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GE Fanuc Automation

VMIVME-5531L Specification

VME Fiber-Optic Repeater Link

Features:

- High performance, easy-to-use method of linking two or more VME systems together via fiber-optic cable
- Software transparent allows direct communication from primary chassis to secondary chassis with no software overhead (unidirectional link control with bidirectional data transfers)
- Plug-and-play operation
- Supports 8-, 16- and 32-bit data transfers (6U slave)
- Supports 16-, 24- and 32-bit addressing (6U slave)
- Supports 8-, 16-bit data, 16-, 24-bit address (3U slave)
- Total electrical isolation between VME systems
- Maximum 6,560 ft (2,000 m) fiber-optic cables
- Advantages over standard repeaters
  - Small cables
  - High-noise immunity
  - High-voltage isolation
  - No EMI generated by cables
- The VME-to-VME link consists of two boards and two fiber-optic cables (master board: 6U, slave board: 6U or 3U)

Embedded Systems

Ordering Options							
June 29, 2007 800-015531-000 A		A	B	C	D	E	F
VMIVME-5531L	–				0	0	

A =
0 = 6U Slave
1 = 3U Slave
BC = Cable Length
00 = No Cables
01 = 5 ft (1.5m)
02 = 25 ft (7.6m)
03 = 50 ft (15.2m)
04 = 100 ft (30.4m)
05 = 150 ft (45.7m)
06 = 200 ft (60.9m)
07 = 350 ft (106.7m)
08 = 500 ft (152.4m)
09 = 1,000 ft (304.8m)
10 = 1,500 ft (457.3m)
11 = 2,000 ft (609.7m)
12 = 2,460 ft (750.0m)
13 = 3,280 ft (1,000m)
14 = 4,100 ft (1,250m)
15 = 4,920 ft (1,500m)
16 = 5,740 ft (1,750m)
17 = 6,560 ft (2,000m)
DE = 00 (Options reserved for future use)
F = Conformal Coating
0 = Standard VME front panel without conformal coating
1 = Reserved
2 = Standard VME front panel with conformal coating

BOARDS ONLY		A	B	C	D	E	F
VMIVME-5531M	–				0	0	

ABC = Ordering Options
000 = Reserved
001 = Master Board
DE = 00 (Options reserved for future use)
F = Conformal Coating
0 = Standard VME front panel without conformal coating
1 = Reserved
2 = Standard VME front panel with conformal coating

		A	B	C	D	E	F
VMIVME-5531S	–				0	0	

ABC = Ordering Options
000 = Reserved
010 = Slave Board
DE = (Options Reserved for future use)
F = Conformal Coating
0 = Standard VME front panel without conformal coating
1 = Reserved
2 = Standard VME front panel with conformal coating

Note
Link: Includes one VMIVME-5531M (Master) Board, one VMIVME-5531S (Slave) Board and two cable assemblies.

Connector Data	
Compatible Connector	**ST Connector**
PC Board Fiber-Optic Connector	Fiber-Optic Receiver HFBR-2416 (Hewlett-Packard) Fiber-Optic Transmitter HFBR-1414 (Hewlett Packard)

For Ordering Information, Call:
1-800-322-3616 or 1-256-880-0444 • FAX (256) 882-0859
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Functional Characteristics

Overview: The VMIVME-5531 Link is a high performance, yet easy-to-use method of linking two or more VME systems together via fiber-optic cable. The Repeater Link is a two board set which allows VME slave I/O boards residing in one VME chassis to be controlled by a VME master residing in another chassis. In general, the VME chassis in which VME masters reside is referred to as a primary chassis, while the VME slave boards reside in a secondary chassis. The two board set is configured as shown in Figure 1 with one board designated for the primary chassis while the other board is designated for the secondary chassis. A master VME chassis can communicate with several secondary chassis by using multiple REPEATER Links in a star configuration as shown in Figure 2.

The link is software transparent. Any VME master in the primary chassis may access (read or write) to any slave board in the secondary chassis. Only noninterrupter slave boards are allowed in the secondary chassis.

The link between the primary chassis and secondary chassis is automatically established when a VME master (typically a CPU board) addresses any board in the secondary chassis.

