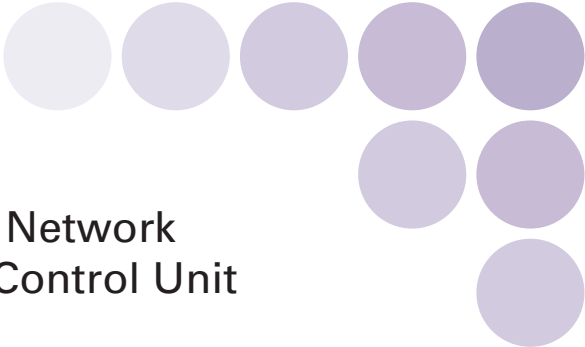


New!

OMRON

SYSMAC CJ-Series Position Control Unit CJ1W-NCF71



Transforming Devices with Motion Field Network
MECHATROLINK-II-compatible Position Control Unit
New W-Series Compact Servo Driver



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.

Note: Do not use this document to operate the Unit.

Printed on 100%
Recycled Paper



Authorized Distributor:

Note: Specifications subject to change without notice. Cat. No. R118-E1-01 Printed in Japan 0904-1M

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

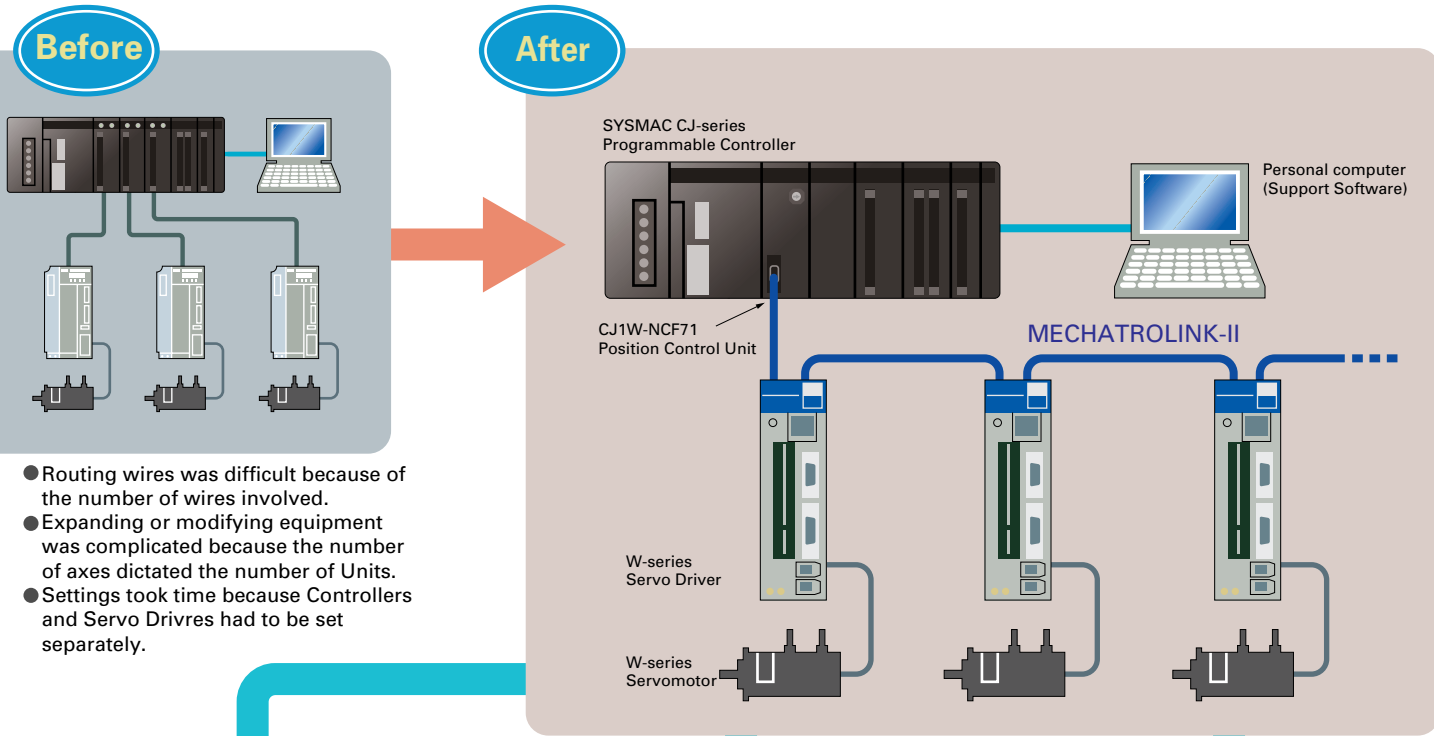
OMRON EUROPE B.V.
Wegalaan 67-69, NL-2132 JD Hoofddorp
The Netherlands
Tel: (31)2356-81-300/Fax: (31)2356-81-388

