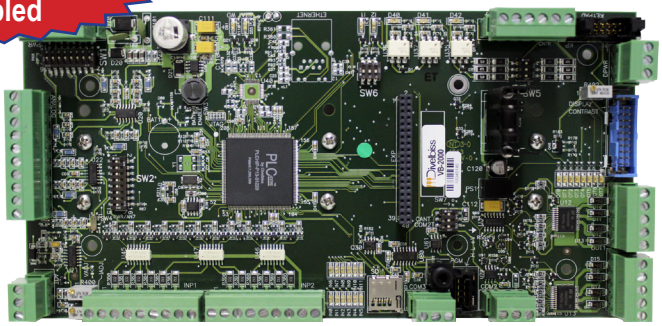
VB-2000 SERIES

Versatile Base 2000 Series PLCs

NOW VersaCloud M2M Enabled

- Operating Temperature -40° to 80° C
- Digital Inputs / Digital Outputs
- PWM Output Capability
- Analog Inputs / Analog Outputs
- High Speed Counter Inputs (100KHz)
- Ethernet, Serial & CAN Communications
- Cellular[1,2], Wi-Fi[2] and GPS Options
- LCD Display / Keypad / HMI Ports
- Expandable I/O including Thermocouple Inputs
- SAE J1939 / NMEA 2000 / OptiCAN Networking
- Micro SD Card Support
- Din Rail / Subplate Mount



VB-2000 Programmable Logic Controller

Overview:

The Versatile Base 2000 (VB-2XXX) Series solves today's tough control issues with all the advanced features needed in one product family. The VB-2000 Series includes multiple models of Programmable Logic Controllers, plug-in expansion with Digital I/O, Analog I/O and VersaCloud M2M remote control / reporting via Ethernet, Cellular[1,2], Wi-Fi[2]. Additionally, the VB-2000 also supports HMI Interfaces (LCD Display and Keypad) to allow operators to set parameters and identify alarms and faults. With an operating temperature of -40°C to 80°C, the VB-2000 Series is able to control in almost any temperature environment.

The VB-2000 Series Programmable Logic Controllers are based on the P-Series PLC on a Chip™. The PLC on a Chip™ provides powerful functionality with ease of programming using EZ LADDER Toolkit which supports ladder diagram and Structured Text.

The VB-2000 Series provides solutions for counting, batching, on-off control, proportional valve control and many others while providing communications options for data collecting including an RS232 Serial Port, an RS485 Serial Port, CAN Port Wi-Fi connectivity and Ethernet Port. The VB-2000 Series controllers support Modbus Master, Modbus Slave and Modbus TCP. Custom communications drivers may be written using structured text. The VB-2XXX Controller supports SAE J1939, NMEA 2000 and OptiCAN CAN networking.

VersaCloud:

The VB-2000 Series now supports VersaCloud M2M solutions for remote reporting and control via multiple communications avenues including Ethernet, Wi-Fi[2], GPS and Cellular[1,2] data. Ethernet and Wi-Fi[2] options are model dependent. Cellular and GPS options available as an expansion module.

I/O Expansion & HMI Options:

Additional model plug-in, stack-mount expanders for the controllers provide additional digital and analog I/O such as digital outputs and thermocouple inputs. For user interaction, the VB-2000 Series supports the VBDSP-XX expanders which provide user interaction through LCD displays and programmable push-buttons. Like the controller, all the expanders including the VBDSP-XX User Interface are rated for the -40°C to 80°C operating temperature. Panel mounting kits and keypad overlays are available. Refer to the **VB-2000 Series HMIs and Plug-in Expanders Brochure** for more details on plug-in I/O, plug-in VersaCloud Modules and HMIs.

Other HMIs may be connected to the VB-2000 Series by utilizing the on-board serial ports (RS232, RS485), CAN port or the Ethernet Port. Modbus Master, Modbus Slave and Modbus TCP are supported as well as the ability for custom drivers to interface to nearly any HMI using structured text.

