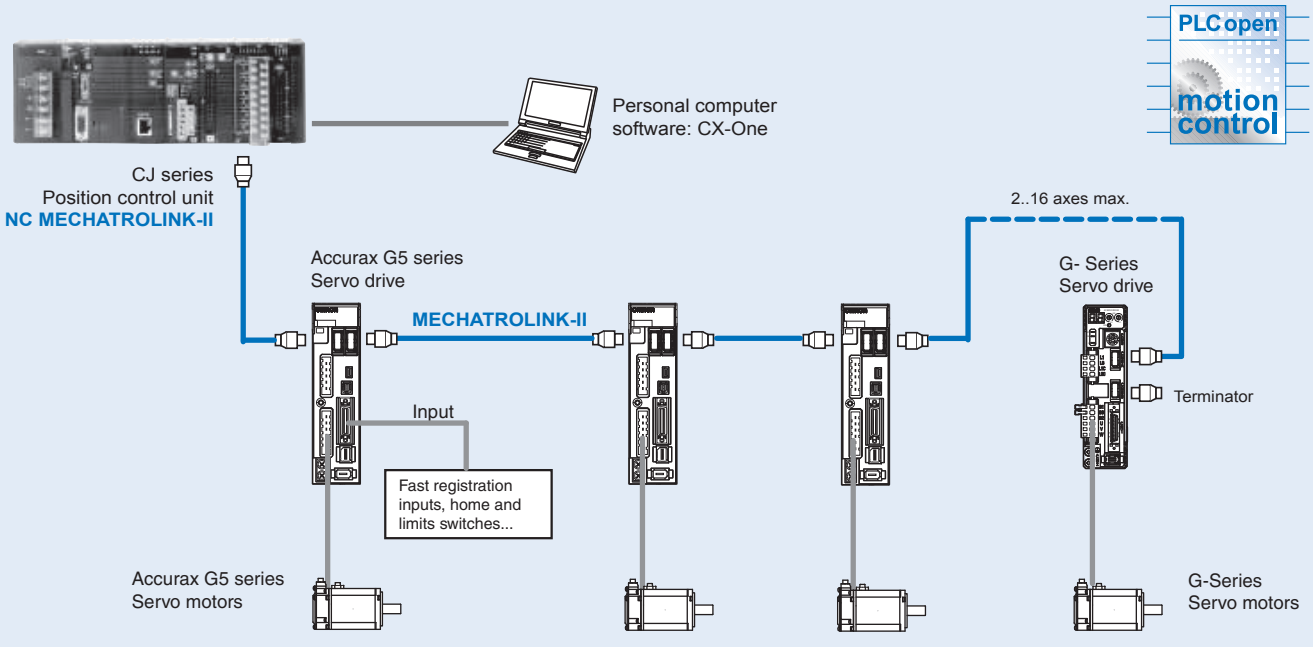
CJ1W-NC271/471/F71 - NC MECHATROLINK-II

Position control unit

Multi-axis point-to-point positioning controller over MECHATROLINK-II Motion Bus

- Position control units with 2, 4 or 16 axes.
- High-speed bus MECHATROLINK-II is specially designed for motion control.
- Supports position, speed and torque control.
- Programming languages: ladder, function blocks. Supports PLC Open Function Blocks.
- Smart active parts for OMRON HMIs terminals reduce engineering time.
- Access to the complete system from one point. Network setup, servo drives configuring and monitoring, and PLC programming.

