XVME-090

VMEbus Extender Board

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Chapter 1

INTRODUCTION

1.1 OVERVIEW

The XVME-090 Extender Board brings signals from the VMEbus backplane to the front edge connectors on its front edge. It allows any VMEbus module to be connected to VMEbus backplane signals while both surfaces of the module are exposed for testing. The XVME-090 VMEbus Extender Board thus simplifies the testing of any VMEbus module.

The XVME-090 can be installed in any double-high (NEXP) slot in a VMEbus backplane, and a VMEbus card to be tested is plugged into the front edge of the XVME-090 (see Figure 1-1). The two female connectors P1 and P2 on the front edge of the the Extender Board are identical to the VMEbus connectors on a VMEbus backplane.

The XVME-090 is a six-layer board: 3 signal planes, 2 ground planes, and a power plane. For greater noise immunity, each signal is sandwiched between ground and power planes.

The VMEbus Extender Board simplifies the testing of VMEbus backplane signals. It features easily accessible test pins for all P1 and P2 backplane signals, and provides separate traces which can be cut to isolate each VMEbus backplane signal from the VMEbus card being tested.

In addition, the XVME-090 contains four LEDs which provide visual status of power signals on the VMEbus backplane (+5V, +5VS, +12V, -12V). Each LED has an associated jumper which can disconnect the LED for precise voltage/current measurement. An onboard switch and clip-style test points are also provided to connect/disconnect and easily monitor the +5V supply.

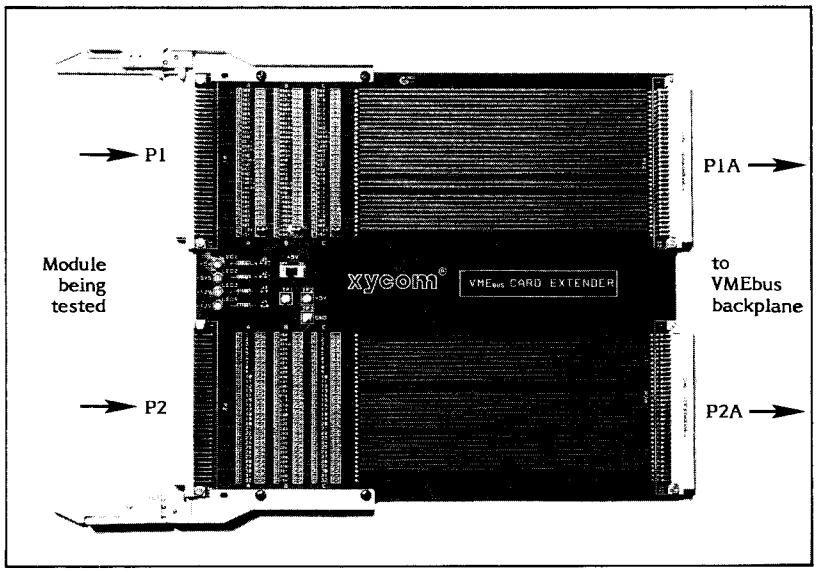

Figure 1-1. XVME-090 Extender Board

1.2 SPECIFICATIONS

VMEbus COMPLIANCE

Double-high (NEXP) board size
P1 and P2 connectors
Meets all VME electrical specifications

ENVIRONMENTAL

Temperature	
Operating	0 to 65°C (32° to 149°F)
Non-operating	-40° to 85°C (-40° to 158°F)
Humidity	5 to 95% RH non-condensing (Extreme low humidity conditions may require special protection against static discharge.)
Altitude	
Operating	Sea-level to 10,000 ft. (3048 m)
Non-operating	Sea-level to 50,000 ft. (15240 m)
Vibration	
Operating	5 to 2000 Hz .015 inches peak-to-peak displacement 2.5 g peak (maximum) acceleration
Non-operating	5 to 2000 Hz .030 inches peak-to-peak displacement 5.0 g peak (maximum) acceleration
Shock	
Operating	30 g peak acceleration, 11 msec duration
Non-operating	50 g peak acceleration, 11 msec duration

Chapter 2

INSTALLATION

To install the XVME-090 VMEbus Extender Board, you must:

1. Attach the two handles provided in the XVME-090 package (see Figure 2-1). The function of these handles is to hold the module being tested securely mated to the Extender Board. The XVME-090 is shipped with the the 4 screws and 4 nuts required to attach the two handles.

