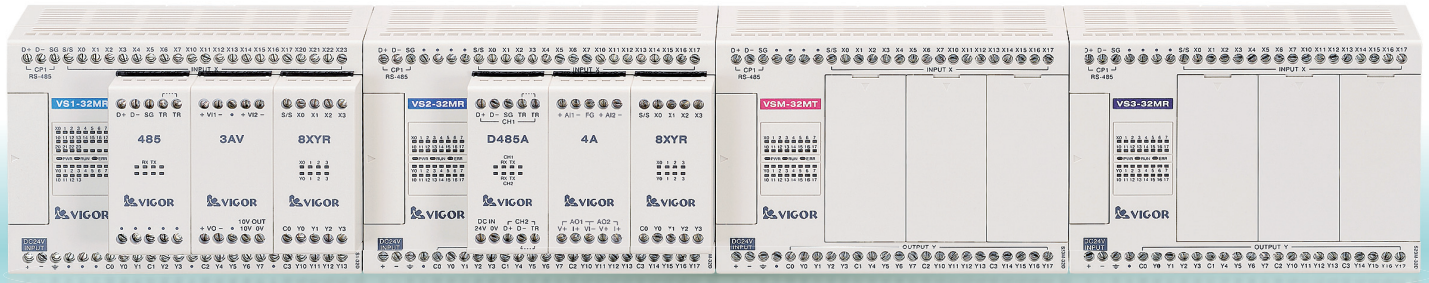
Genuine Taiwan Excellence

VIGOR
PROGRAMMABLE CONTROLLER



VIGOR [New Generation] Programmable Logic Controller VS Family

More Effective

The VS Family 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 raised from 4 ~ 16K to 16 ~ 64K words, also the number of data registers is greatly increased.
Communication could expand to 6 ports (USB and CP1 ~ CP5 multifunctional ports), fully support high-level control system.
The 4 pulse out points provide various positioning functions and up to 1 MHz. The 8 high-speed inputs provide functions of external interrupt, hardware / software high-speed counter, pulse capture, period measurement, hand wheel and etc.

More Diversification

The VS Family includes the VS1 (General), VS2 (Advanced), VSM (Motion Control) and VS3 (High Performance) PLCs. The applicable coverage is from simple to complicated control.
By the modular structure with various Main Unit, Expansion Module, Special Module, Expansion Card and Memory Card etc. to produce a complete and flexible combination.
The remarkable add-on card function which supports DIO, Communication and Special Expansion Card. That provides a superb cost-effective, space savingand flexible expansion.
Simple to combine and maintain, this VS Family is the best choice of programmable logic controller.

More Fast

The high performance processor to execute a basic instruction only 0.15μS/step that is two times faster than ordinary. More powerful than similar products of the automation competitor.
Via the superbly fast 12Mbps USB port to connect with a computer. To read or write the user project is just only in an instant, 16K Words is about 3 seconds. It is an inventive experience and surpassed the past.

More Competitive Advantage

The VIGOR R&D team has accumulated decades of experience for "More diversified combination and most suitable product" design concept. Thoughtfully selected high quality processor, then invented great VS family with reasonable and high competitive price. The VS Family is close to the automation market and demand by flexible combination. Perfect presents High Value with evolving and more competitive.

Item \ Series	VS1 General	VS2 Advanced	VSM Motion Control	VS3 High Performance
Process Time of Basic Instruction	0.17 μS/Step	0.17 μS/Step	0.17 μS/Step	0.15 μS/Step
Memory Capacity of Project	16K Words	32K Words	32K Words	64K Words
Max. Input/Output Points	128 points + 24 at Expansion Card	256 points + 24 at Expansion Card	256 points + 24 at Expansion Card	512 points + 24 at Expansion Card
Programming Port	Built-in 12Mbps high-speed Mini USB port			
Main Unit Built-In Comm. Port	CP1 (RS-485) provides various communication modes: Computer Link, MODBUS(Master/ Slave), CPU Link, Non-protocol and so on.			
Expandable Comm. Port	CP2	CP2~CP3	CP2~CP3	CP2~CP5
Multi-function High Speed Input	8 points 10KHz	8 points 50KHz	4 points 1 MHz※ & 4 points 50KHz	4 points 200KHz & 4 points 50KHz
Pulse Output	4 points 50KHz※※	4 points 50KHz※※	4 points 1 MHz※※	4 points 200KHz※※
Number of Special Modules	—	8	8	16
Expansion Card Function	EC1~EC3 for the DIO, communication (RS-232, RS-485) or special expansion card※※※ (e.g. Analog, Temperature, Inverter Speed Control)			
Memory Card Function	No battery maintenance-free of large data and project memory card. It provides the best data transplant mechanism for a system maintenance.			