System configuration



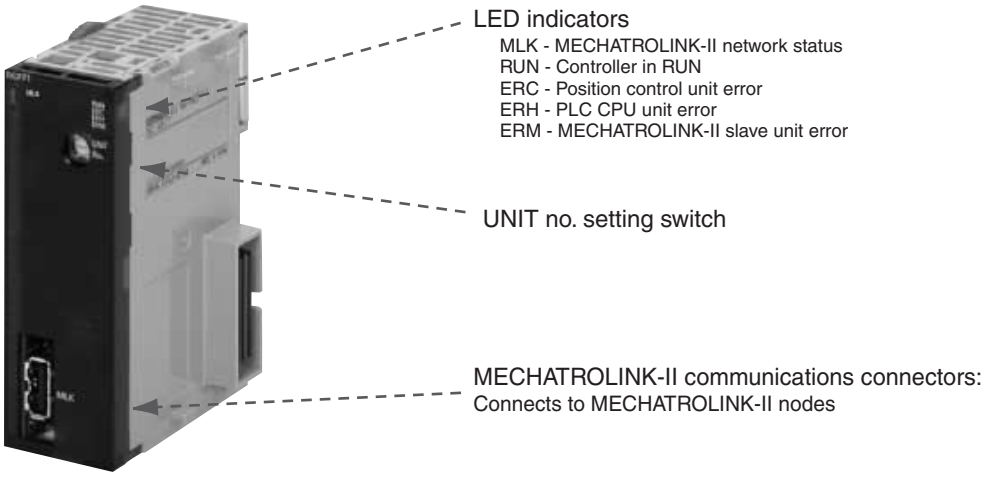
Specifications

Position control unit

Model		CJ1W-NC271	CJ1W-NC471	CJ1W-NCF71
Classification		CJ-series CPU bus unit		
Applicable PLCs		CJ-series		
		CJ-series V. 3.0 or later in order to use function blocks (recomended CJ1G-CPU45 or CJ1H-CPU□)		
Possible unit number settings		0 to F		
Control method		MECHATROLINK-II (position, speed and torque control)		
Controlled devices		Accurax G5 and G-Series servo drives with MECHATROLINK-II built-in		
Controlled axes		2 maximum	4 maximum	16 maximum
I/O allocations	Common operating memory area	Words allocated in CPU bus unit area: 25 words (15 output words, 10 input words)		
	Axis operating memory area	Allocated in one of the following areas (user-specified): CIO, work, auxiliary, holding, DM, or EM area. Number of words allocated: 50 words (25 output words, 25 input words) × highest axis No. used		
Control units	Position command unit	Command unit: depends on the electronic gear setting in the servo parameters. Default setting: pulses		
	Speed command unit for position control	Command units/s		
	Acceleration/deceleration speeds for position control	10,000 command units/s^2		
	Speed command unit for speed control	0.001% of the motor's maximum speed		
	Torque command unit for torque control	0.001% of the motor's maximum torque		
Control command range	Position command range	-2,147,483,648 to 2,147,483,647 (command units)		
	Speed command range for position control	0 to 2,147,483,647 (command units/s)		
	Acceleration/deceleration speeds for position control	1 to 65,535 (10,000 command units/s^2)		
	Speed command range for speed control	-199.999% to 199.999% The upper limit is restricted by the maximum speed of the servo motor.		
	Torque command range for torque control	-199.999% to 199.999% The upper limit is restricted by the maximum torque of the servo motor.		
Control functions	Servo lock/unlock	Locks and unlocks the servo drive.		
	Position control	Positions to an absolute position or relative position according to the specified target position and target speed specified from the ladder program.		
	Origin determination	• Origin search: establishes the origin using the specified search method. • Present position preset: changes the present position to a specified position to establish the origin. • Origin return: returns the axis from any position to the established origin. • Absolute encoder origin: establishes the origin using a servo motor that has an absolute encoder, without having to use an origin search.		
	Jogging	Outputs a fixed speed in the CW or CCW direction.		
	Interrupt feeding	Performs positioning by moving the axis a fixed amount when an external interrupt input is received while the axis is moving.		
	Speed control	Performs speed control by sending a command to the servo drive speed loop.		
	Torque control	Performs torque control by sending a command to the servo drive current loop.		
	Stop functions	• Deceleration stop: decelerates the moving axis to a stop. • Emergency stop: positions the moving axis for the number of pulses remaining in the deviation counter and then stops the axis.		
	Linear interpolation	Up to 8 axes can be interpolated by using two interpolators (4 axes per interpolator) Available in unit version 1.1 or higher		
Auxiliary functions	Acceleration/deceleration curves	Sets either a trapezoidal (linear) curve, an exponential curve, or an S-curve (moving average).		
	Torque limit	Restricts the torque upper limit during position control.		
	Override	Multiplies the axis command speed by a specified ratio. Override: 0.01% to 327.67%		
	Servo parameter transfer	Reads and writes the servo drive parameters from the ladder program in the CPU unit.		
	Monitoring function	Monitors the control status of the servo drive's command coordinate positions, feedback position, current speed, torque, etc.		
	Software limits	Limits software operation for controlling positioning.		
	Backlash compensation	Compensates for the amount of play in the mechanical system according to a set value.		
	Deviation counter reset	The position deviation in the servo drive's deviation counter can be reset to 0 (unit version 1.3 or later).		
External I/O	Position control unit	One MECHATROLINK-II interface port		
	Servo drive I/O	CW/CCW limit inputs, origin proximity inputs, external interrupt inputs 1 to 3 (can be used as external origin inputs)		
Programming methods	Standard ladder	Directly over NCF unit memory area		
	Function blocks	Using standard PLC open function blocks		
	Smart active parts	Use of OMRON HMIs smart active parts optimizes CPU usage and engineering time		
Internal current consumption		360 mA or less at 5 VDC		
Weight		95 g		

