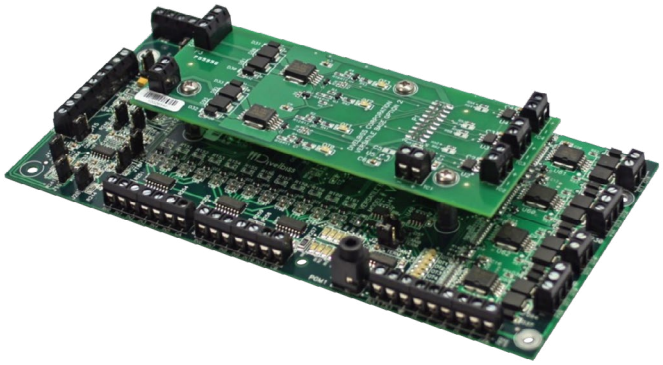
VB-1000 Series

Versatile Base 1000 Series PLCs

- Single Board Construction
- Low Mounting Profile
- SAE J1939 / OptiCAN Connectivity
- Analog Inputs - Field Selectable
- Serial Ports - Modbus Slave
- Thermocouple Inputs
- High Speed Counter (100KHz)
- -40º to 80ºC Operating Temperature
- Supports Custom Expansion
- Programs in Ladder Diagram / Function Block



VB-1000 Controller with VBEX-4K4DOT

The Versatile Base controller (VB-1000) is designed for cost-effective control by providing powerful features in an open-board format including Digital and Analog I/O, High Speed Counting, Pulse Width Modulation (PWM) Outputs, and communications including SAE J1939, OptiCAN, and Modbus Slave.

The Versatile Base controllers are ideal for many small to medium OEM system control and monitor requirements. In addition to the on-board functionality, a connecter allows for I/O expansion via the PLC on a Chip's SPI port. This expansion capability is what makes the control so versatile as an OEM solution. Expanding the control to include additional functionality such as thermocouple input, quadrature counting, D/A and A/D conversion, motor and fan drive, real time clock, and much more can be done quickly - with minimal NRE cost - as only the smaller expansion board requires engineering design. The result is a quick to market, affordable, application specific solution.

Typical Applications Include:

- Mobile Equipment
- Proportional Valve Control
- Engine Control
- Furnace Control
- Hydraulic Equipment
- Refrigeration Control
- Access Control
- Pump Control

VB-1000 Controller Specifications / Features (Refer to the product Manual / Data Sheet for more detailed specifications)	
Processor / Memory / Programming	**VB-1000 Controller**
Processor / Memory / EEPROM / Retentive	M-Series PLC on a Chip™, 256K 12K Bytes RAM, 256K Flash / 2792 Bytes EEPROM, 100 Bytes Retentive
Programming	Ladder Diagram / Function Block
Digital I/O	
Digital Inputs, 8-32VDC	Qty 12, Sink/Source in groups of 6, Optically Isolated with LED Indicators
High Speed Counters 8-32VDC	Qty 2, Count Up, 100KHz Max., Sinking or Sourcing Selectable
Digital Outputs, 8-32VDC - On/Off, PWM	Qty 8 Solid-State Sourcing, with LED Indictors, Rated 4A per output pair Max. (Derated based on Temperature) Organized as 2 groups of 4 with Individual Source Terminals (Power) PWM Frequency 1.436Hz to 1KHz, PWM Range 5-95%, Over-current protected.
Analog I/O	
Field Analog Inputs	Qty 7, 10 bit resolution, Configurable as 0-20mADC, 0-5VDC or 0-10VDC
Non-Field Analog Inputs	Analog Input for Input Power Monitor - on board
User Interface	
Status LED Indicators	Watchdog LED, 1 Programmable LED
Communications	
Serial Ports	1 Programming, RS232, 1 RS232 Serial Port - Modbus Slave
CAN Port	2 CAN Ports, SAE J1939 (Read only), OptiCAN
Other	
Input Power	8-32VDC, Typical input current 45mA@12VDC (no I/O or loads)
Style / Mounting	Open Board / Subplate
Dimensions	8.3 L x 4.27" W x 1.0" H
Operating Temperature	-40ºC to +80ºC (Outputs Derated based on Temperature)