OMRON ELECTRONICS LLC
1 East Commerce Drive, Schaumburg, IL 60173
U.S.A.
Tel: (1)847-843-7900/Fax: (1)847-843-8568

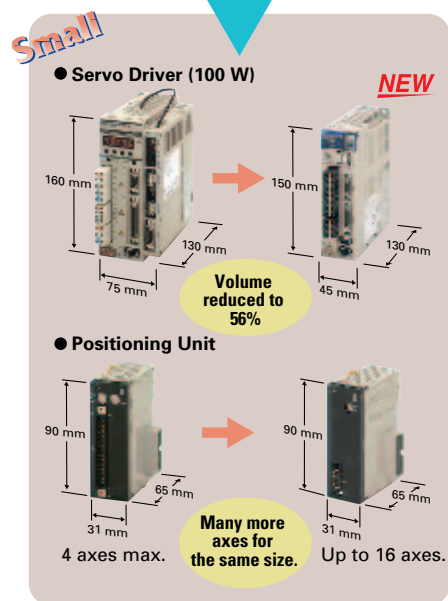
OMRON ASIA PACIFIC PTE. LTD.
83 Clemenceau Avenue,
#11-01, UE Square,
Singapore 239920
Tel: (65)6835-3011/Fax: (65)6835-2711

Quick and Simple Multi-axis System Implementation

Introducing a Position Control Unit that can control up to 16 axes across a MECHATROLINK-II* high-speed field network. With it, every aspect of multi-axis systems from machine design to future expansions can be changed quickly and simply.



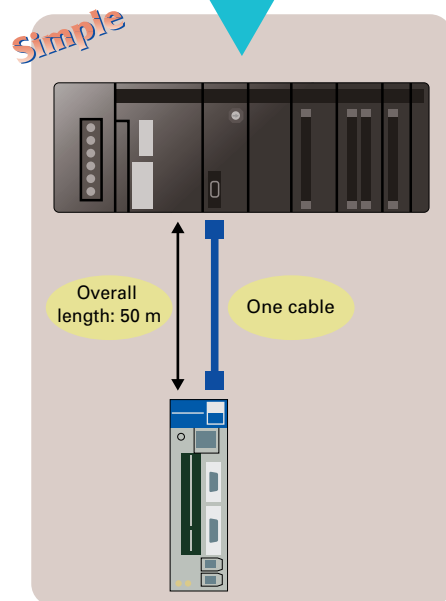
More Compact



Even smaller

Previously, W-series Units had to be connected to a MECHATROLINK-II Module. Now, OMNUC W-series AC Servo Drivers with built-in MECHATROLINK-II communications are available. This reduces the volume to 2/3 or more of previous models.

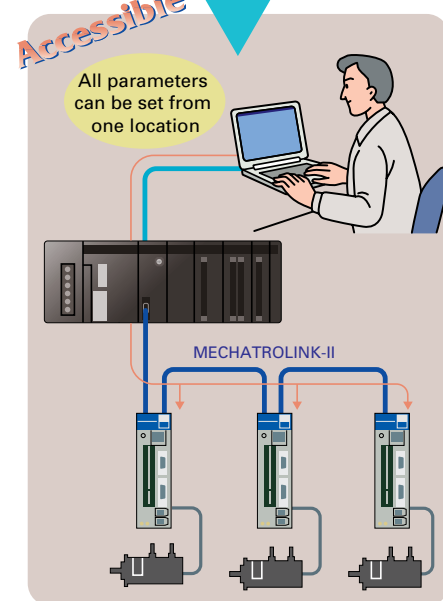
Less Wiring



Single-cable connection offers wiring flexibility

Servo Driver connection was greatly simplified: just one shielded twisted-pair cable is needed with a MECHATROLINK-II network. The overall cable length is 50 m (30 m max. with 16 axes connected) and there is less wiring and more flexibility in device arrangement.

