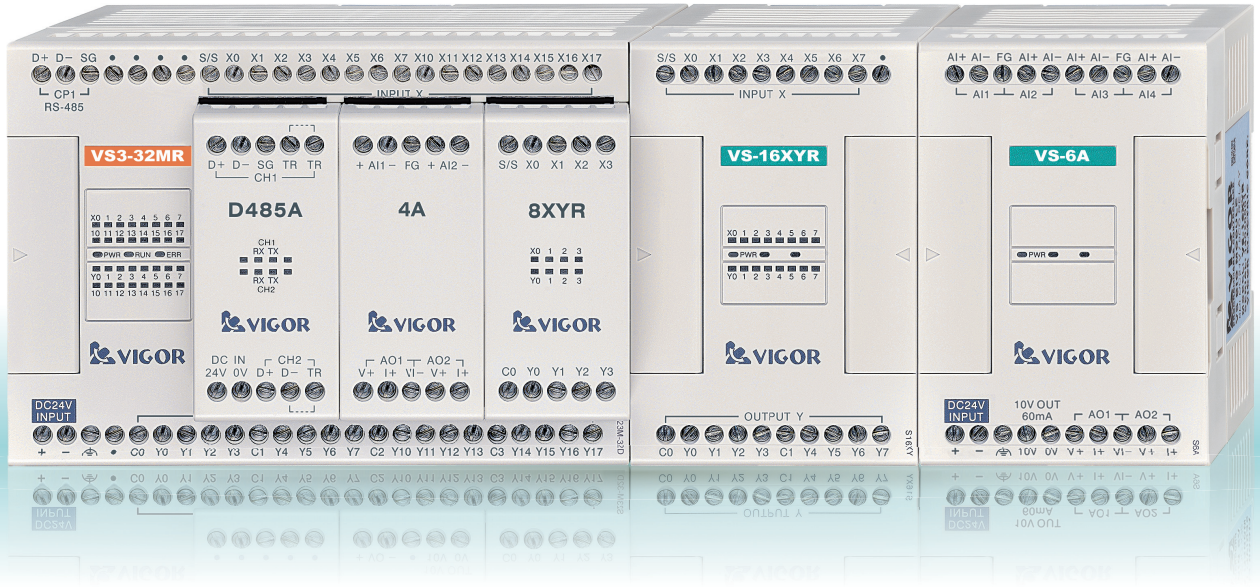
Real **Taiwan Excellent Product**

R & D in Taiwan, Made in Taiwan

VIGOR
PROGRAMMABLE CONTROLLER

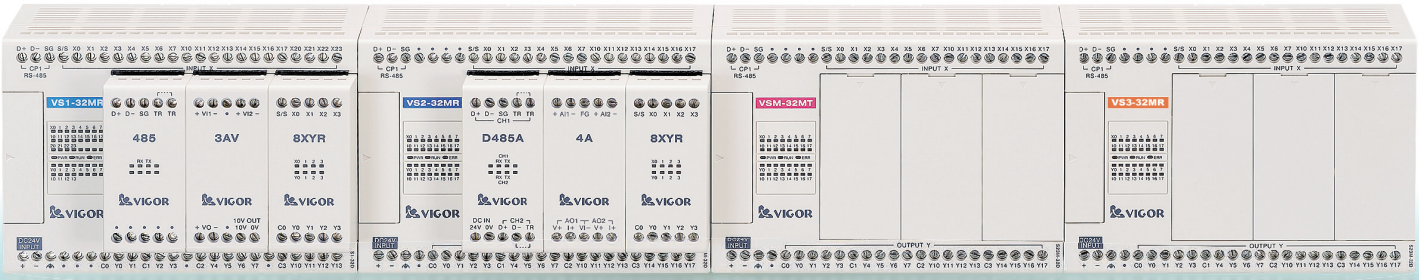


VIGOR [NEW GENERATION] VS Series CONTROLLER

More **Effective** • More **Fast** • More **Diverse** • More **Competitive Advantage**

VIGOR ELECTRIC

VS Series Controller Provides [Comprehensive] Control Application



More Effective

The VS Series is base on high performance 32-bit 96 MHz processor, the overall efficiency is 10 times more then the VB or VH series PLC.

The size of project memory is enlarged from 4~16K to 16~64K words, also the number of data registers is greatly increased.

The communication could expand up to 6 ports (USB and CP1~CP5 multi-functional ports), fully support high-level control system.

The 4 pulse out points have various positioning functions. The 8 high-speed inputs provide plenty functions such as external interrupt, hardware / software high-speed counter, pulse capture, period measurement, handwheel...

More Diverse

The VS Series has the VS1 (General), VS2 (Advanced), VSM (Motion Control) and VS3 (High Performance) Main Units. The applicable coverage is from simple to complicated control.

By various Main Units, Modules, Cards, Memory Cards and the modular design to produce a complete and flexible combination.

Remarkable add-on card structure with the DIO, Communication and Special Cards to provide a superb cost-effective, space saving and flexible expansion.

Simple to construct and maintain, this VS Series is the best choice of programmable logic controller.

More Fast

The new processor only takes 0.15μs per basic instruction step, that performance is 2.5 times faster than before. Both the pulse inputs and outputs can reach 1 MHz, more powerful than similar competitor.

By superbly fast USB port to read or write the user project just spends in an instant, 16K Words less than 3 Sec. This progress far exceeds the past.

More Competitive Advantage

The VIGOR R&D team has accumulated decades of experience for "More diverse combination" and "The most suitable product" design concepts. Carefully selected high quality CPU to develop the excellent and stable VS Series also with highly competitive price.

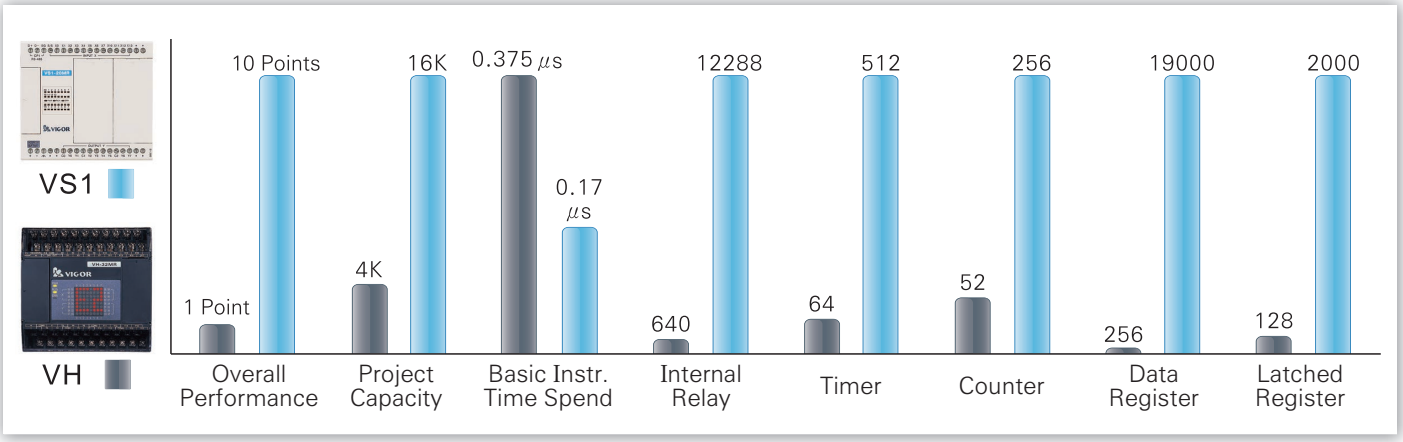
The VS Series is close to the automation market and demand by flexible combination. Can raise product level with expandability and more competitive.

Item \ Series	VS1 General	VS2 Advanced	VSM Motion Control	VS3 High Performance
Process Time of Basic Instruction	0.17μs/Step	0.17μs/Step	0.17μs/Step	0.15μs/Step
Memory Capacity of Project	16K Words	32K Words	32K Words	64K Words
Max. Input/Output Points	128 pt. + 24 (at Exp. Cards)	256 pt. + 24 (at Exp. Cards)	256 pt. + 24 (at Exp. Cards)	512 pt. + 24 (at Exp. Cards)
Programming Port	Built-in 12Mbps high-speed Mini USB port			
Unit Built-In Comm. Port	CP1 (RS-485) provides various communication modes: Computer Link, MODBUS (Master / Slave), CPU Link, Non-protocol...			
Expandable Comm. Port	CP2	CP2 ~ CP3	CP2 ~ CP3	CP2 ~ CP5
Multi-Func. High Speed In	8 points 10 kHz	8 points 50 kHz	4 points 200 kHz* & 4 points 50 kHz	
Pulse Output	4 points (axes) 50 kHz※	4 points (axes) 50 kHz※	4 points (axes) 200 kHz※	
Number of Special Modules	—	8	8	16
Number of Special Cards	1	3	3	3
Function of Expansion Card	EC1 ~ EC3 for the DIO, communication (RS-232, RS-485) or special card (e.g. Analog, Temperature, Inverter Speed Control)			
Function of Memory Card	Maintenance-free user project & large data memory card provides the best subject transplanting method for system maintain			

* For the VSM-28ML-D Line Driver model, its two Hardware High-Speed Counters can count 1 MHz pulses respectively.

※ Those 4 outputs are available generate 1 MHz pulses individually at the VSM-28-ML-D Line Driver model; 200 kHz at the VSM/VS3's NPN; 50 kHz at the VS1/VS2's NPN or 5 kHz at the PNP Main Unit. Not available in the relay output unit.

Quantum Leap Performance, High Cost-Effectiveness, Excellent Value



Speedy Programming USB Port

By the built-in 12Mbps USB interface, to read or write a user project can be finished in an instant (16K Words < 3 Sec.) This innovation also improves the monitoring efficiency, to monitor the PLC could have faster response and more components.

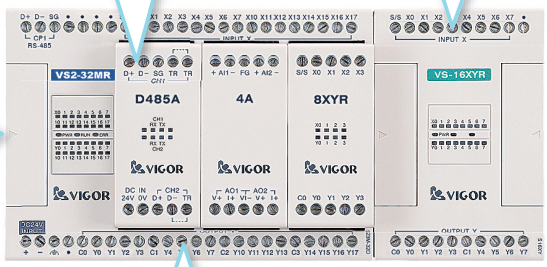
Using a standard mini USB 5-Pin cable to contact to a computer directly, away from the unfriendly adapter. Furthermore, VIGOR provides the VSPC-200A noise suppression USB cable that is designed for industrial environment use, could reduce the USB communication failed.

Diverse Combination Brings Competitive Advantage

- The simple flexible add-on DIO Expansion Card can avoid waste and save space, thus to make "The most suitable product".
- Various RS-485/232 communication, special function (analog, temperature, etc.) and small number DIO cards to meet expansion needs.

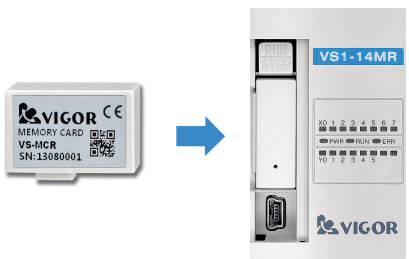
- Diverse 8, 16, 28 & 32-point DIO Expansion Modules provide the most satisfactory I/O expansion.
- The VS2, VSM and VS3 could join the analog input / output and temperature modules up, for accurately measure and control.

No battery required memory card for user project and large data storage; also the Real-Time Clock (RTC) function is available.



- The VS Series presents the VS1 General, VS2 Advanced, VSM Motion Control & VS3 High Performance PLCs. Suitable for applications from simple to complex.
- The VS Series offers flexible options: 16K~64K Word project memory, 10~512 I/O points, 2~6 Comm. ports and various special functions (analog, temp....).

Multi-Function Memory Card Provides the Best Data Transplant Mechanism



Multi-function memory card adopts no battery required Flash ROM. This card is like a PLC's hard disk to store a user project and large 655,360 Words latched data.

The appropriate user project and relevant data (such as system setting, molding parameters, event records...) are all stored in the card. If the PLC Main Unit got failed, the user can quickly move the card into a new spare unit.

With the card, the maintenance work can complete by an ordinary trained worker, not necessary by a professional. It solves the problem of inconvenient maintenance if the controller fails.

Robust System Structure, Cautiously Protect Data and Intellectual Property

All the VS Series takes the no battery required FLASH ROM for its user project and latched area data, that could keep away from the disaster of lost resource data. The advantage will appear in a care shortage control system.

The Memory Card stores a user project and large latched data. By an appropriate user project and relevant data could easily move the process to another PLC, to reduce the difficulty of maintenance.

The Password function would restrict the permission to read the project, and furthermore provided the Disallow to Read function. On the other hand, the Project ID combines with the PLC ID could protect the benefit of designer advantageously. This VS Series to protect the intellectual property right is comprehensive.

More Communication Ports and Forms to Meet the Demand of Advanced System

The VS Main Unit built-in the USB programming port and a RS-485 multi-function communication port (CP1).
By expansion cards could expand CP2 ~ CP5 multi-function communication ports (RS-232 or RS-485 interface selectable).
Each multi-function communication port could individually appoint for the VS Computer Link, MODBUS, CPU Link, Non-protocol or other mode. The plenty ports can link with HMI, central supervisory system, distributed control system and peripherals to satisfy all kinds of applications in the control.

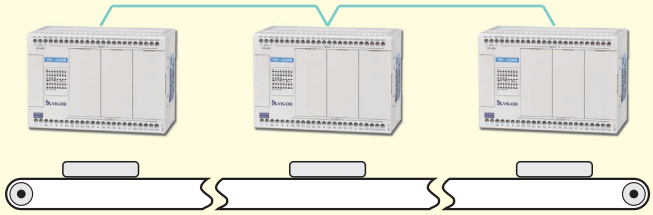
Through the MODBUS or VS protocol, the Slave PLC will respond the request from HMI or central supervisory system.

The MODBUS Master mode could actively link with various of peripherals.

New Windows® based programming software the Ladder Master S.

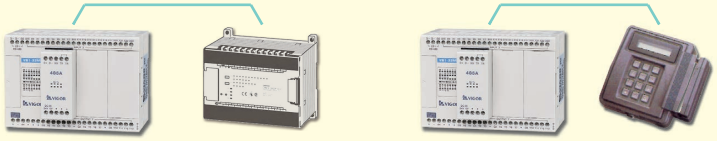
USB+CP1~CP5 communication ports

The CPU Link mode via immediate data link between multiple PLCs to exchange data then achieve the distributed control objective.



Use the VS Computer Link mode to establish a local network.

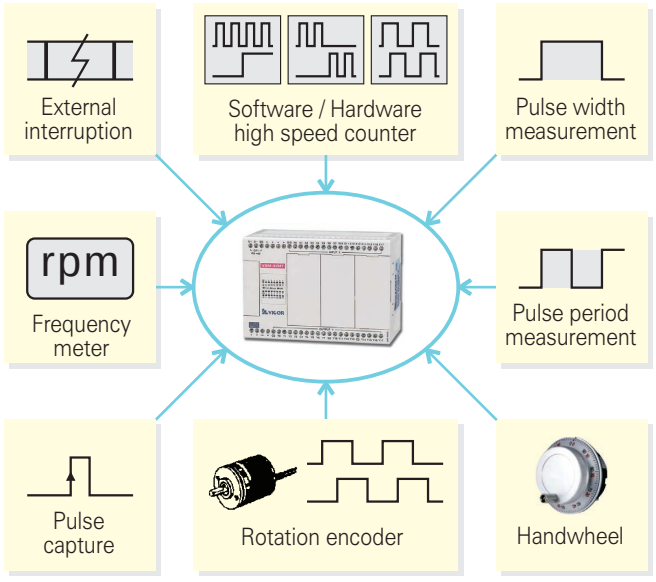
The VS PLC Series has the Non-Protocol communication, that can be linked to various peripheral in the market.



Multi-Function High Speed Input

The Main Unit has built-in 8 high-speed inputs (up to 1 MHz) for the external interrupt, pulse capture, frequency meter, pulse measurement, high speed counter, handwheel and other functions, to support various special applications.

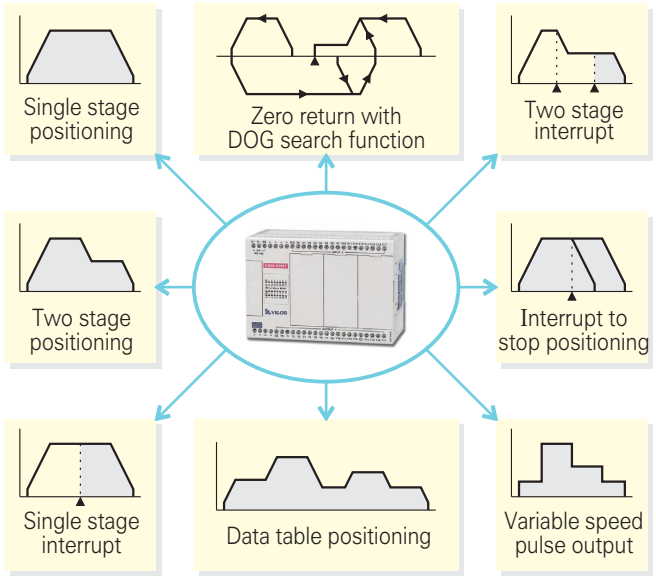
Available become 8 single-phase or 4 A/B-phase counters, furthermore can activate two A/B-phase hardware high speed counters HHSC1 / HHSC2 to improve the system efficiency.



Multi-Function High Speed Position Control

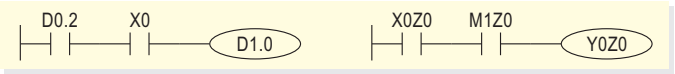
The VSM and VS3 series Main Unit built-in 4 high speed pulse outputs (up to 1 MHz) and various easy to use positioning instructions. Hence, can perform precision positioning control for step or servo motor drivers directly.

The VSM-28ML-D is to meet the requirement of easy connection if the encoders and motor drivers are using the line driver interface.



Bitwise Operation and Bit Index Functions

VS Series offers some advance that typically belongs to high-end PLC. The new functions provide more convenient and flexible usage for the program designer.