Ordering Information:

Model	Description
VB-2000	Versatile Base Controller without Ethernet or Real Time Clock, with VBDSP port.
VB-2100	Versatile Base Controller Ethernet / Real Time Clock and VBDSP port.
VB-2120	Versatile Base Controller with Wi-Fi (no Ethernet), Real Time Clock and VBDSP port.
VB-2200	Versatile Base Controller Ethernet / Real Time Clock and standard Display / Keypad Port

Ordering Information for HMI (VBDSP-XX) and Plug-in Expanders (VB2X-XXX), refer to the **VB-2000 Series HMIs and Plug-in Expanders Brochure**

VB-2000 Series Controllers

The VB-2000 Series Controllers on-board features include 12 sinking or sourcing digital inputs, 8 PWM capable sourcing digital outputs, 7 analog inputs that are field configurable for 0-5VDC, 0-10VDC or 0-20mA, 1 analog output that is field configurable for 0-10VDC or 0-20mADC, communication ports (RS232, RS422, CAN and Ethernet), Real Time Clock, 3 high speed counting inputs (100KHz), micro-SD card socket, programmable LED indicators and LCD / Keypad ports.

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The VB-2000 Series controllers are din rail mount but may be mounted to a subplate using other hardware by removing the din rail feet. The controller peripherals are wired via pluggable terminal blocks.

VB-2000 Series Controller Programming

The VB-2000 Series Controllers program using Divelbiss EZ Ladder Toolkit, a Ladder Diagram Development Platform that allows for programming in ladder diagram (LD), function block (FB) and structured text (ST). 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 controller via the serial port or Ethernet Port. The program is stored on non-volatile FLASH memory and is automatically executed on power up.