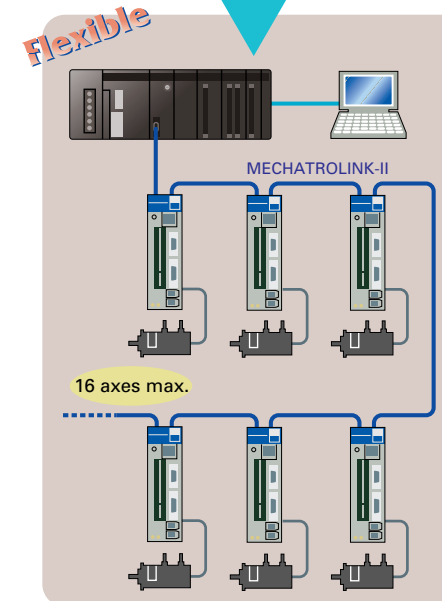
Centralized Data Control



Less Time Spent on Startup and Maintenance

Servo Driver parameters can be set from the PLC. This means that settings and adjustments can be performed from one location rather than having to connect a Programming Device to each Servo Drive individually. Servo Drive alarm status and other information, such as speed and torque, can also be monitored from the PLC.

Multi-axis Control



Simple Expansion

An easily expandable system can be constructed that is just as efficient now with a few axes or later with up to 16 axes.

A Whole New World of Machine Control from OMRON

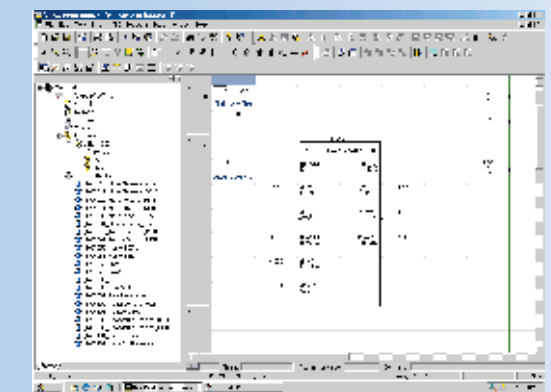
OMRON has developed a whole new environment that seamlessly integrates different control devices and networks over the entire life cycle of equipment and machines, ranging from design and startup to operation and maintenance. The system will still be viable as new systems are developed and new control devices and controllers become available. It all begins with OMRON Standard Libraries.

OMRON Standard Libraries

OMRON Standard Libraries are software applications that customers can load into their system and use without modification. The OMRON FB Library and Smart Active Parts (SAPs) Library are available now. These libraries simplify the software developed for interface components between Programmable Controllers (PLCs) or Programmable Terminals and various other control devices. They also improve the quality of the software by using standardized software components.

OMRON FB Library

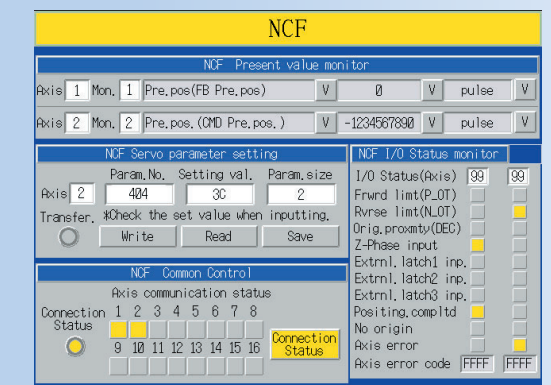
The OMRON FB Library contains functional components for Programmable Controllers (PLCs). These components can be used by customers to produce finished programs that interface with various control devices in much less time. Since the components are standardized, they also improve the quality of the finished programs.



Frequently used ladder programming is provided in each function block. Several function blocks form a library that facilitates program and program asset development.

Smart Active Parts (SAPs) Library

The Smart Active Parts (SAPs) Library, formerly known as the Device Library, consists of screens with functions for Programmable Terminals. SAPs can be used on screens developed by customers to produce finished screens that interface with various control devices in much less time. Since the components are standardized, they also improve screen quality.



The SAPs include various operating screens for Position Control Units. Simply paste SAPs to simplify design work and eliminate unnecessary user programming.

