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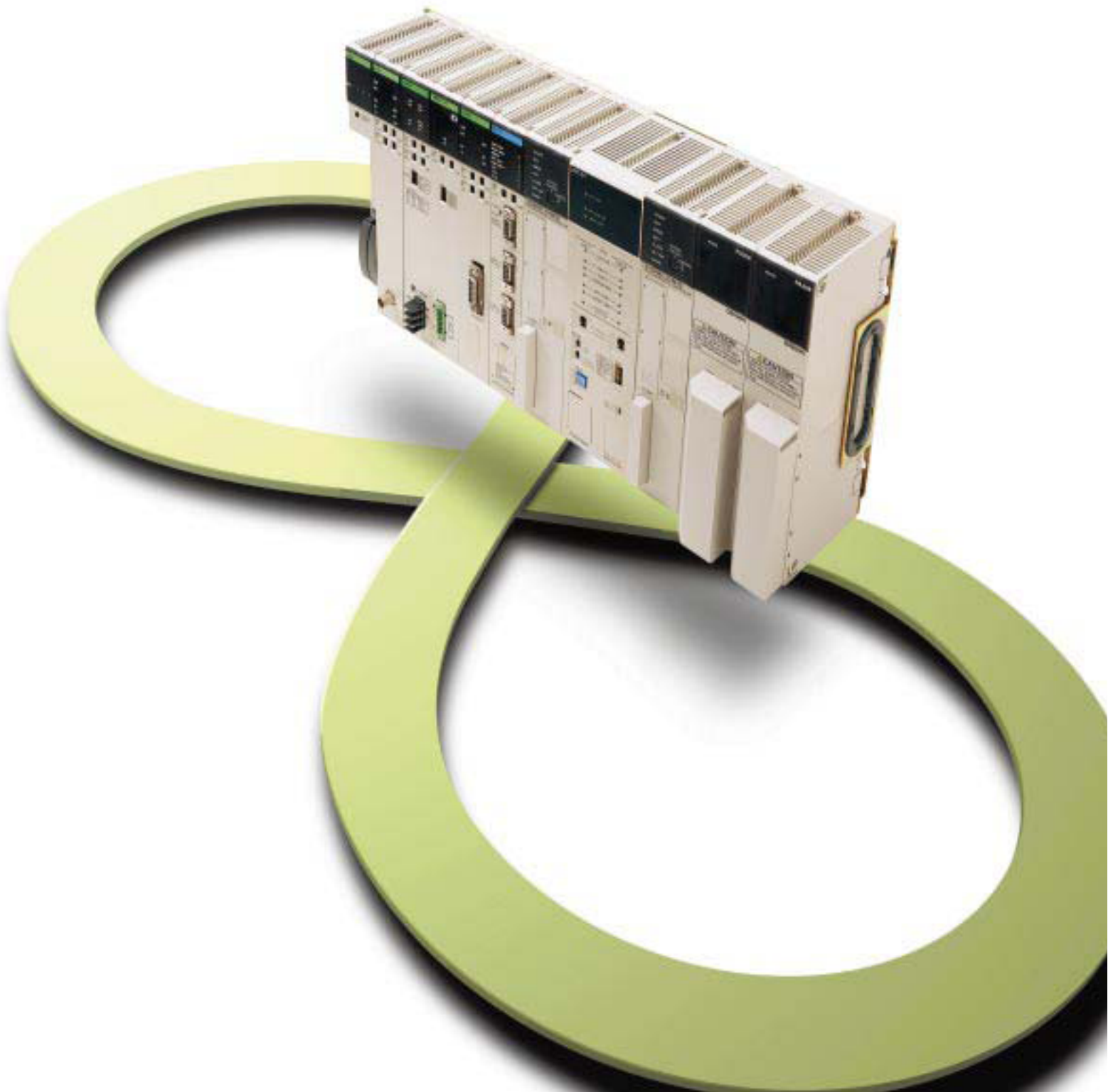
OMRON

