

## Features

- Low jitter velocity control for air-bearing spindles
- Linear amplifier power stage for low noise operation
- Frequency-locked Velocity mode up to 30,000 RPM\*
- Compatible with industry standard controllers
- Adjustable PID parameters
- Positioning to within one encoder count
- Stop on index
- 7-Segment LED Status Display
- Sinusoidal commutation
- Encoder start-up with or without hall sensors
- Extensive internal protection features
- Non-volatile storage of all system parameters
- Simple, easy to use command set
- Field programmable for easy upgrades
- Built-in user interface simplifies setup
- High Speed USB or RS-232 serial interface
- External Frequency locked following mode (1/2 Axis)
- Optically isolated I/O's with programmable logic levels
- Analog Torque or Velocity modes for use with other controllers

\*Dependent on spindle parameters



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The VLTP-4215 spindle controller is the perfect choice for systems requiring the ultimate in low jitter performance and ultra-fast acceleration. Velocity stability performance of 0.0006% (<50nS) with acceleration and deceleration limited only by spindle parameters can be easily achieved thanks to our exclusive frequency-lock technology and field proven high-power linear amplifier output stage.

The unique design of the VLTP-4215 allows it to be a drop in replacement for industry standard MCS LA-2000 and MFM BDC-610 controllers. In addition to backward compatibility, the VLTP-4215 has many additional customer requested features, such as, fully adjustable PID gains, flexible extra I/O options, position mode, S curve ramps, stop on index, and a simple user-friendly text based interface.

Using an incremental encoder as feedback, the VLTP-4215 can commutate with or without hall sensors.

The VLTP-4215 controller can be configured to operate in a variety of modes to match almost any application. Operating modes include: Position, Analog Velocity, Analog Torque, Digital Frequency-locked Velocity and Digital Torque.

A user-friendly serial interface makes programming a simple task. With your choice of high-speed USB or RS-232 connectivity and over 100 commands, there is enough flexibility to allow configuration and tuning for almost any application.

User programmable inputs can be configured as either general purpose inputs or dedicated functions for Air Interlocks, Direction and Enable. Inputs are jumper configurable for optical isolation. 6 user programmable outputs are provided and can be configured as general purpose or dedicated functions for Fault, Zero-Speed, At-Speed and Ready.

\*\*Tested with a Dover Revolution XLIII spindle at 7,200RPM with a single 65mm media payload.

## Specifications

### OUTPUT CONNECTIONS

- Fault
- Zero Speed
- Ready
- At Speed
- Clamp/User 1 Output (Source or sink)
- User 2 Output
- User Analog Output
- Buffered and Open Collector Encoder Signals
- Encoder A, B, I (50 ohm drive and open collector)  
Jumper selectable pull-up or open collector

### INPUT CONNECTIONS

- Incremental Encoder A, B and I (Single-Ended or Differential)  
\*Max quadrature frequency of 25 MHz
- Analog Command (+/-10v) for Velocity or Torque
- Hall Sensors (not required for operation)
- Enable
- Direction
- Reset
- Safety Interlocks (can also be used as limit +/-)
- 2 General Purpose User Inputs
- External Frequency or 1/2 Axis Encoder
- USB 2.0 or RS-232 Serial Interface

### COMMUTATION

- Trapezoidal Start-up, Sinusoidal running
- Encoder Start-up, Sinusoidal running

### PID UPDATE RATES

- 50 KHz Commutation Update (Torque Loop)
- Continuous Analog Current Loops

### WEIGHT

- 25 lbs (11.34 kg)

### JUMPER SETTINGS

- Encoder Input Termination Selection
- External/Local power for Opto-Isolators
- Opto/Non-Opto Isolation for Frequency Input

### ACCELERATION/DECELERATION PROFILES

- Linear
- S Curve (Programmable Jerk)

### ENVIRONMENTAL LIMITS

- 70° C Maximum Heat Sink Temperature
- -40° C to 85° C Storage
- 5 - 95% Relative Humidity, Non-condensing

### INPUT POWER REQUIREMENTS

- 120VAC, 10A or 230VAC, 5A (single phase)