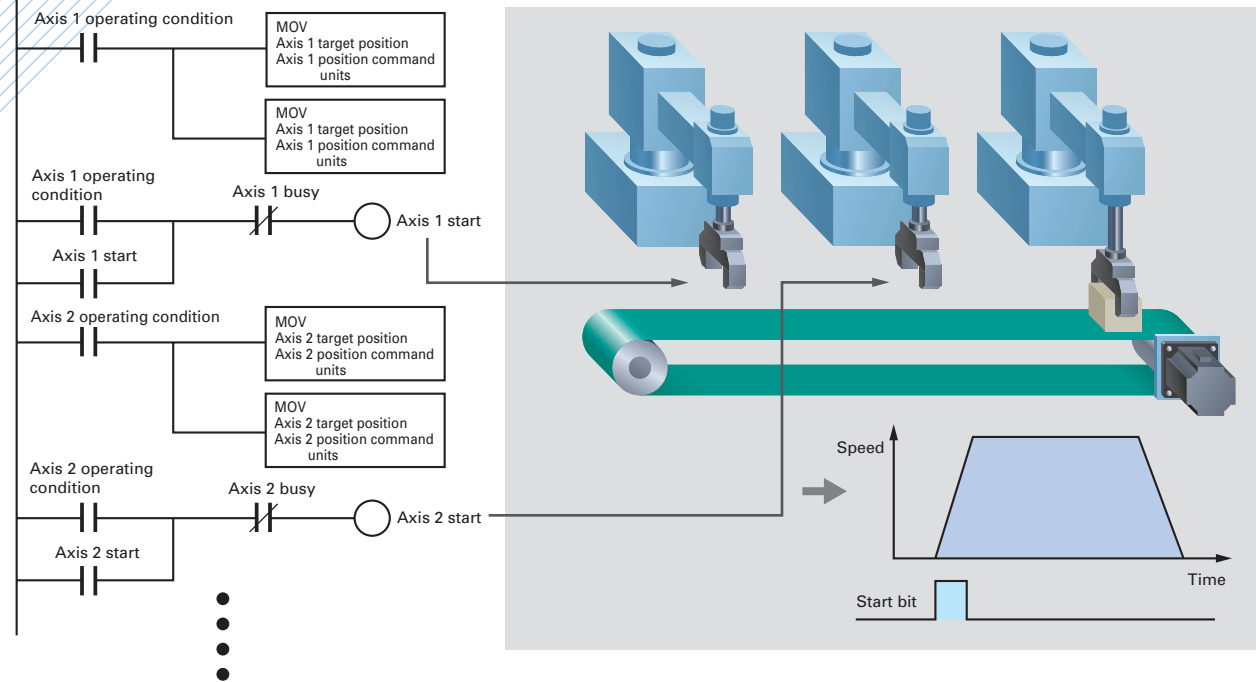
The OMRON FB Library and Smart Active Parts Library can be used with CJ-series Programmable Controller CPU Units version 3.0 or later and NS-series Programmable Terminals version 6 or later, respectively.

*MECHATROLINK and MECHATROLINK-II are registered trademarks of Yaskawa Electric Corporation.

