CONVEX

Field Support Tech Tip

Product: C-1
Tech Tip Number: MB-001
Date: April 25, 1986
Subject: Multibus Chassis
Submitted By: Dick Baker

Pull out the expansion multibus chassis and identify the cover that attaches to the power supply heat sink and back of the multibus for burrs that may cut into cables which are routed over them. An additional measure that may be taken would include covering the exposed screw heads with electrical tape.

CONVEX

Field Support Tech Tip

Product: C-1
Tech Tip Number: MB-002
Date: June 2, 1986
Subject: Multibus
Submitted By: Bill Georgia

Voltages on the first multibus (under the CPU card cage) should be checked periodically using subtest 600 of the IO4000 diagnostic. If a voltage is shown to be out of tolerance by the test, and the power supply measures correctly, check the power connectors on the back of the multibus card cage. The pins inside the plug can be tightened to make a better connection by using a pointed tool such as an awl. Another method of making a better connection is to bend the pins at the backplane so they are forced to push against the sides of the plug when inserted.

Most often indications of this sort of a problem have been disk problems, such as unrecoverable read errors, header not found, etc. Other problems have seemed to point to IOP with error messages such as

```
"Cache Error Addr=45dcc Access=Write Source=Multibus 1"
Error (s): Addr_Par. Map=32c803ad
----------more error message goes here----------
----------and here
----------and here
Hard error detected
Hard error generated by CCU7
        Address parity error
        Data parity error
        Access request: write
        Requestor id: Multibus 1
```

Problems that seem to have no logical solution have responded to this treatment of the older style multibus chassis. It is a good place to check when nothing else works.

We now have approval for a more permanent fix. Since considerable time and effort is required it should be done on an "as needed" basis.

1. Remove the basic multibus chassis from underneath the CPU.
2. Remove the power supply to multibus cable that supplies the -5, +12 and -12 volts.
3. Remove the plugs from the ends of the cable that plug onto the multibus by cutting the wires as close as possible to the plugs.
4. Remove all logic boards from multibus.
5. Install spaghetti or heat shrink tubing on the wire ends and solder wires to the multibus DC pins ensuring that the wires are attached to the correct pins.
6. Install multibus and cable and check out system.

CONVEX

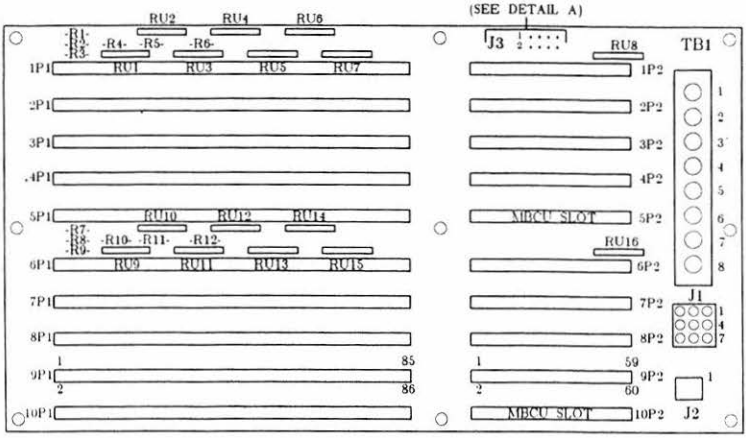
Field Support Tech Tip

Product: C-1
Tech Tip Number: MB-003
Date: March 15, 1987
Subject: MBUS Backplane Information
Submitted By: TAC-HW

The purpose of this Tech Tip is to provide miscellaneous information about the following Convex Multibus Backplanes.

- 10-Slot **Split** Backplane, Part Number **411-000112-200**, used in assemblies:
  - P/N 500-000157-200, Domestic CPU Multibus Assembly.
  - P/N 500-000157-201, International CPU Multibus Assembly.
  - P/N 500-000158-200, Domestic Expansion Multibus Assembly.
  - P/N 500-000158-202, International Expansion Multibus Assembly.
- 9-Slot **Non-Split** Backplane, Part Number 411-000113-200, used in assemblies:
  - P/N 500-000158-201, Domestic Expansion Multibus Assembly.
  - P/N 500-000158-203, International Expansion Multibus Assembly.

