LA6U Series
6U Modular Multi-Axis Linear Amplifier Systems

<table>
<thead>
<tr>
<th>Enclosure Model</th>
<th>VRS-LA6U-2A</th>
<th>VRS-LA6U-5A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Supply Card Slots</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Amplifier Card Slots</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Optional Cooling Fans</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Standard 19” Rack Mount</td>
<td>w/ Kit</td>
<td>Yes</td>
</tr>
<tr>
<td>Compatible Power Supplies</td>
<td>VPS-LA6U Series</td>
<td></td>
</tr>
<tr>
<td>Compatible Amplifiers</td>
<td>LA6U-400/500 Series</td>
<td></td>
</tr>
</tbody>
</table>

Details

The VRS-LA6U Varedan Rack Systems build upon the proven performance and reliability of Varedan Technologies LA Series linear amplifiers and VPS power supplies by enabling the creation of compact and modular multi-axis packages in the industry standard rack mountable 6U form factor.

A complete multi-axis system of up to five LA6U linear amplifier modules and one VPS-LA6U power supply module can be installed in a standard dimension 19 inch rack reducing system wiring and system complexity. The pluggable LA6U linear amplifier modules are available in multiple power levels and motor configurations including three-phase brushless, single-phase brush/voice coil, and the new “Independent” configuration capable of driving three separate single phase loads from each LA6U amplifier module. This allows the engineer to create and configure up to an impressive 15 axis high power precision linear motion control solution with one 6U size 19 inch rack mountable enclosure.

Varedan VRS modular rack systems are currently available in 2 module (VRS-LA6U-2A) or 5 module (VRS-LA6U-5A) versions. Each system accepts a slide-in power supply (VPS-LA6U) connected to each amplifier module through the system backplane at the rear of the enclosure. The VRS Series enclosures can be used as stand-alone units or mounted in Standard 19 inch equipment racks. Multiple cooling options are available.

Custom rack enclosures and intelligent backplanes are available. Please consult a Varedan applications engineer.

Features

- Easily construct modular multi-axis Linear Amplifier systems: Up to 15 axis per rack system
- Standard 19 inch rack 6U form factor
- Simplifies system wiring and integration
- Simplifies system maintenance
- Accepts all LA6U series amplifier cards
- Accepts all VRS-LA6U power supply cards
- Desk mount or 19in rack mount options
- Standard multi-vendor backplane connector options
- Intelligent Amplifier/PowerSupply - Backplane communications options
LA6U Amplifier Cards

<table>
<thead>
<tr>
<th>Model</th>
<th>Current Cont./Peak</th>
<th>± VDC Bus Voltage</th>
<th>Power Cont./Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA6U-415</td>
<td>5/15 A</td>
<td>±12 - ±150VDC</td>
<td>400/1200 W</td>
</tr>
<tr>
<td>LA6U-525</td>
<td>10/25 A</td>
<td>±12 - ±150VDC</td>
<td>500/1500 W</td>
</tr>
<tr>
<td>LA6U-540</td>
<td>20/40 A</td>
<td>±12 - ±150VDC</td>
<td>500/3000 W</td>
</tr>
</tbody>
</table>

Details

The LA6U series linear servo amplifier modules are the next generation of high-performance motion products from Varedan Technologies. They are the perfect choice for systems requiring low radiated noise with zero distortion. These current mode linear amplifiers are well suited to drive loads such as brushless and brush servo motors or voice coils.

Solving many of the problems found with PWM amplifiers, Varedan Linear amplifiers have a truly linear and extremely quiet ClassAB power stage that contributes very low distortion for ultra smooth motor operation in close proximity to sensitive sensors.

The LA6U amplifier design includes a high-speed DSP that monitors all key system functions in real time and provides protection for the output transistors by limiting power to a “Safe Operating Area”. An intelligent user interface allows setup and storage of all system parameters via the serial terminal. Non-volatile memory provides storage of the parameters during power off conditions and the 7-segment status display provides a real-time visual indication of system status.

Features

- True Class AB linear power section for quiet operation and eliminating crossover distortion
- True Rail to Rail Output
- Up to 10kHz Bandwidth
- Multiple Power Levels Share Common Interface
- Single-Phase, Three-Phase & Independent Mode Versions
- Drive up to 3 Independent Axis per Amplifier Module
- Real-time DSP Based Safe Operating Area Protection of Power Devices
- Over Current Protection
- Over Voltage Protection
- Over Temperature Protection
- Motor Temperature Protection
- Opto-Isolated IO Options
- USB & RS-232 Serial Communications Interface
- 7-Segment Display Shows Status in Real-Time
- Custom Tuning for Highest Performance Available
- Intelligent Amplifier – Backplane Communications Options
- Factory Programmable Options Available
VPS-LA6U Power Supply Module