Simplifying the Task of Designing Various Types of Control

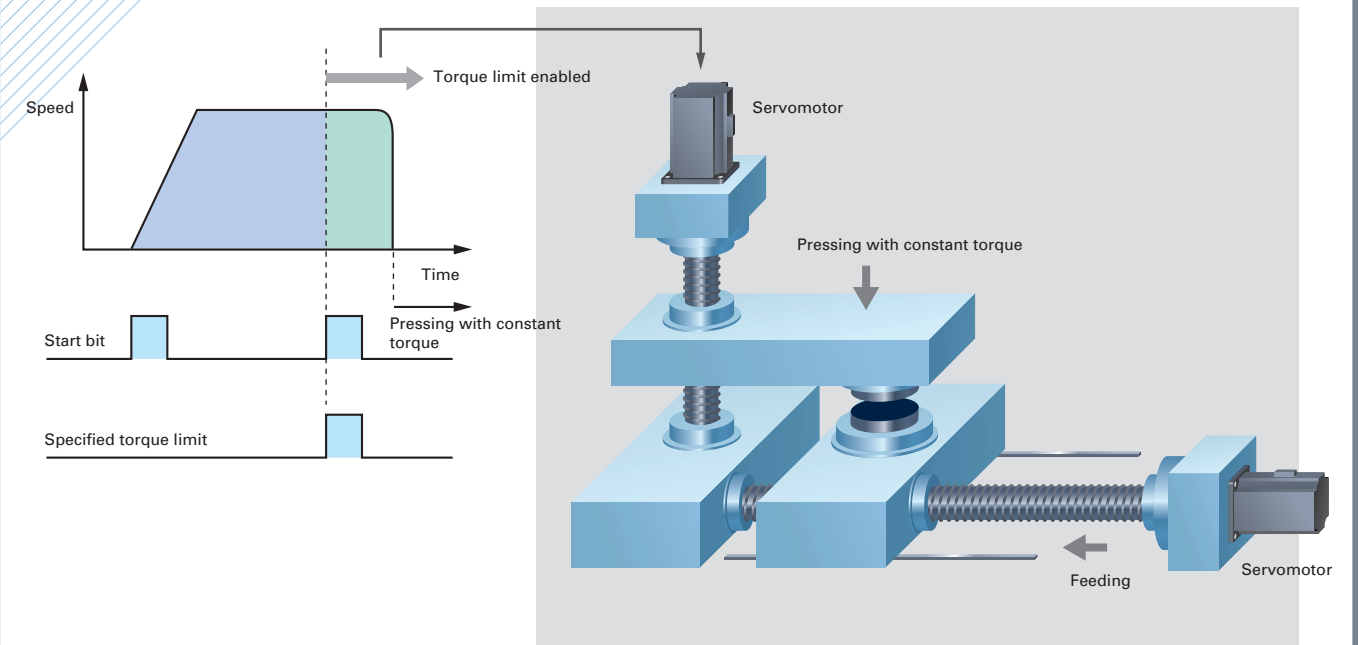
Assembly Equipment

Absolute and relative positioning of multiple axes can be performed by manipulating bits directly from the PLC. The target position and target speed can be changed instantly even while the positioning operation is in progress simply by sending another command.



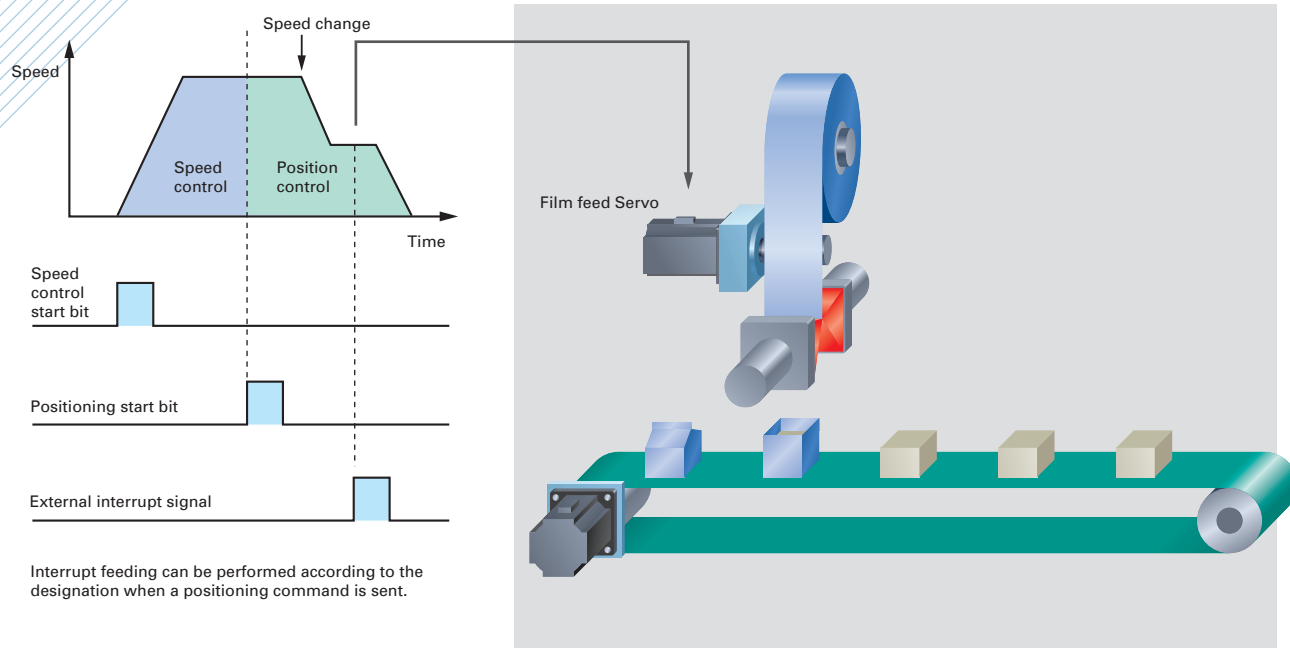
Processing Equipment

Position, speed, and torque can be controlled using a torque limit. The torque limit can be enabled or disabled and a new torque limit can be written while the axis is operating.