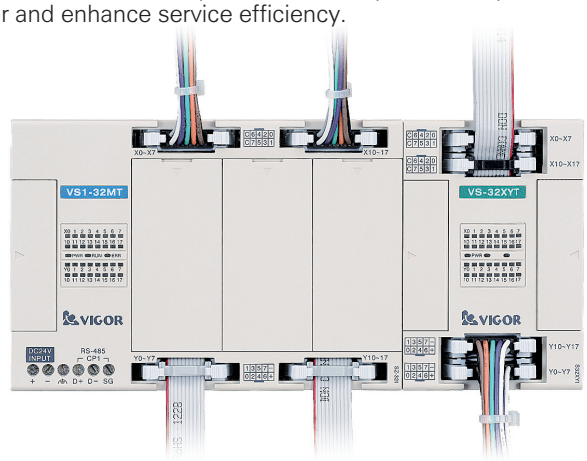
Practical and Various Special Function Cards --- High Cost-Performance Ratio

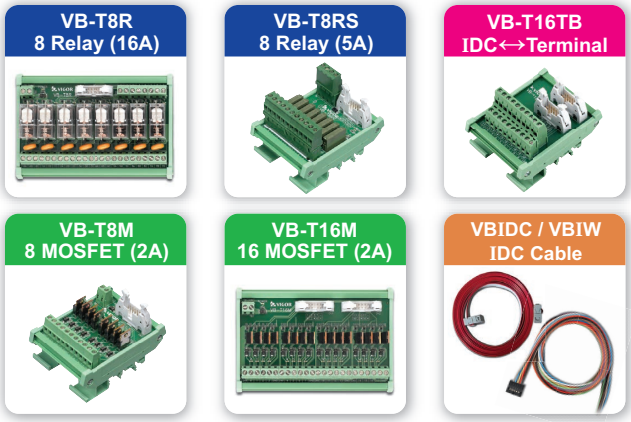
2 Voltage Input & 1 Voltage Output Brief Card	4 Analog Input Card	2 Analog Output Card	2 Analog Input & 2 Analog Output Card	3 Isolated Inverter Speed Control Card	2 Thermocouple Input Card	4 Thermocouple Input Card	1 PT-100 RTD Input Card	2 PT-100 RTD Input Card

Highly Reliable Connector Models, Installation and Maintenance More Easier

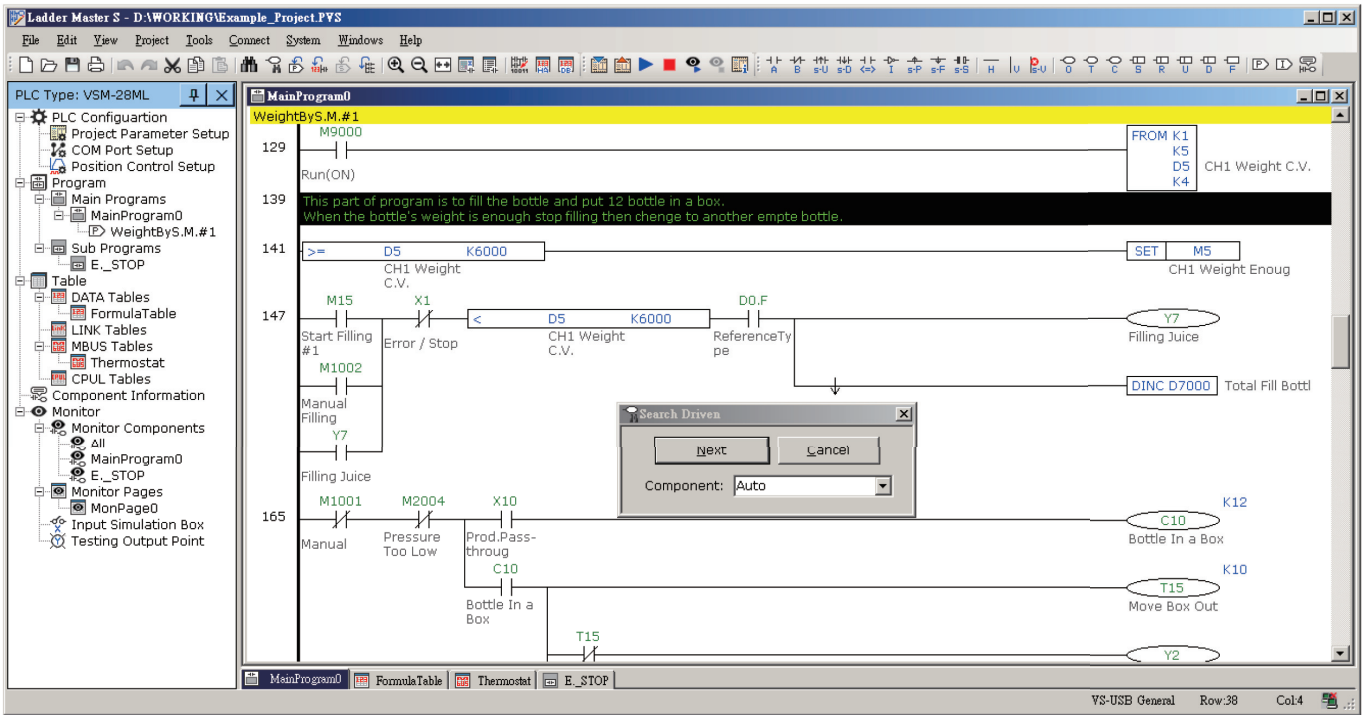
To remove the unstable part (e.g., the AC power and load driving relays) out of the controlling core PLC is the most suitable structure in a control box. Which makes a safeguard mechanism, in order to build a highly reliable control system.

Using connectors join with exterior I/O devices can reduce the assembling time and wiring mistake, also improve work efficiency. If the controller is faulty and must be repaired or replaced, the connector has the advantage to quickly exchange also could avoid error and enhance service efficiency.

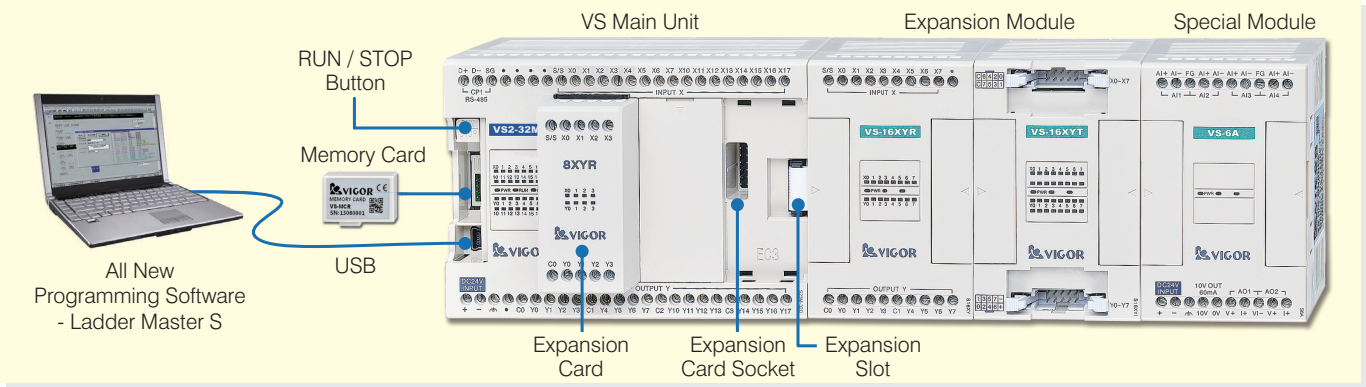




All New Programming Software - Ladder Master S



Syetem Composition



Model and Specification – VS1 Main Unit

Item	VS1-10MR-D	VS1-10MT-D	VS1-10MP-D
Project Memory	16K Words Flash ROM		
DC24V Digital Input	6 point 10 kHz high speed multi-function inputs		
Digital Output	4 × relay (2A) outputs	4×50 kHz outputs all by 0.5A NPN transistor	4×5 kHz outputs all by 0.5A PNP transistor
Communication Interface	Built-in USB programming port & CP1 (non-isolated RS-485) multi-function communication port Available to add the CP2 by a Communication Expansion Card		
Expansion Capability	Memory Card Socket + 1 Expansion Card Socket		
Power Requirement	DC24V –15% / +20%		
Connection Method	Fixed 5mm Screw-Clamp terminal block		

Item	VS1-14MR-D	VS1-14MT-D	VS1-14MP-D
Project Memory	16K Words Flash ROM		
DC24V Digital Input	8 point 10 kHz high speed multi-function inputs		
Digital Output	6 × relay (2A) outputs	4×50 kHz & 2×normal outputs all by 0.5A NPN transistor	4×5 kHz & 2×normal outputs all by 0.5A PNP transistor
Communication Interface	Built-in USB programming port & CP1 (non-isolated RS-485) multi-function communication port Available to add the CP2 by a Communication Expansion Card		
Expansion Capability	Memory Card Socket + 1 Expansion Card Socket		
Power Requirement	DC24V –15% / +20%		
Connection Method	Fixed 5mm Screw-Clamp terminal block		

Item	VS1-20MR-D	VS1-20MT-D	VS1-20MP-D
Project Memory	16K Words Flash ROM		
DC24V Digital Input	8 point 10 kHz high speed multi-function & 4 point 10 ms normal inputs		
Digital Output	8 × relay (2A) outputs	4×50 kHz & 4×normal outputs all by 0.5A NPN transistor	4×5 kHz & 4×normal outputs all by 0.5A PNP transistor
Communication Interface	Built-in USB programming port & CP1 (non-isolated RS-485) multi-function communication port Available to add the CP2 by a Communication Expansion Card		
Expansion Capability	Memory Card Socket + 2 Expansion Card Sockets		
Power Requirement	DC24V –15% / +20%		
Connection Method	Fixed 5mm Screw-Clamp terminal block		

Item	VS1-24MR-D	VS1-24MT-D	VS1-24MP-D
Project Memory	16K Words Flash ROM		
DC24V Digital Input	8 point 10 kHz high speed multi-function & 6 point 10 ms normal inputs		
Digital Output	10 × relay (2A) outputs	4×50 kHz & 6×normal outputs all by 0.5A NPN transistor	4×5 kHz & 6×normal outputs all by 0.5A PNP transistor
Communication Interface	Built-in USB programming port & CP1 (non-isolated RS-485) multi-function communication port Available to add the CP2 by a Communication Expansion Card		
Expansion Capability	Memory Card Socket + 2 Expansion Card Sockets		
Power Requirement	DC24V –15% / +20%		
Connection Method	Fixed 5mm Screw-Clamp terminal block		

Model and Specification

VS1 Main Unit

Item	VS1-28MR-D	VS1-28MT-D	VS1-28MP-D
Project Memory	16K Words Flash ROM		
DC24V Digital Input	8 point 10 kHz high speed multi-function & 8 point 10 ms normal inputs		
Digital Output	12 × relay (2A) outputs	4×50 kHz & 8×normal outputs all by 0.5A NPN transistor	4×5 kHz & 8×normal outputs all by 0.5A PNP transistor
Communication Interface	Built-in USB programming port & CP1 (non-isolated RS-485) multi-function communication port Available to add the CP2 by a Communication Expansion Card		
Expansion Capability	Memory Card Socket + 3 Exp. Card Sockets + Expansion Slot (for DIO Expansion Modules)		
Power Requirement	DC24V −15% / +20%		
Connection Method	Fixed 5mm Screw-Clamp terminal block		

Item	VS1-32MR-D	VS1-32MT-D	VS1-32MP-D
Project Memory	16K Words Flash ROM		
DC24V Digital Input	8 point 10 kHz high speed multi-function & 12 point 10 ms normal inputs		
Digital Output	12 × relay (2A) outputs	4×50 kHz & 8×normal outputs all by 0.5A NPN transistor	4×5 kHz & 8×normal outputs all by 0.5A PNP transistor
Communication Interface	Built-in USB programming port & CP1 (non-isolated RS-485) multi-function communication port Available to add the CP2 by a Communication Expansion Card		
Expansion Capability	Memory Card Socket + 3 Exp. Card Sockets + Expansion Slot (for DIO Expansion Modules)		
Power Requirement	DC24V −15% / +20%		
Connection Method	Fixed 5mm Screw-Clamp terminal block		

Item	VS1-32MT-DI
Project Memory	16K Words Flash ROM
DC24V Digital Input	8 point 10 kHz high speed multi-function & 8 point 10 ms normal inputs
Digital Output	4×50 kHz & 12× ordinary outputs, all by 100mA NPN transistor
Communication Interface	Built-in USB programming port & CP1 (non-isolated RS-485) multi-function communication port Available to add the CP2 by a Communication Expansion Card
Expansion Capability	Memory Card Socket + 3 Exp. Card Sockets + Expansion Slot (for DIO Expansion Modules)
Power Requirement	DC24V −15% / +20%
Connection Method	DIO by IDC connectors (10-pin, 2.54mm, Male); power & CP1 by fixed Screw-Clamp terminal

VS2 Main Unit

Item	VS2-24MR-D	VS2-24MT-D	VS2-24MP-D
Project Memory	32K Words Flash ROM		
DC24V Digital Input	8 point 50 kHz high speed multi-function & 4 point 10 ms normal inputs		
Digital Output	12 × relay (2A) outputs	4×50 kHz & 8×normal outputs all by 0.5A NPN transistor	4×5 kHz & 8×normal outputs all by 0.5A PNP transistor
Communication Interface	Built-in USB programming port & CP1 (non-isolated RS-485) multi-function communication port Available to add the CP2, CP3 by a Communication Expansion Card		
Expansion Capability	Memory Card Socket + 2 Exp. Card Sockets + Exp. Slot (for DIO & 8 Special Func. Modules)		
Power Requirement	DC24V −15% / +20%		
Connection Method	Fixed 5mm Screw-Clamp terminal block		

Item	VS2-32MR-D	VS2-32MT-D	VS2-32MP-D
Project Memory	32K Words Flash ROM		
DC24V Digital Input	8 point 50 kHz high speed multi-function & 8 point 10 ms normal inputs		
Digital Output	16 × relay (2A) outputs	4×50 kHz & 12×normal outs all by 0.5A NPN transistor	4×5 kHz & 12×normal outputs all by 0.5A PNP transistor
Communication Interface	Built-in USB programming port & CP1 (non-isolated RS-485) multi-function communication port Available to add the CP2, CP3 by a Communication Expansion Card		
Expansion Capability	Memory Card Socket + 3 Exp. Card Sockets + Exp. Slot (for DIO & 8 Special Func. Modules)		
Power Requirement	DC24V −15% / +20%		
Connection Method	Fixed 5mm Screw-Clamp terminal block		

Model and Specification

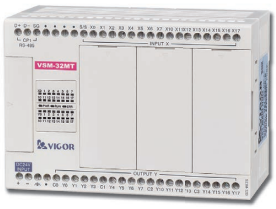
VS2 Main Unit

Item	VS2-32MT-DI
Project Memory	32K Words Flash ROM
DC24V Digital Input	8 point 50 kHz high speed multi-function & 8 point 10 ms ordinary inputs
Digital Output	4×50 kHz & 12×normal outputs, all by 100mA NPN transistor
Communication Interface	Built-in USB programming port & CP1 (non-isolated RS-485) multi-function communication port Available to add the CP2, CP3 by a Communication Expansion Card
Expansion Capability	Memory Card Socket + 3 Exp. Card Sockets + Exp. Slot (for DIO & 8 Special Func. Modules)
Power Requirement	DC24V −15% / +20%
Connection Method	DIO by IDC connectors (10-pin, 2.54mm, Male); power & CP1 by fixed Screw-Clamp terminal

VSM Main Unit

Item	VSM-14MT-D
Project Memory	32K Words Flash ROM
DC24V Digital Input	8 point high speed (4×200 kHz + 4×50 kHz) multi-function inputs
Digital Output	4×200 kHz & 2×normal outputs, all by 0.5A NPN transistor
Communication Interface	Built-in USB programming port & CP1 (non-isolated RS-485) multi-function communication port Available to add the CP2, CP3 by a Communication Expansion Card
Expansion Capability	Memory Card Socket + Expansion Card Socket
Power Requirement	DC24V −15% / +20%
Connection Method	Fixed 5mm Screw-Clamp terminal block

Item	VSM-24MT-D
Project Memory	32K Words Flash ROM
DC24V Digital Input	8 point high speed (4×200 kHz + 4×50 kHz) multi-function & 4 point 10 ms normal inputs
Digital Output	4×200 kHz & 8×normal outputs, all by 0.5A NPN transistor
Communication Interface	Built-in USB programming port & CP1 (non-isolated RS-485) multi-function communication port Available to add the CP2, CP3 by a Communication Expansion Card
Expansion Capability	Memory Card Socket + 2 Exp. Card Sockets + Exp. Slot (for DIO & 8 Special Func. Modules)
Power Requirement	DC24V −15% / +20%
Connection Method	Fixed 5mm Screw-Clamp terminal block



Item	VSM-32MT-D
Project Memory	32K Words Flash ROM
DC24V Digital Input	8 point high speed (4×200 kHz + 4×50 kHz) multi-function & 8 point 10 ms normal inputs
Digital Output	4×200 kHz & 12×normal outputs, all by 0.5A NPN transistor
Communication Interface	Built-in USB programming port & CP1 (non-isolated RS-485) multi-function communication port Available to add the CP2, CP3 by a Communication Expansion Card
Expansion Capability	Memory Card Socket + 3 Exp. Card Sockets + Exp. Slot (for DIO & 8 Special Func. Modules)
Power Requirement	DC24V −15% / +20%
Connection Method	Fixed 5mm Screw-Clamp terminal block

Item		VSM-28ML-D
Project Memory		32K Words Flash ROM
Digital Input	Line Driver	4×1 MHz for 2 hardware high speed counters or 200 kHz for high speed mult-ifunction inputs
	DC24V	4 point 50 kHz high speed multi-function & 8 point 10 ms normal inputs
Digital Output	Line Driver	4×1 MHz & 4×normal Line Driver outputs
	Transistor	4×0.5A NPN transistor normal outputs
Communication Interface		Built-in USB programming port & CP1 (non-isolated RS-485) multi-function communication port Available to add the CP2, CP3 by a Communication Expansion Card
Expansion Capability		Memory Card Socket + 3 Exp. Card Sockets + Exp. Slot (for DIO & 8 Special Func. Modules)
Power Requirement		DC24V −15% / +20%
Connection Method		Fixed 5mm Screw-Clamp terminal block

