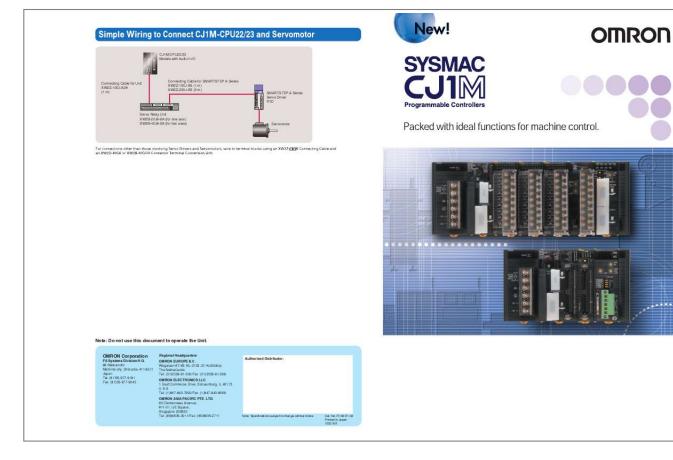# Your PDF Guides

You can read the recommendations in the user guide, the technical guide or the installation guide for OMRON CJ1M. You'll find the answers to all your questions on the OMRON CJ1M in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual OMRON CJ1M
User guide OMRON CJ1M
Operating instructions OMRON CJ1M
Instructions for use OMRON CJ1M
Instruction manual OMRON CJ1M

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Manual abstract:

OMRON Corporation FA Systems Division H.Q. 66 Matsumoto Mishima-city, Shizuoka 411-8511 Japan Tel: (81)55-977-9181 Fax: (81)55-977-9045 Regional Headquarters OMRON EUROPE B.V. Wegalaan 67-69, NL-2132 JD Hoofddorp The Netherlands Tel: (31)2356-81-300/Fax: (31)2356-81-388 OMRON ELECTRONICS LLC 1 East Commerce Drive, Schaumburg, IL 60173 U.S.A. Tel: (1)847-843-7900/Fax: (1)847-843-8568 OMRON ASIA PACIFIC PTE. LTD. 83 Clemenceau Avenue, #11-01, UE Square, Singapore 239920 Tel: (65)6835-3011/Fax: (65)6835-2711 Authorized Distributor: Note: Specifications subject to change without notice.

Cat. No. R100-E1-02 Printed in Japan 1002-3M A computer is not required at the production site, enabling downsizing and cost reductions. Connections to Programming Devices Serial Communications Unit Peripheral port Connecting Cables CS1W-CN226 (for IBM PC/AT or compatible, 2 m) CS1W-CN626 (for IBM PC/AT or compatible, 6 m) Programming Devices IBM PC/AT or compatible Support Software CS1W-CN118 RS-232C Cable XW2Z-@00S -@(@) IBM PC/AT or compatible CX-Programmer Ver. 3.

0 WS02-CXPC1-EV3 (See below.) Connecting Cable CQM1-CIF02 (for IBM PC/AT or compatible) IBM PC/AT or compatible CX-Simulator Ver. 1.3 WS02-SIMC1-E CS1W-CN114 XW2Z-200S-CV (for IBM PC/AT or compatible) XW2Z-500S-CV (for IBM PC/AT or compatible, 5 m) IBM PC/AT or compatible Note: Use version 3 of CX-Programmer with CJ1M PLCs. The following cables can be used for Host Link connections only: XW2Z-200S-V (for IBM PC/AT or compatible, 2 m) XW2Z-500S-V 9for IBM PC/AT or compatible, 5 m) CS1W-CN224 CS1W-CN624 C200H-PRO27-E CS1W-KS001-E + CS1W-CN114 CQM1-PRO01-E CS1W-KS001-E + Equipped with cable (2 m) CQM1H-PRO01-E CS1W-KS001-E + Equipped with cable (2 m) 10 CJ1M CPU Units CJ1M-CPU12/13 CJ1M-CPU22/23 Cu CPU Units Model Number of I/O points Maximum number of Expansion Racks None 1 Unit Maximum number of connectable Units 10 Units Program capacity Data memory capacity LD instruction processing speed 100 ns Built-in ports Mountable options Built-in I/O CJ1M-CPU12 320 CJ1M-CPU13 640 10 Ksteps CPU Rack: 20 Ksteps 10 Units Expansion Rack: 10 Units 10 Units 10 Ksteps CPU Rack: 20 Ksteps 10 Units Expansion Rack: 10 Units 32 Kwords (DM only, no EM) Peripheral Memory port and RS- Card (com232C port pact flash) None CJ1M-CPU22 320 CJ1M-CPU23 640 None 1 Unit 10 inputs and 6 outputs Inputs: 4 interrupt inputs (pulse catch); 2 highspeed counter inputs (Phase differential: 50 kHz; Single phase: 100 kHz) Outputs: 2 pulse outputs (2 points for positioning, 100-kHz speed control, and PWM output) Dimensions CPU Unit 2.