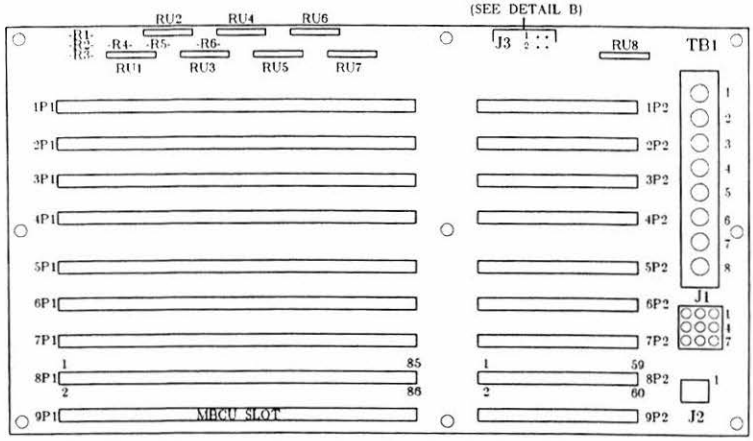
REAR VIEW, 10-SLOT *SPLIT* BACKPLANE



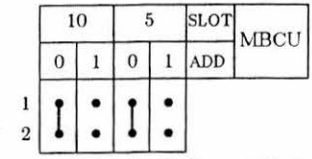
...continued on next page

...continued from previous page

REAR VIEW, 9-SLOT *NON-SPLIT* BACKPLANE

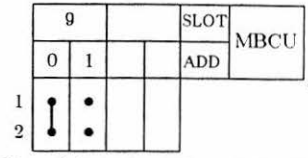


DETAIL A



Normal Strapping is **From** 1 **To** 2,
Address **0**, for **both** Slots 5 and 10.
NOTE: Address **1** is normally **not** used.

DETAIL B



Normal Strapping is **From** 1 **To** 2.
Address **0**, for Slot 9.
NOTE: Address **1** is normally **not** used.

...continued on next page

...continued from previous page

- PARTS INFORMATION -

PART NUMBER	DESCRIPTION
• 103-102000-001 and	Resistor (SIP), 1K OHM. RU1, RU3, and (10-Slot Only) RU9 RU11. Bourns Part Number 4310R-101-102.
• 103-102000-003 Only) 101-222	Resistor (SIP), 2.2K OHM. RU2, RU4 thru 8, and (10-Slot RU10 and RU12 thru 16. Bourns Part Number 4310R-
• 101-000101-009	Resistor, 2.2K OHM. R3 and (10-Slot Only) R7.
• 101-000101-021	Resistor, 510 OHM. R4 and (10-Slot Only) R10.
• 101-000101-008	Resistor, 220 OHM. R1, R6, and (10-Slot Only) R9 and R11.
• 101-000101-011	Resistor, 330 OHM. R2, R5, and (10-Slot Only) R8 and R12.

NOTE: There have been random, unexplained system problems that are seen during periods of heavy I/O activity. Some have been linked to incorrect Multibus Termination Resistors. Therefore, the Resistor information, above, is provided for reference when troubleshooting such problems.

- CABLING INFORMATION -

PART NUMBER	DESCRIPTION
• 003-020003-200	Cable, CPU Multibus Fan Sense. **From** CPU Multibus Backplane, Connector J2, **To** System Monitor Board, Connector J8.
• 003-060009-200	Cable, CPU Multibus Auxiliary Voltage. **From** CPU Power Supply 2 **To** Connector J1, CPU Multibus Backplane. Pin assignments are shown below.

TO	FROM	DESCRIPTION
J1-1	P.S. 2, -V4	-12 VDC (Yellow Wire)
J1-2	P.S. 2, +V4	-12 VDC Return (Black Wire)
J1-6	P.S. 2, -V3	+12 VDC Return (Black Wire)
J1-7	P.S. 2, -V2	-5 VDC (Orange Wire)
J1-8	P.S. 2, +V2	-5 VDC Return (Black Wire)
J1-9	P.S. 2, +V3	+12 VDC (White Wire)

...continued on next page

...continued from previous page

- CABLING INFORMATION - (continued)

PART NUMBER — DESCRIPTION

- 603-080005-200 Cable, CPU Multibus VCC and Ground. **From** CPU Power Supply 3, if installed; else CPU Power Supply 2 **To** TB1, CPU Multibus Backplane. TB1-1 thru 4 are +5 VDC (Red Wires) and TB1-5 thru 8 are Ground (Black Wires).

