

VIGOR VS Series Programmable Controller Brief Introduction

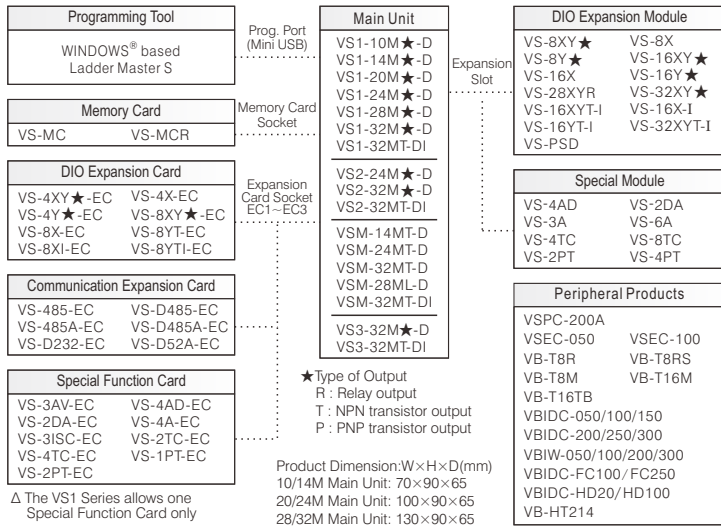
Forward

The VS series is based on decades of experience and the demand of the automation market to create the brand new PLC. It is More Effective, More Fast, More Diverse and More Competitive Advantage.

The VS Family includes the VS1 (General), VS2 (Advanced), VSM (Motion Control) and VS3 (High Performance) PLCs. Because of the all-inclusive product line, the usable coverage is from simple to complex control. Furthermore, by the concept of "The Most Suitable Product" to get superb cost-effective product combination.

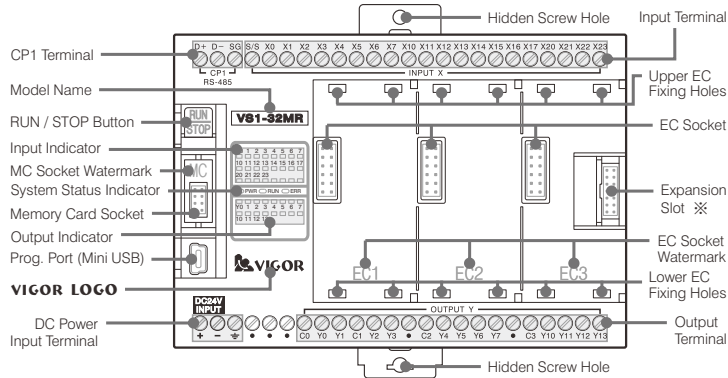
This document provides a brief introduce about the VS series controller. For more description about the specification and installation, please refer to the "VS Series PLC Product Manual"; about the programming, please refer to the "VS Series PLC Programming Manual".

System Composition

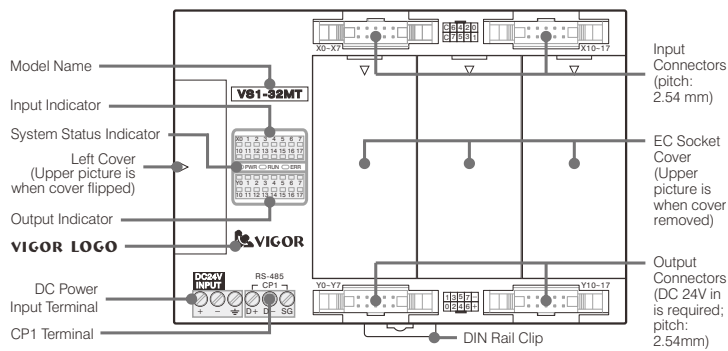


Component Designation

- VS1-32M Main Unit (also apply to the VS1 / VS2 / VSM / VS3 Main Units)
- ※ VS1-24/20/14/10M and VSM-14M Main Units not equip with the Expansion Slot for modules.

