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QUANSER
INNOVATE. EDUCATE.

POWER DELIVERY SOLUTIONS

Multi-Channel Linear Amplifiers
QPA-L4-E & QPA-L2-E Current

Description

Quanser's Pioneering Four- and Two- Channel Linear Power Amplifiers

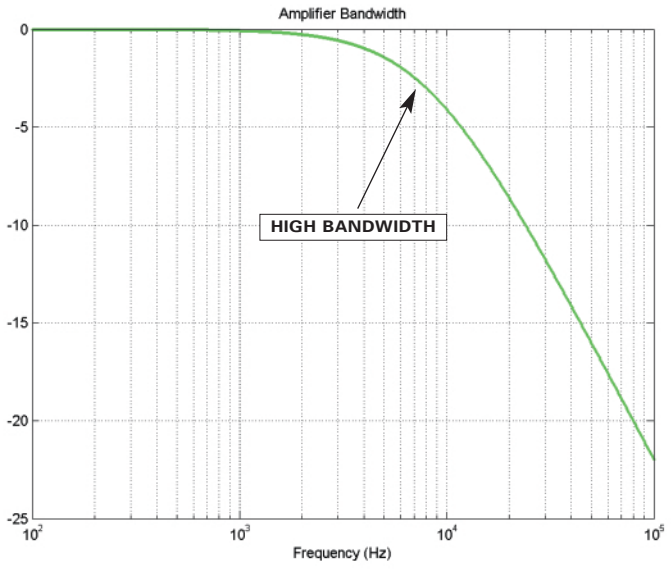


High-precision machines and drive systems will benefit from the rugged and compact Quanser Power Amplifier (QPA) series. The QPA-L4-E and QPA-L2-E are four- and two-channel, respectively, Linear (L) power amplifiers with a circular Encoder (E) connector interfacing to four optical incremental encoders. Each channel of linear amplification operates in current mode. The QPA-L series is based on Quanser's Linear Current Amplifier Module (LCAM) technology.

When operating in current mode, the QPA-L4-E and QPA-L2-E are best suited for precision controls to drive inductive loads such as voice-coil actuators, coreless DC motors, magnetic bearings and the like. Applications which exclude the use of standard PWM amplifiers because of stringent noise requirements (or applications where dither due to PWM signals is unacceptable) can utilize the low-noise, wide-band-width and cost-effective QPA-L series.

Designed to operate from a single power outlet (with rating set to either 110/120 VAC or 220/240 VAC), the QPA-L series can deliver, on each channel, a maximum continuous current of 7 A and has a peak current capability of 9 A. Each amplifier channel features also include accurate current sensing, current limiting, thermal protection and selectable gains for the closed-loop current controller. A detailed Simulink model of each individual amplifier module is supplied to facilitate the interactive selection of one capacitor and one resistor, to tune the current loop performance to match the load impedance. The mathematical model can also be used for system integration simulations.

The QPA-L series comes in a black anodized two-unit rackmount chassis, whose front panel provides two circular connectors to interface to four incremental encoders and provide drive power to four (or two) actuators. An I/O SCSI connector is available to channel the QPA-L series control signals to/from a computer. This can be directly achieved using Quanser's QPA adapter box with either the Q8 or Q4 Hardware-In-the-Loop (HIL) boards. The QPA-L series output lines can be disabled/enabled by using the provided "Emergency-stop" safety switch. Encoder signals connected to the unit can be either single-ended or differential. These signals are internally buffered and converted to single-ended and made available at the SCSI connector for interfacing to a PC.



Applications:

- Rapid Control Prototyping
- Robotics
- High-Precision Materials Handling and Processing (e.g., semiconductors, microelectronics)
- Ultra-Precision Machining (e.g., optical lens grinding)
- Precision Replication
- Biomedical Machines (e.g., laser-eye surgery)
- Metrology (e.g., CMMs, dimensional gauging systems)
- Nanotechnology (e.g., MEMS, micro-machining)
- Precision Optics
- Interferometry
- Photolithography
- Photonics
- And many more!