NOTE

There are three holes along the top and bottom edges of the XVME-090 (see Figure 2-1). The inside two holes are used to attach the handles. The outermost hole (which does not align with the hole in the handle) is not used.

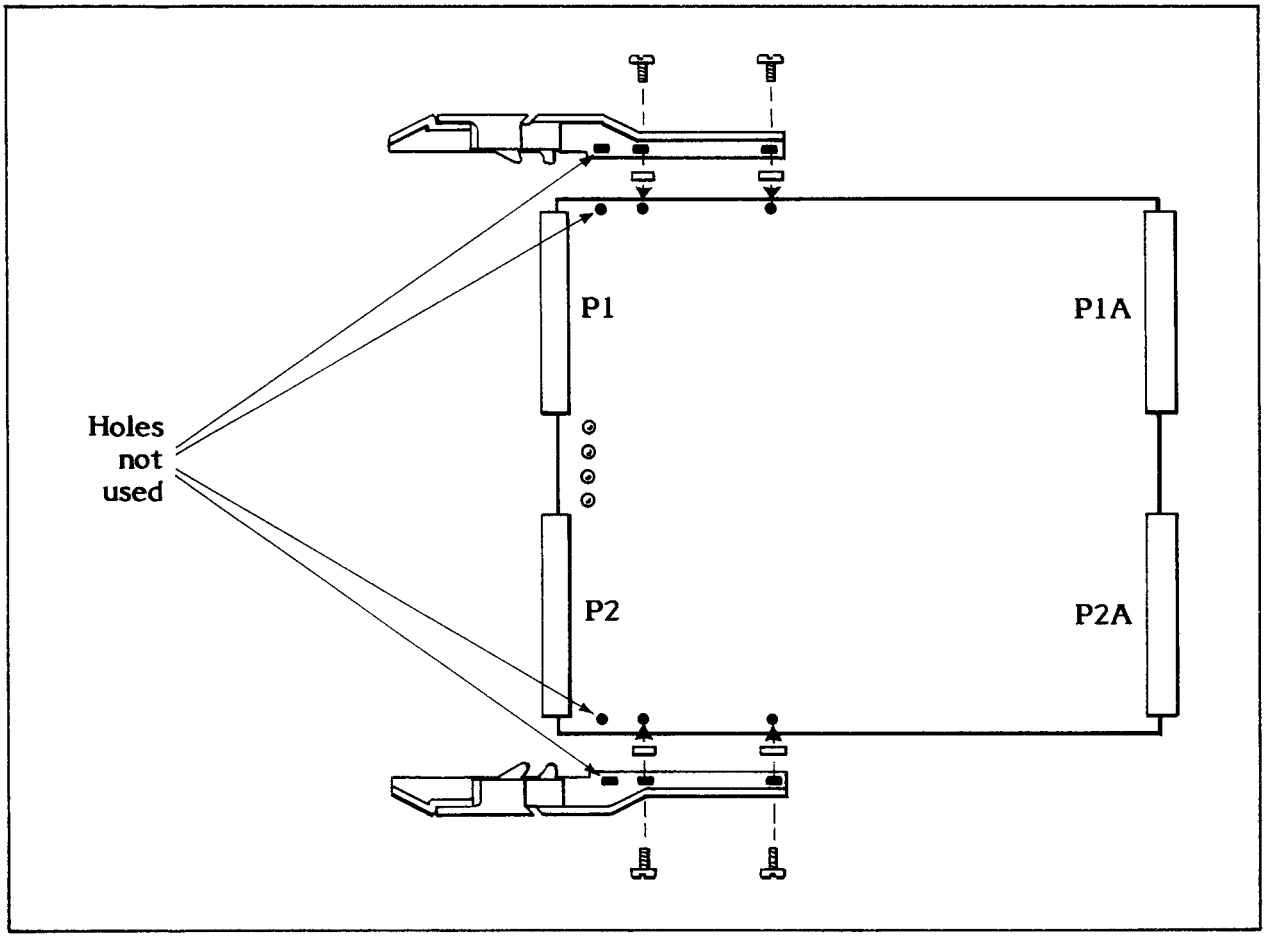

Figure 2-1. Attaching the Handles

2. Install the Extender Board in any double-high (NEXP-size) slot in a VMEbus chassis, just as you would any NEXP-size VME card (see Figure 1-1).

3. Install a VMEbus card in the front edge of the Extender Board. The two connectors P1 and P2 on the front edge of the Extender Board are the standard VMEbus connectors, and VMEbus signals are passed straight-through from the VMEbus backplane to P1 and P2 on the Extender Board (unless a jumper has been removed -- see Chapter 3, Section 3.3).