Any time a master in the primary chassis issues a VME read/write cycle, it will be repeated to the secondary chassis. If a slave board in any secondary chassis responds to that address, the data transfer (read or write) will occur between the chassis and a Data Transfer Acknowledge (DTACK) will be generated to the master (in primary chassis) to complete the cycle.

A link consists of two boards (VMIVME-5531M and VMIVME-5531S) and two cables which enable a VME system to be expanded beyond a single chassis. Refer to Figures 3, 4 and 5 for a block diagram of each board.

Physical/Environmental Specifications

VMEbus Compliance: Complies with VMEbus specification revision C.1 A32, A24, A16: D32, D16, D08 (EO)
VMIVME-5531M is DTB slave (for use in Primary Chassis)
VMIVME-5531S is DTB master (for use in Secondary Chassis)
Form factors - double height, single slot: 5531M
- double height, single slot: 5531S
- single height, single slot: 5531S (3U)

VME Signals Repeated to Secondary Chassis:[1, 2]
A1 to A31, D0 to D31, DS0*, DS1*, WRITE*, SYSRESET*, AM2, AM4, AM5, and LWORD*

VME Signals Returned to Primary Chassis: (D0 to D31, DTACK*)[3] (D0 to D15, DTACK*)[4]

[1] 3U Slave repeats A1 to A23, D0 to D15, DS0*, DS1*, WRITE*, SYSRESET*, AM2, AM4, AM5, and LWORD*.
[2] The following signals are regenerated at the secondary chassis instead of being sent over the fiber-optic cable: SYSCLK, AM0, AM1, AM3 and IACK*.
[3] Applies to 6U.
[4] Applies to 3U.

Address Modifiers: (09, 0D)[5], 29, 2D, 39, 3D

Read Cycle Overhead: 4.0µs maximum

Write Cycle Overhead: 4.0µs maximum

Transfer Rate (Maximum) (10-foot Cable Length): Assuming a slave board in the secondary chassis responds in 250ns:
1MB/s minimum (D32)[5]

Dimensions:
Either Double height 6U board 160 x 233.35mm
Or Single height 3U board 160 x 100.0mm (slave only)

Power Requirements:
VMIVME-5531S: 2A typical at 5VDC, 3.0A maximum
VMIVME-5531M: 2A typical at 5VDC, 3.0A maximum

Temperature: 0 to 65 °C, operating
-20 to 85 °C, storage

Humidity: 20 to 80 percent, relative noncondensing

Altitude: Operation to 10,000 ft (3,048m)

Cooling: Forced air convection

MTBF: Contact factory

[5] Applies to 6U.

Cable Specifications[6]

Mode: Multi

Length: 5 to 6,560 ft (1.5 to 2,000m)

Fiber Size: 62.5 micron

Clad Size: 125 micron

Buffer Size: 900 micron

Maximum Attenuation at 1,300nm: 9.0dB (including connectors)

Bandwidth at 1,300nm: 500 MHz-km

Boot Length: 20 to 60mm

UL/NEC Rating: OFNP

Connector Style: ST, 2.5mm Bayonet, both ends

Quantity Required: 2 per link

Trademarks

All registered trademarks are the property of their respective owners.

[6] Cables conforming to this specification are supplied with the VMIVME-5531L. To order cables separately, please refer to specification number VMICBL-000-F3-XXX.

