CJ-series Position Control Units (High-Speed type)

Motion Control Capabilities with Unit Synchronization and Even Higher Speed

• Models are available with 2 or 4 axes and open-collector or line-driver outputs.

The CJ1W-NC214/NC414 have open-collector outputs and the CJ1W-NC234/NC434 have line-driver outputs.

Control 2 or 4 Axes

High-speed, high-resolution position control is possible for servomotors and pulse motors, and even linear motors and direct drive motors.



CJ1W-NC234



CJ1W-NC434

Features

Improve Productivity with High-speed Control

- A faster pulse output startup time has been achieved. Pulse output will start as fast as 0.1 ms from when the CPU Unit sends the command. (Previous models started pulse output in 2 ms. Refer to the *Operation Manual* for conditions and other details.)
- Pulse output is possible at up to 4 Mpps for compatibility with linear motors and direct drive motors. This achieves both high resolution and high speed.

Increased Added Value with More Advanced Features

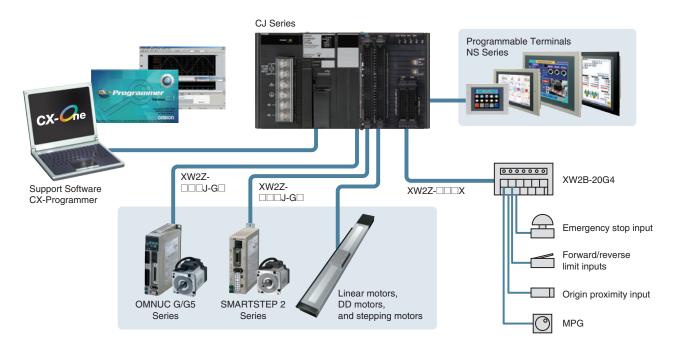
- Operation between the CPU Unit and the Position Control Unit can be synchronized using a high-speed bus. Synchronized control is possible between up to five Units, or 20 axes. A wide range of applications can be achieved by also using the electronic cam function.
- Built-in high-speed counters enable monitoring the present values of the motors while controlling positions, all with just a Position Control Unit. The absolute encoders of OMNUC G-series, G5-series and W-series Servomotors are supported, enabling an absolute positioning system. This eliminates the need to redefine the origin after power interruptions, helping to provide extra added value.
- Select from direct operation or memory operation. Up to 500 positioning sequences can be saved as the data for memory operation for each axis. Any of three end patterns, independent, automatic, or consecutive, can be set for each sequence, and repeat instructions and jump instructions can be used to achieve complex motion control.
- Linear interpolation, circular interpolation, index table control, feeder control, and an MPG function can be used to achieve the functionality of a Motion Control Unit with these Position Control Units.
- A wide range of functions enables easily achieving position control, including teaching, overrides, backlash compensation, zone settings, and S-curve acceleration/deceleration.

Reduce TCO

- All Support Software functions have been integrated into the CX-Programmer. In combination with data tracing and other CX-Programmer functions, work efficiency is improved from design and debugging to system implementation and maintenance.
- The Position Control Units with line-driver outputs generate the 5-VDC power for the line driver internally. Control is possible by providing only a 24-VDC power supply, in the same way as for Units with open-collector outputs.
- A function block library is being prepared that provides function blocks for all Position Control Unit functions. This will reduce ladder programming work. Even sync applications that use an electronic cam will be easy to construct with the function block library.

CJ1W-NC□□4

System Configuration



Ordering Information

International Standards

- The standards are abbreviated as follows: U: UL, U1: UL (Class I Division 2 Products for Hazardous Locations), C: CSA, UC: cULus, UC1: cULus (Class I Division 2 Products for Hazardous Locations), CU: cUL, N: NK, L: Lloyd, and CE: EC Directives.
- Contact your OMRON representative for further details and applicable conditions for these standards.