Model and Specification

VSM Main Unit

Item	VSM-32MT-DI
Project Memory	32K Words Flash ROM
DC24V Digital Input	8 point high speed (4×200 kHz + 4×50 kHz) multi-function & 8 point 10 ms normal inputs
Digital Output	4×200 kHz & 12×normal outputs, all by 100mA NPN transistor
Communication Interface	Built-in USB programming port & CP1 (non-isolated RS-485) multi-function communication port Available to add the CP2, CP3 by a Communication Expansion Card
Expansion Capability	Memory Card Socket + 3 Exp. Card Sockets + Exp. Slot (for DIO & 8 Special Func. Modules)
Power Requirement	DC24V −15% / +20%
Connection Method	DIO by IDC connectors (10-pin, 2.54mm, Male); power & CP1 by fixed Screw-Clamp terminal

VS3 Main Unit

Item	VS3-32MR-D	VS3-32MT-D	VS3-32MP-D
Project Memory	64K Words Flash ROM		
DC24V Digital Input	8 point high speed (4×200 kHz + 4×50 kHz) multi-function & 8 point 10 ms normal inputs		
Digital Output	16 × relay (2A) outputs	4×200 kHz & 12×normal outs all by 0.5A NPN transistor	4×5 kHz & 12×normal outputs all by 0.5A PNP transistor
Communication Interface	Built-in USB programming port & CP1 (non-isolated RS-485) multi-function communication port Available to add the CP2 ~ CP5 by Communication Expansion Cards		
Expansion Capability	Memory Card Socket + 3 Exp. Card Sockets + Exp. Slot (for DIO & 16 Special Func. Modules)		
Power Requirement	DC24V −15% / +20%		
Connection Method	Fixed 5mm Screw-Clamp terminal block		

Item	VS3-32MT-DI
Project Memory	64K Words Flash ROM
DC24V Digital Input	8 point high speed (4×200 kHz + 4×50 kHz) multi-function & 8 point 10 ms normal inputs
Digital Output	4×200 kHz & 12×normal outputs, all by 100mA NPN transistor
Communication Interface	Built-in USB programming port & CP1 (non-isolated RS-485) multi-function communication port Available to add the CP2 ~ CP5 by Communication Expansion Cards
Expansion Capability	Memory Card Socket + 3 Exp. Card Sockets + Exp. Slot (for DIO & 16 Special Func. Modules)
Power Requirement	DC24V −15% / +20%
Connection Method	DIO by IDC connectors (10-pin, 2.54mm, Male); power & CP1 by fixed Screw-Clamp terminal

VS DIO Expansion Module

Item			8XYR	8XYT	8XYP	8X	8YR	8YT	8YP
DC24V Digital Input			4	4	4	8	—	—	—
Digital Output	2A Relay		4	—	—	—	8	—	—
	0.5A Transistor	NPN	—	4	—	—	—	8	—
		PNP	—	—	4	—	—	—	8
Connection Method			Fixed 5mm Screw-Clamp terminal block						

Item			16XYR	16XYT	16XYP	16X	16YR	16YT	16YP
DC24V Digital Input			8	8	8	16	—	—	—
Digital Output	2A Relay		8	—	—	—	16	—	—
	0.5A Transistor	NPN	—	8	—	—	—	16	—
		PNP	—	—	8	—	—	—	16
Connection Method			Fixed 5mm Screw-Clamp terminal block						

Model and Specification

VS DIO Expansion Module

Item			VS-28XYR	VS-32XYR	VS-32XYT	VS-32XYP
DC24V Digital Input			16	16	16	16
Digital Output	2A Relay		12	16	—	—
	0.5A Transistor	NPN	—	—	16	—
		PNP	—	—	—	16
Connection Method			Fixed 5mm Screw-Clamp terminal block			

Item			VS-16XYT-I	VS-16X-I	VS-16YT-I	VS-32XYT-I
DC24V Digital Input			8	16	—	16
Digital Output	2A Relay		—	—	—	—
	100mA Transistor	NPN	8	—	16	16
		PNP	—	—	—	—
Connection Method			IDC connectors (10-pin, 2.54mm, Male)			

VS Special Function Module

◆ VS-3A

2 CH. 16-bit Analog Inputs
1 CH. 16-bit Analog Output

Item	Voltage Input Spec.	Current Input Spec.	
	The voltage or current input switch is located on the module's right side also the operation mode BFM is required to set.		
Analog Input Range	-10V ~ +10V	4 ~ 20mA	-20mA ~ +20mA
Converted Value	-32000 ~ +32000 / -10000 ~ +10000	0 ~ 16000	-16000 ~ +16000 / -20000 ~ +20000
Input Resistance	200KΩ	250Ω	250Ω
Max. Resolution	0.3125mV	1.25μA	1.25μA
Overall Accuracy	Ambient temp. 25 ±5℃ is ±0.3% full scale (±60mV); Ambient temp. 0~55℃ is ±0.5% full scale (±100mV)	Ambient temp. 25 ±5℃ is ±120μA; Ambient temp. 0~55℃ is ±200μA	Ambient temp. 25 ±5℃ is ±0.3% full scale (±120μA); Ambient temp. 0~55℃ is ±0.5% full scale (±200μA)
Max. Input Range	-15V ~ +15V	-32mA ~ +32mA	-32mA ~ +32mA
Conversion Curve	Refer to the VS-4AD module		

◆ VS-6A

4 CH. 16-bit Analog Inputs
2 CH. 16-bit Analog Outputs

Item	Voltage Output Spec.	Current Output Spec.	
Analog Output Range	-10V ~ +10V	4 ~ 20mA	-20mA ~ +20mA
Digital Set Range	-32000 ~ +32000 / -10000 ~ +10000	0 ~ 32000	-32000 ~ +32000 / -20000 ~ +20000
Load Resistance	500Ω ~ 1MΩ	500Ω(or less)	500Ω(or less)
Max. Resolution	0.3125mV	0.625μA	0.625μA
Overall Accuracy	Ambient temp. 25 ±5℃ is ±0.3% full scale (±60mV); Ambient temp. 0~55℃ is ±0.5% full scale (±100mV)	Ambient temp. 25 ±5℃ is ±120μA; Ambient temp. 0~55℃ is ±200μA	Ambient temp. 25 ±5℃ is ±0.3% full scale (±120μA); Ambient temp. 0~55℃ is ±0.5% full scale (±200μA)
Conversion Curve	Refer to the VS-2DA module		

Item	VS-3A	VS-6A
Response Time	0.8ms	1.2ms
Accurate Calibration Voltage Output	DC10V ± 0.5%, 60mA (Max.)	
Isolation Method	The DC 24V input through isolated DC/DC power to provide convert circuit use; Magnetic-coupler isolation between PLC & analog circuits; no isolation between AI/AO channels	
Power Consumption	DC 24V ± 20%, 160mA (Max.) from terminal + DC 5V 15mA from PLC's inner power	DC 24V ± 20%, 210mA (Max.) from terminal +DC 5V 15mA from PLC's inner power

Model and Specification

VS Special Function Module

◆ VS-4AD

4 CH. 16-bit Analog Inputs

Item	Voltage Input Spec.	Current Input Spec.	
	The voltage or current input switch is located on the module's right side also the operation mode BFM is required to set.		
Analog Input Range	-10V ~ +10V	4 ~ 20mA	-20mA ~ +20mA
Converted Value	-32000 ~ +32000 / -10000 ~ +10000	0 ~ 16000	-16000 ~ +16000 / -20000 ~ +20000
Input Resistance	200KΩ	250Ω	250Ω
Max. Resolution	0.3125mV	1.25μA	1.25μA
Overall Accuracy	Ambient temp. 25 ±5℃ is ±0.3% full scale (±60mV); Ambient temp. 0~55℃ is ±0.5% full scale (±100mV)	Ambient temp. 25 ±5℃ is ±120μA; Ambient temp. 0~55℃ is ±200μA	Ambient temp. 25 ±5℃ is ±0.3% full scale (±120μA); Ambient temp. 0~55℃ is ±0.5% full scale (±200μA)
Response Time	0.8ms		
Max. Input Range	-15V ~ +15V	-32mA ~ +32mA	-32mA ~ +32mA
Isolation Method	The DC 24V input through isolated DC/DC power to provide convert circuit use; Magnetic-coupler isolation between PLC & analog circuits; no isolation between input channels		
Accurate Calibration Voltage Output	DC10V ± 0.5%, 60mA (Max.)		
Power Consumption	DC 24V ± 20%, 140mA (Max.) from external + DC 5V 15mA from PLC's inner power		
Conversion Curve	Mode 0 / Mode 1 -10V ~ +10V voltage input Converted digital value Mode 0:+32000 Mode 1:+10000 Input voltage -10V 0 +10V Mode 0:-32000 Mode 1:-10000	Mode 2 4mA ~ 20mA current input Converted digital value +16000 Input current -12mA 0 4mA +20mA -4000 -16000	Mode 3 / Mode 4 -20mA ~ +20mA current input Converted digital value Mode 3:+16000 Mode 4:+20000 Input current -20mA 0 +20mA Mode 3:-16000 Mode 4:-20000

◆ VS-2DA

2 CH. 16-bit Analog Outputs

Item	Voltage Output Spec.	Current Output Spec.	
Analog Output Range	-10V ~ +10V	4 ~ 20mA	-20mA ~ +20mA
Digital Set Range	-32000 ~ +32000 / -10000 ~ +10000	0 ~ 32000	-32000 ~ +32000 / -20000 ~ +20000
Load Resistance	500Ω ~ 1MΩ	500Ω (or less)	500Ω (or less)
Max. Resolution	0.3125mV	0.625μA	0.625μA
Overall Accuracy	Ambient temp. 25 ±5℃ is ±0.3% full scale (±60mV); Ambient temp. 0~55℃ is ±0.5% full scale (±100mV)	Ambient temp. 25 ±5℃ is ±120μA; Ambient temp. 0~55℃ is ±200μA	Ambient temp. 25 ±5℃ is ±0.3% full scale (±120μA); Ambient temp. 0~55℃ is ±0.5% full scale (±200μA)
Response Time	0.1ms		
Isolation Method	The DC 24V input through isolated DC/DC power to provide convert circuit use; Magnetic-coupler isolation between PLC & analog circuits; no isolation between output channels		
Power Consumption	DC 24V ± 20%, 90mA (Max.) from external + DC 5V 15mA from PLC's inner power		
Conversion Curve	Mode 0 / Mode 1 -10V ~ +10V voltage output Converted voltage output +10V Mode 0:-32000 Mode 1:-10000 Digital set value 0 Mode 0:+32000 Mode 1:+10000 -10V	Mode 2 4mA ~ 20mA current output 20mA Converted Current output 4mA 0mA 0 Digital set value 32000	Mode 3 / Mode 4 -20mA ~ +20mA current output Converted current output +20mA Mode 3:-32000 Mode 4:-20000 Digital set value 0 Mode 3:+32000 Mode 4:+20000 -20mA

Model and Specification

VS Special Function Module

◆ VS-4TC
VS-8TC

4 CH. / 8 CH.
Thermocouple Inputs

Item	VS-4TC	VS-8TC
Sensor Input Number	4	8
Sensor Type	K, J, R, S, T, E, B or N type isolated (ungrounded) thermocouple	
Measurable Range	–220℃ ~+1800℃ (–364℉ ~+3272℉) depends upon the input mode of sensor used	
Digital Output Range	The unit of measurement data is by 0.1 ℃ or 0.1 ℉	
Resolution	0.1℃ (0.1℉)	
Overall Accuracy	±0.5% (full scale) ±1℃	
Response Time	250ms	
Isolation Method	The DC 24V input through isolated DC/DC power to provide convert circuit use; Magnetic-coupler isolation between PLC and inputs; no isolation between input channels	
Power Consumption	DC24V ±20%, 30mA (Max.) from terminal +DC 5V 15mA from PLC's inner power	DC24V ±20%, 30mA (Max.) from terminal +DC 5V 15mA from PLC's inner power

◆ VS-2PT
VS-4PT

2 CH. / 4 CH.
PT-100 Inputs

Item	VS-2PT	VS-4PT
Sensor Input Number	2	4
Sensor Type	PT-100, Platinum resistance thermometer (RTD), 3-Wire, 3850 PPM/℃	
Measurable Range	–200℃ ~+850℃ (–328℉ ~+1562℉)	
Digital Output Range	The unit of measurement data is by 0.1 ℃ or 0.1 ℉	
Resolution	0.1℃ (0.1℉)	
Overall Accuracy	Ambient temp. 25 ±5℃ is ±0.5% full scale; Ambient temp. 0~55℃ is ±1% full scale	
Response Time	250ms	
Isolation Method	The DC 24V input through isolated DC/DC power to provide convert circuit use; Magnetic-coupler isolation between PLC and inputs; no isolation between input channels	
Power Consumption	DC24V ±20%, 30mA (Max.) from terminal +DC 5V 15mA from PLC's inner power	DC24V ±20%, 30mA (Max.) from terminal +DC 5V 15mA from PLC's inner power

VS DIO Expansion Card

Item			VS-4XYR-EC	VS-4XYT-EC	VS-4X-EC	VS-4YR-EC	VS-4YT-EC
DC24V Digital Input			2	2	4	—	—
Digital Output	2A Relay		2	—	—	4	—
	0.3A Transistor	NPN	—	2	—	—	4
		PNP	—	—	—	—	—
Connection Method			Fixed 5mm Screw-Clamp terminal block				

Item			VS-8XYR-EC	VS-8XYT-EC	VS-8X-EC	VS-8YT-EC
DC24V Digital Input			4	4	8	—
Digital Output	2A Relay		4	—	—	—
	0.3A Transistor	NPN	—	4	—	8
		PNP	—	—	—	—
Connection Method			Fixed 5mm Screw-Clamp terminal block			

Item			VS-8XI-EC	VS-8YTI-EC
DC24V Digital Input			8	—
Digital Output	2A Relay		—	—
	100mA Transistor	NPN	—	8
		PNP	—	—
Connection Method			IDC 10-pin (2.54mm, 2 row, Male) connector without eject hooks	

Model and Specification

VS Special Function Card

◆ VS-3AV-EC

2 CH. 12-bit Voltage Inputs
1 CH. 10-bit Voltage Output

Item	Voltage Input Spec.
Voltage Input CH.	2
Voltage Input Range	0 ~ 10V
Converted Value	0 ~ 4000
Input Resistance	56KΩ
Resolution / Accuracy	2.5mV / ± 2% (Overall Max.)
Response Time	Renew values every Scan Time
Isolation Method	No Isolation

Item	Voltage Output Spec.
Voltage Output CH.	1
Voltage Output Range	0 ~ 10V
Digital Set Range	0 ~ 1000
Load Resistance	1KΩ ~ 1MΩ
Resolution / Accuracy	10mV / ± 2% (Overall Max.)
Response Time	Renew output every Scan Time
Isolation Method	No Isolation

※ One accurate calibration DC 10V ± 1% (10mA Max.) output could be used for to connect with variable resistors.

◆ VS-4A-EC

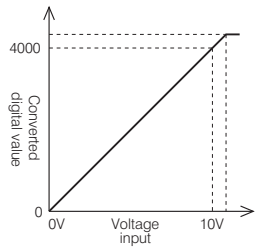
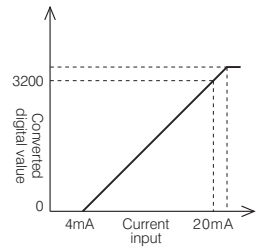
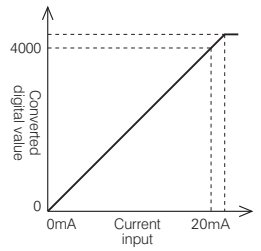
2 CH. 12-bit Analog Inputs
2 CH. 12-bit Analog Outputs

Item	Voltage Input Spec.	Current Input Spec.	
	The voltage or current input switch is located on the card's bottom also the operation mode special register is required to set.		
Analog Input Range	0 ~ 10V	4 ~ 20mA	0 ~ 20mA
Converted Value	0 ~ 4000	0 ~ 3200	0 ~ 4000
Input Resistance	200KΩ	250Ω	250Ω
Resolution / Accuracy	2.5mV / ± 1% (Overall Max.)	5μA / ± 1% (Overall Max.)	5μA / ± 1% (Overall Max.)
Max. Input Range	-0.5V ~ +12V	-2mA ~ +30mA	-2mA ~ +30mA
Response Time	1.2 ms × (No. of enabled AI CH.) + 15 μs × (No. of enabled AO CH.) , the AI/AO values will be renewed or sent at the END instruction.		
Isolation Method	No isolation between PLC, inputs and outputs; no isolation between input/output channels		
Conversion Curve	Refer to the VS-4AD-EC card		

Item	Voltage Output Spec.	Current Output Spec.	
Analog Output Range	0 ~ 10V	4 ~ 20mA	0 ~ 20mA
Digital Set Range	0 ~ 4000	0 ~ 3200	0 ~ 4000
Load Resistance	500Ω ~ 1MΩ	500Ω (or Less)	500Ω (or Less)
Resolution / Accuracy	2.5mV / ± 1.5% (Overall Max.)	5μA / ± 1.5% (Overall Max.)	5μA / ± 1.5% (Overall Max.)
Response Time	1.2 ms × (No. of enabled AI CH.) + 15 μs × (No. of enabled AO CH.) , the AI/AO values will be renewed or sent at the END instruction.		
Isolation Method	No isolation between PLC, inputs and outputs; no isolation between input/output channels		
Conversion Curve	Refer to the VS-2DA-EC card		

◆ VS-4AD-EC

4 CH. 12-bit Analog Inputs

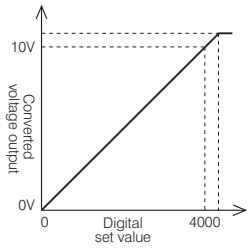
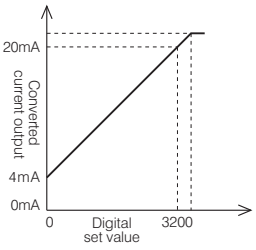
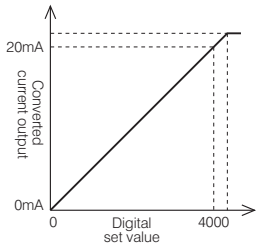
Item	Voltage Input Spec.	Current Input Spec.	
	The voltage or current input switch is located on the card's bottom also the operation mode special register is required to set.		
Analog Input Range	0 ~ 10V	4 ~ 20mA	0 ~ 20mA
Converted Value	0 ~ 4000	0 ~ 3200	0 ~ 4000
Input Resistance	200KΩ	250Ω	250Ω
Resolution / Accuracy	2.5mV / ± 1% (Overall Max.)	5μA / ± 1% (Overall Max.)	5μA / ± 1% (Overall Max.)
Response Time	1.2 ms × (the No. of enabled AI CHs); the AI values will be renewed at the END instruction		
Isolation Method	No isolation between PLC and inputs; no isolation between input channels		
Max. Input Range	-0.5V ~ +12V	-2mA ~ +30mA	-2mA ~ +30mA
Conversion Curve			

Model and Specification

VS Special Function Card

◆ VS-2DA-EC

2 CH. 12-bit Analog Outputs

Item	Voltage Output Spec.	Current Output Spec.	
Analog Output Range	0 ~ 10V	4 ~ 20mA	0 ~ 20mA
Digital Set Range	0 ~ 4000	0 ~ 3200	0 ~ 4000
Load Resistance	500Ω ~ 1MΩ	500Ω	500Ω
Resolution / Accuracy	2.5mV / ± 1.5% (Overall Max.)	5μA / ± 1.5% (Overall Max.)	5μA / ± 1.5% (Overall Max.)
Response Time	15 μs × the No. of enabled AO CHs , the AO values will be sent at the END instruction.		
Isolation Method	No isolation between PLC and outputs; no isolation between output channels		
Conversion Curve			

◆ VS-3ISC-EC

3 Inverters Speed Control

Item	Specification
Output Channels	3
VO Output Range	0.0% ~ 100.0% (= 0V ~ the setting value of VO Max.)
Digital Set Range	0 ~ 1000
Inverter's Input Resistance	10KΩ (or more)
Resolution	0.1%
Overall Accuracy	± 1.5% (Overall Max.)
Response Time	150ms (Max.)
V+ Input Range	4V~12V (power input from inverter to V+ & SG terminals)
Isolation Method	Each channel has own photocoupler to isolate this part of analog circuit to others and PLC.