PROGRAMMABLE CONTROLLER

**SYSMAC
CVM1D**

**DUPLEX
SYSTEM**

**Double Power Supply Units
and CPU Units Offer High Reliability**

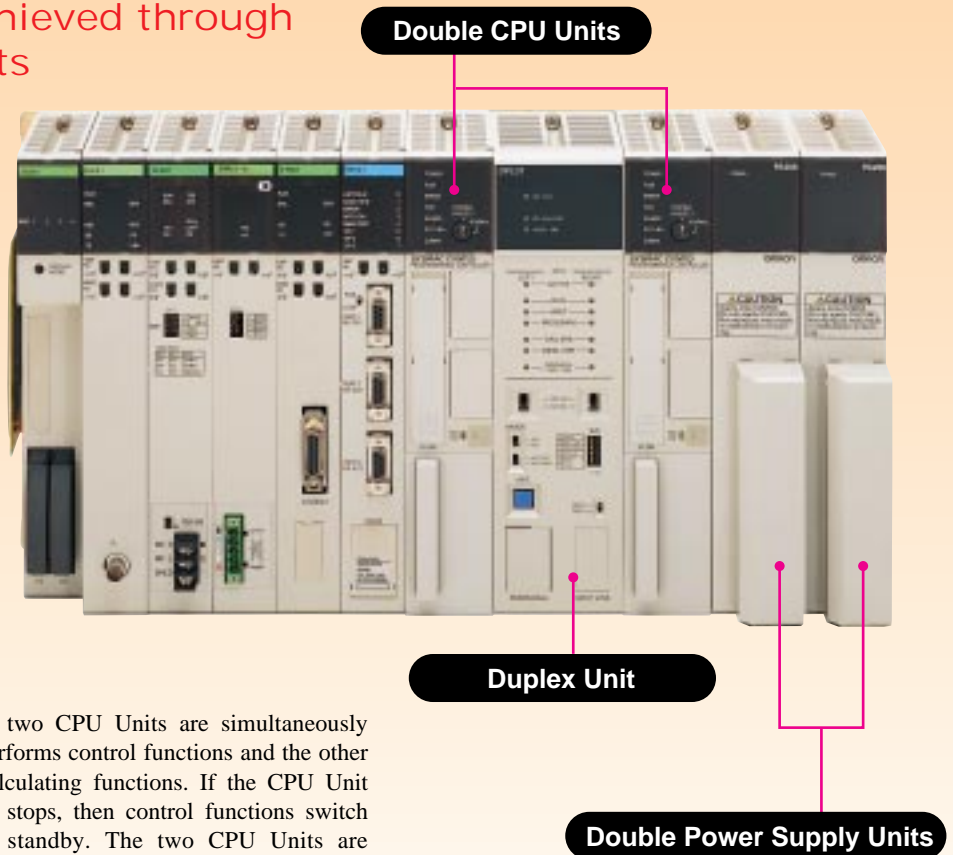


CVM1D Programmable Controllers inherit the advantages from the CV/CVM1 Series and go a step further by incorporating double systems for higher reliability. These PCs are available as a simplex system with double Power Supply Units or as a duplex system with double Power Supply Units and CPU Units. Duplex systems offer even higher reliability than conventional CV/CVM1-series systems.

High-reliability system achieved through double Power Supply Units and CPU Units

DUPLIX SYSTEM

With double CPU Units and Power Supply Units, a CPU Unit or Power Supply Unit can be serviced easily without shutting down operation in the rare event that one of these Units should fail.



● Hot Standby Method

The hot standby method is a method where the two CPU Units are simultaneously performing calculating functions. One CPU Unit performs control functions and the other is placed on standby while it is executing the calculating functions. If the CPU Unit performing control functions detects an error and stops, then control functions switch immediately over to the CPU Unit that is on standby. The two CPU Units are synchronized to process program, data memory, timer, counter, and other data in order to ensure a smooth transition between them.

