



SYSTEM CONTROLLER Control Pack CP-317M

*Centralized
Control*



*Integrated
Control*





CP-317M

Increased functionality, extended facility life, and backward/upward compatibility are required for applications in the field of system engineering serving steel plants, water supply plants, and sewage treatment plants.

The Control Pack CP-317M is a new generation of system controller that is compatible with the CP-317, an earlier version, and offers increased performance, functionality, and reliability to meet your needs.

In the pursuit of excellence



High Performance

High Reliability

■ CPU for High-speed Control

The CP-317M system controller can be used as the master control station for medium or large plants. The CP-317M has compatibility with the CP-317, an earlier version, and has a 32-bit high-speed processor and large-capacity memory for increased functionality and performance. The processing speed has been doubled to meet possible future requirements for increased processing time in high-level and sophisticated applications.

Also, the cooling fan has been eliminated, because the optimal design of the CP-317M enables it to withstand heating produced in high-speed operations by using natural cooling.

■ Latest Technology with Increased Reliability

A large-capacity FPGA is used for improved self-diagnosis. Also, the battery back-up memory with an Error Check and Correct (ECC) function increases the reliability of the CP-317M.

FPGA: Field Programmable Gate Array(Programmable LSI)
ECC: Error Check Correct

■ Compatibility with Earlier Versions

The CP-317M has full compatibility with the CP-317 regarding software, size, and bus interface specifications/functions. All option modules for the CP-317 can be used with the CP-317M, and existing systems can still be used by simply replacing a single operation module (CPU).

Flexible system configuration with your choice of network to easily increase functions and quickly upgrade equipment.

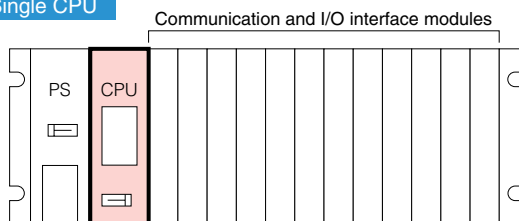


Expandability
&
Flexibility

■ Optimal Memory Capacity (Single or Multiple CPUs)

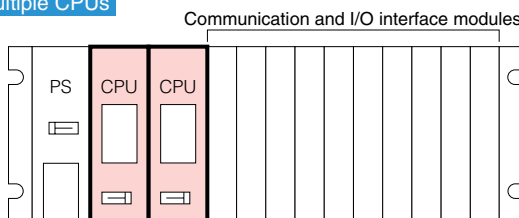
Select a configuration with single or multiple CPUs on a short or long mounting base to construct a system with the ideal amount of program memory and data memory for the scale and purpose of your plant.

Single CPU



Single CPU on a short or long mounting base.

Multiple CPUs



- Mount two CPUs on a long mounting base and operate each CPU independently using with two different software.
- Each CPU can perform either synchronous or asynchronous scanning depending on the program settings.
- A maximum of 32 K words of data can be easily transmitted between CPUs though shared registers.

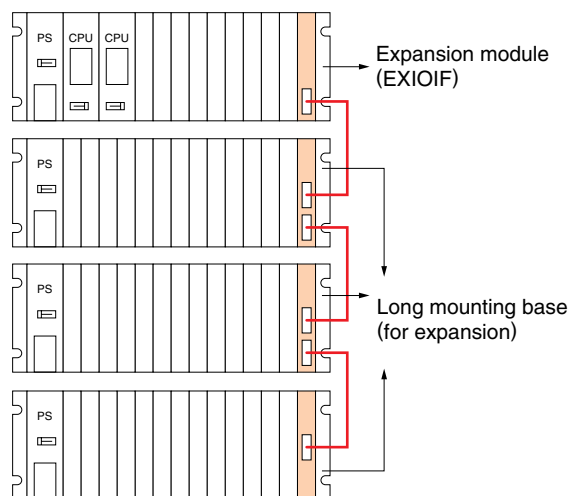
Note : Use CPUs of the same version on a single rack.
CPUs of different versions can be used for different racks in the same system.

■ Equipment Expansion (Max. 4 racks)

Four expansion racks can be used by mounting the expansion modules (EXIOIF) on the mounting base as shown here. Mount an assortment of communication and I/O modules to complete your system.