◆ VS-2TC-EC
VS-4TC-EC

2 CH. / 4 CH.
Thermocouple Inputs

Item	VS-2TC-EC	VS-4TC-EC
Sensor Input Number	2	4
Sensor Type	K, J, R, S, T, E, B or N type isolated (ungrounded) thermocouple	
Measurable Range	–220 ℃ ~ +1800 ℃ (–364 ℉ ~ +3272 ℉) depends upon the input mode of sensor used	
Converted Value	The measurement results are indicated by the unit of 0.1 ℃ or 0.1 ℉ .	
Resolution	0.2 ℃ ~ 0.3 ℃ (0.36 ℉ ~ 0.54 ℉)	
Overall Accuracy	± 1% (Overall Max.) ± 1 ℃	
Response Time	100ms, the temperature values will be renewed at the END instruction.	
Isolation Method	No isolation between PLC and TC inputs; no isolation between TC input channels	

◆ VS-1PT-EC
VS-2PT-EC

1 CH. / 2 CH.
PT-100 Inputs

Item	VS-1PT-EC	VS-2PT-EC
Sensor Input Number	1	2
Sensor Type	PT-100, Platinum resistance thermometer (RTD), 3-Wire, 3850 PPM / ℃	
Measurable Range	–200 ℃ ~ 850 ℃ (–328 ℉ ~ 1562 ℉)	
Converted Value	The measurement results are indicated by the unit of 0.1 ℃ or 0.1 ℉ .	
Resolution	0.1 ℃ (0.18 ℉)	
Overall Accuracy	± 1% (Overall Max.)	
Response Time	25ms, the temperature values will be renewed at the END instruction.	
Isolation Method	No isolation between PLC and PT-100 inputs; no isolation between PT-100 input channels	

Model and Specification

VS Communication Expansion Card

Item	VS-485-EC	VS-D485-EC	VS-485A-EC	VS-D485A-EC	VS-D52A-EC	VS-D232-EC
Comm. Interference	RS-485	RS-485×2	RS-485	RS-485×2	RS-485 / RS-232C	RS-232C×2
Isolation Method	No Isolation	No Isolation	Magnetic-coupler isolation			No Isolation
LED Indicator	TX (transmitting) and RX (receiving) indicators					
Distance	50 Meters	50 Meters	1000 Meters	1000 Meters		15 Meters
Comm. Method	Half-duplex	Half-duplex	Half-duplex	Half-duplex	Half-duplex	Half-duplex
Baud Rate	By the setting of installed project (up to 115,200 bps.)					
Connection Method	Fixed 5mm Screw-Clamp terminal block					

※ The VS-485A-EC, VS-D485A-EC & VS-D52A-EC require a stable DC24V -15/+20% power input.

VS Memory Card

Item	VS-MCR	VS-MC
Memory Capacity	16Mb Flash ROM, no battery required latched memory	
Memory Life Span	Rewrite: 100,000 times; read: no limit	
Project Memory	Support an user project storage or project duplicate function for all VS Series PLCs	
Data Bank Function	Provides 655,360 words data storage capacity	
Real Time Clock Function	Indicates year, month, date, hour, min., sec. and day of week (Accuracy: ± 45 sec./mo. @ 25°C)	—

Power Repeater Module

◆ VS-PSD

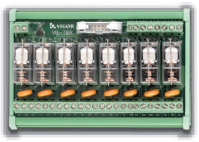
Item	Specification
Power Requirement	DC 24V -15% / +20%
Power Frequency	—
Input Power Interrupt	Period<1ms with no affect
Fuse Capability	5A
Power Consumption	19W
Inner Power Support	DC5V 500mA
	DC12V 800mA

Peripheral Product

Programming Cable	Module's Ext. Cable
VSPC-200A	VSEC-050/100

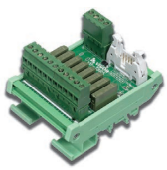
IDC Connector Model Related Product

◆ VB-T8R



Item	Specification
Power Input Required	DC 24V -15% / +20%, 180mA, by fixed 5mm Screw-Clamp terminal block
Number of Relay	8 (with relay socket)
Contact of Relay	Contact form : 1C ; Contact rating current : 16A
Status Indicator	1 × power + 8 × relay coil indicators; color: red
Contact Protection	Surge absorber at every A (NO) contact
Signal Input Connector	IDC 10-pin (2.54mm, 2 row, Male) connector or fixed 5mm Screw-Clamp terminal block
Output Wiring Method	Fixed 5mm Screw-Clamp terminal block
Dimension / Mounting	130(W) × 87(H) × 60(D) mm / 35mm DIN rail

◆ VB-T8RS

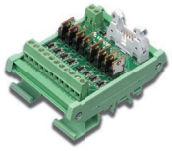


Item	Specification
Power Input Required	DC 24V -15% / +20%, 70mA, by pluggable 5mm Screw-Clamp terminal block
Number of Relay	8
Contact of Relay	Contact form : 1a (NO) contact ; Contact rating current : 5A (with out protection).
Status Indicator	1× power + 8×relay coil indicators; color: red
Signal Input Connector	IDC 10-pin (2.54mm, 2 row, Male) connector
Output Wiring Method	Pluggable 5mm Screw-Clamp terminal block
Dimension / Mounting	65(W) × 87(H) × 55(D) mm / 35mm DIN rail

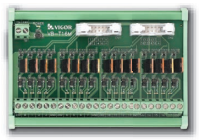
Model and Specification

IDC Connector Model Related Product

◆ VB-T8M



◆ VB-T16M



Item	VB-T8M	VB-T16M
Power Input Required	DC 24V -15% / +20%, by fixed 5mm Screw-Clamp terminal block	
Power Consumption	25mA	50mA
Number of MOSFET	8	16
Output Type	Sourcing ; Rating current : 2A	
Status Indication	1 × power + 8 × output indicators	1 × power + 16 × output indicators
Contact protection	Flybacke diode at every contact	
Signal Input Connector	IDC 10-pin (2.54, 2 row, Male) connector	2 × IDC 10-pin (2.54, 2 row, Male) connectors
Output Wiring Method	5mm Screw-Clamp terminal block	
Dimension / Mounting	65(W) × 87(H) × 52(D) mm / 35mm DIN rail	130(W) × 87(H) × 52(D) mm / 35mm DIN rail

◆ VB-T16TB

Item	Specification
Connector Side	2×IDC 10-pin (2.54mm, 2 row, Male) connectors to controller
Wiring Method	20 pin, fixed 5mm double-level Screw-Clamp terminal block
Dimension / Mounting	65(W) × 87(H) × 52(D) mm / 35mm DIN rail

Item	Specification
VBIDC-050	Two IDC female connectors' ribbon cable, Length: 50cm
VBIDC-100	Two IDC female connectors' ribbon cable, Length: 100cm
VBIDC-150	Two IDC female connectors' ribbon cable, Length: 150cm
VBIDC-200	Two IDC female connectors' ribbon cable, Length: 200cm
VBIDC-250	Two IDC female connectors' ribbon cable, Length: 250cm
VBIDC-300	Two IDC female connectors' ribbon cable, Length: 300cm

Item	Specification
VBIW-050	An IDC female connector with 10 non-integrated rainbow cables, 22 AWG, Length: 50cm
VBIW-100	An IDC female connector with 10 non-integrated rainbow cables, 22 AWG, Length: 100cm
VBIW-200	An IDC female connector with 10 non-integrated rainbow cables, 22 AWG, Length: 200cm
VBIW-300	An IDC female connector with 10 non-integrated rainbow cables, 22 AWG, Length: 300cm

Item	Specification
VBIDC-FC100	IDC ribbon cable, 10-pin, grey color, 28AWG, Length: 100 foot
VBIDC-FC250	IDC ribbon cable, 10-pin, grey color, 28AWG, Length: 250 foot

Item	Specification
VBIDC-HD20	IDC female 10-pin connector with strain relief, grey color, 20PCS
VBIDC-HD100	IDC female 10-pin connector with strain relief, grey color, 100PCS

Technicality Specification

Specification Table of All the VS Series Main Unit

Item			VS1 Series	VS2 Series	VSM Series	VS3 Series
Operation Control Method			Cyclic Operation by Stored Program			
Programming Language			Ladder Diagram + Sequential Function Chart (SFC) or Ladder Diagram + Step Ladder (STL)			
I/O Control Method			Batch Processing			
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 / 131	29 / 159	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)
Max. Digital Input / Output	External Input (X)		64 points: X0 ~ X77	128 points: X0 ~ X177	128 points: X0 ~ X177	256 points: X0 ~ X377
	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			
		Annunciator	100 points: S900 ~ S999 (Latched)			
Timer (T)	100ms		200 points: T0 ~ T199 (Timer range: 0.1 ~ 3,276.7 sec.)			
	10ms		46 points: T200 ~ T245 (Timer range: 0.01 ~ 327.67 sec.)			
	1ms (Retentive)		4 points: T246 ~ T249 (Timer range: 0.001 ~ 32.767 sec.)			
	100ms (Retentive)		6 points: T250 ~ T255 (Timer range: 0.1 ~ 3,276.7 sec.)			
	1ms		256 points: T256 ~ T511 (Timer range: 0.001 ~ 32.767 sec.)			
Counter (C)	16-bit Up	General	100 points: C0 ~ C99 (Range: 0 ~ 32,767)			
		Latched	100 points: C100 ~ C199 (Range: 0 ~ 32,767)			
	32-bit Up / Down	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)			
Software High Speed Counter (C)	32-bit Up / Down, Latched	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)			
Hardware High Speed Counter			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			
	Extension Register (R)		10000 points: R0 ~ R9999			24000 points: R0~R23999
Pointer	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			
	Nest Pointer (N)		8 points: N0 ~ N7			
Numerical System of Constant			Decimal (K), Hexadecimal (H) or Real number (E)			
Comm. Function	Main Unit Built-in Comm. Port	Programming	12Mbps high-speed Mini USB port			
		Multi-Function	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 ~ CP5 at EC1 & EC3
Multi-Function High Speed Input			External Interruption, Hardware / Software High Speed Counter Pulse Capture, Pulse Measurement, Handwheel ...			
			10 kHz × 8 points	50 kHz × 8 points	200 kHz × 4 points + 50 kHz × points ☆	
Pulse Output			50 kHz × 4 points	50 kHz × 4 points	200 kHz × 4 points ☆	
Real Time Clock (Optional)			By installing the VS-MCR Multi-Function Memory Card to get 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			
Type of Expansion Card (EC1 ~ EC3)			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 the HHSC1 & HHSC2) + 50 kHz × 4 Multi-Function High Speed Input points and its Pulse Output has 1 MHz × 4 points.

Technicality Specification

Performance Specification of the VS1 Series

Item			10M	14M	20M	24M	28M	32M	32MT-I
Operation Control Method			Cyclic Operation by Stored Program						
Programming Language			Ladder Diagram + Sequential Function Chart (SFC) or Ladder Diagram + Step Ladder (STL)						
I/O Control Method			Batch Processing						
Process Time	Basic Instruction		0.17 μs						
	Application Instruction		A few μs ~ Hundreds of μs						
Number of Instructions	Basic Instruction		29						
	Application Instruction		131						
Project Memory Capacity (Flash ROM)			16k Words (The project includes all parameters, program, pointers, tables and comments)						
Main Unit Built-in I / O	Number of Input Points		6 (X0~X5)	8 (X0~X7)	12 (X0~X13)	14 (X0~X15)	16 (X0~X17)	20 (X0~X23)	16 (X0~X17)
	Number of Output Points		4 (Y0~Y3)	6 (Y0~Y5)	8 (Y0~Y7)	10 (Y0~Y11)	12 (Y0~Y13)	12 (Y0~Y13)	16 (Y0~Y17)
Max. Digital Input / Output	External Input (X)		X0 ~ X5	X0 ~ X7	X0 ~ X13	X0 ~ X15	X0 ~ X77		
	External Output (Y)		Y0 ~ Y3	Y0 ~ Y5	Y0 ~ Y7	Y0 ~ Y11	Y0 ~ Y77		
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						
		Annunciator	100 points: S900 ~ S999 (Latched)						
Timer (T)	100ms		200 points: T0 ~ T199 (Timer range: 0.1 ~ 3,276.7 sec.)						
	10ms		46 points: T200 ~ T245 (Timer range: 0.01 ~ 327.67 sec.)						
	1ms (Retentive)		4 points: T246 ~ T249 (Timer range: 0.001 ~ 32.767 sec.)						
	100ms (Retentive)		6 points: T250 ~ T255 (Timer range: 0.1 ~ 3,276.7 sec.)						
	1ms		256 points: T256 ~ T511 (Timer range: 0.001 ~ 32.767 sec.)						
Counter (C)	16-bit Up	General	100 points: C0 ~ C99 (Range: 0 ~ 32,767)						
		Latched	100 points: C100 ~ C199 (Range: 0 ~ 32,767)						
	32-bit Up / Down	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)						
Software High Speed Counter (C)	32-bit Up / Down, Latched	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)						
Hardware High Speed Counter			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 ~ D9255						
	Index Register (V / Z)		16 points: V0 ~ V7, Z0 ~ Z7						
	Extension Register (R)		10,000 points: R0 ~ R9999						
Pointer	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						
	Nest Pointer (N)		8 points: N0 ~ N7						
Numerical System of Constant			Decimal (K), Hexadecimal (H) or Real number (E)						
Comm. Function	Main Unit Built-in Comm. Port	Programming	12Mbps high-speed Mini USB port						
		Multi-Func.	CP1 (RS-485) for the Computer Link, MODBUS, CPU Link or Non-protocol						
	Expanded Multi-Func. Port		CP2: At the communication card of EC1, usable function is equal to the CP1						
Multi-Function High Speed Input			10 kHz × 8 points: For the External Interruption, HHSC, SHSC, Pulse Capture, Pulse Measurement, Handwheel ...						
Pulse Output			50 kHz × 4 points: For the 6 positioning instructions at the NPN Main Unit						
Real Time Clock (Optional)			By installing the VS-MCR Multi-Function Memory Card to get 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						
Expansion Card	Number of Card Socket		1		2 (allow one special card only)		3 (allow one special card only)		
	Type of Expansion Card		DI / DO, communication or special function card (AI, AO, temperature input, inverter speed control, etc.)						