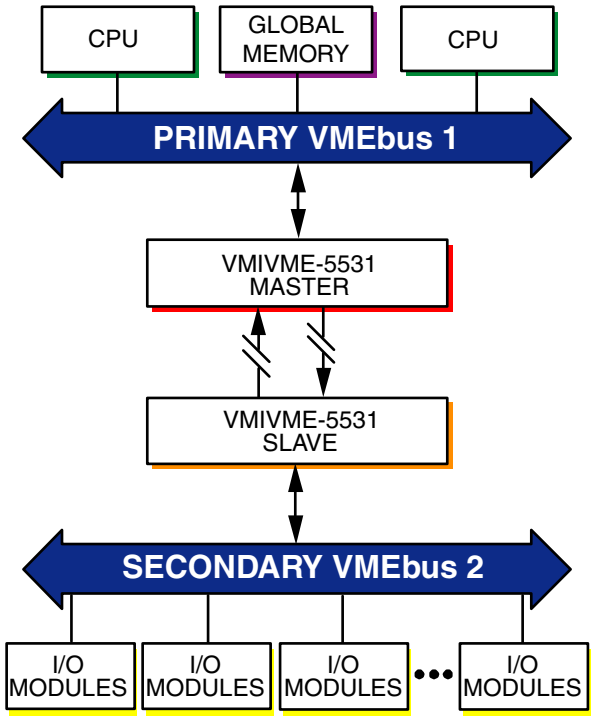


Figure 1. Single Link Application Diagram

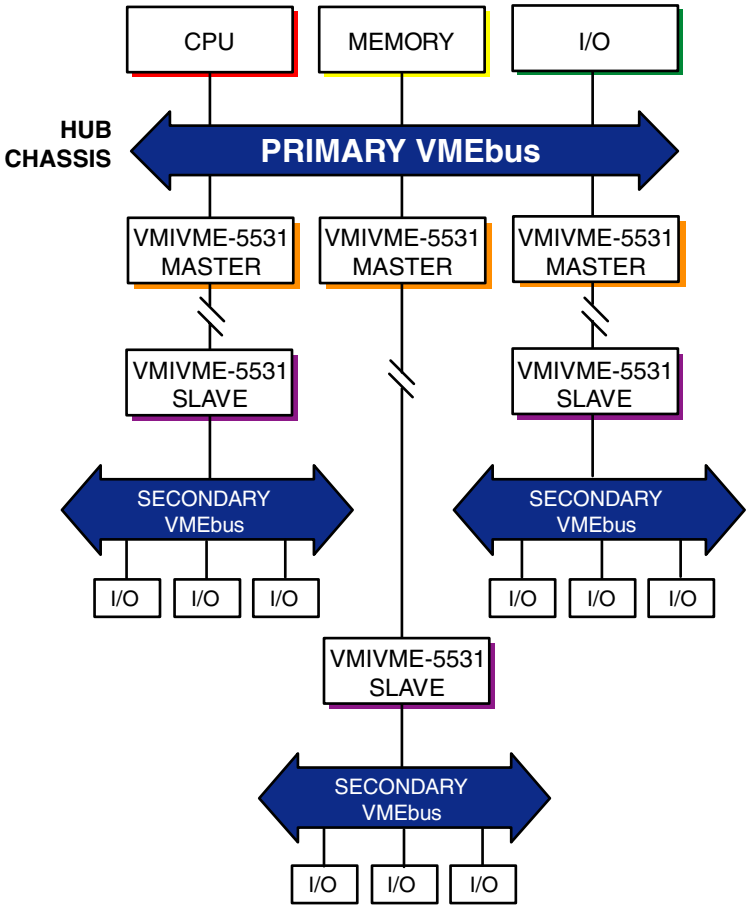


Figure 2. Star Configuration

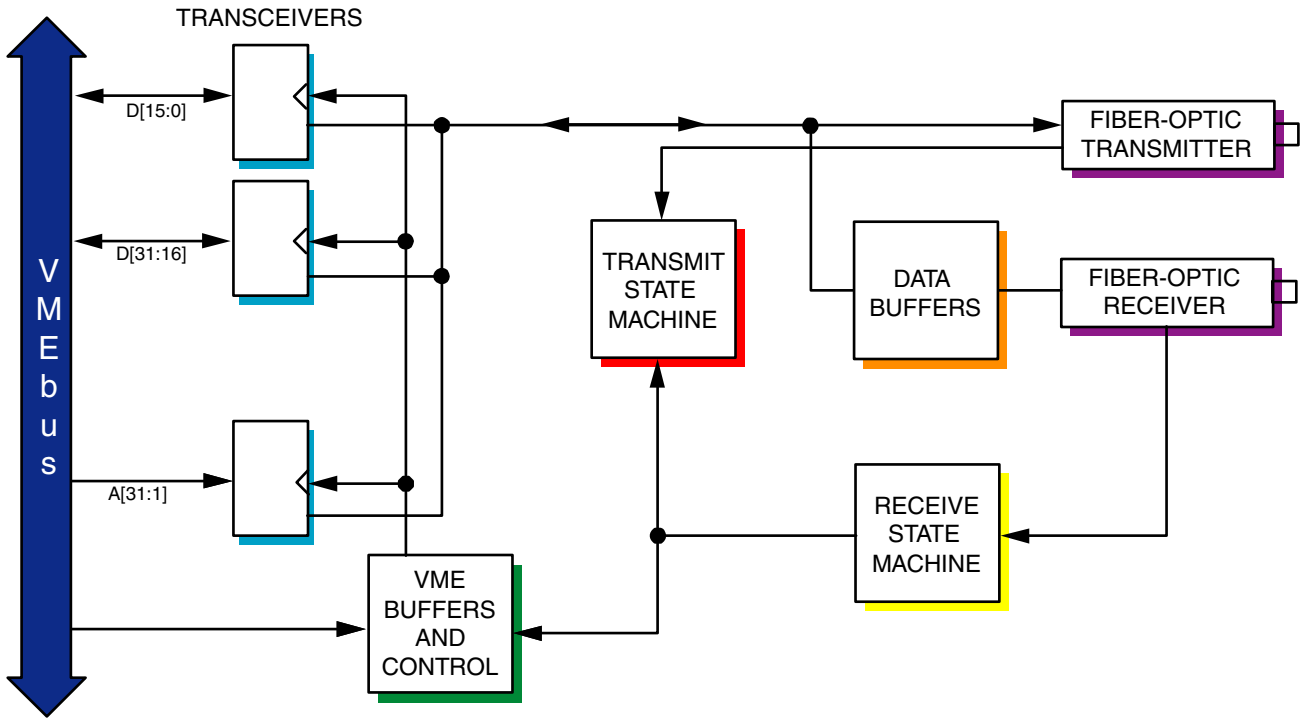