● Online I/O Unit Switching

I/O Units on CPU, CPU Expansion, and I/O Expansion Racks can be replaced from the Programming Console while the system is running unless a Special I/O Unit is mounted on the same Rack.

Advanced Communications Functions

Compatibility with information-based networks

Data can be exchanged with a host computer through an Ethernet Unit via the TCP/IP, UDP/IP and FTP information-based network protocols.

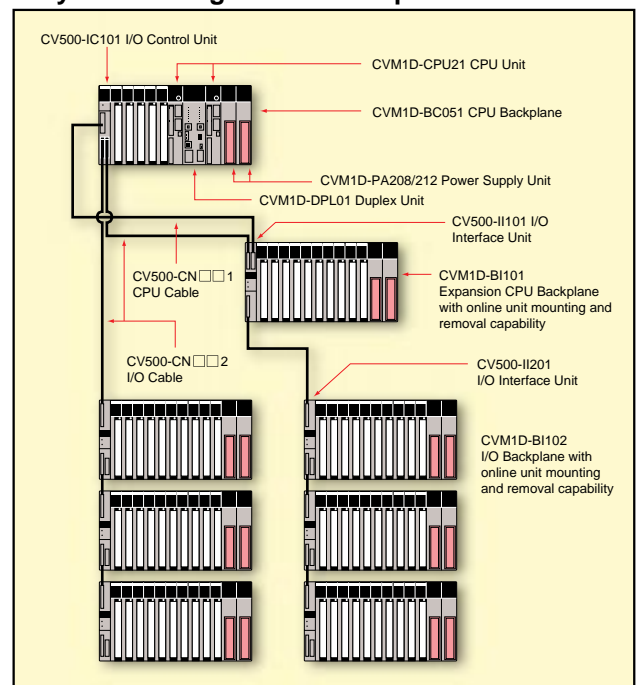
Communications between CVM1 and CV, CVM1 and C, as well as between CVM1 Units

Controller Link, SYSMAC LINK or other Link Units can be used to build networks that link Programmable Controllers for C, CV, and CVM1 Units.

Building multi-vendor networks using CompoBus/D

CompoBus/D can be used to build a component bus capable of controlling a maximum of 63 Remote I/O Units, or a combined maximum of 2,048 I/O points. Since CompoBus/D conforms to DeviceNet standards, any DeviceNet slave units made in the world can be used on the network.

■ System Configuration Example



Inherits Advantages from the CVM1

Able to use CVM1 I/O, Special I/O, and Communications Units

The present system can use the wide array of available SYSMAC C-series Units* as well as C and CVM1-series programs that can be accessed via SYSMAC Support Software.

*C2000-ID216 Interrupt Unit and C500-ASC03 ASCII Unit cannot be used.

Inherits vast array of functions from the CVM1

- Built-in clock function ● Built-in peripheral interface ● Built-in host link
- Vast array of instructions ● Space-saving design ● Excellent cost performance

High Speed and Large Capacity

High-speed processing at 0.125μs

The present system is capable of processing basic instructions at less than 0.125 μs and special instructions at less than 0.5 μs, thus ensuring higher machine productivity.

Large 62K-word program capacity and 24K-word data memory capacity

The present system offers large capacity with 2,048-I/O point capacity,

24K-word data memory capacity (Expansion Data Memory for up to 256K words) and 62K-word program capacity.

No need to worry about running out of memory either, even when connected to a PT so you can experience the full power of all PT functions.