Position Control Units

Unit turns	Name	Specifications		No. of unit	Cur consum		Madal	Standards
Unit type	Name	Control method/Control output interface	Number of control axes	numbers allocated	5 V system	24 V system	Model	Standards
CJ1 Position Control Special Units (High- I/O Units Speed type)		sition Control ts (High- sed type) Pulse-train line-driver output with Pulse Counter Function	2 axes	2	0.27	-	CJ1W-NC214	UC1. CE
			4 axes		0.31	-	CJ1W-NC414	
			2 axes	2	0.27	-	CJ1W-NC234	001, 02
			4 axes	axes	0.31	-	CJ1W-NC434	

Note: This unit cannot be used with the Machine Automation Controller NJ-series.

Support Software

	Specifications				
Product name		Number of licenses	Media	Model	Standards
FA Integrated Tool Package CX-One Ver.4.⊡	The CX-One is a comprehensive software package that integrates Support Software for OMRON PLCs and components. CX-One runs on the following OS. OS: Windows XP (Service Pack 3 or higher), Vista, or 7 Note: Except for Windows XP 64-bit version CX-One Ver.4. ☐ includes CX-Programmer Ver.9. ☐. For details, refer to the CX-One catalog (Cat. No. R134).	1 license *1	DVD *2	CXONE-AL01D-V4	_

*1. Multi licenses are available for the CX-One (3, 10, 30, or 50 licenses).

*2. The CX-One is also available on CD (CXONE-AL C-V4).



Connecting Cables

Appli	cable Units	Applicable	Servo Drive	Number of	Cable	Mastal
Output Type	Model	Name	Model	control axes	Length	Model
					1m	XW2Z-100J-G13
		OMNUC G/G5 Series	R88D-GT/-KT		3m	XW2Z-300J-G13
			R7D-BP		1m	XW2Z-100J-G16
		SMARTSTEP2		1 axis	3m	XW2Z-300J-G16
					1m	XW2Z-100J-G14
pen-collector	CJ1W-NC⊡14	OMNUC W Series	R88D-WT		3m	XW2Z-300J-G14
utput		OMNUC G/G5 Series	R88D-GT/-KT		1m	XW2Z-100J-G5
		OMINUC G/G5 Series	R00D-G1/-K1		3m	XW2Z-300J-G5
		SMARTSTEP2		2 axes	1m	XW2Z-100J-G8
		SWARTSTEFZ	R7D-BP	2 8885	3m	XW2Z-300J-G8
		OMNUC W Series	R88D-WT		1m	XW2Z-100J-G6
		Ownoc w Series			3m	XW2Z-300J-G6
					1m	XW2Z-100J-G9
		OMNUC G/G5 Series	R88D-GT/-KT	1 axis	5m	XW2Z-500J-G9
					10m	XW2Z-10MJ-G9
			R7D-BP		1m	XW2Z-100J-G12
		SMARTSTEP2			5m	XW2Z-500J-G12
					10m	XW2Z-10MJ-G12
			R88D-WT		1m	XW2Z-100J-G10
		OMNUC W Series			5m	XW2Z-500J-G10
ine-driver output	CJ1W-NC⊟34				10m	XW2Z-10MJ-G10
	00111-110-054				1m	XW2Z-100J-G1
		OMNUC G/G5 Series	R88D-GT/-KT		5m	XW2Z-500J-G1
					10m	XW2Z-10MJ-G1
					1m	XW2Z-100J-G4
		SMARTSTEP2	R7D-BP	2 axes	5m	XW2Z-500J-G4
					10m	XW2Z-10MJ-G4
					1m	XW2Z-100J-G2
		OMNUC W Series	R88D-WT		5m	XW2Z-500J-G2
					10m	XW2Z-10MJ-G2

Devices for External Signal Connection

Devices for External Signal Connection

Name	Specifications	Model
	Cable length: 0.5m	XW2Z-C50X
	Cable length: 1.0m	XW2Z-100X
Connecting Cables for	Cable length: 2.0m	XW2Z-200X
Connector Terminal Block	Cable length: 3.0m	XW2Z-300X
	Cable length: 5.0m	XW2Z-500X
	Cable length: 10.0m	XW2Z-010X
	20-points, M2.4 screw terminal	XW2B-20G4
Connector Terminal Block	20-points, M3.5 screw terminal	XW2B-20G5
	20-points, M3 screw terminal	XW2D-20G6