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Ordering Information: (See Specifications)

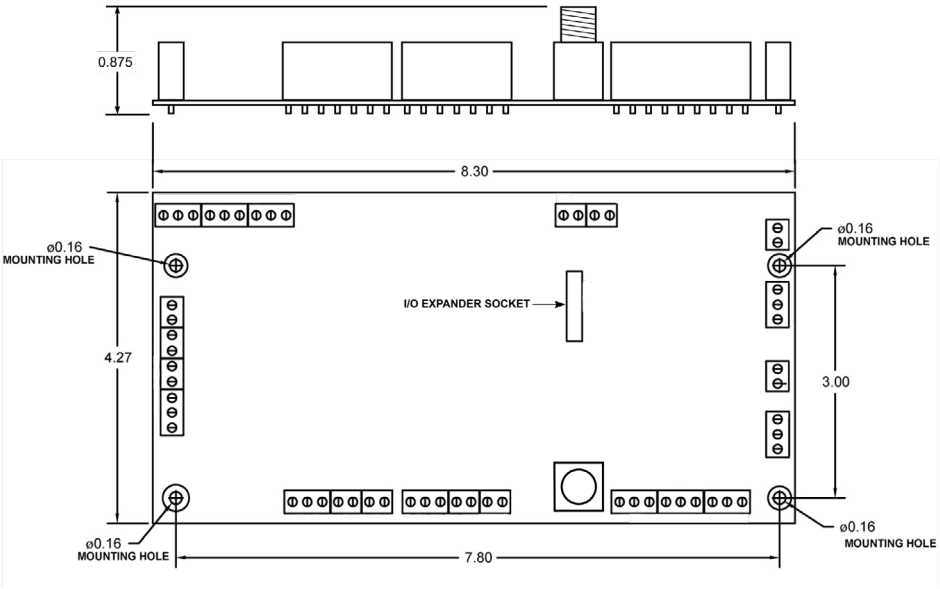
Model	Description
VB-1000	VB-1000 Controller with Digital I/O, Analog I/O and Communications
VBEX-4K	VB-1000 Expansion board with 4 Type K Thermocouple Inputs. Stack Mounts to top of VB-1000 Controller.
VBEX-4K4DOT	VB-1000 Expansion board with 4 Type K Thermocouple Inputs and 4 Additional Digital Outputs. Stack Mounts to top of VB-1000 Controller.

Programming the Controller

The VB-1000 Series PLCs program in Ladder Diagram using the Divelbiss EZ LADDER® Toolkit, a Ladder Diagram Development Platform. EZ LADDER software parallels the IEC-61131 standard and provides an easy to use interface.

After a ladder diagram program is developed, it can be downloaded to the VB-1000 via the programming port. The program is stored on non-volatile FLASH memory and is automatically executed on power up. Once the download is complete, the VB-1000 is successfully programmed and begins executing the program.

Refer to the EZ LADDER Toolkit's User Manual for more detail on creating ladder diagram programs, connecting to targets and downloading the program to targets.



VB-1000 Expansion Details:

Model #	Description	Detailed Specifications
VBEX-4K	4 Type K Thermocouple Input Expander	4 Type K Thermocouple Inputs, 2 Bit Resolution Range: 0ºC to 1023ºC Accuracy: 0.25ºC per bit, +/- 7.75ºC or better based on actual measured temperature
VBEX-4K4DOT	4 Type K Thermocouple Input Expander with 4 Digital Outputs (On/Off operation)	4 Type K Thermocouple Inputs, 2 Bit Resolution Range: 0ºC to 1023ºC Accuracy: 0.25ºC per bit, +/- 7.75ºC or better based on actual measured temperature Qty 4 Solid-State Sourcing, with LED Indictors Rated 4A per output pair Max. (Derated based on Temperature) Individual Source Terminal (8-32VDC)

The VB-1000 User Manual and EZ LADDER Toolkit can be downloaded from http://www.divelbiss.com.

Specifications are subject to change without notice.