The VMEbus module installed in the Extender Board is now ready to be tested.

The following chapter explains the functions of the jumpers, LEDs, switch, and test points on the XVME-090.

Chapter 3

JUMPERS, LEDs, SWITCHES, AND TEST POINTS

3.1 INTRODUCTION

To simplify testing of any VMEbus module, the Extender Board contains test pins and clip-style test points, jumpers and traces, a switch and several LEDs. This chapter explains their function.

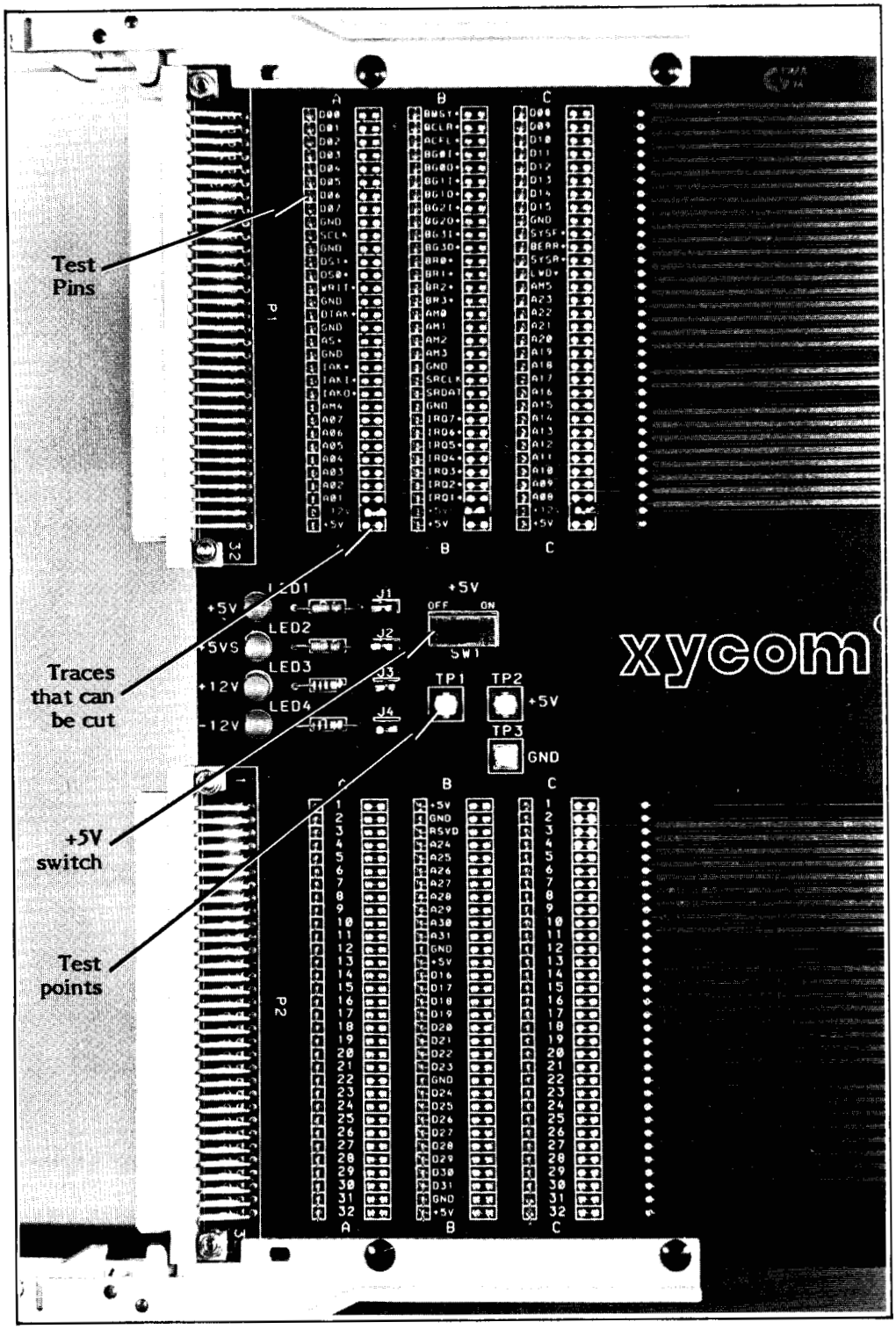

Figure 3-1. XVME-090 Pins, Jumpers, LEDs, and Test Points

3.2 TEST PINS

To facilitate monitoring of backplane signals, each line on P1 and P2 has an easily accessible test pin (see Figure 3-1). There is one pin for every signal on both P1 and P2, and the pins are laid out in rows A, B, and C, just as the pins on connectors P1 and P2. To measure the voltage on any signal line, simply connect a meter between the specified pin and the clip-style touch point GND (or any ground pin).