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Multi-Channel Linear Amplifiers QPA-L4-E & QPA-L2-E Current

Tender Specification

A rack-mounted, low-noise linear power amplifier designed to drive up to four loads in either voltage or current mode.

Equipment is supplied with a one year parts and labor warranty.

Technical Specifications

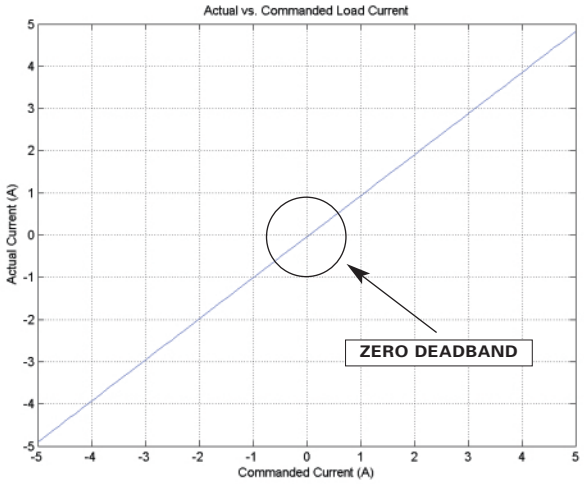
Key Features

Performance
- Linear (zero deadband) in either voltage or current mode
- Low-noise operation
- High output current
- Broad bandwidth in both current and voltage modes
- Accurate current sensing

Versatile
- Selectable amplifier gain
- Adjustable current limit
- Adjustable current (or voltage) offset
- Selectable high/low enable input signal
- Encoder circular connector to interface to 4 incremental encoders
- I/O SCSI connector to interface to any Hardware-In-the-Loop (HIL) board
- Runs from a single power outlet

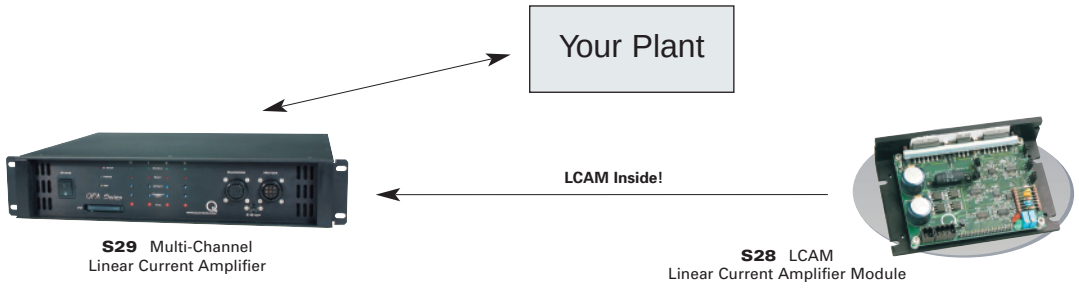
Safe and Reliable
- External enable line allowing to connect a "E-stop" safety switch
- Air-cooled design using internal fans
- Overheat shutdown
- Power supply monitoring: startup/shutdown circuitry disabling the amplifier until power supply stabilizes
- Fault indicator and status LED outputs

Compatible
- Contained in a two-unit rackmount chassis
- Fully compatible with Quanser's HIL boards (e.g. Q4, Q8)



Maximum Continuous Current (Per Channel)	7	A
Peak Current (Per Channel)	9	A
Maximum Continuous Voltage (Typical - Per Channel)	28	V
Peak Power (Per Channel)	300	W
Bandwidth (Current or Voltage Mode - Per Channel)	10	kHz
Input Impedance (Per Channel)	1E+6	W
Output Impedance (Per Channel)	0.2	W
Power supply	110/120 or 220/240	VAC
Size - two-unit rack mounting (LxWxH)	0.445 x 0.406 x 0.089	m
Mass (QPA-L4-E)	10.6	kg
Mass (QPA-L2-E)	8.7	kg

Robotics, Haptics and Teleoperation



S29 Multi-Channel Linear Current Amplifier

S28 LCAM Linear Current Amplifier Module

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