Technicality Specification

Performance Specification of the VS2 Series

Item			VS2-24M	VS2-32M
Operation Control Method			Cyclic Operation by Stored Program	
Programming Language			Ladder Diagram + Sequential Function Chart (SFC) or Ladder Diagram + Step Ladder (STL)	
I/O Control Method			Batch Processing	
Process Time	Basic Instruction		0.17 μs	
	Application Instruction		A few μs ~ Hundreds of μs	
Number of Instructions	Basic Instruction		29	
	Application Instruction		159	
Project Memory Capacity (Flash ROM)			32K Words (The project includes all parameters, program, pointers, tables and comments)	
Main Unit Built-in I / O	Number of Input Points		12 points: X0 ~ X13	16 points: X0 ~ X17
	Number of Output Points		12 points: Y0 ~ Y13	16 points: Y0 ~ Y17
Max. Digital Input / Output	External Input (X)		128 points: X0 ~ X177	
	External Output (Y)		128 points: Y0 ~ Y177	
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	
		Annunciator	100 points: S900 ~ S999 (Latched)	
Timer (T)	100ms		200 points: T0 ~ T199 (Timer range: 0.1 ~ 3,276.7 sec.)	
	10ms		46 points: T200 ~ T245 (Timer range: 0.01 ~ 327.67 sec.)	
	1ms (Retentive)		4 points: T246 ~ T249 (Timer range: 0.001 ~ 32.767 sec.)	
	100ms (Retentive)		6 points: T250 ~ T255 (Timer range: 0.1 ~ 3,276.7 sec.)	
	1ms		256 points: T256 ~ T511 (Timer range: 0.001 ~ 32.767 sec.)	
Counter (C)	16-bit Up	General	100 points: C0 ~ C99 (Range: 0 ~ 32,767)	
		Latched	100 points: C100 ~ C199 (Range: 0 ~ 32,767)	
	32-bit Up / Down	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)	
Software High Speed Counter (C)	32-bit Up / Down, Latched	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)	
Hardware High Speed Counter			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 ~ D9255	
	Index Register (V / Z)		16 points: V0 ~ V7, Z0 ~ Z7	
	Extension Register (R)		10,000 points: R0 ~ R9999	
Pointer	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	
	Nest Pointer (N)		8 points: N0 ~ N7	
Numerical System of Constant			Decimal (K), Hexadecimal (H) or Real number (E)	
Comm. Function	Main Unit Built-in Comm. Port	Programming	12Mbps high-speed Mini USB port	
		Multi-Func.	CP1 (RS-485) for the Computer Link, MODBUS, CPU Link or Non-protocol	
	Expanded Multi-Func. Port		CP2, CP3: At the communication card of EC1, usable functions are equal to the CP1	
Multi-Function High Speed Input			50 kHz × 8 points: For the External Interruption, HHSC, SHSC, Pulse Capture, Pulse Measurement, Handwheel ...	
Pulse Output			50 kHz × 4 points: For the 6 positioning instructions at the NPN Main Unit	
Real Time Clock (Optional)			By installing the VS-MCR Multi-Function Memory Card to get 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	
Number of Expansion Card Socket (For DI / DO, Comm., Special Func. Card)			2 (EC1 ~ EC2)	3 (EC1 ~ EC3)
Number of Special Module			8 (AI, AO, temperature input, etc.)	

Technicality Specification

Performance Specification of the VSM Series

Item			VSM-14MT	VSM-24MT	VSM-32MT	VSM-28ML
Operation Control Method			Cyclic Operation by Stored Program			
Programming Language			Ladder Diagram + Sequential Function Chart (SFC) or Ladder Diagram + Step Ladder (STL)			
I/O Control Method			Batch Processing			
Process Time	Basic Instruction		0.17 μs			
	Application Instruction		A few μs ~ Hundreds of μs			
Number of Instructions	Basic Instruction		29			
	Application Instruction		170			
Project Memory Capacity (Flash ROM)			32K Words (The project includes all parameters, program, pointers, tables and comments)			
Main Unit Built-in I / O	Number of Input Points		8 points: X0 ~ X7	12 points: X0 ~ X13	16 points: X0 ~ X17	16 points: X0 ~ X17
	Number of Output Points		6 points: Y0 ~ Y5	12 points: Y0 ~ Y13	16 points: Y0 ~ Y17	12 points: Y0 ~ Y13
Max. Digital Input / Output	External Input (X)		8 points: X0 ~ X7	128 points: X0 ~ X177		
	External Output (Y)		6 points: Y0 ~ Y5	128 points: Y0 ~ Y177		
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			
		Annunciator	100 points: S900 ~ S999 (Latched)			
Timer (T)	100ms		200 points: T0 ~ T199 (Timer range: 0.1 ~ 3,276.7 sec.)			
	10ms		46 points: T200 ~ T245 (Timer range: 0.01 ~ 327.67 sec.)			
	1ms (Retentive)		4 points: T246 ~ T249 (Timer range: 0.001 ~ 32.767 sec.)			
	100ms (Retentive)		6 points: T250 ~ T255 (Timer range: 0.1 ~ 3,276.7 sec.)			
	1ms		256 points: T256 ~ T511 (Timer range: 0.001 ~ 32.767 sec.)			
Counter (C)	16-bit Up	General	100 points: C0 ~ C99 (Range: 0 ~ 32,767)			
		Latched	100 points: C100 ~ C199 (Range: 0 ~ 32,767)			
	32-bit Up / Down	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)			
Software High Speed Counter (C)	32-bit Up / Down, Latched	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)			
Hardware High Speed Counter			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 ~ D9255			
	Index Register (V / Z)		16 points: V0 ~ V7, Z0 ~ Z7			
	Extension Register (R)		10,000 points: R0 ~ R9999			
Pointer	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			
	Nest Pointer (N)		8 points: N0 ~ N7			
Numerical System of Constant			Decimal (K), Hexadecimal (H) or Real number (E)			
Comm. Function	Main Unit Built-in Comm. Port	Programming	12Mbps high-speed Mini USB port			
		Multi-Func.	CP1 (RS-485) for the Computer Link, MODBUS, CPU Link or Non-protocol			
	Expanded Multi-Func. Port		CP2, CP3: At the communication card of EC1, usable functions are equal to the CP1			
Multi-Function High Speed Input			200 kHz × 4 points + 50 kHz × 4 points			1 MHz ×4 + 50 kHz ×4 pt.
Pulse Output			200 kHz × 4 points: For the 17 positioning instructions			1 MHz ×4 points
Real Time Clock (Optional)			By installing the VS-MCR Multi-Function Memory Card to get 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			
Number of Expansion Card Socket (For DI / DO, Comm., Special Func. Card)			1 (EC1)	2 (EC1 ~ EC2)	3 (EC1 ~ EC3)	3 (EC1 ~ EC3)
Number of Special Module			—	8 (AI, AO, temperature input, etc.)		

Performance Specification of the VS3 Series

Item			VS3-32M
Operation Control Method			Cyclic Operation by Stored Program
Programming Language			Ladder Diagram + Sequential Function Chart (SFC) or Ladder Diagram + Step Ladder (STL)
I/O Control Method			Batch Processing
Process Time	Basic Instruction		0.15 μs
	Application Instruction		A few μs ~ Hundreds of μs
Number of Instructions	Basic Instruction		29
	Application Instruction		208
Project Memory Capacity (Flash ROM)			64K Words (The project includes all parameters, program, pointers, tables and comments)
Main Unit Built-in I / O	Number of Input Points		16 points: X0 ~ X17
	Number of Output Points		16 points: Y0 ~ Y17
Max. Digital Input / Output	External Input (X)		256 points: X0 ~ X377
	External Output (Y)		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
		Annunciator	100 points: S900 ~ S999 (Latched)
Timer (T)	100ms		200 points: T0 ~ T199 (Timer range: 0.1 ~ 3,276.7 sec.)
	10ms		46 points: T200 ~ T245 (Timer range: 0.01 ~ 327.67 sec.)
	1ms (Retentive)		4 points: T246 ~ T249 (Timer range: 0.001 ~ 32.767 sec.)
	100ms (Retentive)		6 points: T250 ~ T255 (Timer range: 0.1 ~ 3,276.7 sec.)
	1ms		256 points: T256 ~ T511 (Timer range: 0.001 ~ 32.767 sec.)
Counter (C)	16-bit Up	General	100 points: C0 ~ C99 (Range: 0 ~ 32,767)
		Latched	100 points: C100 ~ C199 (Range: 0 ~ 32,767)
	32-bit Up / Down	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)
Software High Speed Counter (C)	32-bit Up / Down, Latched	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)
Hardware High Speed Counter			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 ~ D9255
	Index Register (V / Z)		16 points: V0 ~ V7, Z0 ~ Z7
	Extension Register (R)		24,000 points: R0 ~ R23999
Pointer	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 timed interrupt and 10 for High Speed Counter interrupt
	Nest Pointer (N)		8 points: N0 ~ N7
Numerical System of Constant			Decimal (K), Hexadecimal (H) or Real number (E)
Comm. Function	Main Unit Built-in Comm. Port	Programming	12Mbps high-speed Mini USB port
		Multi-Func.	CP1 (RS-485) for the Computer Link, MODBUS, CPU Link or Non-protocol
	Expanded Multi-Func. Port		CP2, CP3 at the EC1; CP4, CP5 at the EC3. Usable functions are equal to the CP1
Multi-Function High Speed Input			200 kHz × 4 points + 50 kHz × 4 points
Pulse Output			200 kHz × 4 points: For the 17 positioning instructions at the NPN Main Unit
Real Time Clock (Optional)			By installing the VS-MCR Multi-Function Memory Card to get 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
Number of Expansion Card Socket (For DI / DO, Comm., Special Func. Card)			3 (EC1 ~ EC3)
Number of Special Module			16 (AI, AO, temperature input, etc.)

Technicality Specification

Basic Instruction Table

Ins.	Function	Devices
LD	Initial logical operation contact type NO (Normally Open)	X, Y, M, S, T, C, D.b,R.b
LDI	Initial logical operation contact type NC (Normally Closed)	X, Y, M, S, T, C, D.b,R.b
LDP	Initial logical operation Rising edge pulse	X, Y, M, S, T, C, D.b,R.b
LDF	Initial logical operation Falling edge pulse	X, Y, M, S, T, C, D.b,R.b
AND	Serial connection of NO (Normally Open) contact	X, Y, M, S, T, C, D.b,R.b
ANI	Serial connection of NC (Normally Closed) contact	X, Y, M, S, T, C, D.b,R.b
ANDP	Serial connection of Rising edge pulse	X, Y, M, S, T, C, D.b,R.b
ANDF	Serial connection of Falling edge pulse	X, Y, M, S, T, C, D.b,R.b
OR	Parallel connection of NO (Normally Open) contact	X, Y, M, S, T, C, D.b,R.b
ORI	Parallel connection of NC (Normally Closed) contact	X, Y, M, S, T, C, D.b,R.b
ORP	Parallel connection of Rising edge pulse	X, Y, M, S, T, C, D.b,R.b
ORF	Parallel connection of Falling edge pulse	X, Y, M, S, T, C, D.b,R.b
ANB	Series connection of multiple parallel circuit blocks	—
ORB	Parallel connection of multiple contact circuit blocks	—
MPS	Store the current result of the internal PLC operations	—

Ins.	Function	Devices
MRD	Read the current result of the internal PLC operations	—
MPP	Pop (recall and remove) the currently stored result	—
INV	Invert the current result of the internal PLC operations	—
MEP	Conversion of operation result to Rising edge pulse	—
MEF	Conversion of operation result to Falling edge pulse	—
OUT	Final logical operation type coil drive	Y,M,S,T,C,D.b,R.b
SET	Set component permanently “ON”	Y,M,S,D.b,R.b
RST	Reset component permanently “OFF”	Y,M,S,D.b,R.b,T,C,D,R, V,Z
PLS	Rising edge pulse	Y, M (except Special M)
PLF	Falling edge pulse	Y, M (except the Special M)
MC	Denote the start of a master control block	N0 ~ N7
MCR	Denote the end of a master control block	N0 ~ N7
END	Force the current program scan to end	—
NOP	No operation or null step	—

SFC Instruction Table

Ins.	Function	Devices
SFC	Define SFC program block	16 letters max. (the name of this SFC prog. block)
TRAN	State transfer	—

STL Instruction Table

Ins.	Function	Devices
STL	Step ladder starts	S
RET	Return to standard ladder, end of the step ladder	—

Application Instruction Table

Mnemonic			Brief Function Introduction	Series			
Program Flow Instructions				1	2	M	3
	CJ	P	Conditional Jump	○	○	○	○
	CALL	P	Call Subroutine	○	○	○	○
	SRET		Subroutine Return	○	○	○	○
	IRET		Interrupt Return	○	○	○	○
	EI		Enable Interrupt	○	○	○	○
	DI		Disable Interrupt	○	○	○	○
	FEND		First End	○	○	○	○
	WDT	P	Watch Dog Timer Refresh	○	○	○	○
	FOR		Start of a FOR-NEXT Loop	○	○	○	○
	NEXT		End of a FOR-NEXT Loop	○	○	○	○
Comparsion Instructions				1	2	M	3
D	CMP	P	Compare	○	○	○	○
D	ZCP	P	Zone Compare	○	○	○	○
D	LD=		Load In-line Compare (S1) = (S2)	○	○	○	○
D	LD>		Load when (S1) > (S2)	○	○	○	○
D	LD<		Load when (S1) < (S2)	○	○	○	○
D	LD<>		Load when (S1) ≠ (S2)	○	○	○	○
D	LD<=		Load when (S1) ≤ (S2)	○	○	○	○
D	LD>=		Load when (S1) ≥ (S2)	○	○	○	○
D	AND=		AND when (S1) = (S2)	○	○	○	○
D	AND>		AND when (S1) > (S2)	○	○	○	○

Mnemonic			Brief Function Introduction	Series			
Comparsion Instructions				1	2	M	3
D	AND<		AND when (S1) < (S2)	○	○	○	○
D	AND<>		AND when (S1) ≠ (S2)	○	○	○	○
D	AND<=		AND when (S1) ≤ (S2)	○	○	○	○
D	AND>=		AND when (S1) ≥ (S2)	○	○	○	○
D	OR=		OR when (S1) = (S2)	○	○	○	○
D	OR>		OR when (S1) > (S2)	○	○	○	○
D	OR<		OR when (S1) < (S2)	○	○	○	○
D	OR<>		OR when (S1) ≠ (S2)	○	○	○	○
D	OR<=		OR when (S1) ≤ (S2)	○	○	○	○
D	OR>=		OR when (S1) ≥ (S2)	○	○	○	○
Move Instructions				1	2	M	3
D	MOV	P	Move	○	○	○	○
	SMOV	P	Shift Move	○	○	○	○
D	CML	P	Complement	○	○	○	○
	BMOV	P	n → n Block Move	○	○	○	○
D	FMOV	P	1 → n Fill Move	○	○	○	○
D	XCH	P	Exchange	○	○	○	○
Code Convert Instructions				1	2	M	3
D	BCD	P	Convert BIN to BCD	○	○	○	○
D	BIN	P	Convert BCD to BIN	○	○	○	○
D	GRY	P	Convert BIN to Gray Code	○	○	○	○

Application Instruction Table

Mnemonic			Brief Function Introduction	Series			
Code Convert Instructions				1	2	M	3
D	GBIN	P	Convert Gray Code to BIN	○	○	○	○
D	DABIN	P	Convert Decimal ASCII String to BIN Number				○
D	BINDA	P	Convert BIN Number to Decimal ASCII String				○
Arithmetic Insructions				1	2	M	3
D	ADD	P	Addition (S1) + (S2) → (D)	○	○	○	○
D	SUB	P	Subtraction (S1) – (S2) → (D)	○	○	○	○
D	MUL	P	Multiplication (S1) × (S2) → (D + 1,D)	○	○	○	○
D	DIV	P	Division (S1) ÷ (S2) → (D),(D + 1)	○	○	○	○
D	INC	P	Increment (D) + 1 → (D)	○	○	○	○
D	DEC	P	Decrement (D) – 1 → (D)	○	○	○	○
D	NEG	P	Negation ($\overline{D}$) + 1 → (D)	○	○	○	○
D	MEAN	P	Mean	○	○	○	○
D	SQR	P	Square Root	○	○	○	○
Logical Operation Instructions				1	2	M	3
D	WAND	P	Logic Word AND	○	○	○	○
D	WOR	P	Logic Word OR	○	○	○	○
D	WXOR	P	Logic Word Exclusive OR	○	○	○	○
D	BON	P	Check Specified Bit Status	○	○	○	○
Rotary Instructions				1	2	M	3
D	ROR	P	Rotation Right	○	○	○	○
D	ROL	P	Rotation Left	○	○	○	○
D	RCR	P	Rotation Right with Carry	○	○	○	○
D	RCL	P	Rotation Left with Carry	○	○	○	○
Shift Instructions				1	2	M	3
	SFTR	P	Bit Shift Right	○	○	○	○
	SFTL	P	Bit Shift Left	○	○	○	○
	WSFR	P	Word Shift Right	○	○	○	○
	WSFL	P	Word Shift Left	○	○	○	○
	SFR	P	Shift n Bit Right in 16-bit Word Data with Carry				○
	SFL	P	Shift n Bit Left in 16-bit Word Data with Carry				○
Table Shift Instructions				1	2	M	3
	SFWR	P	Shift Register Write (FIFO Write)	○	○	○	○
	SFRD	P	Shift Register Read (FIFO Read)	○	○	○	○
	FDEL	P	Delete Data from Specific Location of Table				○
	FINS	P	Insert Data into Specific Location of Table				○
	POP	P	Shift the Last Register Read (FIFO Last Read)				○
Data Operation Instructions				1	2	M	3
	ZRST	P	Zone Reset	○	○	○	○
	DECO	P	Decode	○	○	○	○
	ENCO	P	Encode	○	○	○	○
D	SUM	P	The Sum of Active Bits	○	○	○	○
D	SER	P	Search a Data Stack		○	○	○
	SORT		Sort Tabulated Data		○	○	○
D	WSUM	P	Sum of Word Data				○
	WTOB	P	Split Word to Byte				○
	BTOW	P	Combine Byte to Word				○
	UNI	P	Combine 4-bit Nibble to Word				○
	DIS	P	Separate Word to 4-bit Nibble				○
D	SWAP	P	Swap High / Low Byte	○	○	○	○

