

Active Extender

AGPAX

Hot Swap AGP Bus Extender Board

AGP

User Manual

Revision 1.1

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TABLE OF CONTENTS

INTRODUCTION	3
INSTALLATION	3
OPERATION	4
ON-OFF	4
POWER-ON RESET	4
CURRENT MEASUREMENT	4
CURRENT LIMIT CIRCUITRY	4
EXTERNAL POWER SUPPLY	5
JUMPER TABLE	6
LEDs	6
SPECIFICAT ION: AGPAX	7

INTRODUCTION

This Active Extender board allows HOT SWAPPING or LIVE INSERTION of the Unit-Under-Test into the AGP bus. The “HOT SWAPPING” feature of this extender eliminates the need for turning the PC Off and On and repeated rebooting. This feature speeds up rework, characterization and test of Unit-Under-Test in the development phase as well as production test. The elimination of the repeated power cycling also helps prolong the system life and the hard disc operation. This Active Extender uses a new CMOS technology for switching the signals On and Off (known as “Quick Switch”). These switches have a very fast propagation delay, typically about 250 picoseconds, resulting in no timing degradation between the bus and the Unit-Under-Test. The switches are also bi-directional allowing the entire address range to be supported for both target and master type operation.

This Active Extender board isolates all signals and voltages to the Unit-Under-Test, when the On-Off switch is in the Off position. All voltages are ramped down and ramped up during the power down and power up in order to eliminate any spikes. During the power down the signals to the bus become isolated as soon as the VCC3 supply, reaches down to +2.7V. During the power up the signals stay isolated until this voltage is at least +2.8V.

The AGPAX extender board allows for voltage margin testing of the UUT by allowing external power supplies to replace the system power supplies as inputs to the Unit-Under-Test.

An on-board current-to-voltage converters allow measurement of the current drawn by the UUT at any time, using just a voltmeter at the appropriate test points.

INSTALLATION

To install the Active Extender board, make sure to turn the PC power off. Insert the Active Extender in any available AGP slot and secure it's bracket to the main chassis. You are now ready to use your new extender board.

NOTE: If you are planning to use an external I/O signal to control the board, the On-Off switch must be in the Off position.

OPERATION

Using this Active Extender board is no different than using a regular extender board. However, the extra features that the Active Extender have to offer, are explained below:

ON-OFF

To insert or remove any Unit-Under-Test into and out of the Active Extender, make sure that the Active Extender is turned Off, if the system power is to stay On. There are two ways to turn the Active Extender power On and Off. 1) The mechanical toggle switch. 2) External control signal (via Parallel Port).

AGPAX boards may be controlled via parallel port interface. Turn the On-Off switch to the Off position, plug a parallel cable between the system port and the board(s) and use the system parallel port address to turn the board(s) On and Off.

Two AGPAX boards in a system may be controlled independently, if so desired. Jumper JP15 on the board may be used to configure each board to be turned On and Off by a different bit of the parallel port. For example board One is set to be controlled with JP15 installed and board Two is set to be controlled with JP15 removed. Low level for each bit will turn the board On and Hi will turn the board Off.

Examples, assuming the system parallel port address is set at 378:

outp (0x378, 0x05)	Will turn board One On.
outp (0x378, 0x50)	Will turn board Two On.
outp (0x378, 0xff)	Will turn both boards Off .

POWER-ON RESET

Each time the Active Extender board is turned Off and then On, reset signal will be generated from the extender to the Unit-Under-Test automatically. The duration of this reset is 200 milliseconds. The reset to the Unit-Under-Test is also activated every time there is a reset from the bus.

CURRENT MEASUREMENT

To measure the current being drawn by the Unit-Under-Test, just connect a voltmeter to J3. Every Volt read by the meter represent One Amp. So if the voltmeter reads 0.35, it represents that the Unit-Under-Test is drawing 350 milliamperes of current. J3 terminals are marked for Ground, 5I, 3CI, and VDQI.