Maximum Number of Modules

Modules	Qty
CPU	2
213IF, 217IF, 2000IOIF, 225IF, 260IF, 261IFM, 262IF	8/type
215IF, 215IFQ	Total : 8
218FXB, 218TXB	Total : 8
216IF, 2500IF, 2520IF	8/type
820IF, 820IFR	Total : 8
LIO-01, CNTR-01, AI-01, AO-01, DI-01, DO-01	Unlimited
EXIOIF	8



■ Open Field Networks

The CP-317M supports a variety of open field networks including PROFIBUS-DP, FL-Net, and DeviceNet.

- User-friendly support for everything from system design to maintenance even for sophisticated and complex configurations.
- Trace functions for large-capacity systems to collect Reliability, Availability, and Serviceability (RAS) data from individual components and rapidly pinpoint the location of any faults.



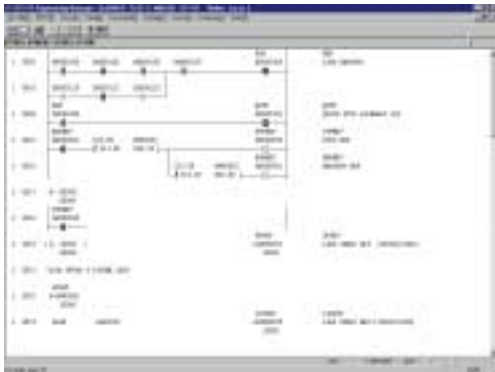
Desktop EWS CP-717
Connected with the high-speed CP-215 real-time network or Ethernet.



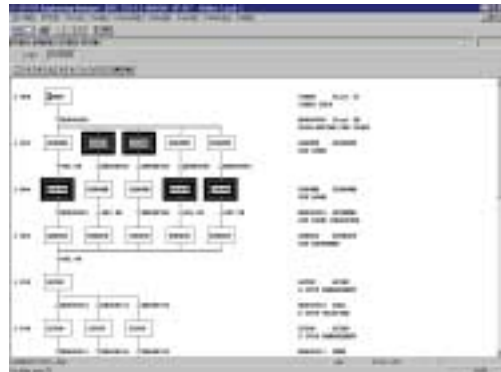
Laptop EWS CP-717
Connected with an RS-232C interface or Ethernet.

■ CP Language-based Programming

Programming is simplified by using relay symbols for ladder programming of sequence circuits and operation circuits, and by using sequential function charts (SFC).



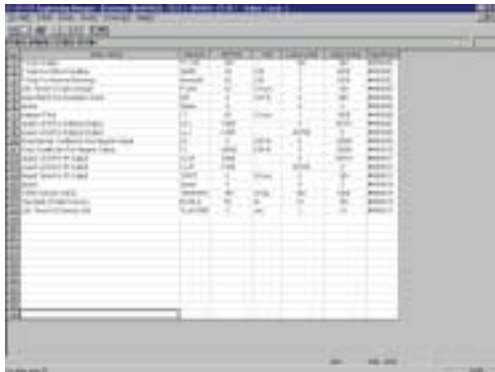
▲ Ladder Program



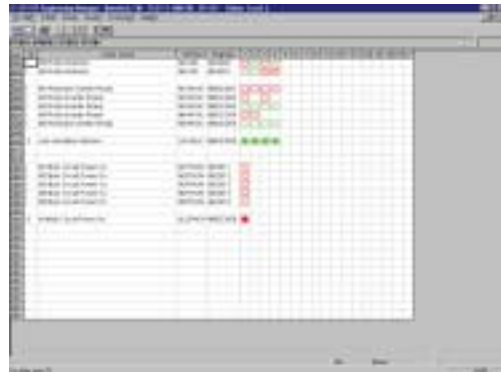
▲ SFC

■ Visual Programming

Predictive visual programming, such as chart programming, enhances coding efficiency. The online monitoring function in the programming window provides easy-to-understand, real-time monitoring.