Mnemonic			Brief Function Introduction	Series			
Data Operation Instructions				1	2	M	3
D	SORT2		Sort Tabulated Data 2		○	○	○
Floating Point Arithmetic Instructions				1	2	M	3
D	FLT	P	BIN Integer→ BIN Floating Point Format	○	○	○	○
D	ECMP	P	Compare Two BIN Floating Point Numbers	○	○	○	○
D	EZCP	P	Compare a BIN Float No. to BIN Float Zone	○	○	○	○
D	EMOV	P	Move Floating Point Data	○	○	○	○
D	ESTR	P	Convert BIN Floating Point to Character String				○
D	EVAL	P	Convert Character String to BIN Floating Point				○
D	EBCD	P	Convert BIN to DEC Floating Point Format	○	○	○	○
D	EBIN	P	Convert DEC to BIN Floating Point Format	○	○	○	○
D	EADD	P	BIN Floating Point Addition	○	○	○	○
D	ESUB	P	BIN Floating Point Subtraction	○	○	○	○
D	EMUL	P	BIN Floating Point Multiplication	○	○	○	○
D	EDIV	P	BIN Floating Point Division	○	○	○	○
D	EXP	P	BIN Floating Point Number Exponent		○	○	○
D	LOGE	P	BIN Floating Point Nature Logarithm		○	○	○
D	LOG10	P	BIN Floating Point Common Logarithm		○	○	○
D	ESQR	P	BIN Floating Point Square Root	○	○	○	○
D	ENEG	P	BIN Floating Point Negation		○	○	○
D	INT	P	BIN Floating Point→ BIN Integer Format	○	○	○	○
D	SIN	P	Calculate Sine	○	○	○	○
D	COS	P	Calculate Cosine	○	○	○	○
D	TAN	P	Calculate Tangent	○	○	○	○
D	ASIN	P	Calculate Arc Sine		○	○	○
D	ACOS	P	Calculate Arc Cosine		○	○	○
D	ATAN	P	Calculate Arc Tangent		○	○	○
D	RAD	P	Convert Angle From Degrees to Radians		○	○	○
D	DEG	P	Convert Angle From Radians to Degrees		○	○	○
High Speed Processing Instructions				1	2	M	3
	REF	P	I/O Refresh	○	○	○	○
	REFF	P	I/O Refresh and Filter Adjust	○	○	○	○
	MTR		Input Matrix	○	○	○	○
D	HSCS		Software High Speed Counter Set	○	○	○	○
D	HSCR		Software High Speed Counter Reset	○	○	○	○
D	HSZ		Software High Speed Counter Zone Compare	○	○	○	○
D	SPD		Speed Detection	○	○	○	○
D	PLSY		Pulse Y Output	○	○	○	○
	PWM		Pulse Width Modulation	○	○	○	○
D	PLSR		Pulse Ramp	○	○	○	○
D	HHCMV		Hardware High Speed Counter Data Move	○	○	○	○
D	HSCT		Software High Speed Counter Table Compare	○	○	○	○
Handy Instructions				1	2	M	3
D	ABSD		Absolute Drum Sequencer	○	○	○	○
	INCD		Incremental Drum Sequencer	○	○	○	○
	TTMR		Teaching Timer		○	○	○
	STMR		Special Timer		○	○	○
	ALT	P	Alternate State	○	○	○	○
	RAMP		Ramp Variable Value	○	○	○	○
	PID		PID Control Loop	○	○	○	○

Application Instruction Table

	Mnemonic		Brief Function Introduction	Series			
Handy Instructions				1	2	M	3
	DBRD	P	Read Data From Data Bank	○	○	○	○
	DBWR	P	Write Data Into Data Bank	○	○	○	○
	TPID		Temperature PID Control	○	○	○	○
	DTRD	P	Read Data From Data Table	○	○	○	○
	ZPUSH	P	Batch Store of All Index Register				○
	ZPOP	P	Batch Recover of All Index Register				○
D	LIMIT	P	Limit Control				○
D	BAND	P	Dead Band Control				○
D	ZONE	P	Zone Shift Control				○
D	SCL	P	Scaling		○	○	○
D	SCL2	P	Scaling 2		○	○	○
External Setting and Display Instructions				1	2	M	3
D	TKY		Ten Key Input		○	○	○
D	HKY		Hexadecimal Key Input		○	○	○
	DSW		Digital Switch (Thumbwheel) Input		○	○	○
	SEGD	P	Seven Segment Decoder	○	○	○	○
	SEGL		Seven Segment with Latch		○	○	○
	ASC		Convert Letters to ASCII Code		○	○	○
	PR		Print ASCII Code		○	○	○
D	FROM	P	Read From Special Module		○	○	○
D	TO	P	Write To Special Module		○	○	○
Serial Port Communication Instructions				1	2	M	3
	RS		Receive/Send Communication	○	○	○	○
D	PRUN	P	Parallel Run (Octal Mode)		○	○	○
	ASCI	P	Convert HEX to ASCII	○	○	○	○
	HEX	P	Convert ASCII to HEX	○	○	○	○
	CCD	P	Check Code	○	○	○	○
	CPUL		CPU Link Communication	○	○	○	○
	LINK		Easy Link Communication	○	○	○	○
	MBUS		MODBUS Communication	○	○	○	○
Real-Time Clock Instructions				1	2	M	3
	TCMP	P	Time Compare	○	○	○	○
	TZCP	P	Time Zone Compare	○	○	○	○
	TADD	P	Time Addition	○	○	○	○
	TSUB	P	Time Subtraction	○	○	○	○
D	HTOS	P	Convert Hour to Second		○	○	○
D	STOH	P	Convert Second to Hour		○	○	○
	TRD	P	Read RTC Data	○	○	○	○
	TWR	P	Set RTC Data	○	○	○	○
Timer Instructions				1	2	M	3
D	HOUR		Hour Meter	○	○	○	○
	TFT		Timer (10 ms.)	○	○	○	○
	TFH		Timer (100 ms.)	○	○	○	○
	TFK		Timer (1 s.)	○	○	○	○
Data Process Insructions				1	2	M	3
D	BK+	P	Block Data Subtraction				○
D	BK−	P	Block Data Subtraction				○
D	BKCMP=	P	Block Data Compare (S1) = (S2)				○
D	BKCMP>	P	Block Data Compare (S1) > (S2)				○

	Mnemonic		Brief Function Introduction	Series			
Data Process Insructions				1	2	M	3
D	BKCMP<	P	Block Data Compare (S1) < (S2)				○
D	BKCMP<>	P	Block Data Compare (S1) ≠ (S2)				○
D	BKCMP<=	P	Block Data Compare (S1) ≤ (S2)				○
D	BKCMP>=	P	Block Data Compare (S1) ≥ (S2)				○
Character String Control Instructions				1	2	M	3
D	STR	P	BIN to Character String Conversion				○
D	VAL	P	Character String to BIN Conversion				○
	$+	P	Join Up Two Character Strings				○
	LEN	P	Character String Length Detection				○
	RIGHT	P	Read Character from the Right of String				○
	LEFT	P	Read Character from the Left of String				○
	MIDR	P	Read Character from Specific Place of String				○
	MIDW	P	Write Character to Specific Place of String				○
	INSTR	P	Search Character String from another String				○
	$ MOV	P	Transfer Character String				○
Positioning Instructions				1	2	M	3
D	ZRN		Zero Return	○	○	○	○
D	JOGF		Jog Forward			○	○
D	JOGR		Jog Reverse			○	○
D	DRVR		Drive to Relative Position	○	○	○	○
D	DRVA		Drive to Absolute Position	○	○	○	○
D	DV2R		Drive to Relative Position by 2 Stages			○	○
D	DV2A		Drive to Absolute Position by 2 Stages			○	○
D	DVIT		Interrupt Constant Quantity Positioning	○	○	○	○
D	DV2I		2 Stages Interrupt Constant Quantity Position			○	○
D	DVSR		IngInterrupt to Stop or Drive to Relative Position			○	○
D	DVSA		Interrupt to Stop or Drive to Absolute Position			○	○
D	PLSV		Variable Speed Pulse Output	○	○	○	○
	DTBL		Data Table Positioning			○	○
D	ABS		Absolute Current Value Read	○	○	○	○
	MPG		Handwheel Positioning			○	○
D	LIR		Relatively Linear Interpolation			○	○
D	LIA		Absolutely Linear Interpolation			○	○
Other Instructions				1	2	M	3
	ANS		Timed Annunciator Set	○	○	○	○
	ANR	P	Annunciator Reset	○	○	○	○
	RND	P	Generate Random Number		○	○	○
	DUTY		Timing Pulse Generation				○
	CRC	P	Cyclic Redundancy Check - 16	○	○	○	○

Technicality Specification

Common Specification

Item	Specification
Ambient	Work Temperature: 0 ~ 55 ℃; Storage Temperature: –20 ~ 70℃; Humidity: 10 ~ 90% RH (at 25 ℃ / 77 ℉, non-condensation)
Vibration Tolerance	10 ~ 55 Hz with amplitude of 0.075 mm; 55 ~ 150 Hz 1G acceleration at X, Y and Z axes for 80 min. (8 min. per cycle×10 cycles)
Shock Tolerance	10 G, three times for each of X, Y and Z axes
Noise Immunity	Noise simulator: 1500 Vp-p; Pulse width: 1 μs, Frequency: 25 ~ 60Hz
Dielectric Strength	500V AC (between the ground and DC terminals); 1 min.
Insulation Resistance	> 5 MΩ ; 500V DC (between the ground and DC terminals)
Grounding	Class-3 Grounding to the terminal of Main Unit then other expansions (Not to common grounding with heavy electric machinery)
Atmosphere	Keep away from corrosive gas or dusty environment; Pressure: 1080 to 795 hPa (equivalent to an altitude of -1000 to 2000 m)

Power Specification

Item	VS1-10/14M & VSM-14M	VS1-20/24M	VS1-28/32M & VS2 & VSM & VS3
Power Requirement	DC24V, –15% / +20% ; 10W	DC24V –15% / +20% ; 12W	DC24V –15% / +20% ; 15W
Input Power Interrupt	Period < 1ms with no affect	Period < 1ms with no affect	Period < 1ms with no affect
Inner Power Support	DC5V 100mA + DC12V 450mA	DC5V 150mA + DC12V 450mA	DC5V 450mA + DC12V 450mA

Notes for Expansions

The VS Series is to enhance flexibility and reach "The most suitable combination". Not only equipped with an ordinary Expansion Slot for modules, but also created the interface of Expansion Card Socket.

The Main Unit has the circuit for internal power supplying but the expanded modules and cards do not have, therefor all the power is from the Main Unit. Please pay attention to the power consumption, add the VS-PSD power repeater module is required if the power is insufficient.

- Notes for Expansion Card
  - The Expansion Card Socket is in the front of Main Unit. It is not only to shrink the installation space, but also by various cards could provide small number DIO, communication port and special function expansion to reduce cost.
  - VS PLC Series has 1~3 Expansion Card Sockets that depends on the type of different main units.
  - VS1 series can use 1 special function card only; VS2, VSM or VS3 could use up to 3 special function cards.
- Notes for Expansion Module
  - VS1 series:

    VS1-10M, VS1-14M, VS1-20M or VS1-24M Main Unit is not provided with the module's Expansion Slot, so it can not connect to any expansion module.

    VS1-28M or VS1-32M Main Unit equips a module's Expansion Slot for to connect with DIO expansion modules, but it is unable to use the special expansion module.

    VS1 series PLC can use expansion modules to handle up to 64 input points (X0~X77) and 64 output points (Y0~Y77), total 128 I/O points.

    VS1-28M or VS1-32MT-DI Main Unit will occupy the X0~X17 and Y0~Y17 I/O addresses, thus the beginning I/O addresses of the first expansion module are the X20 and Y20.

    VS1-32M Main Unit will occupy the X0~X27 and Y0~Y17 I/O addresses, thus the beginning I/O address of the first expansion module are the X30 and Y20.
  - VS2, VSM and VS3 series:

    VSM-14M Main Unit is not provided with the module's Expansion Slot, so it can't connect to any expansion module. VS2, VSM or VS3 Main Unit equips a module's Expansion Slot, could connect with DIO expansion modules and special modules. (excluded VSM-14M)

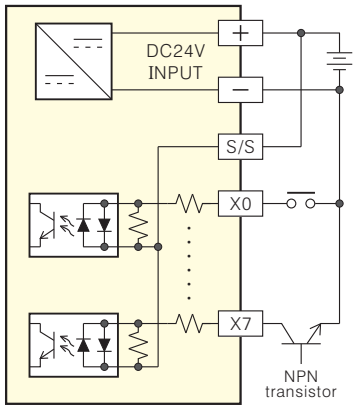
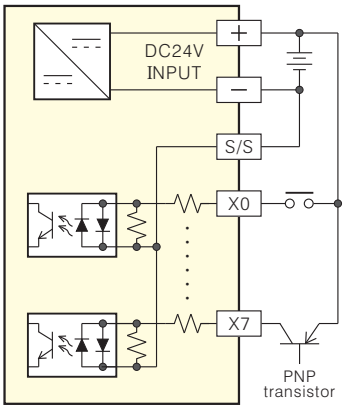
    VS2 or VSM Main Unit can use expansion modules to handle up to 128 input points (X0~X177) and 128 output points (Y0~Y177), total 256 I/O points. And also available to expand 8 special modules.

    VS3 Main Unit can use expansion modules to handle up to 256 input points (X0~X377) and 256 output points (Y0~Y377), total 512 I/O points. And also available to expand 16 special modules.

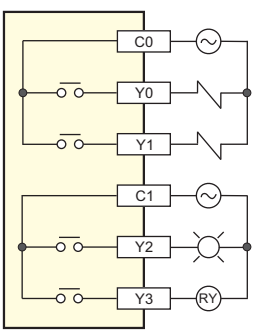
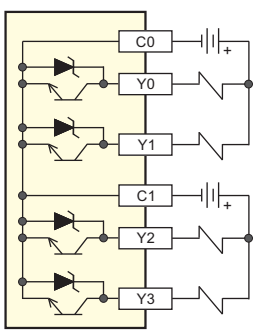
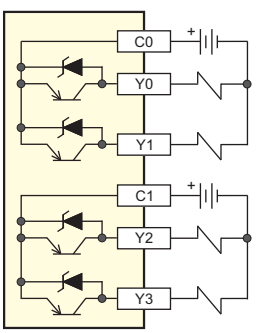
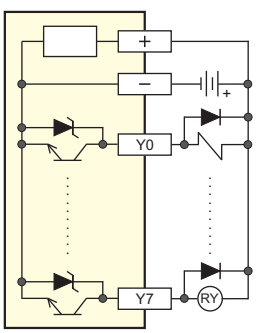
    VS2, VSM or VS3 Main Unit will occupy the X0~X17 and Y0~Y17 I/O address, thus the beginning I/O addresses of the first expansion module are the X20 and Y20.
  - The VS-8XY expansion module will occupy 8 input and 8 output points.
  - The VS-28XYR expansion module will occupy 16 input and 16 output points, in addition unable to expand any module through its right.

Technicality Specification

VS1 and VS2 Input Point Specification

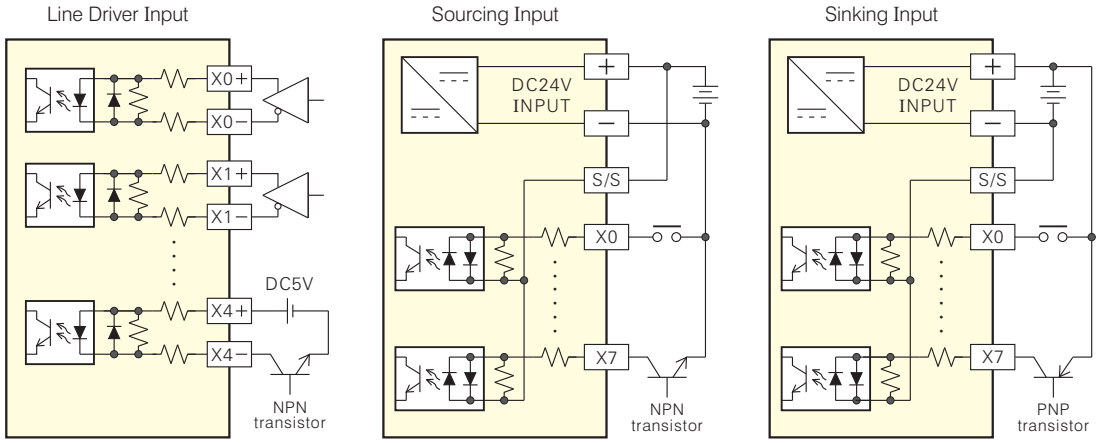
Item	X0~X7 at VS1	X0~X7 at VS2	X10 and After
Input Type	Sinking or Sourcing either	Sinking or Sourcing either	Sinking or Sourcing either
Input Activating Voltage	DC24V ± 15%	DC24V ± 15%	DC24V ± 15%
Input Signal Current	7mA / DC24V	5.3mA / DC24V	5.3mA / DC24V
Input ON Definition	Above 4.5mA	Above 3.5mA	Above 3.5mA
Input OFF Definition	Below 1.5mA	Below 1.5mA	Below 1.5mA
Input Resistance	3.3KΩ approx.	4.3KΩ approx.	4.3KΩ approx.
Input Response Time	10 ms approx. (0 ~ 60 ms adjustable)	10 ms approx. (0 ~ 60 ms adjustable)	10 ms approx.
Input Signal Type	Dry contact or NPN / PNP transistor		
Isolation Method	Photocoupler Isolation	Photocoupler Isolation	Photocoupler Isolation
Max. Counting Freq.	10 kHz	50 kHz	50 Hz approximately
Input Indicator	When a photocoupler's input is activated, the related input indicator will display ON		
Input Circuit and Wiring Diagram	Sourcing Input 	Sinking Input 	

VS1 and VS2 Output Point Specification

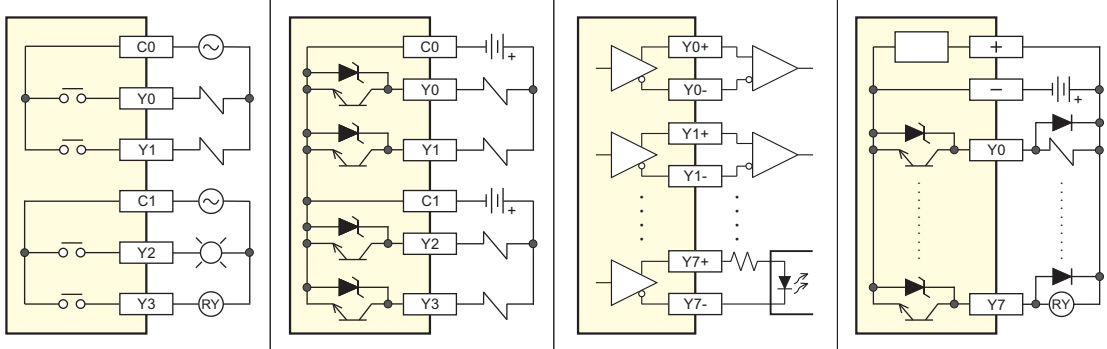
Item		Specification			
		Screw-Clamp Terminal Block Type			IDC Connector Type
Output Type		Relay Output	NPN Transistor Output	PNP Transistor Output	NPN Transistor Output
Switch Voltage		AC: < 250V; DC: < 30V	DC5V ~ 30V		DC5V ~ 30V
Rated Current	Resistive Load	2A / point, 8A / 4 points / COM	0.5A / point, 0.8A / 4 points / COM		0.1A / point, 0.5A / 8 points / COM
	Inductive Load	80VA / AC230V	12W / DC24V		2.4W / DC24V
	Lamp Load	100W / AC230V	1.5W / DC24V		—
Open Circuit Leakage		—	<0.1mA / DC30V		<0.1mA / DC30V
Response Time	Y0~Y3	OFF→ON:10ms approx.	OFF→ON:<10 μs ON→OFF:<10 μs	OFF→ON:<100 μs ON→OFF:<100 μs	OFF→ON:<10 μs ON→OFF:<10 μs
	Others	ON→OFF:10ms approx.	OFF→ON:<100 μs ON→OFF:<100 μs		OFF→ON:<100 μs ON→OFF:<100 μs
Isolation Method		Machinery Isolation (Relay)	Photocoupler Isolation		Photocoupler Isolation
Output Indicator		When the actual output point is activated, the related output indicator will display ON			
Output Circuit and Wiring Diagram					