Figure 3. Block Diagram of 5531M Primary Chassis Repeater Link Board

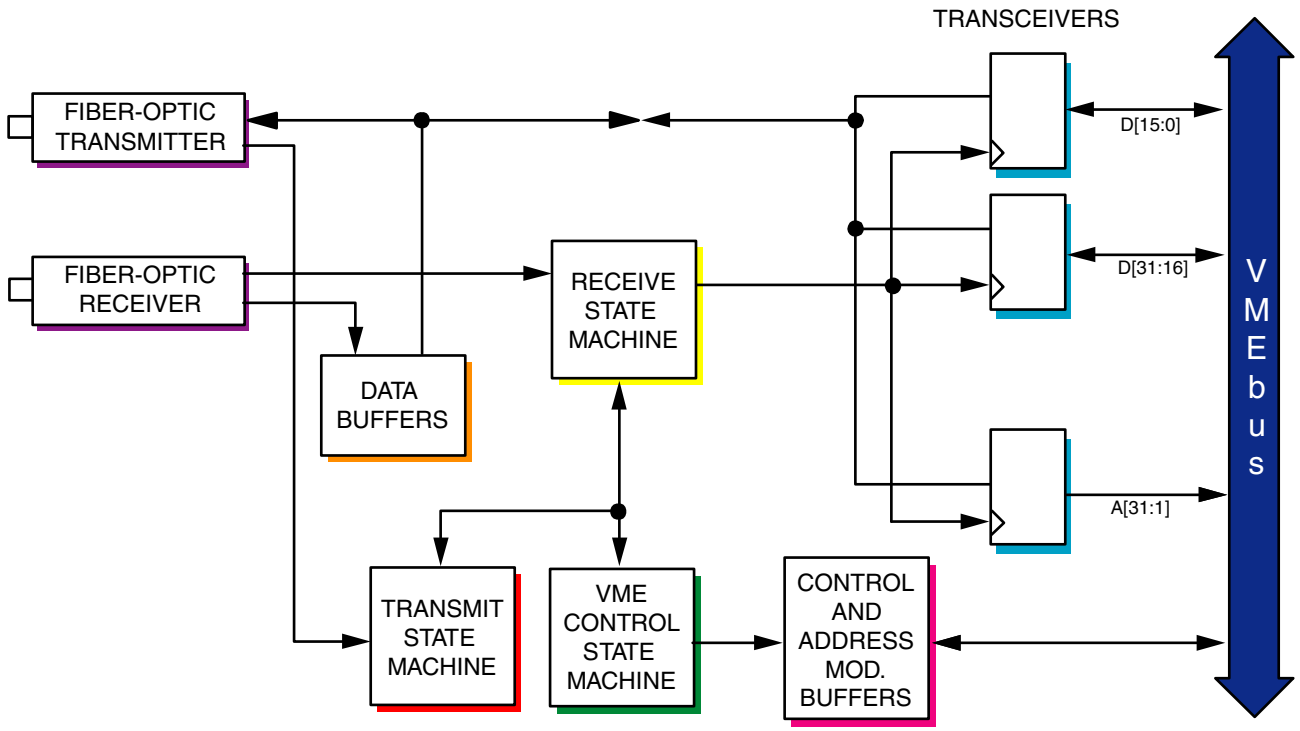


Figure 4. Block Diagram of VMIVME-5531S Secondary Chassis Repeater Link Board (6U)