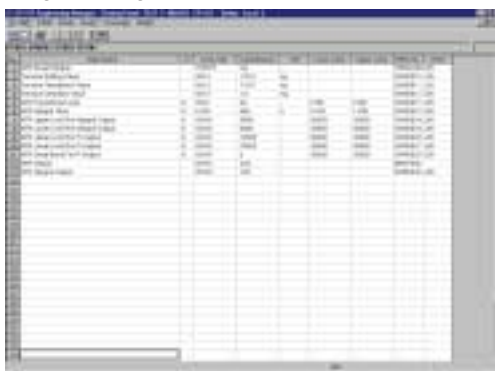
▲ Parameter List



▲ Interlock List

■ Simple Parameter Adjustments

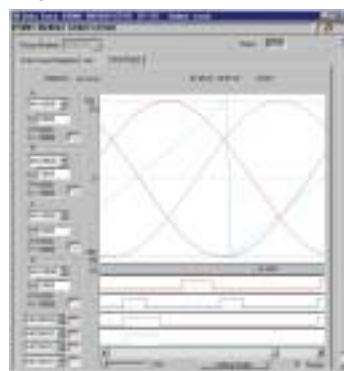
Control parameters can be set directly from the adjustment panel without complicated programming.

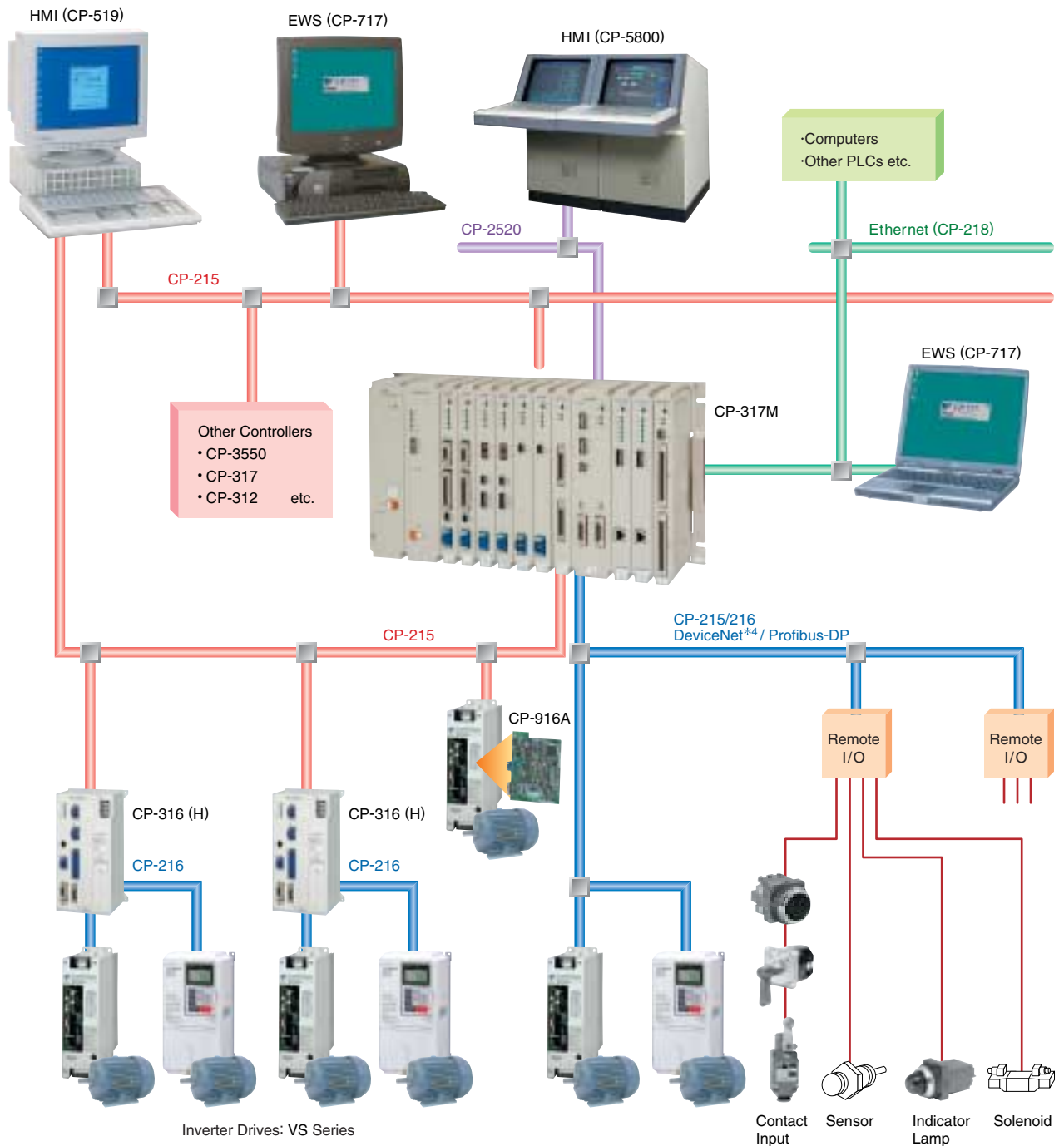


▲ Adjustment Panel

■ Data Trace

Select the data to be analyzed in the trace data definition window and easily call it up as a list or graph.





Component Descriptions

■ Network

CP-215:

A shared-memory N:N high-speed realtime network handling both cyclic and message transfers. Used primarily to interconnect controllers, HMI or EWS.

CP-2520(Vnet):

High-speed N:N realtime network handling both cyclic and message transfers.

CP-218:

Uses Ethernet*1 protocol, primarily for connection with computers. Supports MEMOBUS, no-protocol, and MELSEC*2 protocol connections.

CP-216:

1:N high speed real-time network handling both cyclic and message transfers.

■ Human-machine interface (HMI)

CP-519, CP-5800:

Windows*3 based HMI designed for general-purpose PC platforms.

■ Engineering workstation (EWS)

CP-717:

An engineering maintenance tool for controllers. From a single EWS, it is possible to access all controllers on the network.

*1 : Ethernet is a registered trademark of Xerox Corporation.

*2 : MELSEC is a registered trademark of Mitsubishi Electric Corporation.

*3 : Windows is a registered trademark of Microsoft Corporation.

*4 : DeviceNet is a registered trademark of Open DeviceNet Vendors Association.

General Specifications

The general specifications are specifications for the power supply and the environmental conditions for the installation and use of the CP-317M. The following specifications are applicable in all but exceptional circumstances. Please install the CP-317M in an environment that meets the following conditions for use. If the CP-317M is to be used in an environment where it may be exposed to corrosive gases, contact your YASKAWA representative for details.