### OUTPUT POWER

- 5A cont./ 15A peak
- 100V min. at 5A/ 75V min. at 15A

### COMMAND EXAMPLES

- RUN Enable and run in velocity mode
- STOP Stop motor
- ENABLE Enable motor
- DISABLE Disable motor
- PGAIN:100 Set proportional gain to 100
- IGAIN:200 Set integral gain to 200
- DGAIN:500 Set derivative gain to 500
- FAULT? Query fault status
- GOTO:1000 Go to position 1000
- SPEED:20000 Set maximum speed to 20000 rpm
- WRITE Save parameters to NVM

### DIMENSIONS

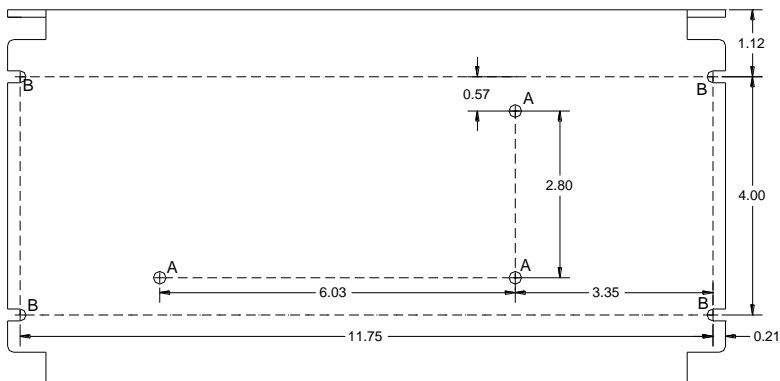
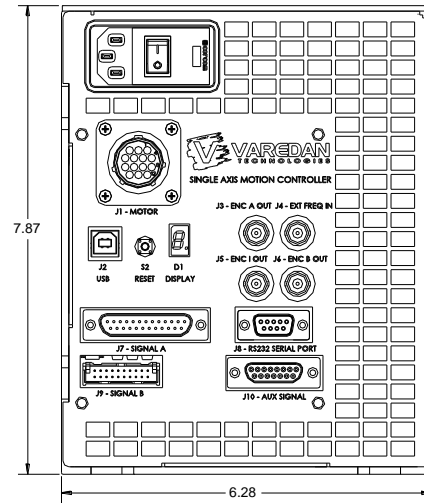
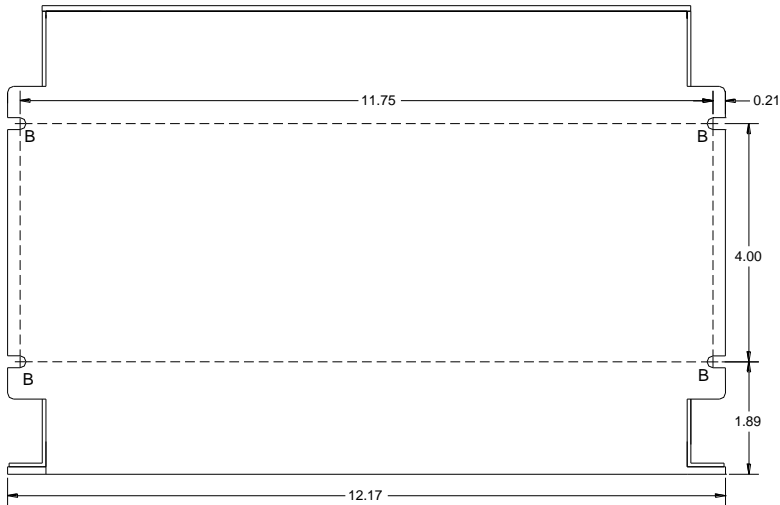
- 12.18" x 6.28" x 7.87" (L x W x H)

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## Warranty

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.

## Dimensions



B: 0.200in x 0.313in SLOT FOR UNC 10-32  
SCREW (8 PLACES)  
A: TAPPED FOR UNC 8-32 SCREW (3 PLACES)  
MAXIMUM PENETRATION OF SCREW INTO  
BOX IS 0.4 IN.

NOTES:

Figure 1: VLTP-4215 Dimensions