7 End Plate 2.7 CJ1M-CPU12/13 CJ1M-CPU22/23 (Provided with the CPU Unit.) RS-422A Converter CJ1W-CIF11 38.8 Rack Dimensions 27 90 90 83.7 34 2.7 31 65 73.9 2.7 49 Weight: 170 g 65 83.6 Weight: 20 g 14.7 W 65 90 35.

4 27.6 Weight: 120 g 11 Unit Dimensions Power Supply Units 8/16-point Basic I/O Units 2.7 Width W (mm) When Used with a CJ1WPA202 Power Supply Unit (AC, 14 W) Number of I/O Units with 31-mm width CJ1M-CPU12/13 121.7 152.7 183.7 214.7 245.7 276.7 307.7 338.

7 369.7 400.7 CJ1M-CPU22/23 139.7 170.7 201.

7 232.7 263.7 294.7 325.7 356.

7 387.7 418.7 90 W PA202 45 PA205R 80 PD025 65 W 65 81.6 90 1 2 3 4 5 6 7 8 9 10 2.7 31 65 89 32-point I/O Units Fujitsu connector 2.7 (112.5) MIL connector 64-point Basic I/O Units MIL connector 2.7 90 90 I/O Units with 20-mm width: · 32-point Basic I/O Units ·CompoBus/S Master Units I/O Units with 31-mm width: · Basic I/O Units other than the above Special I/O Units CPU Bus Units 31 65 66.5 (112.5) 65 83.

6 2.7 20 65 66.5 65 83.6 2.7 Current Consumption CPU Unit Current Consumption Model CJ1M-CPU12/ CPU13 CJ1M-CPU22/ CPU23 Current consumption Current at 5 V consumption at 24 V 0.58 A 0.64 A - Calculation Example for Power and Current Consumption The configuration in this example is possible with the CJ1W-PA202 Power Supply Unit (14 W). Model Specification Current Current consumption consumption at 5 V at 24 V 0.64 A 0.04 A 0. 08 A 0.09 A 0.11 A 0.10 A 0.096 A 0.

096 A Power Supply Unit Capacity Model Current Current consumption consumption at 5 V 24 V 0.4 A CJ1W-CPU23 CJ1W-CIF11 CJ1W-ID211 CJ1W-ID261 CJ1W-OC211 0.8 A CJ1W-OD211 CJ1W-OD261 0.8 A CPU Unit RS-422A Converter 16-point DC Input Unit 64-point DC Input Unit 16-point Relay Output Unit 16-point Relay Output Unit CJ1W-PA202 Maximum 2.8 A current output Maximum power output 14 W CJ1W-PA205R Maximum 5.

0 A current output Maximum power output CJ1W-PD025 25 W 64-point Transis- 0.17 A tor Output Unit 0.42 A 0.36 A 2.01 A 12.35 W Maximum 5.0 A current output Maximum power output 25 W CJ1W-AD08-V1 8-point Analog Input Unit CJ1W-NC413 4-axis Position Control Unit Total current consumption Total power consumption 12 Common Specifications Item Control method I/O control method Programming Instruction length Ladder instructions Execution time Basic instructions Special instructions Overhead time Unit connection method Mounting method Number of tasks Interrupt types Stored program Cyclic scan and immediate processing are both possible. Ladder diagram 1 to 7 steps per instruction Approx. 400 (3-digit function codes) 0.1 μs min.

0.3 μs min. 0.5 ms No backplane (Units joined together with connectors.) DIN track mounting (screw mounting not possible) 288 (cyclic tasks: 32, interrupt tasks: 256) Scheduled interrupts: Interrupts generated at a specified interval based on the CPU Unit's built-in clock. I/O interrupts: Interrupts from Interrupt Input Units or from built-in inputs (CJ1M-CPU22/23 only). @@@@@@tasks CIO (Core I/O) Area I/O Area 640 (40 words): CIO 000000 to CIO 003915 (words CIO 0000 to CIO 039) Setting of first rack words can be changed from default (CIO 0000) to CIO 0000 to CIO 0999. I/O bits are allocated to Basic I/O Units. 10 input bits: CIO 296000 to CIO 296009 6 output bits: CIO 296100 to CIO 296105 Built-in I/O bits are allocated to the CPU Unit's built-in inputs and outputs (CJ1MCPU22/23 only). 3,200 (200 words): CIO 100000 to CIO 119915 (words CIO 1000 to CIO 1199) Link bits are used for data links in Controller Link systems.