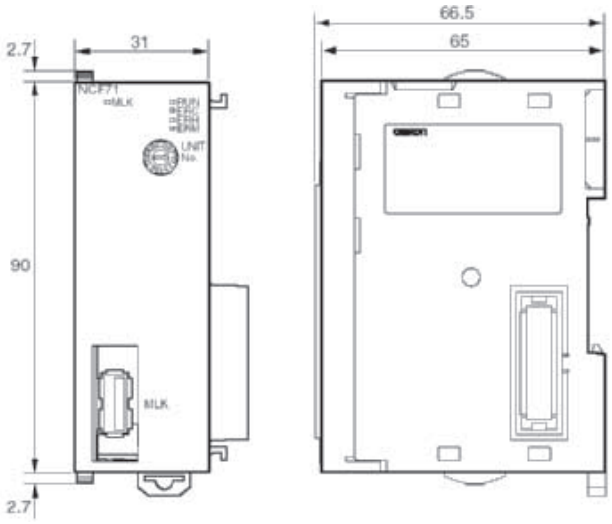
Nomenclature

CJ1W-NC271/471/F71 - position control unit



Dimensions

CJ1W-NC271/471/F71 - position control unit



Ordering information

Position controller unit

Name	Model
MECHATROLINK-II position controller unit - 16 axes	CJ1W-NCF71
MECHATROLINK-II position controller unit - 4 axes	CJ1W-NC471
MECHATROLINK-II position controller unit - 2 axes	CJ1W-NC271

MECHATROLINK-II related devices

Servo system

Name	Model
Accurax G5 servo drive ML-II built-in	R88D-KN□□□-ML2
G-Series servo drive ML-II built-in	R88D-GN□□H-ML2

Note: Refer to servo systems section for detailed specs and ordering information

MECHATROLINK-II cables

Name	Remarks	Model
MECHATROLINK-II terminator	Terminating resistor	JEPMC-W6022
MECHATROLINK-II cables	0.5 meter	JEPMC-W6003-A5
	1 meter	JEPMC-W6003-01
	3 meters	JEPMC-W6003-03
	5 meters	JEPMC-W6003-05
	10 meters	JEPMC-W6003-10
	20 meters	JEPMC-W6003-20
	30 meters	JEPMC-W6003-30

Computer software

Specifications	Model
CX-One version 2.0 (CX-Motion NCF 1.70 or higher) CX-One version 3.0 (CX-Motion NCF 1.90 or higher) CX-One version 4.0 or higher	CX-One

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. I09E-EN-02B

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