Servo Drive Connector

Name	Specifications	Model	
Connector Socket	For a 50-pin MIL plug-crimp socket connector For AWG24	XG5M-5032-N	
Connector Cover	For a 50-pin MIL plug-crimp socket connector	XG5S-5022	

Cables with Crimp Terminals (20 Poles)

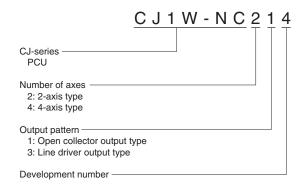
Cable Length	Model
1.0m	XW2Z-100F
1.5m	XW2Z-150F
2.0m	XW2Z-200F
3.0m	XW2Z-300F
5.0m	XW2Z-500F
10.0m	XW2Z-010F
15.0m	XW2Z-15MF
20.0m	XW2Z-20MF

Accessories

MIL Connectors are not included. Use one of the applicable connector or a dedicated cable with connectors listed above.

Model of PCUs

You can identify the number of axes and output pattern from the model number.





Mountable Racks

	NJ system CJ system (CJ1, C		(CJ1, CJ2) CP1H system		NSJ system		
Model	CPU Rack	Expansion Rack	CPU Rack	Expansion Backplane	CP1H PLC	NSJ Controller	Expansion Backplane
CJ1W-NC214/234/414/434	34 Not supported		5 Units	5 Units (per Expansion Backplane)	Not Supported	Not Supported	5 Units

Note: With this PCU counts 1 PCU as 2 Component Units.

Accordingly, design an appropriate configuration that meets the formula below:

Number of this PCUs installed $\times 2$ + Number of other PCUs installed ≤ 10

For example, if you install 5 PCUs in 1 rack, you cannot install other PCUs.

Unit Versions and Programming Devices

The following tables show the relationship between unit versions and CX-Programmer versions.

		Required Programming Device					
CPU Unit	Functions		Programming				
		Ver. 7.1 or lower	Ver. 8.0	Ver. 8.02 or higher	Console *		
CJ1W-NC□□4 Unit Ver.1.0	Functions for unit version 1.0	Not supported	Not supported	Supported	Not supported		
* Brogromming Concolo	* Programming Cancele connet be used for C 11W NC $\Box\Box$ 4						

Programming Console cannot be used for CJ1W-NC□□4

Function List of Function Block Library (FBL)

Functional Function Block Library (FBL)

1	Move Absolute	14	Manual Pulses Output
2	Unlimited Move Absolute	15	Read Status
3	Move Relative	16	Read Parameter
4	Speed Control	17	Read Error
5	Origin Search	18	Read Present Position
6	Origin Return	19	Present Position Latch
7	Deceleration Stop	20	Write Parameter
8	Operation Command	21	Save Parameter
9	Error Reset	22	Teaching
10	Deviation Counter Reset	23	Present Position Preset
11	Run Program	24	Override Setting
12	Interrupt Feeding	25	Torque Limits
13	Jogging / Inching	26	Absolute Encoder's Origin Position Offset Setting
-			

Application Function Block Library (FBL)

1	Electronic Cam	4	Trailing Synchronization
2	Electronic Shaft	5	Link Operation
3	3 Virtual Pulse		

Specifications

General Specifications

On a sitila shi sa ika m	Model				
Specification item	CJ1W-NC214/234	CJ1W-NC414/434			
Device complex voltage	5 VDC (unit)				
Power supply voltage	24 VDC (external power supply)				
Allowable power supply voltage range	21.6 to 26.4 VDC (external power supply)				
Internal current consumption	5 VDC, 270 mA maximum	5 VDC, 310 mA maximum			
Current consumption of external power supply	24 VDC NC214 13 mA maximum NC234 44 mA maximum	24 VDC NC414 26 mA maximum NC434 90 mA maximum			
Dimensions	$90 \times 51 \times 65 (H \times W \times D)$	$90 \times 62 \times 65 (H \times W \times D)$			
Weight	170 g maximum	220 g maximum			
Ambient operating temperature	0 to 55°C				
Mounting position	CJ-series CPU Rack or CJ-series Expansion Rack				
Maximum number of units per rack	5 units				
Maximum number of units per CJ system	20 units (when up to 3 expansion racks are connected)				
Occupied unit	No. 2				
Applicable standards	cULus, EC directives				
Models other than above conform to the gene	aral specifications of the C I series				

Models other than above conform to the general specifications of the CJ series.

