate, and Boolean Arithmetic
  Causes Micro-sequencer to branch on operation result flags
- o Parity
  - . Generate or check even or odd parity
  - . Low byte, or high byte, or 16 bit word
- o Serial Data Shift Register
  - . Send or receive
  - . MSB or LSB first
  - . Any length by software not to exceed 1M x 20 bits
- o Frontplane Interface to other boards in test system
  - . Address 20 bits and Data 20 bits
- o Manchester/MIL-STD-1553 one bi-directional channel
  - . Output Driver Programmable 0 to 20 Vp-p into
    70 ohm load in 100 mV steps.
- o Ternary Receiver Programmable Window Comparitor
  - . Input voltage -10 V to +10 V
  - . Programmable Threshold 0 to + 10 V
  - . Programmable Resolution 50 mV steps
  - . Receive Levels High, Low, or Forbidden Zone
  - . RS-232, 4 Drivers and 4 Receivers

Micro-Sequence:

- o Writable Micro-store memory 4K x 192 bits
- o 16 way branches from measurement handshakes,
  - . ALU Flags, Parity Flags
- o 16 micro-store bits for stimulus handshakes
- o Downloaded with custom micro-code for each bus protocol
- o Micro-code generated from ITI's protocol assembler
- o ATLAS type language compiled to micro-code
- o Maximum clock rate 50 MHz
- o Frontplane micro-address bus 12 bits
- o Boards can be concatenated to accommodate wider buses

Clock and Strobes:

Operate from internal or external timing source

Internal Clock
- o Programmable Frequency ..... 10 kHz to 50 MHz
- o Programmable Duty Cycle
- o Resolution ..... < 0.005 %
- o Data Output Jitter ..... 250 psec

External Clock
- o Range ..... DC to 50 MHz
- o Pulse Width ..... 10 nsec minimum
- o Active Edge ..... Rising or falling
- o Input voltage ..... TTL single-ended L <.8 H > 2.0V
  or RS422 Differential 0 to +5.0 V

Clock Output
- o Driver Type ..... Differential 26LV32 or Single-Ended
  74LVT125

VXI Interface Specifications:

VXI Interface Compatibility:

Type ..... Register-based, servant only
VXI Revision 2.0
Size ..... C-size, single-slot
Triggers ..... TTLTRG 0-7
Address Space ..... 4 MB VME A32 / D32 / D16

Power Requirements:

+5 V ..... < 6.5 A ..... 32.5 W
+12 V ..... < 0.1 A ..... 1.2 W
+24 V ..... < 0.005 A Selftest A to D only
-2 V ..... < 0.04 A ..... 0.08 W
-5.2 V ..... < 0.005 A Selftest A to D only
-12 V ..... < 0.1 A ..... 1.2 W
-24 V ..... < 0.005 A Selftest A to D only

Total Power ..... 35 W

Cooling Requirements:

Per Slot Avg. ..... 35 W (max)
Airflow ..... 3L/sec @ 0.20 mm water pressure
for 10° C temperature rise

Environmental Specifications:

Temperature
Storage ..... -40° C to +75° C
Operating ..... 0° C to +45° C
Humidity ..... 5% to 95% relative, non-condensing

Weight:

Weight ..... Approx 3.0 lbs

Software Drivers:

Visual ATLAS
LabWindows/CVI

* Specifications subject to change without notice.

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