3.3 JUMPERS AND TRACE CUTS

In addition to a test pin, each backplane signal has associated with it a trace that can be cut (see Figure 3-1). If this trace is cut, the VMEbus module being tested can be isolated from the particular VMEbus line. To measure the current on any line, cut the associated trace and connect a meter across the gap.

After a trace is cut, the circuit can be reconnected simply by installing two jumper posts and sliding a jumper over them. The signals 1A:31, 1B:31, and 1C:31 on P1 (-12V, +5VS, and 12V) already have jumper posts installed and a jumper inserted between the posts, for easy isolation of these signals.

Note that the six traces associated with the six +5V lines on P1 and P2 (pins 1A:32, 1B:32, 1C:32, 2B:1, 2B13, 2B:32) are non-functional. Both ends of all of these traces are connected to one common +5V line on the XME-090. To disconnect this common +5V line from connectors P1 and P2, set the +5V switch to the OFF position (see Section 3.5).

The four jumpers associated with the four LEDs are explained in the next section.

3.4 LEDs

Four red LEDs provide a visual indication of the power signals on connector P1. Each LED is connected in parallel with its associated power signal. The LED labeled +5V is in parallel with the +5V signal on A:32 of P1, while the LEDs labeled +5VS, +12V, and -12V are in parallel with the respective signals on P1.

To the right of each LED is a jumper. If removed, this jumper disconnects the LED from the circuit. Precise measurement of any of the power signals requires that the associated LED be removed from the circuit by removing its jumper.

3.5 +5V SWITCH AND TEST POINTS

CAUTION

Before inserting or unplugging any board from the Extender Board, turn off the VMEbus power supply. It is not sufficient to turn the +5V switch OFF. If VMEbus power is not off when a module is removed from the Extender Board, the module or other modules on the VMEbus backplane could be damaged.

A switch is provided on the Card Extender to easily connect/disconnect the +5V line from all the +5V pins on connectors P1 and P2 (1A:32, 1B:32, 1C:32, 2B:1, 2B:13, 2B:32)

All the +5V lines entering the Extender Board through P1A and P2A are tied together into one common +5V power plane on the Extender Board. The switch on the Extender Board connects/disconnects this common +5V plane from the front edge connectors P1 and P2. The current on this common line can be measured by setting the switch OFF and attaching an ammeter across test points TP1 and TP2 (see Figure 3-2). The voltage on this line can be measured by connecting a voltmeter across the test points TP2 and GND. If the switch is ON, the voltage will be measured with load; if the switch is OFF, the voltage will be measured without load.