Performance Specifications

0		Model					
Specific	ation item	CJ1W-NC214/234	CJ1W-NC414/434				
Applicable PLCs		CJ-series					
Number of occupied inputs/ outputs	Number of words	18CH *					
Controlled drivers		Servo Drive of pulse train input type or stepping motor drivers NC214/414: Open collector output type NC234/434: Line driver output type					
Pulse output method		Phase difference pulse output, forward/reverse	direction pulse output, pulse + direction output				
Controls	Control method	Open-loop control by pulse train output					
Controis	Number of controlled axes	2 axes	4 axes				
Units of control		Pulse, mm, inch, degree					
Positioning functions		Memory operation, direct operation					
	Independent operation	Independent, 2 axes	Independent, 4 axes				
	Linear interpolation	2 axes maximum	4 axes maximum				
	Circular interpolation	2 axes maximum	2 axes maximum				
	Speed control	Independent, 2 axes	Independent, 4 axes				
	Interrupt Constant-pitch Feed	Independent, 2 axes	Independent, 4 axes				
Desition commond	Data	-2147483648 to +2147483647					
Position command	Number of data	500 per task (4 tasks per unit)					
Speed command	Data	Position control: 1 to 2147483647 Speed control: -2147483648 to 2147483647 However, this limits the maximum output frequency based on whether the maximum speed is 4 Mpps (NC234/434) or 500 kpps (NC214/414).					
	Number of data	500 per task					
Acceleration/deceleration	Data	0 to 250000 ms					
time	Number of data	500 per task					
	Override	0.01% to 500.00% (settable for each axis)					
Function	Software limits	-2147483647 to 2147483646 command unit (Settable for each axis)					
	Backlash Compensation	0 to 50000 command unit (settable for each axis	3)				
	Number of input words	1 word (switchable for each controlled axis)					
MPG and external encoder	Input interface	Photocoupler input					
counter input	Maximum response frequency	500 kHz					
	Number of input words	4 words (1 word per axis)					
Feedback pulse counter	Input interface	Line receiver input					
input	Maximum response frequency	NC234/434: 4 MHz (phase difference multiplicat NC214/414: 500 kHz (phase difference multiplic	ation of 4 times: 125 kHz)				
 The factor of the state of the state of the state 	and a second sector second sector sector by						

* This indicates the number of occupied words of special I/O Unit area. In addition, this occupies areas that correspond to up to 144 words according to the number of axes and functions which you use.