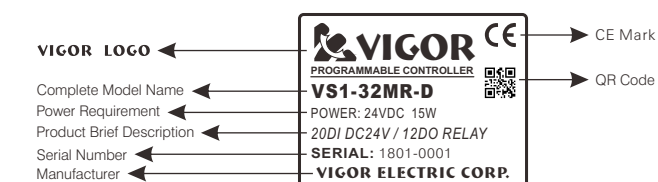


- VS1-32MT-DI Main Unit (also apply to the VS2 / VSM / VS3-32MT-DI Main Units)



Nameplate Description

- Nameplate Description (it is located on the right side of the unit)



Performance Specification

Item	VS1 Series	VS2 Series	VSM Series	VS3 Series	
Operation / DIO Control Method	Cyclic Operation by Stored Program / Batch Processing				
Programming Language	Ladder Diagram + Sequential Function Chart (SFC) or Ladder Diagram + Step Ladder (STL)				
Process Time	Basic Instruction	0.17 μs		0.15 μs	
	Application Instruction	A few μs - Hundreds of μs			
Basic Ins. No. / Application Ins. No.	29 / 168	29 / 170	29 / 170	29 / 208	
	Project Memory Capacity (Flash ROM)	16K Words	32K Words	32K Words	64K Words
Max. Input / Output Points	128 + 24 (at EC card)	256 + 24 (at EC card)	256 + 24 (at EC card)	512 + 24 (at EC card)	
	External Input (X)	64 points: X0 - X77	128 points: X0 - X177	128 points: X0 - X177	256 points: X0 - X377
Max. Digital Input / Output	External Output (Y)	64 points: Y0 - Y77	128 points: Y0 - Y177	128 points: Y0 - Y177	256 points: Y0 - Y377
	Internal Relay	Auxiliary Relay (M)	General	6192 points: M0 - M1999, M4000 - M8191	
Latched			2000 points: M2000 - M3999		
Special			512 points: M9000 - M9511		
Step Relay (S)		Initial	10 points: S0 - S9		
	General	3086 points: S10 - S499, S1500 - S4095			
	Latched	900 points: S500 - S899, S1000 - S1499			
Timer (T)	100ms	General	200 points: T0 - T199 (Timer range: 0.1 - 3.276.7 sec.)		
		Latched	46 points: T200 - T245 (Timer range: 0.01 - 327.67 sec.)		
		Retentive	4 points: T246 - T249 (Timer range: 0.001 - 32.767 sec.)		
		Retentive	6 points: T250 - T255 (Timer range: 0.1 - 3.276.7 sec.)		
Counter (C)	16-bit Up	General	100 points: C0 - C99 (Range: 0 - 32,767)		
		Latched	100 points: C100 - C199 (Range: 0 - 32,767)		
		General	20 points: C200 - C219 (Range: -2,147,483,648 - 2,147,483,647)		
		Latched	15 points: C220 - C234 (Range: -2,147,483,648 - 2,147,483,647)		
Hardware High Speed Counter (C)	32-bit Up / Down	1-Phase	11 points: C235 - C245 (Range: -2,147,483,648 - 2,147,483,647)		
		2-Phase	5 points: C246 - C250 (Range: -2,147,483,648 - 2,147,483,647)		
		A/B Phase	5 points: C251 - C255 (Range: -2,147,483,648 - 2,147,483,647)		
		General	2 points: HHSC1 - HHSC2 (Range: -2,147,483,648 - 2,147,483,647)		
Data Register	General (D)	7000 points: D0 - D6999			
		Latched (D)	2000 points: D7000 - D8999		
		Special (SD)	512 points: D9000 - D9511		
		Index Register (V / Z)	16 points: V0 - V7, Z0 - Z7		
Pointer	Extension Register (R)	10000 points: R0 - R9999	24000 points: R0 - 23999		
		Mark / Branch Pointer (P)	1024 points: Each pointer can be named by P0 - P1023 or 16 characters		
		Table Nickname / Code (Q)	32 points: Each table can be named by Q0 - Q31 or 16 characters		
		Interrupt Pointer (I)	21 points: 8 for external interrupt, 3 for timing interrupt and 10 for High Speed Counter interrupt		
Numerical System of Constant	Decimal (K), Hexadecimal (H) or Real number (E)	12Mbps high-speed Mini USB port			
		CP1 (RS-485) provides Computer Link, MODBUS, CPU Link, Non-protocol and so on			
		Expanded Multi-Function Port	CP2 at the EC1, CP2, CP3 at the EC1, CP2 - 5 at EC1 & EC3		
		Multi-Function High Speed Input	External Interrupt, Hardware / Software High Speed Counter, Pulse Capture, Pulse Meas., Handwheel ...		
Pulse Output (4 axes positioning)	50 kHz × 4 points	50 kHz × 8 points	200 kHz × 4 points + 50 kHz × 4 points		
		50 kHz × 4 points	200 kHz × 4 points		
		50 kHz × 4 points	200 kHz × 4 points		
		Real Time Clock (Optional)	By VS-MCR Multi-Function Memory Card to indicate the year, month, date, hour, min, sec. & day of week		
Expanded Memory (VS-MC / VS-MCR)	No battery required 16Mb Flash ROM for user project and data-bank (655,360 words) storage	DI / DO, communication or special function card (AI, AO, temperature input, inverter speed control, etc.)			
		No. of Special Module / Special Card	0/1, 8/3, 8/3, 16/3		
		☆ The VSM-28ML has 1 MHz × 4 (for HHSC1 & HHSC2) + 50 kHz × 4 Multi-Function High Speed Input points and its Pulse Output has 1 MHz × 4 points.			