Technicality Specification

VSM and VS3 Input Point Specification

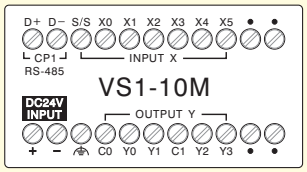
Item	X0,1,3,4 at VSM-28ML	X0, X1, X3 and X4	X2, X5, X6 and X7	X10 and After
Input Type	Line Driver	Sinking or Sourcing either	Sinking or Sourcing either	Sinking or Sourcing either
Input Activating Voltage	DC3 ~ 5.5V	DC24V ± 15%	DC24V ± 15%	DC24V ± 15%
Input Signal Current	8.8 mA / DC5V; 3.8 mA / DC3V	5.3mA / DC24V	5.3mA / DC24V	5.3mA / DC24V
Input ON Definition	Above 3.8mA	Above 3.5mA	Above 3.5mA	Above 3.5mA
Input OFF Definition	Below 1.5mA	Below 1.5mA	Below 1.5mA	Below 1.5mA
Input Resistance	400 Ω approx.	3.3 kΩ approx.	4.3 kΩ approx.	4.3 kΩ approx.
Input Response Time	10 ms approx. (0 ~ 60 ms adjustable)			10ms. approximately
Input Signal Type	Line Driver or NPN transistor	Dry contact or NPN / PNP transistor		
Isolation Method	Photocoupler Isolation	Photocoupler Isolation	Photocoupler Isolation	Photocoupler Isolation
Max. Counting Freq.	1 MHz	200 kHz	50 kHz	50 Hz approx.
Input Indicator	When a photocoupler's input is activated, the related input indicator will display ON			
Input Circuit and Wiring Diagram				

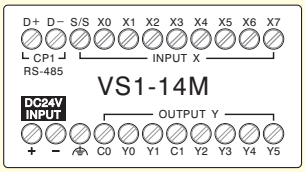
VSM and VS3 Output Point Specification

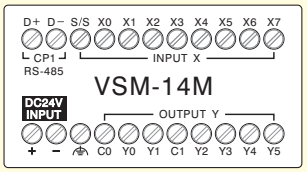
Item		Specification			
		Screw-Clamp Terminal Block Type			IDC Connector Type
Output Type		Relay Output	NPN Transistor Output	Line Driver Output	NPN Transistor Output
Switch Voltage		AC: < 250V; DC: <30V	DC5V ~ 30V	—	DC5V ~ 30V
Rated Current	Resistive Load	2A / point, 8A / 4 points / COM	0.5A / point, 0.8A / 4 points / COM	20mA	0.1A / point, 0.5A / 8 points / COM
	Inductive Load	80VA / AC230V	12W / DC24V		2.4W / DC24V
	Lamp Load	100W / AC230V	1.5W / DC24V		—
Open Circuit Leakage		—	<0.1mA / DC30V	—	<0.1mA / DC30V
Response Time	Y0 ~ Y3	OFF → ON: <10 ms approx.	OFF → ON: <2.5 μs ON → OFF: <2.5 μs	OFF → ON: <0.5 μs ON → OFF: <0.5 μs	OFF → ON: <2.5 μs ON → OFF: <2.5 μs
	Others	ON → OFF: <10 ms approx.	OFF → ON: <100 μs ON → OFF: <100 μs	OFF → ON: <100 μs ON → OFF: <100 μs	OFF → ON: <100 μs ON → OFF: <100 μs
Isolation Method		Machinery Isolation (Relay)	Photocoupler Isolation	Magnetic-coupler Isolation	Photocoupler Isolation
Output Indicator		When the actual output point is activated, the related output indicator will display ON			
Output Circuit and Wiring Diagram					