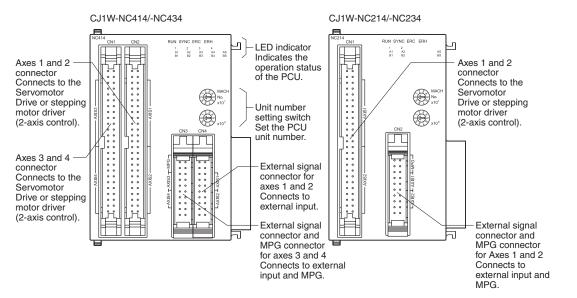
Functional Specifications

	Function item		Description		
Control function		Absolute			
		movement	Specify the absolute/relative target position and target speed directly in the ladder program to perform		
		Relative movement	positioning.		
		Speed control	Specify the target speed directly in the ladder program to perform speed feed.		
	Single axis	•	Externally issue an interrupt input during absolute movement, relative movement or speed control to feed		
	control	Interrupt Feeding	the machine by a constant amount to perform positioning.		
		Rotational axis control	Rotational axes suitable for feeder and index table control are supported. In addition to forward/reverse direction positioning, you can also specify short-cut operation.		
		Target position and target speed change	Change the target position or target speed during absolute movement, relative movement or speed contro		
	Multi-axis control	Linear interpolation	This control starts/ends the operations of multiple axes simultaneously and connects the start position to target position of each axis by a straight line. Linear interpolation of up to 4 axes is possible.		
		Circular interpolation	You can combine 2 desired axes and control each axis in a manner which the axes draw a circular path. Three methods are available to specify a circular arc: "Specification of target position and center point", "specification of target position, radius and direction" and "target position and passing points".		
	Memory	Automatic operation and continuous operation	Set the target positions, target speeds and operation patterns in the PCU beforehand to perform a series of operations automatically. Continuous positioning and speed changes are also possible.		
	operation	Sequence function	Memory operation data incorporates a sequence feature that allows for repetition of a given operation, start/end of operation data via external inputs, and so on. Accordingly, the PCU can perform various operation sequences without affecting the ladder program of PLC.		
	Origin Search		This function uses an external sensor, etc. to detect the mechanical origin of the system. You can select a desired origin search operation for your system from 15 different origin search operation patterns.		
	Origin Return		This function performs the return operation to the established mechanical origin.		
Manual operation	Present Positio	n Present	It changes the present position to the specified data and establishes the origin.		
function	Deceleration st	ор	The operating axis decelerates to a stop.		
	JOG Operation		This function feeds the axis in the forward/reverse direction at a constant speed.		
	Inching operation	on	The axis inches in the forward/reverse direction.		
	MPG operation		Connect a manual pulsar and perform manual feed.		
	Command unit	setting	You can set a desired unit of control for each axis according to the machine.		
	Acceleration/ deceleration control	Auto acceleration/ deceleration control	This function automatically generates an acceleration/deceleration curve for axis operation. You can select the trapezoidal curve or the S-curve based on a tertiary function.		
		Acceleration/ deceleration time change	You can change the acceleration/deceleration time during acceleration/deceleration.		
			You can select one of three methods to connect speeds in different operation patterns during continuous pattern memory operation.		
		Acceleration/ deceleration point switch			
	Override	deceleration			
	Override Backlash Comp	deceleration point switch	pattern memory operation.		
		deceleration point switch	pattern memory operation. This function changes the speed of the axis which is currently in positioning operation.		
	Backlash Comp	deceleration point switch	This function changes the speed of the axis which is currently in positioning operation. This compensates for the mechanical plays to increase the positioning accuracy.		
	Backlash Comp M code	deceleration point switch pensation	pattern memory operation. This function changes the speed of the axis which is currently in positioning operation. This compensates for the mechanical plays to increase the positioning accuracy. You can output M codes to implement interlocking with external machines during memory operation. You can set a desired zone and assess whether the present position is inside the zone. Up to 3 zones are		
	Backlash Comp M code Zone setting	deceleration point switch pensation	pattern memory operation. This function changes the speed of the axis which is currently in positioning operation. This compensates for the mechanical plays to increase the positioning accuracy. You can output M codes to implement interlocking with external machines during memory operation. You can set a desired zone and assess whether the present position is inside the zone. Up to 3 zones are settable for each axis. A feedback pulse counter input is available for each axis. You can connect encoder pulse outputs from a Servo Drive to monitor deviation from the command		
	Backlash Comp M code Zone setting Feedback pulse	deceleration point switch pensation	pattern memory operation. This function changes the speed of the axis which is currently in positioning operation. This compensates for the mechanical plays to increase the positioning accuracy. You can output M codes to implement interlocking with external machines during memory operation. You can set a desired zone and assess whether the present position is inside the zone. Up to 3 zones are settable for each axis. A feedback pulse counter input is available for each axis. You can connect encoder pulse outputs from a Servo Drive to monitor deviation from the command position, etc. You can input encoder pulses from a Servo Drive to a feedback pulse counter to use a motor with absolute encoder. This function supports OMRON W-series, G-series and G5-series Servomotors with absolute		
Auxiliary control function	Backlash Comp M code Zone setting Feedback pulse Absolute encod	deceleration point switch pensation e counter	 pattern memory operation. This function changes the speed of the axis which is currently in positioning operation. This compensates for the mechanical plays to increase the positioning accuracy. You can output M codes to implement interlocking with external machines during memory operation. You can set a desired zone and assess whether the present position is inside the zone. Up to 3 zones are settable for each axis. A feedback pulse counter input is available for each axis. You can connect encoder pulse outputs from a Servo Drive to monitor deviation from the command position, etc. You can input encoder pulses from a Servo Drive to a feedback pulse counter to use a motor with absolute encoder. This function supports OMRON W-series, G-series and G5-series Servomotors with absolute encoder. This function enables loading of the present position into memory operation position data. It supports not only the present command position, but also the present position from the feedback pulse 		
	Backlash Comp M code Zone setting Feedback pulse Absolute encod Teaching	deceleration point switch pensation e counter	 pattern memory operation. This function changes the speed of the axis which is currently in positioning operation. This compensates for the mechanical plays to increase the positioning accuracy. You can output M codes to implement interlocking with external machines during memory operation. You can set a desired zone and assess whether the present position is inside the zone. Up to 3 zones are settable for each axis. A feedback pulse counter input is available for each axis. You can connect encoder pulse outputs from a Servo Drive to monitor deviation from the command position, etc. You can input encoder pulses from a Servo Drive to a feedback pulse counter to use a motor with absolute encoder. This function supports OMRON W-series, G-series and G5-series Servomotors with absolute encoder. This function enables loading of the present position into memory operation position data. It supports not only the present command position, but also the present position from the feedback pulse counter. An output signal is available for operating the torque limit switch input of a Servo Drive. You can turn this output signal ON/OFF directly in the ladder program. Also, Origin Search by holding 		
	Backlash Comp M code Zone setting Feedback pulse Absolute encod Teaching	deceleration point switch pensation e counter der	 pattern memory operation. This function changes the speed of the axis which is currently in positioning operation. This compensates for the mechanical plays to increase the positioning accuracy. You can output M codes to implement interlocking with external machines during memory operation. You can set a desired zone and assess whether the present position is inside the zone. Up to 3 zones are settable for each axis. A feedback pulse counter input is available for each axis. You can connect encoder pulse outputs from a Servo Drive to monitor deviation from the command position, etc. You can input encoder pulses from a Servo Drive to a feedback pulse counter to use a motor with absolute encoder. This function supports OMRON W-series, G-series and G5-series Servomotors with absolute encoder. This function enables loading of the present position into memory operation from the feedback pulse counter. An output signal is available for operating the torque limit switch input of a Servo Drive. You can turn this output signal ON/OFF directly in the ladder program. Also, Origin Search by holding supports automatic switching of torque limits. You can set forward/reverse direction software limits of axis operation. If the positioning target exceeds 		