<table>
<thead>
<tr>
<th>Model</th>
<th>VPS-LA6U</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aux-AC Input Voltage</td>
<td>85 - 260 VAC</td>
</tr>
<tr>
<td>Backplane Bus Voltage (Max)</td>
<td>±150 VDC</td>
</tr>
<tr>
<td>Backplane Bus Current (Max)</td>
<td>±60 A</td>
</tr>
<tr>
<td>Backplane Voltage: +5VDC Output</td>
<td>10 A</td>
</tr>
<tr>
<td>Backplane Voltage: +15VDC Output</td>
<td>3 A</td>
</tr>
<tr>
<td>Backplane Voltage: -15VDC Output</td>
<td>3 A</td>
</tr>
<tr>
<td>Backplane Voltage: +24VDC Output</td>
<td>3 A</td>
</tr>
</tbody>
</table>

Details

Based on the proved technology of Varedan VPS-LA stand-alone power supply modules, the VPS-LA6U power supply cards were designed for the high power multi-axis applications of the VRS-LA6U rack systems. As an all-in-one solution, the VPS-LA6U power supplies generate all required backplane voltages and supply the high voltage/high current Bus to all amplifiers on the backplane system. With 3-Phase AC Bus input, the VPS-LA6U can support the demands of a multi-axis system without generating excess noise.

Features

- 3-Phase Center-Tapped AC Bus Input
- Up to ±150VDC Bus Output
- Up to ±60A Bus Current Output
- Aux-AC Input Range of 85-260VAC
- Internal Backplane System Voltage Rails of +5VDC, ±15VDC, +24VDC
- Internal AC Bus Fusing
- Internal Aux-AC System Supply Fusing
- Front Panel System Power Switch
- Intelligent Power Supply – Backplane Communications Options
LA6U Series
6U Modular Multi-Axis Linear Amplifier Systems

SYSTEM COMPONENTS
VRS-LA6U-2A: 2 Axis Enclosure
VRS-LA6U-5A: 5 Axis Enclosure
LA6U-415: 400 Watt Amplifier Module
LA6U-525: 500 Watt Amplifier Module
LA6U-540: 500 Watt Amplifier Module
VPS-LA6U: Power Supply Module

OUTPUT CONNECTIONS
Motor Phases A, B, C (3-phase)
Motor Phases A, B (Single Phase)
Hall Power +5V, Common
Motor Current (I RMS Out)
Fault (Open Collector, +5V pull-up)
RS232 - Transmit

INPUT CONNECTIONS
Command A, ±10V, Single-Ended or Differential
Command B, ±10V, Single-Ended or Differential
Limits ±
Enable
Reset
Hall Sensors A, B, C
Motor Temperature Switch
RS232 - Receive
Transformer isolated 3-Phase AC Bus

COMMUTATION
External 2-Phase Sinusoidal, ±10V using Command A&B
Trapezoidal, ±10V using Command

BANDWIDTH
10kHz Maximum

INDICATORS
7-Segment LED for system status

MECHANICAL
Dimensions
VRS-LA6U-2A: 11.2” x 12.1” x 10.5”
VRS-LA6U-5A: 18.9” x 12.1” x 10.5”
LA6U-415: 11.025” x 9.19” x 2.77”
LA6U-525: 11.025” x 9.19” x 2.77”
LA6U-540: 11.025” x 9.19” x 2.77”
VPS-LA6U: 11.025” x 9.19” x 2.77”

Weight
VRS-LA6U-2A: 9.2 pounds
VRS-LA6U-5A: 18.8 pounds
LA6U-415: 4.6 pounds
LA6U-525: 5.0 pounds
LA6U-540: 5.5 pounds
VPS-LA6U: 4.5 pounds

PROGRAMMABLE / JUMPER SETTINGS
RMS Overcurrent Trip Level
RMS Overcurrent Trip Time
Absolute Overcurrent Trip Level
Motor Reverse (Trap Mode)
Commutation Mode
Input Filter 3dB Frequency
Transconductance Ratio
Command Signal Type
Current Loop Bandwidth

FAULT PROTECTION
Safe Operating Area
Absolute Overcurrent
RMS Overcurrent
Bus Overvoltage
Bus Undervoltage
±15V Bias Supply
Amplifier Over Temperature
Motor Over Temperature
Hall Sensor Error
Hall Sensor 5V Supply
Internal 5V Supply
Internal 2.5V Supply
Autobalance
DSP Error
NVM Error

ENVIRONMENTAL LIMITS
0 to 70 deg. C Ambient
-40 to 85 deg. C Storage
5 to 95% Relative Humidity. Non-condensing.

POWER REQUIREMENTS
±15vdc Bias Supply @300mA per side
± DC Motor Bus Supply
90 – 240VAC Low voltage system power

OPTIONS
Breakout modules for I/O connections

Varedan Technologies warrants this product to be free from defects for a period of one year after the date of shipment and according to the Terms and Conditions of Sale.