



Venus Digital Servo Drive

Ultra-high power density Digital Servo Drive for most motor types

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* High precision and performances for your motion control applications

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High power Servo Drive

Venus is an ultra-high power density slave or standalone Servo Drive capable of driving most motor types up to 2 kW power peak without the need of any additional heat-sink on its whole operating temperature range.

Supply voltage	12 VDC - 60 VDC
Maximum phase peak current	30 Arms (1 s)
Maximum phase continuous current	15 Arms
Supported motor types	DC brush, brushless trapezoidal, brushless sinusoidal, voice coil, 2 phases bipolar, 3 phases stepper
Shunt regulator	<ul style="list-style-type: none">• Configurable level and duty cycle for regen. braking• Low power onboard shunt resistor
Ambient temperature	<ul style="list-style-type: none">• 0 °C to 50 °C (operating)• -20 °C to 85 °C (non-operating)
Maximum humidity	80% (non-condensing)



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Advanced control

Venus uses PID algorithms with advanced control capabilities to regulate position, velocity and current/torque.

The instantaneous demand of the main variables is internally computed by a **trajectory generator** which generates an optimal profile allowing for smooth movements. The instantaneous demand could also be received from a host at a regular interval time allowing for synchronization between different axes.

Current / Torque Servo Loop	<ul style="list-style-type: none">• PI with output bias• Sampling rate of 10 kHz
Velocity Servo Loop	<ul style="list-style-type: none">• PID with integration limit, anti-windup and acceleration feed-forward• Sampling rate of 1 kHz
Position Servo Loop	<ul style="list-style-type: none">• PID with integration limit, anti-windup, velocity and acceleration feed-forward• Sampling rate of 1 kHz
Operating Modes	Open Loop, V/F, Profiled Torque, Profiled Velocity, Profiled Position, Interpolated Position, Cyclic Sync Position and Homing

Communications

Venus includes RS232 interface for configuration of applications with low communications traffic volume. A RS232 daisy-chain option has been added to simplify the control of multi-axis system from a unique host.

For systems with high communications traffic or sync multi-axis, Venus includes a CAN interface with CANopen protocol.

RS-232	Up to 115200 bps with daisy-chain option
CANopen	Up to 1 Mbps. Using CiA-301, CiA-303, CiA-305, CiA-306 and CiA-402

Command sources

Venus accepts a wide set of external command sources. It also can work in stand-alone mode executing a pre-stored program from its non-volatile memory.

Network	Using communication interfaces
+/-10 V and 0-5 V Analog input	User configurable input, offset and dead-band
Pulse Width Modulation (PWM)	<ul style="list-style-type: none">• PWM and direction mode (0 - 100 % PWM range)• PWM mode (0 - 50 % PWM range)
Step & Direction	Step size configurable. Max. frequency 200 kHz
Electronic Gearing	Gear ratio configurable. Max. frequency 20 kHz
Standalone	Up to 64 macros of 64 commands (1024 Kb of program memory)

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Feedbacks

Many of the most known feedbacks work together with Venus independently of the controlled motor. Venus also incorporates different start-up commutation methods to work with non-absolute feedbacks together with brushless motors.

Quadrature incremental encoder	Single ended or differential (RS-422) configuration. Max. encoder frequency 2 MHz.
Digital hall sensor	Alignment correction by software
Analog hall sensor (linear hall)	Configurable independent gain and offset
Analog input	Input used configurable
PWM sensor	16 bits resolution – Frequencies from 1 kHz to 10 kHz
DC-Tachometer (analog tacho)	Input used, offset and V/rpm ratio are user configurable

Inputs & Outputs

Input and output signals, both digital and analog, are available for easy interfacing with Venus. Digital inputs and outputs could accept TTL or PLC levels giving to Venus the possibility to be part of a low-level system or to directly fit in an industrial environment.

4x low speed isolated digital inputs	Sourcing or sinking devices, PNP, NPN and 2 wire sensors
2x high speed isolated digital inputs	Single ended or differential configuration
3x analog differential inputs	<ul style="list-style-type: none">• 2x +/-10 V (12 bits)• 1x 0 to 5 V (12 bits)

4x isolated digital outputs	<ul style="list-style-type: none">• Maximum current 200 mA• High/low side switch configurable• Thermal, overload, s.c. protected
1x analog output	0 to 5 V (11 bits)
1x high current output	<ul style="list-style-type: none">• Maximum current 700 mA• Brake or general purpose output

Protections & Compliance

Venus is a CE and RoHS marked product with a wide set of self-protection mechanisms to assure top reliability.

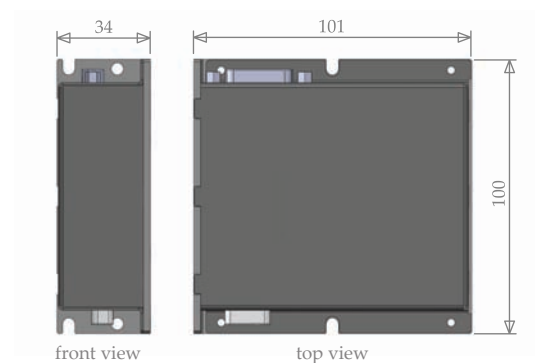
User configurable over/under temp. and voltage disconnection
Line-to-line, line-to-power, line-to-gnd short-circuit detection
Overcurrent, inverse polarity and i^2t protection
Onboard shunt resistor to absorb motor regenerative braking

CE marked	<ul style="list-style-type: none">• 2006/95/CE LVD• 2004/108/CE EMC• Safety EN 61800 EN 61800-5-1:2007
RoHS	2002/95/EC

Mechanical

Venus design is compact and offers several mounting options.

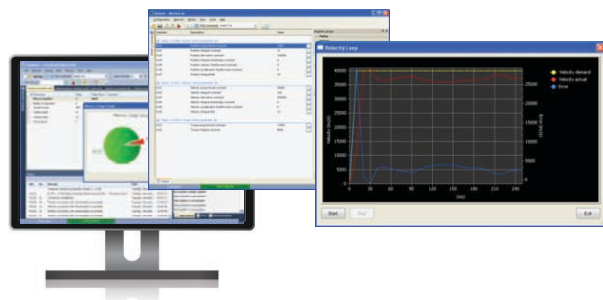
Dimensions	101 mm x 100 mm x 34 mm
Weight	310 g
Mounting	<ul style="list-style-type: none">• Wall Mount, along the back• Book Shelf, along the side
Mechanical options	DIN Rail mounting adapter



Software

Venus comes with a complete suite of user-friendly and intuitive software tools that helps user to configure, operate and program the controller.

MotionLab	Graphical user interface for configuring and tuning
Composer	Integrated development environment for developing and debugging
Flash Wizard	Software tool which greatly simplifies firmware upgrades





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