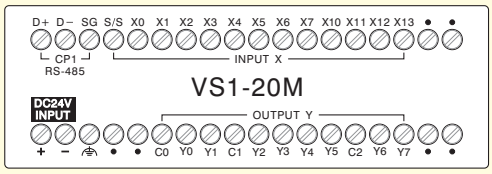
Terminal Layout

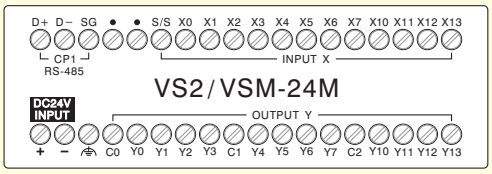
Main Unit

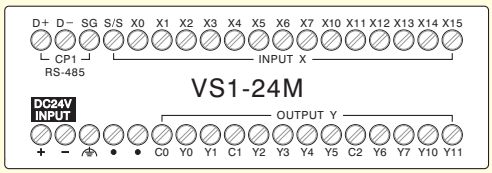


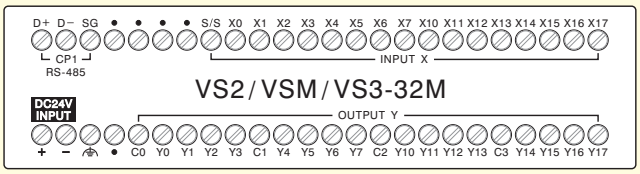


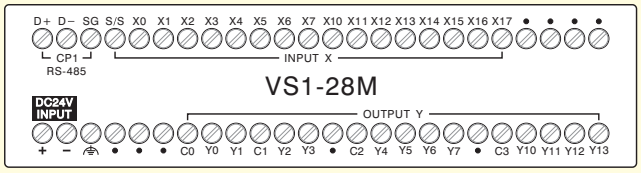


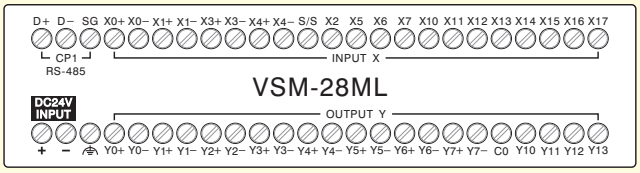


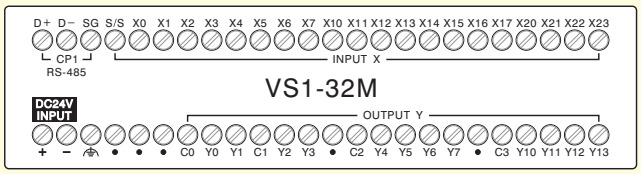


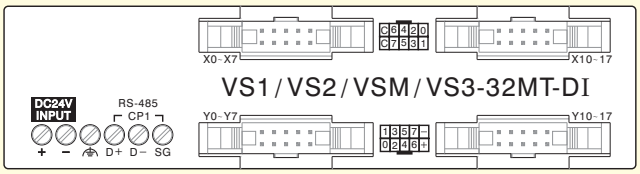




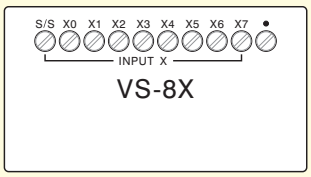


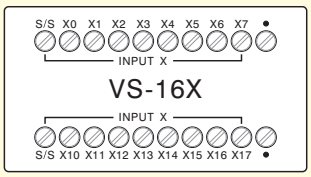


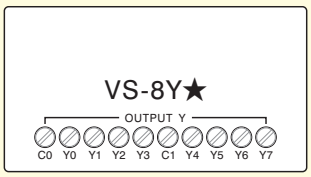


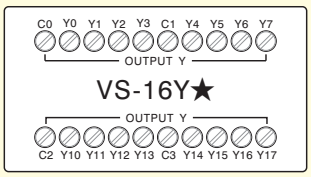


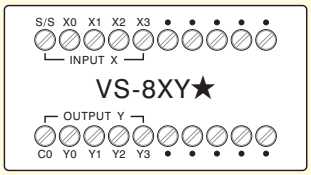
DIO Expansion Module

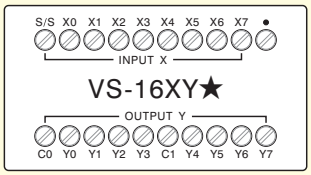


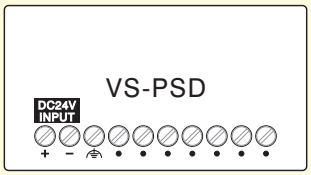


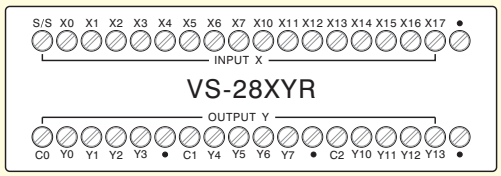


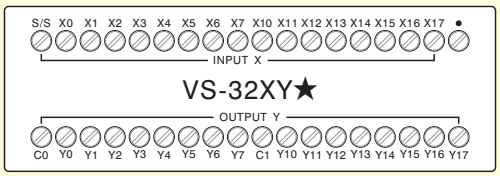


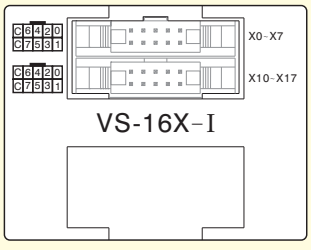


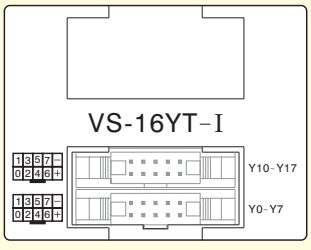


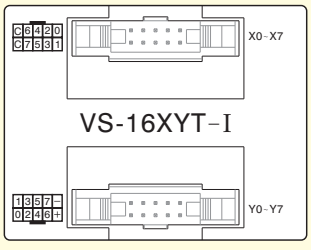


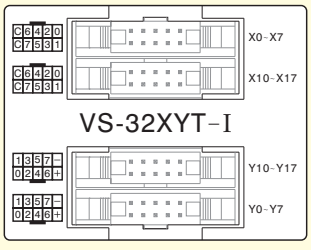






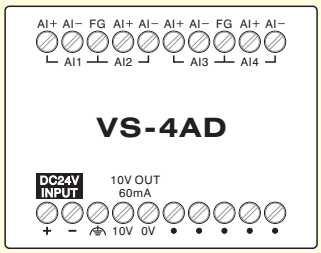


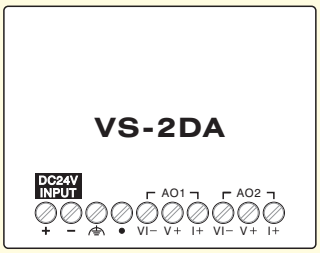


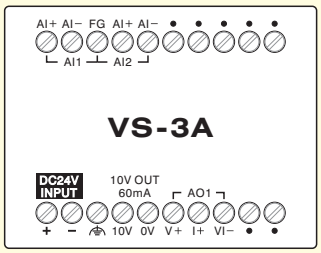


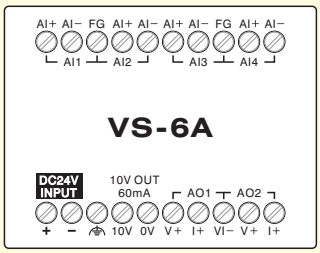
Terminal Layout

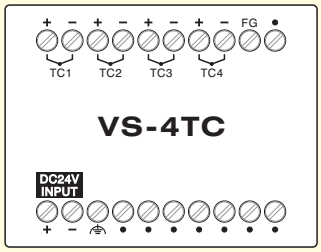
Special Module

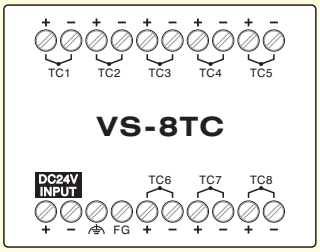


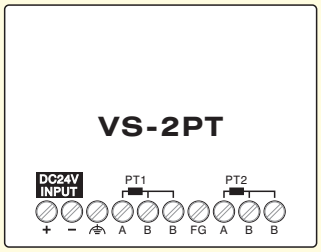


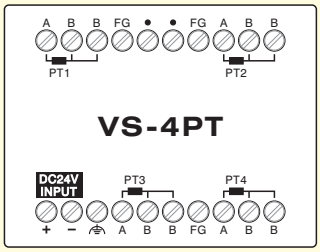




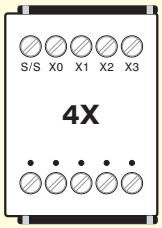


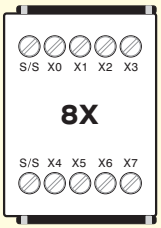


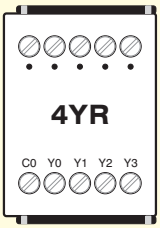


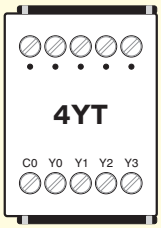


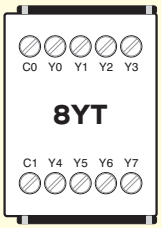
Expansion Card

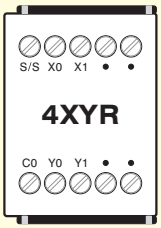


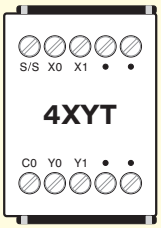


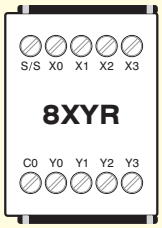


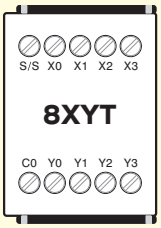


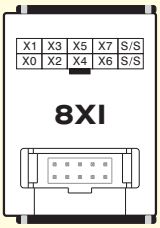


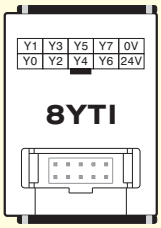


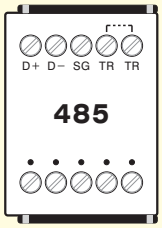


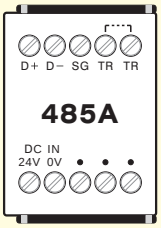


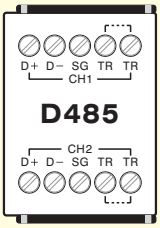


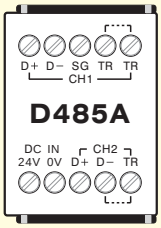


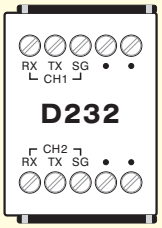


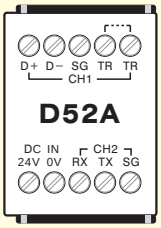


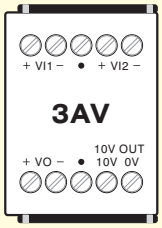


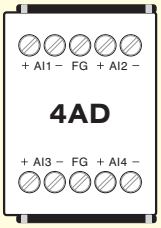


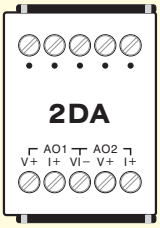


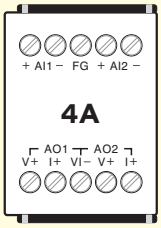


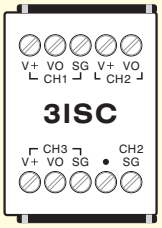


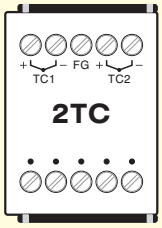


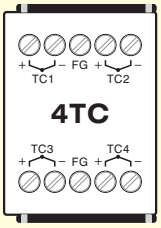


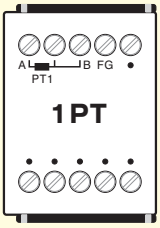


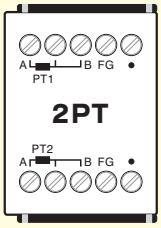












Product List

Item	Model Name	Main Specification	Dim.
VS1 Series Main Unit	VS1-10M★-D	VS1 Main Unit: 6 DI (DC 24V, X0~X5 10 kHz); 4 DO ★; 16K words project memory; 1 Expansion Card socket; I/O by screw-clamp terminal	A
	VS1-14M★-D	VS1 Main Unit: 8 DI (DC 24V, X0~X7 10 kHz); 6 DO ★; 16K words project memory; 1 Expansion Card socket; I/O by screw-clamp terminal	
	VS1-20M★-D	VS1 Main Unit: 12 DI (DC 24V, X0~X7 10 kHz); 8 DO ★; 16K words project memory; 2 Expansion Card sockets; I/O by screw-clamp terminal	B
	VS1-24M★-D	VS1 Main Unit: 14 DI (DC 24V, X0~X7 10 kHz); 10 DO ★; 16K words project memory; 2 Expansion Card sockets; I/O by screw-clamp terminal	
	VS1-28M★-D	VS1 Main Unit: 16 DI (DC 24V, X0~X7 10 kHz); 12 DO ★; 16K words project memory; 3 Expansion Card sockets; DIO Expansion Module available; I/O by screw-clamp terminal	C
	VS1-32M★-D	VS1 Main Unit: 20 DI (DC 24V, X0~X7 10 kHz); 12 DO ★; 16K words project memory; 3 Expansion Card sockets; DIO Expansion Module available; I/O by screw-clamp terminal	
	VS1-32MT-DI	VS1 Main Unit: 16 DI(DC 24V, X0~X7 10 kHz); 16 DO (100mA NPN transistor, Y0~Y3 50 kHz); 16K words project memory; 3 Expansion Card sockets; DIO Expansion Module available; I/O by IDC connector	E
VS2 Series Main Unit	VS2-24M★-D	VS2 Main Unit: 12 DI (DC 24V, X0~X7 50 kHz); 12 DO ★; 32K words project memory; 2 Expansion Card sockets; DIO Expansion & 8 Special Modules available; I/O by screw-clamp terminal	B
	VS2-32M★-D	VS2 Main Unit: 16 DI (DC 24V, X0~X7 50 kHz); 16 DO ★; 32K words project memory; 3 Expansion Card sockets; DIO Expansion & 8 Special Modules available; I/O by screw-clamp terminal	C
	VS2-32MT-DI	VS2 Main Unit: 16 DI (DC 24V, X0~X7 50 kHz); 16 DO (100mA NPN transistor, Y0~Y3 50 kHz); 32K words project memory; 3 Exp. Card sockets; DIO Exp. & 8 Special Modules available; I/O by IDC connector	E
VSM Series Main Unit	VSM-14MT-D	VSM Main Unit: 8 DI (DC 24V, 4×200 kHz + 4×50 kHz); 6 DO (500mA NPN transistor, Y0~Y3 200 kHz); 32K words project memory; 1 Expansion Card socket; I/O by screw-clamp terminal	A
	VSM-24MT-D	VSM Main Unit: 12 DI (DC 24V, 4×200 kHz + 4×50 kHz); 12 DO (500mA NPN transistor, Y0~Y3 200 kHz); 32K words project memory; 2 Exp. Card sockets; DIO Exp. & 8 Special Modules available; I/O by screw-clamp terminal	B
	VSM-32MT-D	VSM Main Unit: 16 DI (DC 24V, 4×200 kHz + 4×50 kHz); 16 DO (500mA NPN transistor, Y0~Y3 200 kHz); 32K words project memory; 3 Exp. Card sockets; DIO Exp. & 8 Special Modules available; I/O by screw-clamp terminal	C
	VSM-28ML-D	VSM Main Unit: 4 Line Driver DI (for 2 hardware counters 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 transistor); 32K words project memory; 3 Expansion Card sockets; DIO Expansion & 8 Special Modules available; I/O by screw-clamp terminal	
	VSM-32MT-DI	VSM Main Unit: 16 DI (DC 24V, 4×200 kHz + 4×50 kHz); 16 DO (100mA NPN transistor, Y0~Y3 200 kHz); 32K words project memory; 3 Exp. Card sockets; DIO Exp. & 8 Special Modules available; I/O by IDC connector	E
VS3 Series Main Unit	VS3-32M★-D	VS3 Main Unit: 16 DI (DC 24V, 4×200 kHz + 4×50 kHz); 16 DO ★(Y0~Y3 200 kHz at NPN transistor model); 64K words project memory; 3 Exp. Card sockets; DIO Exp. & 16 Special Modules available; I/O by screw-clamp terminal	C
	VS3-32MT-DI	VS3 Main Unit: 16 DI (DC 24V, 4×200 kHz + 4×50 kHz); 16 DO (100mA NPN transistor, Y0~Y3 200 kHz); 64K words project memory; 3 Exp. Card sockets; DIO Exp. & 16 Special Modules available; I/O by IDC connector	E
DIO Expansion Module	VS-8X	DI Expansion Module: 8 DI DC 24V, Sink/Source selectable; input by screw-clamp terminal	D
	VS-16X	DI Expansion Module: 16 DI DC 24V, Sink/Source selectable; input by screw-clamp terminal	
	VS-8Y★	DO Expansion Module: 8 DO ★; output by screw-clamp terminal	
	VS-16Y★	DO Expansion Module: 16 DO ★; output by screw-clamp terminal	
	VS-8XY★	DIO Expansion Module: 4 DI DC 24V, Sink/Source selectable; 4 DO ★; I/O by screw-clamp terminal	
	VS-16XY★	DIO Expansion Module: 8 DI DC 24V, Sink/Source selectable; 8 DO ★; I/O by screw-clamp terminal	
	VS-28XYR	DIO Expansion Module: 16 DI DC 24V, Sink/Source selectable; 12 DO (2A Relay); I/O by screw-clamp terminal	B
	VS-32XY★	DIO Expansion Module: 16 DI DC 24V, Sink/Source selectable; 16 DO ★; I/O by screw-clamp terminal	
	VS-16X-I	DI Expansion Module: 16 DI DC 24V, Sink/Source selectable; input by IDC connector	F
	VS-16YT-I	DO Expansion Module: 16 DO (100mA NPN transistor); output by IDC connector	
	VS-16XYT-I	DIO Expansion Module: 8 DI DC 24V, Sink/Source selectable; 8 DO (100mA NPN transistor); I/O by IDC connector	
	VS-32XYT-I	DIO Exp. Modul: 16 DI DC 24V, Sink/Source selectable; 16 DO (100mA NPN transistor); I/O by IDC connector	
Power Module	VS-PSD	Power Repeater Module: DC 24V input converts to DC 5V 500mA + DC 12V 800mA outputs for Modules' inner use	D
Special Function Module	VS-4AD	Analog Input Module: 4 channel (16-bit) inputs, each channel could input either –10~+10V, 4~20mA or –20~+20mA; isolated; with an accurate calibration DC 10V output	
	VS-2DA	Analog Output Module: 2 channel (16-bit) outputs, each channel could output either –10~+10V, 4~20mA or –20~+20mA; isolated	
	VS-3A	Analog I/O Module: 2 channel (16-bit) inputs + 1 channel (16-bit) output, each channel could input/output either –10~+10V, 4~20mA or –20~+20mA; isolated; with an accurate calibration DC 10V output	
	VS-6A	Analog I/O Module: 4 channel (16-bit) inputs + 2 channel (16-bit) outputs, each channel could input/output either –10~+10V, 4~20mA or –20~+20mA; isolated; with an accurate calibration DC 10V output	
	VS-4TC	Thermocouple Temperature Input Module: 4 channel (K, J, R, S, T, E, B or N type thermocouple) inputs, 0.1℃ / 0.1℉ resolution; isolated	
	VS-8TC	Thermocouple Temperature Input Module: 8 channel (K, J, R, S, T, E, B or N type thermocouple) inputs, 0.1℃ / 0.1℉ resolution; isolated	
	VS-2PT	PT-100 Temperature Input Module: 2 channel (3-wire PT-100) inputs, 0.1℃ / 0.1℉ resolution; isolated	
	VS-4PT	PT-100 Temperature Input Module: 4 channel (3-wire PT-100) inputs, 0.1℃ / 0.1℉ resolution; isolated	

Product List

DIO Expansion Card: 4 DI DC 24V, Sink/Source selectable; 4 DO ★; I/O by screw-clamp terminal

Item	Model Name	Main Specification	Dim.
DIO Expansion Card	VS-4X-EC	DI Expansion Card: 4 DI DC 24V, Sink/Source selectable; input by screw-clamp terminal	G
	VS-8X-EC	DI Expansion Card: 8 DI DC 24V, Sink/Source selectable; 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 (DC 24V, 300mA NPN transistor); output by screw-clamp terminal	
	VS-4XY★-EC	DIO Expansion Card: 2 DI DC 24V, Sink/Source selectable; 2 DO ★; I/O by screw-clamp terminal	
	VS-8XY★-EC	DIO Expansion Card: 4 DI DC 24V, Sink/Source selectable; 4 DO ★; I/O by screw-clamp terminal	
	VS-8XI-EC	DI Expansion Card: 8 DI DC 24V, Sink/Source selectable; input by IDC connector	I
	VS-8YTI-EC	DO Expansion Card: 8 DO (DC 24V, 100mA NPN transistor); output by IDC connector	
Comm. Expansion Card	VS-485-EC	RS-485 Communication Expansion Card: One non-isolated RS-485 port with TX / RX indicators; dist. 50m Max.	G
	VS-485A-EC	RS-485 Communication Expansion Card: One isolated RS-485 port with TX / RX indicators; dist. 1000m Max.	
	VS-D485-EC	RS-485 Communication Expansion Card: Dual non-isolated RS-485 ports with TX / RX indicators; dist. 50m Max.	
	VS-D485A-EC	RS-485 Communication Expansion Card: Dual isolated RS-485 ports with TX / RX indicators; dist. 1000m Max.	
	VS-D232-EC	RS-232C Communication Expansion Card: Dual non-isolated RS-232 ports with TX / RX indicators; dist. 15m Max.; wiring by the RX / TX / SG terminals	
	VS-D52A-EC	RS-485 + RS-232C Communication Expansion Card: One isolated RS-485 port (1000m) & one non-isolated RS-232C port (15m), both with TX / RX indicators and wiring by terminals	
Special Function Card	VS-3AV-EC	Brief Voltage I/O Card: 2 channel (0 ~ 10V, 12-bit) inputs; 1 channel (0 ~ 10V, 10-bit) output; with an accurate calibration DC 10V output; non-isolated	H
	VS-4AD-EC	Analog Input Card: 4 channel (12-bit) inputs, each channel could input either –10~+10V, 4~20mA or –20~+20mA; non-isolated	
	VS-2DA-EC	Analog Output Card: 2 channel (12-bit) outputs, each channel could output either –10~+10V, 4~20mA or –20~+20mA; non-isolated	
	VS-4A-EC	Analog I/O Card: 2 channel (12-bit) inputs + 2 channel (12-bit) outputs, each channel could input/output either –10~+10V, 4~20mA or –20~+20mA; non-isolated	
	VS-3ISC-EC	Inverter Speed Control Card: 3 channel (0.1% resolution) voltage outputs; totally isolated for each channel	
	VS-2TC-EC	Thermocouple Temperature Input Card: 2 channel (K, J, R, S, T, E, B or N type thermocouple) inputs, 0.2~0.3℃ resolution; non-isolated	
	VS-4TC-EC	Thermocouple Temperature Input Card: 4 channel (K, J, R, S, T, E, B or N type thermocouple) inputs, 0.2~0.3℃ resolution; non-isolated	
	VS-1PT-EC	PT-100 Temperature Input Card: 1 channel (3-wire PT-100) input, 0.1℃ resolution; non-isolated	
	VS-2PT-EC	PT-100 Temperature Input Card: 2 channel (3-wire PT-100) inputs, 0.1℃ resolution; non-isolated	
Memory Card	VS-MC	Memory Card: No battery required 16Mb Flash ROM for user's project and data-bank (655,360 words) storage	—
	VS-MCR	Multi-Function Memory Card: 16Mb Flash ROM for user's project and data-bank (655,360 words) storage; with the Real Time Clock function	
Connection Cable	VSPC-200A	USB Reinforced Cable: Between a PLC's Mini USB Programming Port and computer's A-type USB; length: 200 cm	
	VSEC-050	Extension Cable: For the Expansion Slot of the VS series; length: 50 cm	
	VSEC-100	Extension Cable: For the Expansion Slot of the VS series; length: 100 cm	
IDC Connector Related Accessory	VB-T8R	8 Relays Output Module: 16A 1c contact relays; with varistors and relay sockets	
	VB-T8RS	8 Relays Output Module: 5A 1a contact relays; with 5mm pluggable screw-clamp terminals	
	VB-T8M	8 MOSFETs Output Module: 2A current source MOSFETs; with flyback diodes	
	VB-T16M	16 MOSFETs Output Module: 2A current source MOSFETs; with flyback diodes	
	VB-T16TB	16 Points Adapted Board: Transfer between the IDC connectors and screw-clamp terminals	
	VBIDC-□□□	IDC Ribbon Cable: Assembled with two 10-pin female connectors; length□□□:50/100/150/200/250/300 cm	
	VBIW-□□□	IDC's Dispersed Wires: An IDC female connector with 10 rainbow 22 AWG wires; length□□□:50/100/200/300 cm	
	VBIDC-FC100	10-pin Ribbon Cable: Flat, Grey, 28 AWG; length: 100 foot	
	VBIDC-FC250	10-pin Ribbon Cable: Flat, Grey, 28 AWG; length: 250 foot	
	VBIDC-HD20	10-pin IDC Connector: Female connector with strain relief, Grey, 20 pcs.	
	VBIDC-HD100	10-pin IDC Connector: Female connector with strain relief, Grey, 100 pcs.	
	VB-HT214	Crimping tool: Merge the IDC connector and ribbon cable	

★ Selectable output:

R: 2A Relay

T: 0.5A NPN transistor, Y0~Y3 can generate pulses (VS1 / VS2: 50kHz; VSM / VS3: 200kHz); EC cards are 0.3A only

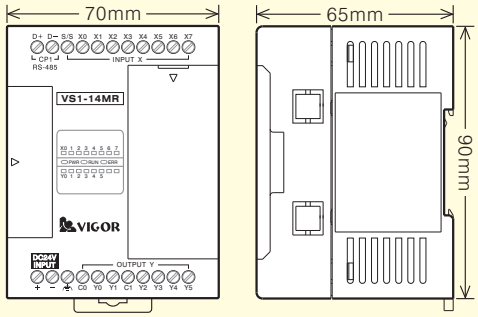
P: 0.5A PNP transistor, Y0~Y3 can generate 5kHz pulses

All Main Unit, Special Module, VS-PSD & IDC's output are required DC 24V -15~+20% power input

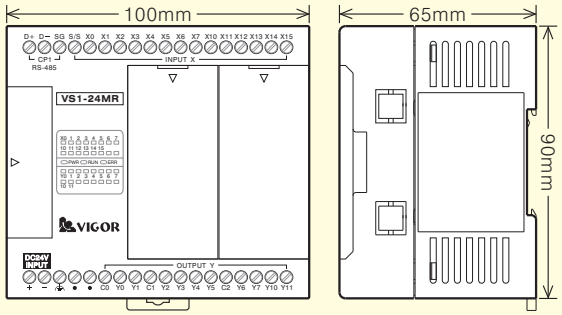
Dimension

Dimension

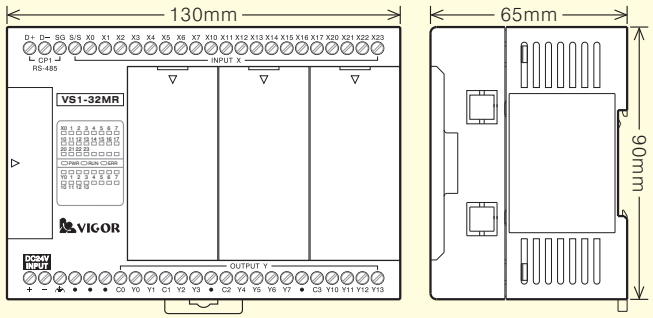
Drawing A



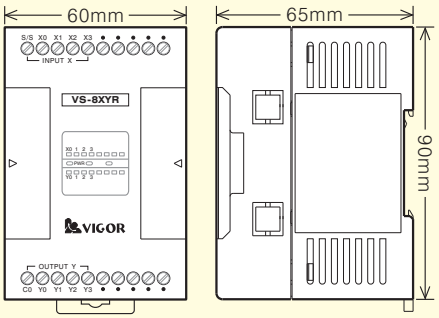
Drawing B



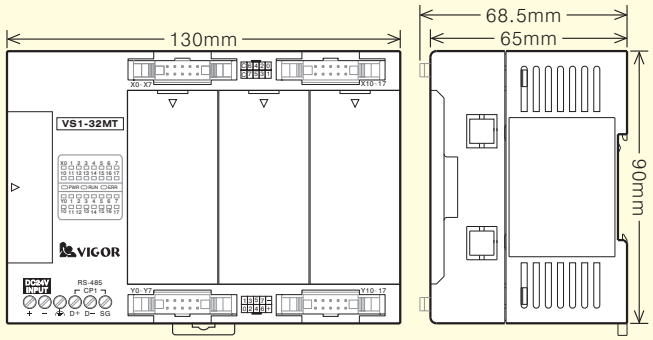
Drawing C



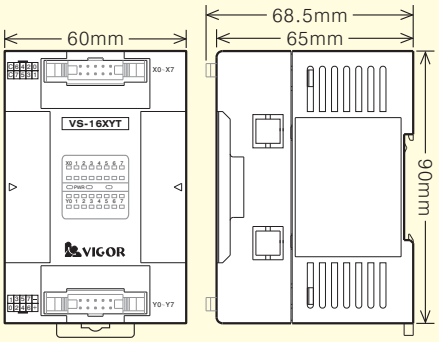
Drawing D



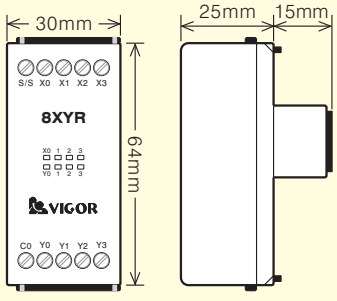
Drawing E



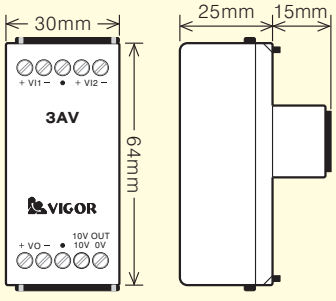
Drawing F



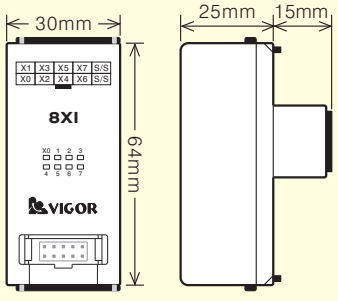
Drawing G



Drawing H



Drawing I



VIGOR ELECTRIC CORP.

Address : No.116, Xingzhong Rd., Danshui Dist.,
New Taipei City 251, Taiwan

Tel : 886-2-2620-4393

Fax : 886-2-2620-4976

http://www.vigorplc.com

Specifications are subject to change without notice. July, 2018