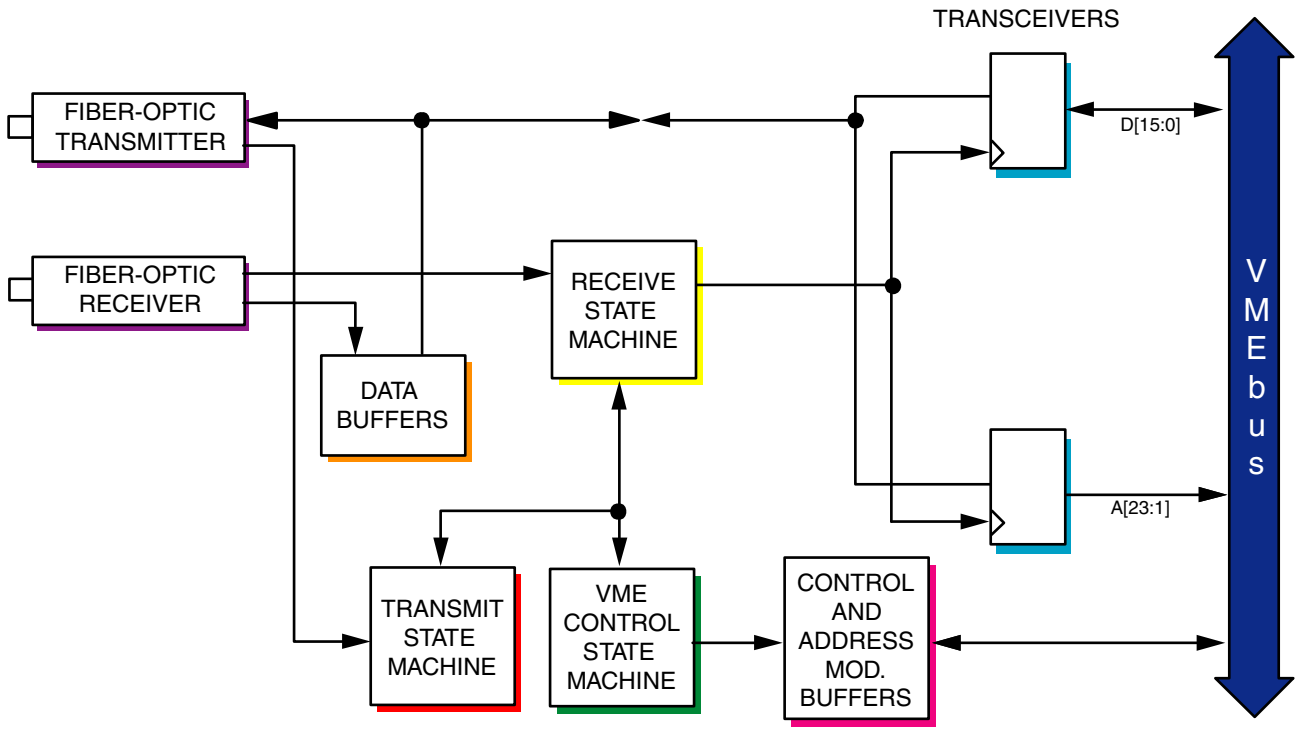


Figure 5. Block Diagram of VMIVME-5531S Secondary Chassis Repeater Link Board (3U)

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