※ Available 1 MHz at the hardware high speed counters of Line Driver model; other functions are up to 200 KHz.

※※ Available 1 MHz at the Line Driver outputs; 200 KHz at the VSM/VS3's NPN; 50 KHz at the VS1/VS2's NPN or 1 KHz at the PNP Main Unit. Not available in the relay output unit.

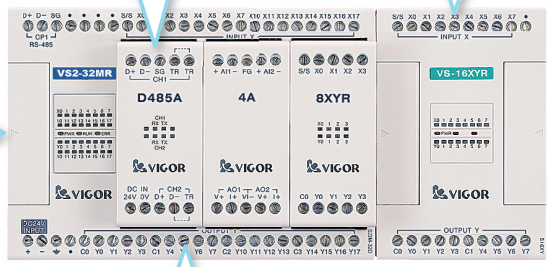
※※※ The VS1 Series is allowed one Special Card only.

The Most Suitable and More Diversified Combination to Create More Competitiveness

- The Expansion Card provides a simple and flexible expansion, to avoid waste and save space. The design achieves the optimal and diversification combination.
- Various RS-485/RS-232 communication, special function (analog, temperature...) and small number DIO cards to meet expansion needs.

- Diverse 8, 16 or 32 point DIO Expansion Module, provides the best combination of I/O expansion.
- Relay or transistor output, terminal or connector wiring, for providing a multiple choice.

No battery required memory card for user project, large data storage and the Real-Time Clock (RTC) functions.



- The VS Family includes the VS1 General, VS2 Advanced,VSM Motion Control and VS3 High Performance PLC series. VIGOR PLC provides from simple to complex application.
- Flexible VS Family could choose: 16K~64K words project memory, 10~512 input/output points, 2~6 communication ports and expansion slots for analog, temperature... function cards.

More Communication Ports, Achieve Fine and Diversely Communication

All VS Main Units built-in an USB programming communication port and CP1 (RS-485 interface) multi-function communication port. By installing the communication expansion cards that can expand CP2~ CP5 multi-function communications ports, provide for RS-232C and RS-485 interface.

Each multi-function communication port could select the VS Computer Link, MODBUS communication, CPU Link, Non-protocol or other mode.
Those ports could link with HMI, central monitor, decentralized controller and peripherals, sufficient to meet the needs of all kinds of control.

Multi-Function Memory Card Provides the Best Data Transplant Mechanism

Multi-function memory card uses no battery required Flash ROM. Memory card is similar to a PLC's hard disk that stores a user project and huge latched 655,360 words data.

By the appropriate user project and relevant data (such as system setting, molding parameters, history records…etc.) all in the card. When the PLC Main Unit got failed, can quickly move the card into a new spare unit.This maintenance work can apply by an ordinary trained worker, not necessary by a professional. The card is solved the inconvenient maintenance problems of controller failure.

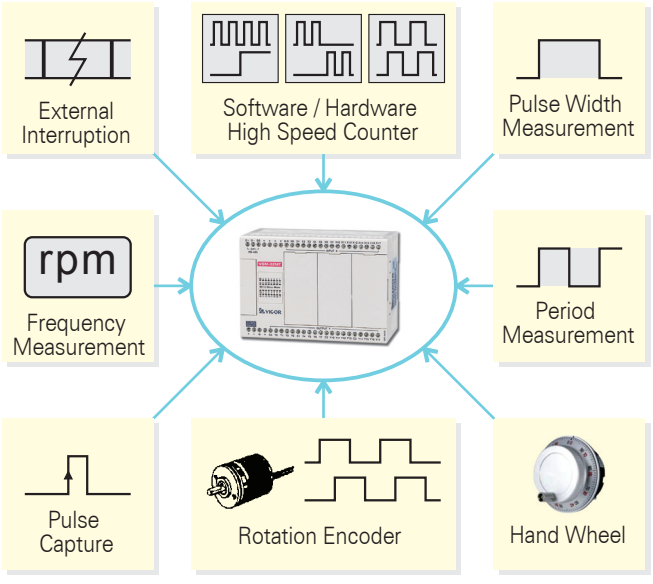
Practical and Various Special Function Expansion Card — High Cost-Performance Ratio

Brief 2 Voltage Input and 1 Voltage Output Card | 4 Analog Input Card | 2 Analog Output Card | 2 Analog Input & 2 Analog Output Card | 3 Independent Inverter Speed Control Card | 2 Thermocouple Temperature Input Card | 4 Thermocouple Temperature Input Card | 1 PT-100 Temperature Input Card | 2 PT-100 Temperature Input Card

Multi-Function High Speed Input

Main Unit built-in 8 high-speed input points (Maximum 200KHz), could perform the exterior interruption, pulse capture, frequency measurement, pulse measurement, high speed counter, hand wheel and other functions, they support for varied special applications.