Items	Specifications
Power Supply	
PS-01 Power Supply Module	
Rated Voltage	100 VAC/100 VDC
Allowable Voltage Range 100 VAC	Rated voltage 100 VAC/115 VAC ±15% (85 VAC to 132 VAC)
Allowable Frequency Range 100 VAC	47 Hz to 440 Hz
Allowable Voltage Range 100 VDC	Rated voltage 100 VDC -10%, +40% (90 VDC to 140 VDC)
PS-02 Power Supply Module	
Rated Voltage	200 VAC
Allowable Voltage Range 200 VAC	Rated voltage 200 VAC/230 VAC ±15% (170 VAC to 264 VAC)
Allowable Frequency Range 200 VAC	47 Hz to 440 Hz
PS-03 Power Supply Module	
Rated Voltage	24 VDC
Allowable Voltage Range 24 VDC	Rated voltage 24 VDC ±20% (19.2 VDC to 28.8 VDC)
Allowable Momentary Power Loss	10 ms or less
Power Consumption	150 W or less
Insulation Resistance	5 MΩ or more at 500 VDC application across all external terminals connected and the grounding
Common	
Environmental Conditions	
Operating Temperature	0°C to 55°C, average temperature for 24 hours: 50°C or less (below the CP-317M)
Storage Temperature	-25°C to +85°C (Data backup is not guaranteed.)
Operating Relative Humidity	5% to 95% RH (non-condensing)
Corrosive Gas	No corrosive gasses
Mechanical Operating Conditions	
Vibration Resistance	In compliance with JIS B 3502* Frequency range: 5 ≤ f < 9 Hz, constant amplitude vibration, half-amplitude: 3.5 mm 9 ≤ f ≤ 150 Hz, constant accel. vibration, acceleration: 9.8 m/s ² (1.0 G) Apply vibration with ten sweeps in each of the 3 orthogonal axial directions.
Shock Resistance	In compliance with JIS B 3502* Peak acceleration: 147 m/s ² (15 G), application time: 11 ms Apply vibration three times in each of the 3 orthogonal axial directions.
Electrical Operating Conditions	
Noise Resistance	In compliance with JIS B 3502* First transient/burst noise: 2 kV (power supply line only)
Resistance to Electric Discharge	In compliance with JIS B 3502* Apply 4 kV ten times by contact discharge method
Grounding	Protective ground: 100 Ω or less
Cooling Method	Natural Cooling