CJ1W-NC□□4

External Interface

Name of Each Part



LED Display

LED name	Display color	Status	Explanation				
DUN	Green	Lit	Normal operation				
RUN	Green	Unlit	The power supply is OFF, a hardware error has occurred, or the PLC detects a PCU error.				
ERC	Red	Lit	An error is occurring.				
		Unlit	Other than the above				
ERH	Red	Lit	An error is occurring in the PLC.				
		Unlit	Other than the above				
1		Lit	Pulse output to Axis 1 in progress (forward/reverse direction)				
	Orange	Flashing	An error related to a connection cable, data, etc. of axis 1 has occurred.				
		Unlit	Other th	Other than the above			
		Lit	Pulse output to Axis 2 in progress (forward/reverse direction)				
2	Orange	Flashing	An error related to a connection cable, data, etc. of axis 2 has occurred.				
		Unlit	Other th	Other than the above			
		Lit	Pulse output to Axis 3 in progress (forward/reverse direction)				
3	Orange	Flashing	An error related to a connection cable, data, etc. of axis 3 has occrred.				
		Unlit	Other than the above				
	Orange	Lit	Pulse output to Axis 4 in progress (forward/reverse direction)				
4		Flashing	An error related to a connection cable, data, etc. of axis 4 has occrred.				
		Unlit	Other th	Other than the above			
A1, B1	Orange	Lit	ON	Phase A/B-input status of the Axis 1 feedback counter			
AI, DI		Unlit	OFF	ON when lit, OFF when unlit			
A2, B2	Orange	Lit	ON	Phase A/B-input status of the Axis 2 feedback counter			
A2, D2		Unlit	OFF	ON when lit, OFF when unlit			
A3, B3	Orange	Lit	ON	Phase A/B-input status of the Axis 3 feedback counter			
A3, B3		Unlit	OFF	ON when lit, OFF when unlit			
A4, B4	Orange	Lit	ON	Phase A/B-input status of the Axis 4 feedback counter			
A4, D4		Unlit	OFF	ON when lit, OFF when unlit			
AS, BS	Orange	Lit	ON	Phase A/B-input status of the MPG input			
A3, D3		Unlit	OFF	ON when lit, OFF when unlit			
SYNC	Green	Lit	In the S	YNCHRONOUS OPERATION mode			
STINC		Unlit	Other th	nan the above			