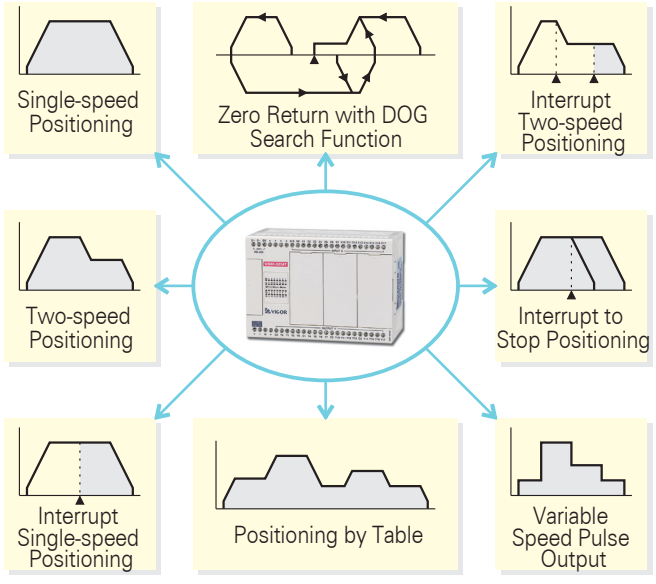
The points are capable to connect to the signals of 8 single-phase or 4 A/B-phase counters, also can enable its A/B-phase High Speed Hardware Counters (HHSC1 and HHSC2) to improve the system efficiency.



Multi-Function High Speed Position Control

The VSM and VS3 series Main Unit are built-in 4 high speed pulse outputs (up to 200KHz) and support various of position control instructions, could precisely and easily control the drivers of servo or step motor.

Especially the VSM-28ML-D Main Unit is designed for the Line Driver pulse inputs and outputs (up to 1 MHz), for connecting with the devices which has the line driver interface.



VS Family Product Specification

Item			VS1 Series	VS2 Series	VSM Series
Operation Control Method			Cyclic Operation by Stored Program		
Programming Language			Ladder diagram + Sequential Function Chart (SFC)		
I/O Control Method			Batch Processing		
Operation Processing Time	Basic Instruction		0.17 μ S		
	Applied Instruction		Several μs ~ Several 100 μs		
Number of Instructions	Basic Instruction		29		
	Applied Instruction		131	159	170
Project Memory Capacity (Flash ROM)			16K Words	32K Words	32K Words
Max. Input / Output Points			128 points + 24 at Expansion Card	256 points + 24 at Expansion Card	256 points + 24 at Expansion Card
Digital I/O	Input point (X)		64 points: X0~X77	128 points: X0~X177	128 points: X0~X177
	Output point (Y)		64 points: Y0~Y77	128 points: Y0~Y177	128 points: Y0~Y177
Internal Relay	Auxiliary coil (M)	General	6192 points: M0~M1999 , M4000~M8191		
		Latched	2000 points: M2000~M3999		
		Special	512 points: M9000~M9511		
	State coil (S)	Initial	10 points: S0~S9		
		General	3086 points: S10~S499 , S1500~S4095		
		Latched	900 points: S500~S899 , S1000~S1499		
		Annunciaor	100 points: S900~S999 (Latched)		
Timer (T)	100mS		200 points: T0~T199 (Range: 0.1~3,276.7 sec.)		
	10mS		46 points: T200~T245 (Range: 0.01~327.67 sec.)		
	1mS(Retentive)		4 points: T246~T249 (Range: 0.001~32.767 sec.)		
	100mS(Retentive)		6 points: T250~T255 (Range: 0.1~3,276.7 sec.)		
	1mS		256 points: T256~T511 (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	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)		
Hard Ware High Speed Counter			2 points: HHSC1~HHSC2 (1, 2 or A/B phase; 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 (V, Z)		16 points: V0~V7 , Z0~Z7		
	Extension Register (R)		10000 points: R0~R9999		
Label	Pointer Nickname / Branch Pointer		Pointer Nickname is described by 16 letters / Branch Pointer uses P0~P1023, total 1024 pointers		
	Table Nickname / Table Code		Table Nickname is described by 16 letters / Table Code uses Q0~Q31, total 32 tables		
	Interrupt Label (I)		21 points: 8 for external input interrupt, 3 for timer interrupt, and 10 for High Speed Counter interrupt		
	Nest Label (N)		8 points: N0~N7		
Numerical Constants			Decimal (K), Hexadecimal (H), Real number (E)		
Comm. Functions	Main Unit Built-in Comm. Port	Prog. Port	12Mbps high-speed Mini USB port		
		Multi-Func. Port	CP1 (RS-485) provides Computer Link, MODBUS, CPU Link, Non-protocol and so on.		
	Expand Multi-Function Port		CP2 (at the EC1 socket)	CP2~3 (at the EC1 socket)	CP2~3 (at the EC1 socket)
Multi-Function High Speed Input			Performs external interrupt, high speed counter, pulse capture, pulse measurement, hand wheel and so on.		
			8 points, 10 KHz	8 points, 50 KHz	4 points 200 KHz;4 points 50 KHz
Pulse Output			4 points, 50 KHz	4 points, 50 KHz	4 points, 200 KHz
Real Time Clock (Optional)			After installed the VS-MCR card, get the year, month, day, hour, minute, second and week.		
Memory Card (VS-MC、VS-MCR)			No battery required 16Mb Flash ROM for user's project and data-bank (655'360 words) storage		
Expansion Card (EC1~EC3)			For the DIO, communication or Special Expansion card (e.g. Analog, Temperature, Inverter Speed Control)		
Special Modules			—	8	8