■ Specifications

| Item | Specification | |
|-------------------------------|---|--|
| Power Supply Unit | CVM1D-PA208 | CVM1D-PA212 |
| Input power supply | Rated voltage | 100 to 120 or 200 to 240 VAC (automatic voltage setting) |
| | Frequency | 50/60 Hz ±5% |
| | Operating voltage range | 85 to 132 or 170 to 264 VAC |
| Power consumption | 150VA max. | 200VA max. |
| Inrush current | 30A max. | |
| Output capacity | 8A | 12A |
| Overcurrent protection | 105% min. | |
| Overvoltage protection | 6V min. | |
| Grounding | Less than 100 Ω | |
| Enclosure | Mounted in panel | |
| Weight | 0.9 kg | |
| Dimensions (mm) | 250 x 47 x 95 | |
| Terminal screw size | M3.5 | |
| Applicable mounting torque | 0.8N•m | |
| Applicable crimp terminal | 1.25 to YS3A, VD1.25 to 3.5 | |
| Applicable wire | 0.25 to 1.65 mm ² | |
| Insulation resistance | 20MΩ min. (at 500 VDC) between AC external terminals and GR terminals | |
| Dielectric strength | 2,300 VAC 50/60 Hz for 1 min between AC external and GR terminals, leakage current: 10 mA max. | |
| Noise immunity | 1,500 Vp-p, pulse width: 100 ns to 1 μs, rise time: 1ns (via noise simulation) | |
| Vibration resistance | 10 to 57 Hz, 0.075-mm amplitude, 57 to 150 Hz, acceleration: 9.8m/S ² in X, Y and Z directions for 80 minutes (time coefficient: 8 minutes x coefficient factor 10 = total time of 80 minutes) (according to JIS C0911) | |
| Shock resistance | 147m/S ² 3 times each in the X, Y and Z directions (according to JIS C0912) | |
| External input signal | Start input | |
| External output signal | Output while PC is operating | |
| Ambient operating temperature | 0 to 55°C | |
| Ambient operating humidity | 10% to 90% (with no condensation) | |
| Atmosphere | Must be free of corrosive gases. | |
| Ambient storage temperature | -25 to 75°C | |
| Mounting location | CPU, CPU Expansion, or I/O Expansion Backplanes | CPU, CPU Expansion, or I/O Expansion Backplanes |