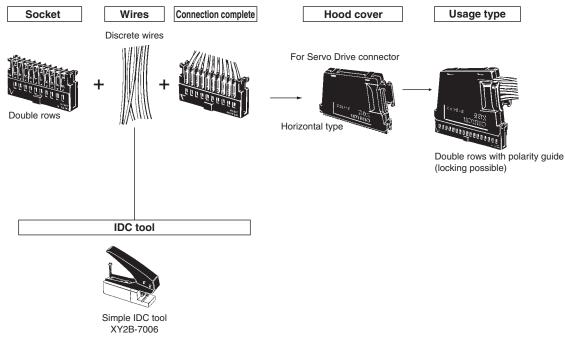
CJ1W-NC

Wiring of Servo Drive Connector

Con	nector type	Model
Flat-cable connector		XG4M-5030-T *1
	Socket	XG5M-5032-N *2
IDC connector for discrete wires	Sockei	XG5M-5035-N *3
	Hood cover	XG5S-5022 (horizontal)

*1. This connector comes with a strain relief. To connect to the PCU, use a connector with strain relief.
*2. The applicable wire is AWG24 (UL-1061).
*3. The applicable wire is AWG28 to 26 (UL-1007).

Configuration Diagram for IDC Connector for Discrete Wires

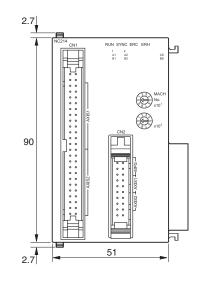


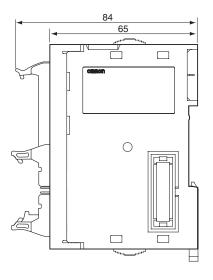
Dimensions

Position Control Unit (High-Speed type)

CJ1W-NC214/-NC234 (2-axis control)

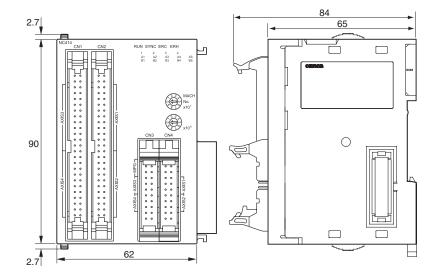






CJ1W-NC414/-NC434 (4-axis control)





Related Manuals

Manual Number		Model	Name	Contents
English	Japanese	Model	ivame	Contents
W477	SBCE-354	CJ1W-NC214/234/414/434	Position Control Units Operation Manual	Provides information on operating and installing Position Control Units, including details. on basic settings, memory operation, direct operation from CPU and other functions.
W446	SBCA-337	CXONE-AL C-V/ AL D-V	CX-Programmer Operation Manual)	Describes operating procedures for the CX-Programmer. Also refer to the <i>Software User's Manual</i> (W473) and <i>Instructions</i> <i>Reference Manual</i> (W474) when you do programming.

Read and Understand This Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

Warranty and Limitations of Liability

WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

LIMITATIONS OF LIABILITY

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

Application Considerations

SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- · Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this catalog.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- · Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

PROGRAMMABLE PRODUCTS

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

Disclaimers

CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons.

It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the products may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

ERRORS AND OMISSIONS

The information in this document has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.

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In the interest of product improvement, specifications are subject to change without notice.

Industrial Automation Company