VS Family Product List

Item	Model Name	Main Specification
VS1 Series Main Unit	VS1-10M★-D	6 DI (DC 24V, X0~X5 10KHz); 4 DO ★; 16K words; 1 Expansion Card socket
	VS1-14M★-D	8 DI (DC 24V, X0~X7 10KHz); 6 DO ★; 16K words; 1 Expansion Card socket
	VS1-20M★-D	12 DI (DC 24V, X0~X7 10KHz); 8 DO ★; 16K words; 2 Expansion Card sockets
	VS1-24M★-D	14 DI (DC 24V, X0~X7 10KHz); 10 DO ★; 16K words; 2 Expansion Card sockets
	VS1-28M★-D	16 DI (DC 24V, X0~X7 10KHz); 12 DO ★; 16K words; 3 Expansion Card sockets; DIO Expansion Module available
	VS1-32M★-D	20 DI (DC 24V, X0~X7 10KHz); 12 DO ★; 16K words; 3 Expansion Card sockets; DIO Expansion Module available
	VS1-32MT-DI	16 DI (DC 24V, X0~X7 10KHz); 16 DO (100mA NPN transistor, Y0~Y3 50KHz); 16K words project memory; 3 Expansion Card sockets; DIO Expansion Module available; I/O by IDC connector.
VS2 Series Main Unit	VS2-24M★-D	12 DI (DC 24V, X0~X7 50KHz); 12 DO ★; 2 Expansion Card sockets; DIO Expansion & 8 Special Modules available
	VS2-32M★-D	16 DI (DC 24V, X0~X7 50KHz); 16 DO ★; 3 Expansion Card sockets; DIO Expansion & 8 Special Modules available
	VS2-32MT-DI	16 DI (DC 24V, X0~X7 50KHz); 16 DO (100mA NPN transistor, Y0~Y3 50KHz); 32K words project memory; 3 Expansion Card sockets; DIO Exp. & 8 Special Modules available; I/O by IDC connector
VSM Series Main Unit	VSM-14MT-D	8 DI (DC 24V, 4*200KHz + 4*50KHz); 6 DO (500mA NPN transistor, Y0~Y3 200KHz); 32K words
	VSM-24MT-D	12 DI (DC 24V, 4*200KHz + 4*50KHz); 12 DO (500mA NPN transistor, Y0~Y3 200KHz); 32K words
	VSM-32MT-D	16 DI (DC 24V, 4*200KHz + 4*50KHz); 16 DO (500mA NPN transistor, Y0~Y3 200KHz); 32K words
	VSM-28ML-D	4 Line Driver DI (2* 1MHz hardware counters) + 12 DI (DC 24V, 4*50KHz); 8 Line Driver DO (Y0~3 1MHz) + 4 DO (500mA NPN transistor); 32K words project memory; 3 Expansion Card sockets; DIO Expansion & 8 Special Modules available; I/O by cage-clamp terminal
	VSM-32MT-DI	16 DI (DC 24V, 4*200KHz + 4*50KHz); 16 DO (500mA NPN transistor, Y0~Y3 200KHz); 32K words project memory; 3 Exp. Card sockets; DIO Exp. & 8 Special Modules available; I/O by IDC connector.
DIO Expansion Module	VS-8 / 16X	DI Expansion Module: 8/16 DI (DC 24V); Input by cage-clamp terminal
	VS-8 / 16Y★	DO Expansion Module: 8/16 DO ★; Output by cage-clamp terminal
	VS-8XY★	DIO Expansion Module: 4 DI (DC 24V); 4 DO ★; I/O by cage-clamp terminal
	VS-16XY★	DIO Expansion Module: 8 DI (DC 24V); 8 DO ★; I/O by cage-clamp terminal
	VS-28XYR	DIO Expansion Module: 16 DI (DC 24V); 12 DO (2A Relay); I/O by cage-clamp terminal
	VS-32XY★	DIO Expansion Module: 16 DI (DC 24V); 16 DO ★; I/O by cage-clamp terminal
	VS-16X-I	DI Expansion Module: 16 DI (DC 24V); Input by IDC connector
