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VoltPAQ X2/X4

User Manual

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1. Introduction

The VoltPAQ is a linear power amplifier designed to run Quanser experiments. VoltPAQs come in three different flavours: X1, X2 and X4. These suffixes stand for the number of channels. Therefore, the VoltPAQX1 can power one load, the VoltPAQX2 can power two, and the VoltPAQX4 can power four. This manual is specifically for the X2 and X4 models.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

2. Specifications

The VoltPAQs replaces the UPM line of power amplifiers. Every VoltPAQX2/X4 consists of the following components and features:

1. Amplifier capable of supplying up to 24V @ 4.16A continuous per channel
2. Current sensing capability for each channel
3. User ability to enable/disable individual amplifiers
4. Automatic thermal shut-down to prevent damage to amplifier
5. Over-heating/over-current fault indication output
6. E-stop

AC Input Specifications	*Value*
Input Voltage Range	100V-132V/ 200V-240V
Max Input Current per channel	1.0A RMS @ 220V 1.9A RMS @ 110V
Input Frequency Min	47Hz
Input Frequency Max	63Hz

Table 1: Amplifier specifications

Amplifier Specifications	*Value*
Output Voltage	± 24V
Continuous Current Output per channel	± 4.16A
Voltage Gain	3V/V
Current Sense	1 A/V
Amplifier Command Voltage	± 10V

Table 2: Amplifier specifications

3. Connections

Figure 1: Front panel connections

Connection	*Description*	*Electrical Range*
Amplifier Command	An analog voltage is applied on this channel. This directly controls the output of the amp through the “To Load” channel.	-10V to +10V
Amplifier LED	Enabled/Disabled status of channel	LED on = enabled
Current Sense	Indicates the current being drawn by the load	1A/V
To Load	The load to be driven is connected here. Amp Out = 3 * Amplifier Command	-24V to +24V
System Power	Indicates the VoltPAQ is receiving power	
Enable	User applies this signal. In the VoltPAQX2, enable 0 and 1 are used. Enable 2 and 3 are floating. VoltPAQX4 uses all 4 enable pins.	0V = Disable 5V = Enable
/Fault	User reads this signal. In the VoltPAQX2, /Fault0 and /Fault1 are used. /Fault2 and /Fault3 are floating. The VoltPAQX4 uses all /Fault pins.	/Fault0 = 0 means Amplifier0 is disabled
E-Stop	E-stop is the master enable/disable	

Table 3: Connection summary of VoltPAQX2 and X4

4. E-Stop

	E-Stop Connected	*E-Stop Not-Connected*
E-Stop Button Released	VoltPAQ amps enabled if amplifier enable lines set HIGH	All VoltPAQ amps disabled
E-Stop Button Pressed	All VoltPAQ amps disabled	All VoltPAQ amps disabled

Table 4: Truth table of E-Stop interaction with the amplifier.

5. Cables

5-Pin DIN to 6-Pin DIN

This cable connects the VoltPAQ output to the desired load.

Figure 2: 5-pin DIN to 6-pin DIN

RCA-to-RCA

RCA-to-RCA cables connect the "Amplifier Command" and the "Current Sense" to a data acquisition board.

Figure 4: RCA-to-RCA Connectors

E-Stop

The E-Stop must be plugged into the X2 or X4 unit for proper operation.

Figure 5: E-Stop

6. Fuses

If you find your unit does not output on either the positive or negative output, or otherwise stops functioning, check the fuses located at the back of the unit.

Figure 6: Backside of VoltPAQX2

There is one fuse per channel. So, for example, in the VoltPAQX2, there are 2 fuses. If your voltage input is 100V-132 VAC use the following fuses:

Slow Blow 1.5A – Digikey part number F2551-ND.

If your voltage input is 200VAC-240VAC use the following fuses:

Slow Blow 1A – Digikey part number F2543-ND

Remove the existing fuse by pushing inward and turning the fuse approximately 90 degrees, then pull the cap out. Replace the fuse, push back in and twist to lock.

7. Obtaining Support

Note that a support contract may be required to obtain technical support. To obtain support from Quanser, go to http://www.quanser.com and click on the *Tech Support* link. Fill in the form with all requested software and hardware information and a description of the problem encountered. Be sure to include your email address and a telephone number where you can be reached. A qualified technical support person will contact you.