Feeders

Just as with position control, speed and torque can also be controlled by operating bits directly from the PLC. The position, speed, and torque can be changed while the axis is operating simply by turning ON individual control bits.



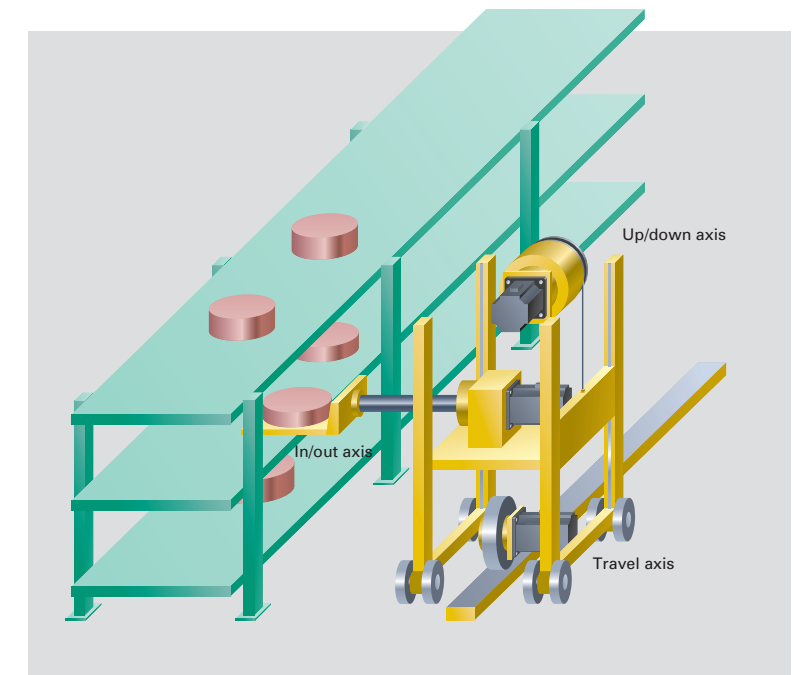
Conveyors

This example uses a W-series Servomotor with an Absolute Encoder. This eliminates establishing the origin each time the equipment is started up.

Establish the origin and set the offset the first time only.