*: Japanese Industrial Standard

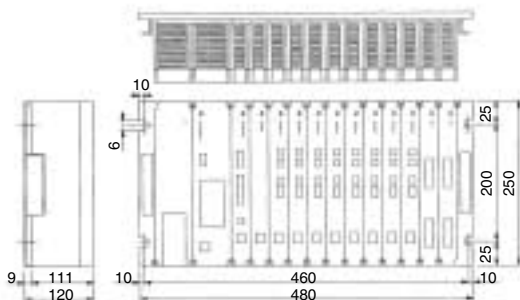
Performance and Function Specifications

Items	Specifications
CPU	32-bit, general-purpose processor
Main Memory	
Program Memory	Equivalent to 128 K steps
Data Memory (Per CPU)	32768 words: data (M) register 1024 words: system (S) register 32768 words: input (I) register 32768 words: output (O) register 32768 words: common parameter (C) register 16384 words/DWG: DWG (D) register* 16384 words/DWG: parameter (#) register*
Trace Memory (Per CPU)	32K words X 8: data trace, 16 points defined* 32K words: fault trace, 500 items defined*
Program Execution Control Method	Constant-period scanning method: 2 levels (high speed, low speed) High-speed scan time setting: 1 ms to 300 ms (units of 0.1 ms) Low-speed scan time setting: 1 ms to 300 ms (units of 0.1 ms)
User-defined Drawings/Functions (Per CPU)	Starting drawing (DWG.A) : 64 drawings max., up to 3 hierarchical drawing levels High-speed scanning drawings (DWG.H) : 200 drawings max., up to 3 hierarchical drawing levels Low-speed scanning drawings (DWG.L) : 500 drawings max., up to 3 hierarchical drawing levels Interruption process drawings (DWG.I) : 64 drawings max., up to 3 hierarchical drawing levels User functions : 500 functions max. Number of steps : 500 steps max./drawing Drawing modification record, Secret function for each drawing (attribution setting possible), Adjustment screen
Instructions	Program control: 14 types Numerical operation : 16 types Basic function : 10 types Direct I/O : 2 types Numerical conversion : 9 types DDC : 13 types Relay circuit : 14 types Numerical comparison : 7 types SFC : 8 types Logic operation : 3 types Data transfer : 25 types System function : 12 types Total: 133 types
Operating Speed	Relay instruction: 0.05 μs, Multiplication/division instruction: 0.1 μs to 0.3 μs (at integer operation) Addition/subtraction instruction: 0.1 μs (at integer operation)
Data Types	Bit (relay) : ON/OFF Integer : -32768 to +32767 (8000H to 7FFFH) Double-length integer : -2147483648 to +2147483647 (80000000H to 7FFFFFFFH) Real number : ±(1.17×10 ³⁸ to 3.40×10 ³⁸), 0

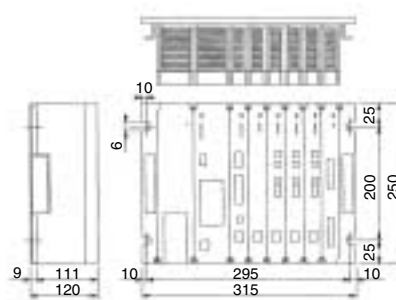
Memory retained one year or more by battery back-up
*: Shared with program memory.