Product List

Item	Model Name	Main Specification
VS1 Series Main Unit	VS1-10 / 14M★-D	6 / 8 DI (DC 24V); 4 / 6 DO; 1 EC socket
	VS1-20 / 24M★-D	12 / 14 DI (DC 24V); 8 / 10 DO; 2 EC socket
	VS1-28 / 32M★-D	16 / 20 DI (DC 24V); 12 DO; 3 EC socket; DIO Module expandable
VS2 Series Main Unit	VS1-32MT-DI	16 DI (DC 24V); 16 DO (100mA NPN); I/O by IDC connector; other specifications are equal to the VS1-32M
	VS2-24M★-D	12 DI (DC 24V); 12 DO (2 EC socket; DIO & 8 Special Module expandable)
	VS2-32M★-D	16 DI (DC 24V); 16 DO; 3 EC socket; DIO & 8 Special Module expandable
VSM Series Main Unit	VS2-32MT-DI	16 DI (DC 24V); 16 DO (100mA NPN); I/O by IDC connector; other specifications are equal to the VS2-32M
	VSM-14MT-D	8 DI (DC 24V); 6 DO (500mA NPN); 1 EC socket
	VSM-24MT-D	12 DI (DC 24V); 12 DO (500mA NPN); 2 EC socket; DIO & 8 Special Module expandable
VS3 Series Main Unit	VSM-32MT-D	16 DI (DC 24V); 16 DO (500mA NPN); 3 EC socket; DIO & 8 Special Module expandable
	VSM-28ML-D	4 Line Driver DI (for 2 HHSC up to 1 MHz) + 12 DI (DC 24V, 4×50 kHz & 8 normal); 8 Line Driver DO (4×1 MHz & 4 normal) + 4 DO (500mA NPN); 32K words project memory; 3 EC socket; DIO & 8 Special Module expandable; I/O by screw-clamp terminal
	VSM-32MT-DI	16 DI (DC 24V); 16 DO (100mA NPN); I/O by IDC connector; other specifications are equal to the VSM-32M
DIO Expansion Module	VS-8 / 16X	DI Expansion Module: 8 / 16 DI (DC 24V); input by screw-clamp terminal
	VS-8 / 16Y★	DO Expansion Module: 8 / 16 DO, output by screw-clamp terminal
	VS-8 / 16XY★	DIO Expansion Module: 4 / 8 DI (DC 24V); 4 / 8 DO; I/O by screw-clamp terminal
	VS-28XYR	DIO Expansion Module: 16 DI (DC 24V); 12 DO (2A Relay); I/O by screw-clamp terminal
	VS-32XY★	DIO Expansion Module: 16 DI (DC 24V); 16 DO; I/O by screw-clamp terminal
	VS-16X-I	DI Expansion Module: 16 DI (DC 24V); input by IDC connector
	VS-16YT-I	DO Expansion Module: 16 DO (100mA NPN transistor); output by IDC connector
	VS-16 / 32XYH	DIO Expansion Module: 8 / 16 DI (DC 24V); 8 / 16 DO (100mA NPN transistor); I/O by IDC connector
	VS-PSD	Power Repeater Module: DC 24V input converts to DC 5V 500mA + DC 12V 800mA outputs for after inner use
	VS-4AD	Analog Input Module: 4 Ch. inputs (16-bit, can use voltage or current); isolated; with accurate DC 10V output
Special Function Module	VS-2DA	Analog Output Module: 2 Ch. outputs (16-bit, can use voltage or current); isolated