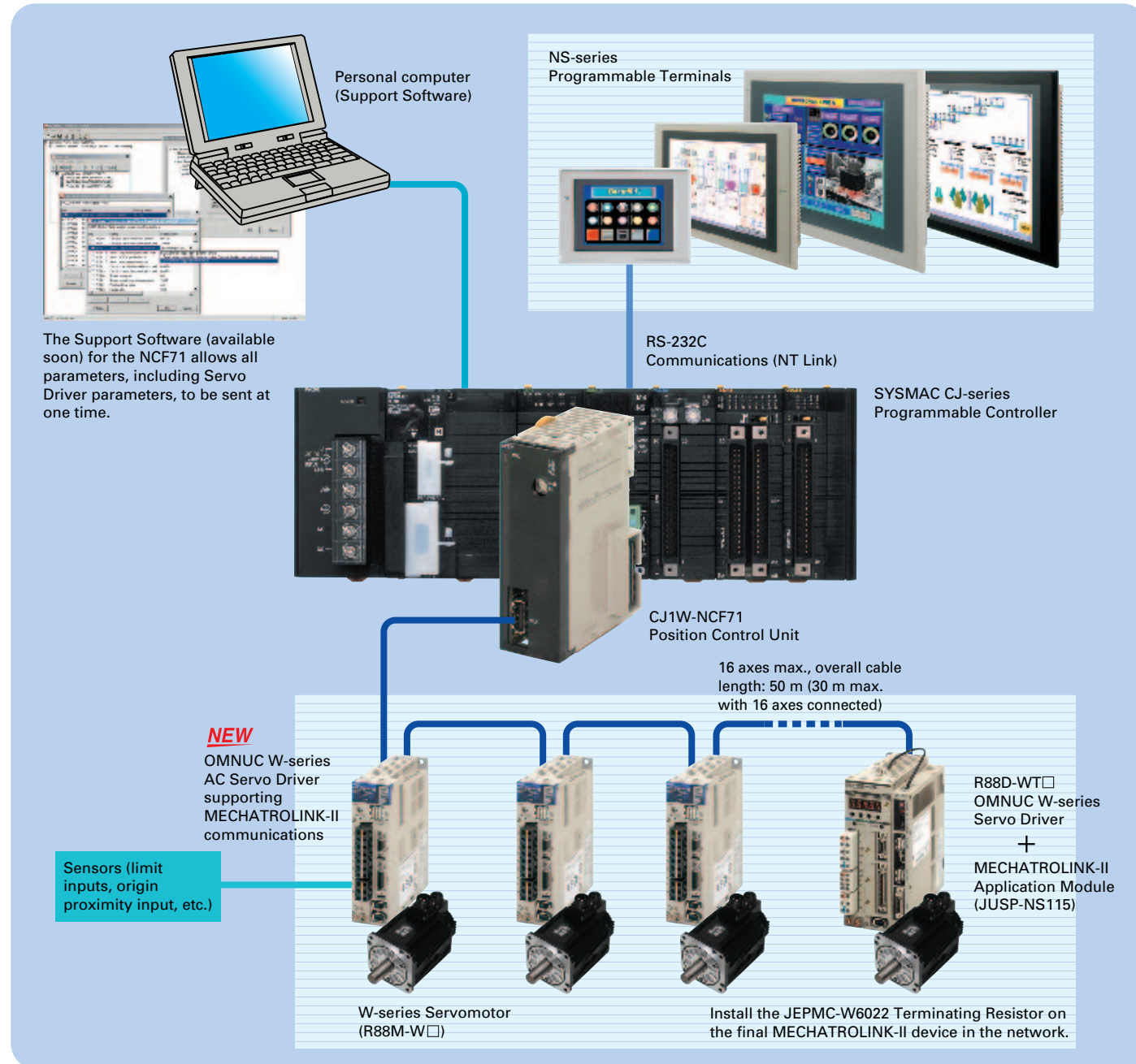
After that, just turn ON the power to start operation.

This simplifies standby and recovery processing when faults such as a power interruptions occur.



Full advantage can be taken of more advanced Servo Drivers and Servomotors to meet customer needs thanks to motion field network capabilities that include monitoring functions for various Servo Driver status conditions and a wide speed command range.

System Configuration Examples



Ordering Information

Name	Model
Position Control Unit	CJ1W-NCF71

Related Products

Name	Yaskawa model number	OMRON model number	Remarks
MECHATROLINK-II Application Module	JUSP-NS115	FNY-NS115	—
MECHATROLINK-II Cable	JEPMC-W6003-A5	FNY-W6003-A5	0.5 m
	JEPMC-W6003-01	FNY-W6003-01	1.0 m
	JEPMC-W6003-03	FNY-W6003-03	3.0 m
	JEPMC-W6003-05	FNY-W6003-05	5.0 m
	JEPMC-W6003-10	FNY-W6003-10	10 m
	JEPMC-W6003-20	FNY-W6003-20	20 m
JEPMC-W6003-30	FNY-W6003-30	30 m	
MECHATROLINK-II Terminating Resistor	JEPMC-W6022	FNY-W6022	—

The MECHATROLINK-II Application Module, Cables, and Terminating Resistor (all made by Yaskawa Electric Corporation) can be ordered from OMRON using our model numbers in the table above.