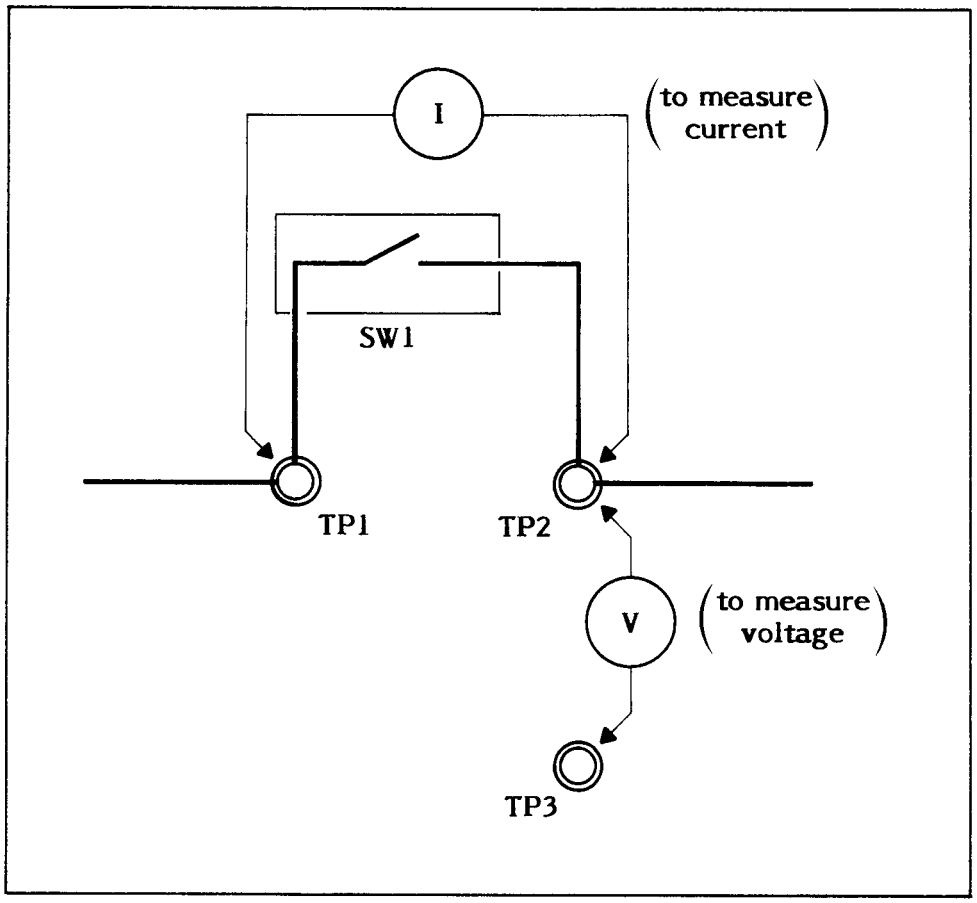

Figure 3-2. +5V Switch and Test Points

Appendix A

P1 AND P2 SIGNALS

P1 Pin Assignments

Pin Number	Row A Signal Mnemonic	Row B Signal Mnemonic	Row C Signal Mnemonic
1	DO0	BBSY*	D08
2	DO1	BCLR*	D09
3	DO2	ACFAIL*	D10
4	DO3	BG0IN*	D11
5	DO4	BG0OUT*	D12
6	DO5	BG1IN*	D13
7	DO6	BG1OUT*	D14
8	DO7	BG2IN*	D15
9	GND	BG2OUT*	GND
10	SYSCLK	BG3IN*	SYSFAIL*
11	GND	BG3OUT*	BERR*
12	DS1*	BR0*	SYSRESET*
13	DS0*	BR1*	LWORD*
14	WRITE*	BR2*	AM5
15	GND	BR3*	A23
16	DTACK*	AM0	A22
17	GND	AM1	A21
18	AS*	AM2	A20
19	GND	AM3	A19
20	IACK*	GND	A18
21	IACKIN*	SERCLK (1)	A17
22	IACKOUT*	SERDAT (1)	A16
23	AM4	GND	A15
24	AO7	IRQ7*	A14
25	AO6	IRQ6*	A13
26	AO5	IRQ5*	A12
27	AO4	IRQ4*	A11
28	AO3	IRQ3*	A10
29	AO2	IRQ2*	A09
30	AO1	IRQ1*	A08
31	-12V	+5V STDBY	+12V
32	+5V	+5V	+5V

P2 Pin Assignments

Pin Number	Row A Signal Mnemonic	Row B Signal Mnemonic	Row C Signal Mnemonic
1	User I/O	+5 Volts	User I/O
2	User I/O	GND	User I/O
3	User I/O	RESERVED	User I/O
4	User I/O	A24	User I/O
5	User I/O	A25	User I/O
6	User I/O	A26	User I/O
7	User I/O	A27	User I/O
8	User I/O	A28	User I/O
9	User I/O	A29	User I/O
10	User I/O	A30	User I/O
11	User I/O	A31	User I/O
12	User I/O	GMD	User I/O
13	User I/O	+5 Volts	User I/O
14	User I/O	D16	User I/O
15	User I/O	D17	User I/O
16	User I/O	D18	User I/O
17	User I/O	D19	User I/O
18	User I/O	D20	User I/O
19	User I/O	D21	User I/O
20	User I/O	D22	User I/O
21	User I/O	D23	User I/O
22	User I/O	GND	User I/O
23	User I/O	D24	User I/O
24	User I/O	D25	User I/O
25	User I/O	D26	User I/O
26	User I/O	D27	User I/O
27	User I/O	D28	User I/O
28	User I/O	D29	User I/O
29	User I/O	D30	User I/O
30	User I/O	D31	User I/O
31	User I/O	GND	User I/O
32	User I/O	+5 Volts	User I/O