	VS-16YT-I	DO Expansion Module: 16 DO (100mA NPN transistor); Output by IDC connector
	VS-16XYT-I	DIO Expansion Module: 8 DI (DC 24V); 8 DO (100mA NPN transistor); I/O by IDC connector
	VS-32XYT-I	DIO Expansion Module: 16 DI (DC 24V); 16 DO (100mA NPN transistor); I/O by IDC connector
Power	VS-PSD	Power Repeater: Input: DC 24V; Output: DC 5V 500mA and DC 12V 800mA
DIO Expansion Card	VS-4 / 8X-EC	DI Expansion Card: 4/8 DI (DC 24V); Input by cage-clamp terminal
	VS-4Y★-EC	DO Expansion Card: 4 DO ★; Output by cage-clamp terminal
	VS-8YT-EC	DO Expansion Card: 8 DO (DC 24V, 100mA NPN transistor); Output by cage-clamp terminal
	VS-4XY★-EC	DIO Expansion Card: 2 DI(DC 24V); 2 DO ★; I/O by cage-clamp terminal
	VS-8XY★-EC	DIO Expansion Card: 4 DI(DC 24V); 4 DO ★; I/O by cage-clamp terminal
	VS-8XI-EC	DI Expansion Card: 8 DI (DC 24V); Input by IDC connector
	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 Comm. Expansion Card: One non-isolated RS-485 port with TX / RX indicators; Dist.: 50M Max.
	VS-485A-EC	RS-485 Comm. Expansion Card: One isolated RS-485 port with TX / RX indicators; Dist.: 1000M Max.
	VS-D485-EC	RS-485 Comm. Expansion Card: Dual non-isolated RS-485 ports with TX / RX indicators; Dist.: 50M Max.
	VS-D485A-EC	RS-485 Comm. Expansion Card: Dual isolated RS-485 ports with TX / RX indicators; Dist.: 1000M Max.
	VS-D232-EC	RS-232C Comm. expansion card: Dual non-isolated RS-232 ports with TX / RX indicators; Dist.: 15M Max.
Special Expansion Card	VS-3AV-EC	Brief Voltage I/O Card: 2 channel (0~10V, 12-bit) inputs; 1 channel (0~10V, 10-bit) output; With a calibrate DC 10V output; Non-isolated
	VS-4AD-EC	Analog Input Card: 4 channel (12-bit) inputs; Non-isolatied; 0~10V, 4~20 or 0~20mA selectable
	VS-2DA-EC	Analog Output Card: 2 channel (12-bit) outputs; Non-isolated; 0~10V, 4~20 or 0~20mA selectable
	VS-4A-EC	Analog I/O card: 2 channel (12-bit) inputs; 2 channel (12-bit) outputs; Non-isolated; 0~10V, 4~20 or 0~20mA selectable
	VS-3ISC-EC	Inverter Speed Control Card: 3 channel (0.1% resolution) voltage outputs; Totally isolated for each channel
	VS-2 / 4TC-EC	Thermocouple Temperature Input Card: 2/4 channel (K, J, R, S, T, E, B or N type thermocouple, 0.2~0.3℃ resolution) inputs; Non-isolated
	VS-1 / 2PT-EC	PT-100 Temperature Input Card: 1/ 2 channel (3-wire PT-100, 0.1℃ resolution) input; 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

All Main Unit, Special Module and IDC's module are required DC 24V -15% / +20% power input

★ Indicates output type: R: 2A Relay;
T: 500mA NPN Transistor, could generate 50KHz (VSM/VS3: 200 KHz) purse at Y0~3;
P: 500mA PNP Transistor, could generate 1KHz purse at Y0~3