These bits can be used as work bits when not used for the applications described on the left. Built-in I/O Area Link Area CPU Bus Unit 6,400 (400 words): CIO 150000 to CIO 189915 (words CIO 1500 to CIO 1899) Area Special I/O Unit Area Serial PLC Link Area DeviceNet Area 15,360 (960 words): CIO 200000 to CIO 295915 (words CIO 2000 to CIO 2959) Special I/O Unit bits are allocated to Special I/O Units (10 words per Unit). 90 (90 words): CIO 310000 to CIO 318900 (words CIO 3100 to CIO 3189) Serial PLC Link words are used for data links in Serial PLC Link systems. 9,600 (600 words): CIO 320000 to CIO 379915 (words CIO 3200 to CIO 3799) DeviceNet bits are allocated to Slaves for DeviceNet Unit remote I/O communications when the master function is used with fixed allocations.

Fixed allocation setting 1 Outputs: CIO 3200 to CIO 3263 Inputs: CIO 3300 to CIO 3363 Fixed allocation setting 2 Outputs: CIO 3400 to CIO 3463 Inputs: CIO 3500 to CIO 3563 Fixed allocation setting 3 Outputs: CIO 3600 to CIO 3663 Inputs: CIO 3700 to CIO 3763 13 Item Internal I/O Area (work bits) Specification 4,800 (300 words): CIO 120000 to CIO 149915 (words CIO 1200 to CIO 1499) 37,504 (2,344 words): CIO 380000 to CIO 614315 (words CIO 3800 to CIO 6143) These bits in the CIO Area are used as work bits in programming to control program execution.

They cannot be used for external I/O. 8,192 (512 words): W00000 to W51115 (words W000 to W511) These bits are used as work bits in programming to control program execution. They cannot be used for external I/O. Note: When using work bits in programming, use bits in the Work Area first before using bits from other areas. These bits can be used as work bits when not used for the applications described on the left.

Work Area Holding Area 8,192 (512 words): H00000 to H51115 (words H000 to H511) Holding bits are used to control program execution, and maintain their ON/OFF status when PLC is turned OFF or the operating mode is changed. Read-only: 7,168 (448 words): A00000 to A44715 (words A000 to A447) Read/write: 8,192 bits (512 words): A44800 to A95915 (words A448 to A959) Auxiliary bits are allocated specific functions. 16 bits (TR0 to TR15) Temporary bits are used to store ON/OFF execution conditions at program branches. @@Used to set parameters for Special I/O Units. CPU Bus Unit DM Area: D30000 to D31599 (100 words × 16 Units). Used to set parameters for CPU Bus Units. IR0 to IR15 Store PLC memory addresses for indirect addressing. @@@@@@@@@@@@@@@@Time constants can be set for inputs from CJ-series Basic I/O Units. @@@@@@@This function is not supported for block program areas. @@Overwrite protection: Set using DIP switch.

Copy protection: Password set using CX-Programmer. User-defined errors (i.e., user can define fatal errors and ighspeed counter input 0 (phase B decremental, or direction input) - - - - - - Out- General-purput pose output Pulse CW/ output CCW - - - - - - General- General- General- General- General- Generalpurpose purpose purpose purpose purpose purpose output 0 output 1 output 2 output 3 output 4 output 5 Pulse output 0 (CW) Pulse output 0 (pulse) Pulse output 0 (CCW) Pulse output 1 (pulse) Pulse output 1 (CW) Pulse output 0 (direction) Pulse output 1 (CCW) Pulse output 1 (direction) - - - - - - - - - - - Pulse + direction Pulse with variable duty factor (PWM) output Origin search - PWM output 0 PWM output 1 Origin search 0 (origin input signal) Origin search 0 (origin proximity input signal) Origin search 1 (origin input signal) Origin search 1 (origin proximity input signal) Origin search 0 (positioning completion signal) Origin search 1 (positioning completion signal) - - - - - - - Origin search 0 (error counter reset output) Origin search 1 (error counter reset output) Built-in Input Specifications Interrupt Inputs and Quick-response Inputs Item Number of interrupt and quick-re- 4 total sponse input points Interrupt inputs Interrupt input mode Counter mode Quick-response input At the rising or falling edge of the input signal, the CPU Unit's cyclic program is interrupted and the corresponding I/O interrupt task (task number 140 to 143) is executed. @@@@The input response frequency is 1 kHz. @@@@Note: The present values are updated each cycle as part of common processing. Use the PRV instruction to read the latest value. Control method Target value comparison Up to 48 target values and interrupt task numbers can be registered. Range comparison Up to 8 upper limits, lower limits, and interrupt task numbers can be registered. Z-phase signal + software reset: Counter reset when the Z-phase input is turned ON with the reset bit (see below) ON.