Item		Code No.	Specifications	
CPU	PS-01	87317-3500x-S060y	Module for single-or multiple-CPU configuration	
	PS-02	87317-1200x	For 100 VAC/100 VDC	
	PS-03	87317-1220x	For 200 VAC	
Communication	2131F (CP-213)	87317-2130x-S011y	Register input:512 words (First 496 words for input, remaining 16 words for system) Register input:512 words (First 496 words for input, remaining 16 words for system) Message transmission:Special protocol	
	2151F (CP-215, Electrical)	87317-2150x-S011y	Register input:2048 words, Register output:512 words max. Message transmission:MEMOBUS protocol/no protocol	
	2151FQ (CP-215, Optical)	87317-2151x-S011y	Register input:2048 words, Register output:512 words max. Message transmission:MEMOBUS protocol/no protocol	
	2161F (CP-216)	87317-2160x-S020y	Register input/output:1024 words Message transmission:MEMOBUS protocol/no protocol	
	2171F (RS-232C / 485)	87317-2170x-S011y	Message transmission:MEMOBUS/MELSEC/OMRON/no protocol	
	218FXB (100M Ethernet, Optical)	87317-2184x-S020y	Message transmission:MEMOBUS/MELSEC/OMRON/no protocol	
	218TXB (100M Ethernet, Electrical)	87317-2183x-S020y	Message transmission:MEMOBUS/MELSEC/OMRON/no protocol	
	2500IF (CP-2500)	87317-2500x-S011y	Register input:1024 words, Register output:256 words max. Message transmission:MEMOBUS protocol/no protocol	
	2520IF (Vnet)	87317-2520x-S011y	Register input: 1024 words Register output: 1000 words max. Message transmission : MEMOBUS protocol/no protocol	
	2251F (CP-225)	87317-2250x-S010y	Register input/output: 1024 words	
	2601F (DeviceNet)	87317-2600x-S020y	Register input/output: 1024 words max. Message transmission: Max. 256 bytes	
	2611FM (Profibus-DP)	87317-2610x-S010y	Register input/output: 2048 words max. Message transmission: Not available	
	2621F (FL-net)	87317-2620x-S010y	Register input/output: 8096 words+8096 bits max. Message transmission: 512 words	
Motion	PO-01	87921-9200x-S010y	4-axis motion controller (pulse train output)	
I/O	LIO-01	87317-8000x	Local I/O module DI : 32 points DO : 32 points	
Input	DI-01	87317-8010x	Digital input module DI : 64 points	
Output	DO-01	87317-8020x	Digital output module DO : 64 points	
Input	CNTR-01	87317-8050x-S010y	Counter input module PI : 4 points	
Input	AI-01	87317-8030x	Analog input module AI : 8 points	
Output	AO-01	87317-8040x	Analog output module AO : 4 points	
Expansion	EXIOIF	87317-9000x	Mounting base expansion module	
2000IO Expansion	2000IOIF	87317-9010x-S010y	IF module for connecting 2000IO	
820IO Expansion	820IFR	87317-9020x	IF module for connecting 820IO (with terminator)	
820IO Expansion	820IF	87317-9021x	IF module for connecting 820IO	
820IO Bus Monitoring	820MR	87317-9030x	IF module for monitoring 820IO (with terminator)	
820IO Bus Monitoring	820M	87317-9031x	IF module for monitoring 820IO	
Mounting Base	MB-01	87317-1100x	Long mounting base for single or multiple configuration	
	MB-03	87317-1120x	Short mounting base for single configuration	
Cable	Mounting Base	WRMW41032-1	(0.5 m) EXIO extension cable	
	Extension Cable	WRMW41032-2	(1.0 m) EXIO extension cable	
	2000 I/O	JZMSZ-W20-1	YCN500001	(0.5 m) 2000 I/O extension cable
		JZMSZ-W20-2	YCN500002	(1.5 m) 2000 I/O extension cable
	Extension Cable	-	87317-13200	(0.5 m) 2000 I/O extension cable
-	-	87317-13300	(1.5 m) 2000 I/O extension cable	

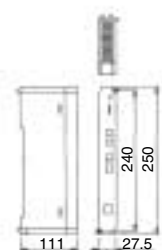
Dimensions Units:mm



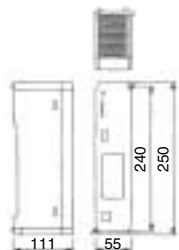
Long Mounting Base (MB-01)



Short Mounting Base (MB-03)



1-slot Width Module



2-slot Width Module

Control Pack CP-317M

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