VB-2000 Series Controller Specifications / Features				
Processor / Memory / Programming	**VB-2000**	**VB-2100**	**VB-2120**	**VB-2200**
Processor / Memory / EEPROM	P-Series PLC on a Chip™ 32K RAM, 512K Flash / 3500 Bytes EEPROM	P-Series PLC on a Chip™ 32K RAM, 512K Flash / 3500 Bytes EEPROM	P-Series PLC on a Chip™ 32K RAM, 512K Flash / 3500 Bytes EEPROM	P-Series PLC on a Chip™ 32K RAM, 512K Flash / 3500 Bytes EEPROM
Retentive Memory (FRAM)	480 Bytes	480 Bytes	480 Bytes	480 Bytes
Micro SD Card	Yes, Update Programs / Kernels Data-logging using Structured Text	Yes, Update Programs / Kernels Data-logging using Structured Text	Yes, Update Programs / Kernels Data-logging using Structured Text	Yes, Update Programs / Kernels Data-logging using Structured Text
Programming	Ladder Diagram / Structured Text / Function Block	Ladder Diagram / Structured Text / Function Block	Ladder Diagram / Structured Text / Function Block	Ladder Diagram / Structured Text / Function Block
Digital I/O				
Digital Inputs, 8-32VDC	Qty 12, Sink/Source in Groups of 6	Qty 12, Sink/Source in Groups of 6	Qty 12, Sink/Source in Groups of 6	Qty 12, Sink/Source in Groups of 6
High Speed Counter / Timer Inputs, 8-32VDC	Qty 3, NPN/PNP, 100KHz Max.	Qty 3, NPN/PNP, 100KHz Max.	Qty 3, NPN/PNP, 100KHz Max.	Qty 3, NPN/PNP, 100KHz Max.
Digital Outputs, 8-32VDC, PWM or On/Off	Qty 8, Sourcing, Groups of 4	Qty 8, Sourcing, Groups of 4	Qty 8, Sourcing, Groups of 4	Qty 8, Sourcing, Groups of 4
Digital Output / PWM Frequency	1.0 Hz to 1.0 KHz	1.0 Hz to 1.0 KHz	1.0 Hz to 1.0 KHz	1.0 Hz to 1.0 KHz
I/O Expandable	Using VB2X Plug-in Expanders	Using VB2X Plug-in Expanders	Using VB2X Plug-in Expanders	Using VB2X Plug-in Expanders
Analog I/O				
Analog Inputs (12 bit)	Qty 7, 0-5VDC / 0-10VDC / 0-20mADC	Qty 7, 0-5VDC / 0-10VDC / 0-20mADC	Qty 7, 0-5VDC / 0-10VDC / 0-20mADC	Qty 7, 0-5VDC / 0-10VDC / 0-20mADC
Analog Outputs (10 bit) (800Ω max load)	Qty 1, 0-10VDC / 0-20mADC	Qty 1, 0-10VDC / 0-20mADC	Qty 1, 0-10VDC / 0-20mADC	Qty 1, 0-10VDC / 0-20mADC
Thermocouple Inputs	Using VB2X Plug-in Expanders	Using VB2X Plug-in Expanders	Using VB2X Plug-in Expanders	Using VB2X Plug-in Expanders
User Interface				
Programmable LED Indicators	Qty 2	Qty 2	Qty 2	Qty 2
Status LED Indicators	Watchdog x 1 / Status x 1	Watchdog x 1 / Status x 1	Watchdog x 1 / Status x 1	Watchdog x 1 / Status x 1
LCD Display (Display Port)	Yes, Using VBDSP-XX Expander Board	Yes, Using VBDSP-XX Expander Board	Yes, Using VBDSP-XX Expander Board	Yes, Standard LCD Display
Keypad (Keypad Port)	Yes, Using VBDSP-XX Expander Board	Yes, Using VBDSP-XX Expander Board	Yes, Using VBDSP-XX Expander Board	Yes, Up to 20 buttons (4x5 matrix)
Communications				
Serial Ports	1 RS232, 1 RS485, 1 Programming	1 RS232, 1 RS485, 1 Programming	1 RS232, 1 RS485, 1 Programming	1 RS232, 1 RS485, 1 Programming
CAN Ports	Qty 1, 3M Link Connector	Qty 1, 3M Link Connector	Qty 1, 3M Link Connector	Qty 1, 3M Link Connector
CAN Networks Supported	SAE J1939, NMEA 2000, OptiCAN	SAE J1939, NMEA 2000, OptiCAN	SAE J1939, NMEA 2000, OptiCAN	SAE J1939, NMEA 2000, OptiCAN
Ethernet Port & VersaClould via Ethernet[2]	No	Yes, RJ-45 Connection	No	Yes, RJ-45 Connection
Modbus Networking	Serial - Modbus Master / Slave	Modbus Master / Slave / Modbus TCP via Ethernet	Modbus Master / Slave / Modbus TCP via Wi-Fi	Modbus Master / Slave / Modbus TCP via Ethernet
Wi-Fi Connectivity & VersaCloud via Wi-Fi[2]	No	No	Yes	No
Supports VersaCloud Cellular[1,2] and GPS	Using optional VB2X-X-X Plug-in Expanders	Using optional VB2X-X-X Plug-in Expanders	Using optional VB2X-X-X Plug-in Expanders	Using optional VB2X-X-X Plug-in Expanders
Other				
Input Power	8-32VDC (75mA @ 12VDC)	8-32VDC (75mA @ 12VDC)	8-32VDC (75mA @ 12VDC)	8-32VDC (75mA @ 12VDC)
Real Time Clock	None	MM/DD/YY, Day of Week, HR/MM/SS	MM/DD/YY, Day of Week, HR/MM/SS	MM/DD/YY, Day of Week, HR/MM/SS
Style / Mounting	Open Board / Din Rail / Subplate	Open Board / Din Rail / Subplate	Open Board / Din Rail / Subplate	Open Board / Din Rail / Subplate
Dimensions	10"L x 5" W x 2.25"H	10"L x 5" W x 2.25"H	10"L x 5" W x 2.25"H	10"L x 5" W x 2.25"H
Operating Temperature	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C

1: Cellular data provided by VersaCloud by Divelbiss
2: VersaCloud features require VersaCloud M2M Package with Cloud Portal. Additional charges apply to connected devices.