- 603-080006-200 Cable, Expansion Multibus Auxiliary Voltage with Remote Sense. **From** Expansion Multibus Power Supply to Connector J1, Expansion Multibus Backplane. Pin assignments are shown below.

TO	FROM	DESCRIPTION
J1-1	P.S. TB4, -V3	-12 VDC (Yellow Wire)
J1-2	P.S. TB4, +V3	-12 VDC Return (Black Wire)
J1-4	P.S. J1, Pin 15	- Remote Sense (Black Wire)
J1-5	P.S. J1, Pin 13	+ Remote Sense (Red Wire)
J1-6	P.S. TB4, -V4	+12 VDC Return (Black Wire)
J1-7	P.S. TB3, -V2	-5 VDC (Orange Wire)
J1-8	P.S. TB3, +V2	-5 VDC Return (Black Wire)
J1-9	P.S. TB4, +V4	+12 VDC (White Wire)

- 603-080007-200 Cable, Expansion Multibus VCC and Ground. **From** Expansion Multibus Power Supply **To** TB1, Expansion Multibus Backplane. TB1-1 thru 4 are +5 VDC (Red Wires) and TB1-5 thru 8 are Ground (Black Wires).

CONVEX

Field Support Tech Tip

Product: Multibus
Tech Tip Number: MB-004
Date: February 21, 1990
Subject: Mbus error Messages
Submitted By: Al Haddix

We've received several inquiries recently concerning Kerntraps associated with the IOP and VIOP. I will attempt to introduce you to the error messages and a very brief attempt at decoding these errors. The following errors are only examples and should only be considered as such. The below evaluation techniques will not always be of value, but will work in the majority of situations.

Below are two (2) examples of standard kerntraps. In this particular instance register a0 contains the address of the device that was active at the time of the error. This value is an address and includes the device csr and the multibus address. In this case a0 indicates the active device was the ACM on mbus 0. 3c0 is the csr of the ACM and 00ffc is the range of mbus 0. As the registers load like a stack, it also possible to find the csr address in register a4.

For your convenience I am including the list of address ranges for both VME and Multibus. See at bottom of text:

For the vector 2 trap the ACCESS ADDR in many instances will give an address in the range of a controller. The range of a controller will be the csr plus the next 8 to 16 register locations depending on the controller. Unfortunately in the example below this is not the case.

```
[CCU00@ 10:39:29] Kerntrap: vector 2 (0x02) PC=0x80000 SR=0x2100 USP=0x7fdfffeb
                  BUS ERROR - ACCESS ADDR=0x80000, FC=0x0016, IR=0x0000
                 <d0-d3> 0000274c 00002100 00000400 f0fff07e
                 <d4-d7> f060f060 f060f060 00000038 00000100
                 <a0-a3> 00ffc3c0 004002fc 0007e00f 00000410
                 <a4-a7> 00ffb814 0040bd40 0040bd40 0007bfa8
                   CCU kernel aborted, returning to EPROM code


[CCU00@ 10:39:29] Kerntrap: vector 4 (0x04) PC=0x1b54 SR=0xffffbff8 USP=0x80000
                 <d0-d3> 000027ff 00002100 00000400 f0fff0ff
                 <d4-d7> f0fff0ff f0fff0ff 00000038 00000100
                 <a0-a3> 00ffc3c0 004002fc 0007e00f 00000410
                 <a4-a7> 00ffb813 0001b380 0007bfc0 000fbfac
                 CCU kernel aborted, returning to EPROM code
```

. . . continued on next page . . . .

...continued from previous page

If the above info should fail to help in isolating the problem then you may wish to use adb. You can do this by attempting th following:

1) cd /mnt/os
2) adbccu iop (or viop)
3) pc value?ia (example: 1b54?ia)
   This will display an EGOS instruction like: mbint7f+0x22 addw #0xC,a7.
   This would indicate an add operation to an interrupt 7 device (e.g. int7).
4) cntl D to exit

While a vector trap 2 will always indicate a multibus or VME related problem, a vector trap 4 is a little more vague. If no sense can be made of the info available it may be worth considering the CCU or PIA (for C2's).

Multibus Addresses

FFc000-ffcfff mbus 0
ffd000-ffdfff mbus 1

VME addresses

c00000-c0ffff vme 0
c10000-c1ffff vme 1