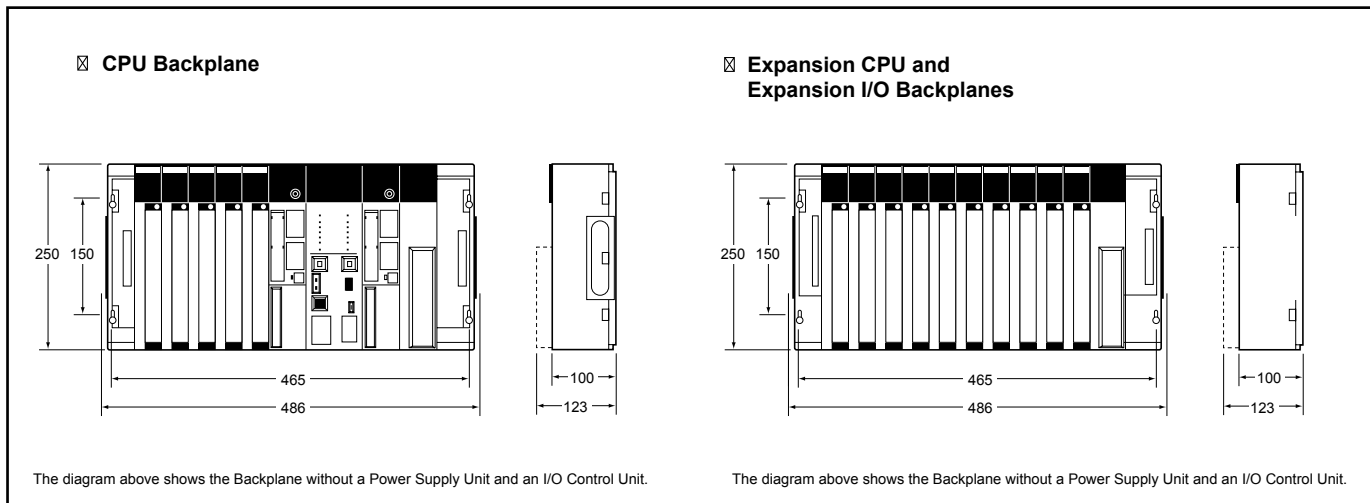
■ Performance Specifications

| Item | Specification | |
|-----------------------|---|-------------------|
| CPU Unit | CVM1D-CPU21 (See note.) | |
| Control method | Stored program | |
| I/O control method | Cyclic refreshing | |
| Programming | Ladder diagrams | |
| Instruction length | 1 to 8 words/instruction, 1 address/instruction | |
| Ladder instructions | 275 (500 variations) | |
| Execution time | Basic | 0.125 to 0.375 μs |
| | Special | 0.5 to 8.25 μs |
| Program capacity | 62K words | |
| I/O bits | 2,048 (words 0000 to 0127) | |
| Remote I/O bits | SYSMAC BUS/2 | 2,048 |
| | SYSBUS | 2,048 |
| Remote I/O bits | SYSMAC BUS/2: 12,800 (words 02000 to 999) SYSBUS: 4,096 (words 2300 to 2555) | |
| Work bits | 1,152 (words 0128 to 0199) 6,400 (words 1900 to 2299) | |
| Link bits | 3,200: 100000 to 119915 (words 1000 to 1199) | |
| Holding bits | 4,800: 120000 to 149915 (words 1200 to 1499) | |
| CPU Bus Unit bits | 6,400: 150000 to 189915 (words 1500 to 1899) | |
| Temporary bits | 8 (TR0 to TR7) | |
| CPU bus link bits | 4,096: G00000 to 25515 (words G000 to 255) | |
| Auxiliary bits | 8,192: A00000 to 51115 (words A000 to 511) | |
| Timers | 1,024 bits (T0000 to 1023) | |
| | Timer: 0 to 999.9 s, high-speed timer: 0 to 99.99 s | |
| Counters | 1,024 bits (C0000 to 1023) | |
| | 0 to 9999 counts | |
| Data memory | 24K words (D00000 to 24575) | |
| Expansion DM | 256K words (E00000 to 32765 x 8 banks) | |
| Data registers | 3 words (DR0 to DR2) | |
| Index registers | 3 words (IR0 to IR2) | |
| Trace memory | 2K words (non-synchronous processing) | |
| File memory | Memory Cards: RAM, EEPROM, or EPROM | |
| Control input signal | START input: RUN mode. PC begins operating when input is ON and stops when it is OFF. Input specifications: 24 VDC, 10 mA | |
| Control output signal | RUN output: The RUN output terminals are ON (closed) while the PC is operating. Maximum switching capacity: 250 VAC/2 A (resistive load), 24 VDC/2 A, 250 VAC/0.5 A (inductive load: cos φ=0.4) | |
| Memory protection | Holding bits and contents of counters and data memory | |
| Battery life | Service life: 5 years. The memory backup time when the PC is not powered varies with ambient temperature. | |
| Self-diagnostics | CPU failure (watchdog timer), I/O verify error, I/O bus error, memory failure, remote I/O error, battery error, link error, special I/O error, and others | |

The CVM1D-DPL01 Duplex Unit is required whether the system is a duplex system or not, and the only Backplane that can be used to mount the Unit is the CVM1D-BC051. Do not use a CV/CVM1-series CPU Backplane.

Note: The CVM1D only operates in Synchronous RUN Mode.

Dimensions (Unit: mm)



Standard Models

| Name | Specification | Model |
|-------------------------|--|-----------------|
| CPU Unit | Two required for a duplex system | CVM1D-CPU21 |
| Duplex Unit | Required in a simplex system as well | CVM1D-DPL01 |
| CPU Backplane | 5-slot | CVM1D-BC051 |
| Expansion CPU Backplane | 10-slot | CVM1D-BI101 |
| Expansion I/O Backplane | 10-slot | CVM1D-BI102 |
| Power Supply Unit | 8A (Mount two of the same model on each Backplane) | CVM1D-PA208 |
| Power Supply Unit | | 12A |
| Programming Console | | CVM1-PRS21-V1 * |

*Use a version (version 2.0 or higher) shipped after November 1998 (serial number: □□ Y8).



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