	VS-3 / 6A	Analog I/O Module: 2 / 4 AI + 1 / 2 AO Ch. (16-bit, can use voltage or current); isolated; with accurate DC 10V
	VS-4 / 8TC	Thermocouple Temperature Input Module: 4 / 8 Ch. (thermocouple) inputs, 0.1 °C / 0.1 °F resolution; isolated
	VS-2 / 4PT	PT-100 Temperature Input Module: 2 / 4 Ch. (3-wire PT-100) inputs, 0.1 °C / 0.1 °F resolution; isolated
DIO Expansion Card	VS-4 / 8X-EC	DI Expansion Card: 4 / 8 DI (DC 24V); input by screw-clamp terminal
	VS-4Y★-EC	DO Expansion Card: 4 DO; output by screw-clamp terminal
	VS-8YT-EC	DO Expansion Card: 8 DO (300mA NPN transistor); output by screw-clamp terminal
	VS-8XI-EC	DI Expansion Card: 8 DI (DC 24V); input by IDC connector
Comm. Expansion Card	VS-8YI-EC	DO Expansion Card: 8 DO (100mA NPN transistor); output by IDC connector
	VS-485 / D485-EC	Communication Expansion Card: 1 / 2 non-isolated RS-485 port with TX / RX indicators; dist. 50m Max.
	VS-485A / D485A-EC	Communication Expansion Card: 1 / 2 isolated RS-485 port with TX / RX indicators; dist. 1000m Max.
	VS-D232-EC	Communication Expansion Card: 2 non-isolated RS-232C ports with indicators; dist. 15m; wiring by terminals
Special Function Card	VS-D52A-EC	Communication Expansion Card: 1 isolated RS-485 (1000m) & 1 non-iso. RS-232C (15m) ports, with indicators
	VS-3AV-EC	Brief Voltage I/O Card: 2 Ch. (0-10V, 12-bit) VI + 1 Ch. (0-10V, 10-bit) VO; with accurate 10V out; non-isolated
	VS-4AD-EC	Analog Input Card: 4 Ch. inputs (12-bit, can use voltage or current); non-isolated
	VS-2DA-EC	Analog Output Card: 2 Ch. outputs (12-bit, can use voltage or current); non-isolated
Memory Card	VS-4A-EC	Analog I/O Card: 2 AI + 2 AO Ch. (12-bit, can use voltage or current); non-isolated
	VS-3ISC-EC	Inverter Speed Control Card: 3 channel (0.1% resolution) voltage outputs; totally isolated for each channel
	VS-2 / 4TC-EC	Thermocouple Temperature Input Card: 2 / 4 Ch. (thermocouple) inputs, 0.2 - 0.3 °C resolution; non-isolated
Memory Card	VS-1 / 2PT-EC	PT-100 Temperature Input Card: 1 / 2 Ch. (3-wire PT-100) input, 0.1 °C resolution; non-isolated
	VS-MC / MCR	Memory Card: 16Mb Flash ROM for user's project and data-bank (655,360 words) storage; MCR with the RTC

★ Selectable output: R = 2A Relay, T = 0.5A NPN transistor (EC cards are 0.3A only), P = 500mA PNP transistor. All Main Unit, Special Module, VS-PSD & I/O's output are required DC 24V -15% +20% power input