Software reset: Counter reset when the reset bit (see below) turns ON. Reset bit: A531, bit 00 (high-speed counter 0); A531, bit 01 (high-speed counter 1) Counter reset method Built-in Output Specifications Positioning and Speed Control Functions Item Output frequency Frequency acceleration/ deceleration rate Changing set values during instruction execution Pulse output method Specification 1 Hz to 100 kHz (1 to 100 Hz: 1-Hz units; 100 Hz to 4 kHz: 10-Hz units; 4 to 100 kHz: 100-Hz units) 1 Hz to 2 kHz (every 4 ms), set in 1-Hz units Acceleration and deceleration for the PLS2 instruction can be set individually. The target frequency, acceleration/deceleration rate, and target position can be changed. The target frequency and acceleration/deceleration rate can only be changed for positioning at a constant speed. CW/CCW or pulse + direction Number of output pulses Relative coordinate specifications: 0000 0000 to 7FFF FFFF Hex (2,147,483,647 in either incremental or decremental direction) Absolute coordinate specifications: 8000 0000 to 7FFF FFFF Hex (-2,147,483,648 to 2,147,483,647) Instruction for origin search/reset Instructions for positioning and speed control ORG (ORIGIN SEARCH): Used to perform origin searches or origin resets according to set parameters.

PLS2 (PULSE OUTPUT): Used to output pulses for trapezoidal positioning with individually set acceleration and deceleration rates. PULS (SET PULSES): Used to set the number of output pulses. SPED (SPEED OUTPUT): Used to output pulses without acceleration or deceleration. @@INI (MODE CONTROL): Used to stop pulse output. @@@@Specification Hardware Specifications Input Specifications Item Number of input points Input type Input points Input voltage 10 points 24-VDC input or line driver input (switched with wiring) 24-VDC input IN0 to IN5 20.

4 to 26.4 VDC IN6 to IN9 Line driver input IN0 to IN5 IN6 to IN9 Conforms to RS-422 line driver (equivalent to AM26LS31). The power supply voltage on the connected side must be 5 V±5%. 4.0 k 4.1 mA 13 mA 10 mA Specification Input impedance Input current (typ.) ON voltage (min.) ON voltage (max.) Response speed (for general-purpose input) 3.6 k 6.

2 mA 5.0 VDC/1 mA max. 17.4 VDC min./3 mA min. ON response time 8 ms max. (Select 0, 0.05, 1, 2, 4, 8, 16, or 32 ms in PC Setup.) OFF response time 8 ms max. (Select 0, 0.

05, 1, 2, 4, 8, 16, or 32 ms in PC Setup.) Circuit Configuration Input Circuit configuration IN0 to IN5 3.6 k IN6 to IN9 4.0 k 24 V Internal circuit 100 24 V 100 LD+ 750 LD+ 1.5 K 1000 pF 1000 pF 0 V/LD- 100 0 V/LD- 100 18 Internal circuit Internal circuit OUT0 to OUT3 Internal circuit General-purpose Output Specifications: Transistor Outputs (Sinking) Outputs Rated voltage OUT0 to OUT3 5 to 24 VDC OUT4 to OUT5 External power supply Circuit configuration 10.

2 to 26.4 VDC, 50 mA min.

Lowvoltage circuit +V Lowvoltage circuit +V OUT4 to OUT5 COM COM Allowable voltage 4.75 to 26.4 V range Maximum switching current 0. 3 A per point, 1.8 A per Unit Pulse Output Specifications (OUT0 to OUT3) Item Specification Maximum switch- 30 mA, 4.75 to 26.4 VDC ing capacity Minimum switch- 30 mA, 4.75 to 26.4 VDC ing capacity Maximum output frequency Output waveform 100 kHz OFF 90% 10% 2 µs min. 4 µs min. Outputs per com- 6 points mon Maximum inrush current Leakage current Residual voltage OFF response time Fuse 3.0 A per point for 10 ms max. 0.

1 mA max. 0.6 V max. 0.1 ms max. ON response time 0.1 ms max. ON None 19 .