VoltPAQ – X1
User Manual

Revision 1.2

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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 so on. This manual is specifically for the VoltPAQx1.

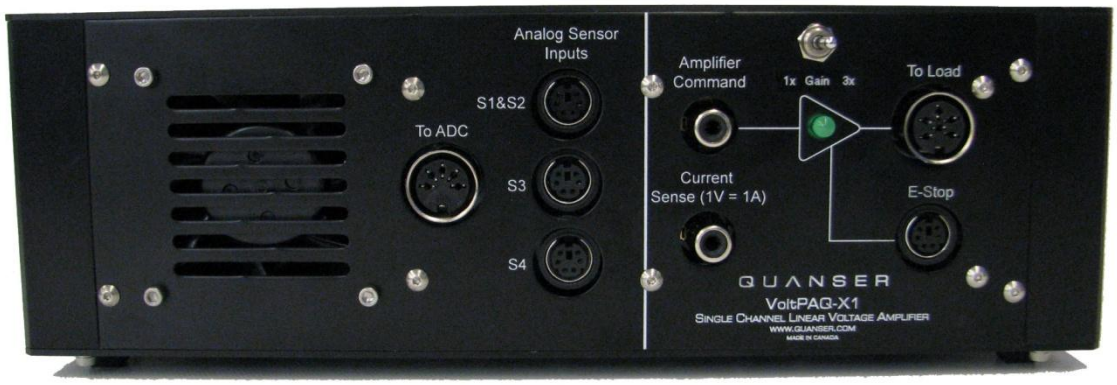
Every VoltPAQx1 consists of the following components:

1. Power amplifier capable of supplying up to 24V @ 4.16A
2. Separate power supply delivering +/-12V @ 1.6 A to sensors and accessories
3. Analog sensor inputs
4. Optional e-stop

The VoltPAQs replaces the UPM line of power amplifiers and brings additional benefits to the table. These benefits include:

- Significantly lighter weight
- Current sensing capability
- Thermal shut-down
- Over-heating/over-current fault indication output
- E-stop

2. Connections & Settings



Connection	Description	Electrical Range
S1, S2	This channel reads the output of up to two external analog sensors. It also provides +/-12V to power the attached sensor(s).	Input range: -10V to 10V
S3	This channel reads the output of an external analog sensor. It also provides +/-12V to power the attached sensor.	Input range: -10V to 10V
S4	This channel reads the output of an external analog sensor. It also provides +/-12V to power the attached sensor.	Input range: -10V to 10V
To ADC	Voltages read through S1, S2, S3 and S4 are outputted via the “To ADC” connector to an external data acquisition board.	Output range: -10V to 10V
Amplifier Command	An analog voltage is applied on this channel. This directly controls the output of the amp through the “Amp Out” channel.	Acceptable Input range: -10V to 10V
Current Sense	Indicates the current being drawn by the load	1A/V
To Load	The load to be driven is connected here. Amp Out = Gain * CMD where Gain is either 1 or 3, and -10V <= CMD <= 10V	-24V to 24V
LED	LED Off = Over-heated / E-Stopped / No Power LED On = Amp powered up and operational	
Gain Toggle Switch	Setting the toggle switch to the left position selects a gain of 1 for the amplifier. Setting to right implies a gain of 3.	

3. Cables

The following are examples of cables and accessories that plug into the VoltPAQ:

Cables	Descriptions
	Cable type: 5-pin DIN to 6-pin-DIN This cable connects the VoltPAQ Amplifier output to the desired load.
	Cable type: RCA-to-RCA RCA-to-RCA cables connect the “Amplifier Command” and the “Current Sense” to a data acquisition board. In this picture, two RCA cables are combined into one cable.

	Accessory: E-Stop This is optional for the VoltPAQx1.
	Cable type: 6-pin-mini-DIN to 6-pin-mini-DIN Connects external sensors to the VoltPAQx1.
	Cable type: 5-pin-DIN to 4 RCA connectors 5-pin-DIN side connects to the VoltPAQx1 and breaks out the S1, S2, S3 and S4 analog signals acquired by the VoltPAQx1 to the data acquisition board (via 4 RCAs).

4. Electrical Specifications

When the VoltPAQ unit is switched on, it takes about 5 seconds to power up. This is normal behaviour. The internal power supplies take a few seconds to start up.

AC Input Specifications

PARAMETER	MIN	TYP	MAX	UNITS
Input Voltage	100-132	N/A	180-240	VAC
Input Current			1.5 @ 220V 2.8 @ 110V	A (rms)
Input Frequency	47		63	Hz

Amplifier Specifications

PARAMETER	MIN	TYP	MAX	UNITS
Output Voltage (to load)	-24		24	V
Max Continuous Current Output	-4.16		4.16	A
Voltage Gain		*1 or 3		V/V
Current Sense		1		A/V
Amplifier Command Voltage	-10		10	V

*The gain is selected by the gain toggle switch on the front panel.

5. Fuses

Fuse 1: Slow Blow 1A – Digikey# F2543-ND (use this if your AC input voltage is 200-240VAC)
Slow Blow 2A – Digikey# F2544-ND (use this if your AC input voltage is 100-120 VAC)
Fuse 2: Slow Blow 400mA – Digikey# F2537-ND (use this if your AC input voltage is 200-240VAC)
Slow Blow 800mA – Digikey# F2542-ND (use this if your AC input voltage is 100-120 VAC)

6. Technical Support

To get support from Quanser, go to: http://www.quanser.com/english/html/support/fs_support.html. Fill in the form with all the requested software and hardware information as well as a description of the problem encountered. Also, make sure your e-mail address and telephone number are included. Submit the form and a technical support representative will contact you shortly.

Note: Depending on the situation a support contract may be required to obtain technical support.