CURRENT LIMIT CIRCUITRY

Red LEDs, when illuminated, indicate a short or a very low voltage. Green LEDs when illuminated, indicate voltages at their corresponding outputs. In the case of the short for the +5V, +12V, VCC3, and VDDQ from the Unit-Under-Test, the Active Extender will shutdown immediately.

The current limit value for the +5V, VCC3, and VDDQ are set to 5 Amps.

EXTERNAL POWER SUPPLY

An external terminal J5 is used for the external power supply input. However remember never to connect any supply to these inputs so long as you have JP5, JP6, JP7, and JP9 installed. In case you want to use the external supply as an input you must remove these 4 jumpers in order not to cause any conflict with the bus voltages. These jumpers are, however, independent from each other. For instance if you would want to bring in only a +5V from the external supply and continue to use the bus voltages for +12V, VCC3 and VDDQ, you would only need to remove JP5. The list below identifies which jumper is for which supply:

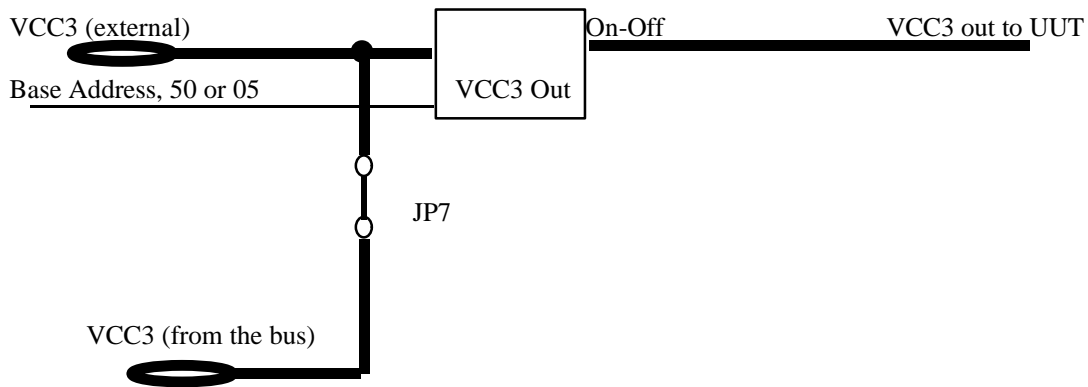
JP5 = +5V

JP6 = +12V

JP7 = VCC3

JP9 = VDDQ

The following diagram indicates the interconnection of the Unit-Under-Test voltages to the bus voltages and the external voltages:



As you can see, there will be conflict in case the external supply is connected while the jumper is still in place. This circuit is repeated for each of the 4 voltages.

If you are using external power supplies do not forget to connect the Ground (GND) signals between the system and the supply. If your external power supply outputs are not isolated, make sure the ground of the PC (containing the extender board) and the ground of the power supply are at the same voltage phase/level with respect to a common point, before connecting the GND signal.

JUMPER TABLE

Description	Jumper	Utilization
Current measurement	J3	Outputs to DVM
External power input	J5	Inputs from external power supply
+5V isolation from the system	JP5	On = voltage from system Off = voltage from External supply
+12V isolation from the system	JP6	On = voltage from system Off = voltage from External supply
VCC3 isolation from the system	JP7	On = voltage from system Off = voltage from External supply
VDDQ isolation from the system	JP9	On = voltage from system Off = voltage from External supply
Disable Mechanical On-Off Switch	SW	On = S1 can control the board Off = S1 is disabled
Remote On-Off	JP15	Shunt On, Board Id is One Shunt Off, Board Id is Two
	JP16	Factory Use Only

LEDs

There are two sets of LED on the board, green and red. Each LED has a label which Voltage it represents. The green LED, when lit, indicates presence of the corresponding voltage. The red LED, when lit, represent a short on the corresponding voltage. Please note that the green LEDs do not indicate if the voltage is at the expected level or not.

SPECIFICATION: AGPAX

Bus: AGP, 32-bit, 3.3V key and universal.

Voltages:

Input requirement +5V, VCC3 & VDDQ at 200 mA
+ 12V at 50 mA

Inputs