Support Software

Name	Model
CJ1W-NCF71 Support Software CX-Motion-NCF	WS02-MNCT1

Specifications

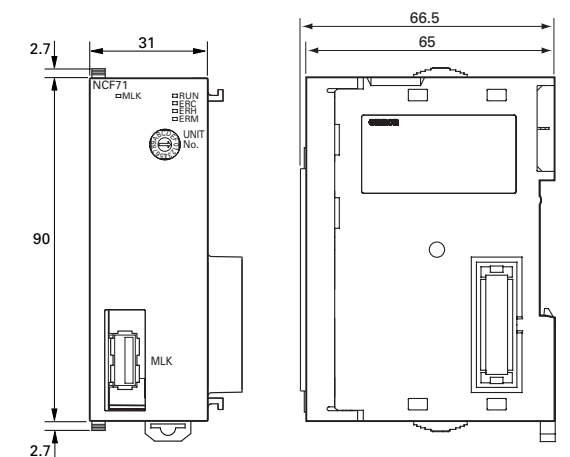
Item	Specification	
Model	CJ1W-NCF71	
Unit classification	CPU Bus Unit	
Applicable PLCs	CJ Series	
Unit number settings	0 to F	
I/O allocations	Common Operating Memory Area	Words allocated in CPU Bus Unit Area: 25 words (15 output words, 10 input words)
	Axis Operating Memory Area	Allocated in one of 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) x Highest axis number used
Compatible devices	OMRON W-series Servo Drivers equipped with MECHATROLINK-II Application Module	
Control method	Control commands executed using MECHATROLINK-II synchronous communications	
Maximum number of controlled axes	16 axes	
Control commands	Position commands	-2,147,483,648 to 2,147,483,647 (command units) (The command unit depends on the Electronic Gear Settings in the Servo Parameter)
	Speed commands for position control	0 to 2,147,483,647 (command units/s)
	Acceleration/deceleration for position control	1 to 65,535 (10,000 command units/s ²)
	Speed commands for torque control	-199.999 to 199.999% (0.001% units) The upper limit of the speed command range is a percentage (%) of the maximum speed and depends on the specifications of the Servo Driver.
Control functions	Torque commands for torque control	-199.999 to 199.999% (0.001% units) The upper limit of the torque command range is a percentage (%) of the maximum torque and depends on the specifications of the Servo Driver.
	Servo lock/unlock	Locks and unlocks the Servo Driver.
Position control	Position control	Performs absolute or relative positioning according to the target position and target speed specified by the ladder program. (Linear interpolation for up to 4 axes is possible with appropriate settings.)
	Establishing the origin	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 Servomotor that has an absolute encoder, without having to use an origin search.
Jogging	Outputs pulses at 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 Driver speed loop.	
Torque control	Performs torque control by sending a command to the Servo Driver 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 error counter and then stops the axis.	
Acceleration/deceleration curves	Any of the following can be set: a trapezoidal (linear) curve, an exponential curve, or an S-curve (moving average).	
Torque limit	Restricts the output torque during axis operation.	
Override	Multiplies the axis command speed by a specified ratio. Override: 0.01% to 327.67%	
Servo parameter transfer	Reads and writes the Servo Driver parameters from the ladder program in the CPU Unit.	
Monitoring function	Monitors the control status of the Servo Driver, such as the command coordinate positions, feedback position, current speed, and torque.	
Software limits	Sets limits on the software level applied to the positioning range of axis operations.	
Backlash compensation	Compensates for the amount of play in the mechanical system according to a set value.	
External I/O	Position Control Unit	One MECHATROLINK-II interface port
	Servo Driver I/O	CW/CCW limit inputs, origin proximity inputs, external interrupt inputs 1 to 3 (can be used as external origin inputs)
Self-diagnostic functions	Watchdog, flash memory check, memory corruption check	
Error detection functions	Overtravel, Servo Driver alarm detection, CPU error, MECHATROLINK communications error, Unit setting error	
Internal current consumption	360 mA max. at 5 V DC	
Dimensions	31 x 90 x 65 mm (W x H x D)	
Weight	95 g max.	
Ambient operating temperature	0 to 55°C	

When a MECHATROLINK-II Application Module must be mounted to a W-series Servo Driver, use the following device versions.

Device	Compatible versions
R88D-WT□ W-series Servo Driver	Version 39 or later
JUSP-NS115 MECHATROLINK-II Application Module	Version □□□03 or later

The versions of both the W-series Servo Driver and MECHATROLINK-II Application Module can be found on the nameplate on the side of each device. If an earlier version of the device is used, it will not function properly. Always use products with versions listed in the table above (or later versions).

Dimensions (Unit: mm)



AC Servo Driver and Servomotor Selection

The following combinations of Servo Drivers and Servomotors can be connected to Position Control Units.

Combination	Servo Driver	AC Servomotor
①	R88D-WN□□□-ML2 OMNUC W-series AC Servo Driver supporting MECHATROLINK-II communications	OMNUC W-series AC Servomotor Use a 200-V AC Servomotor for both 100-V and 200-V Servo Drivers.
②	R88D-WT□□□ OMNUC W-series AC Servo Driver with MECHATROLINK-II Interface Unit	OMNUC W-series AC Servomotor

Servo Driver and Servomotor Combinations

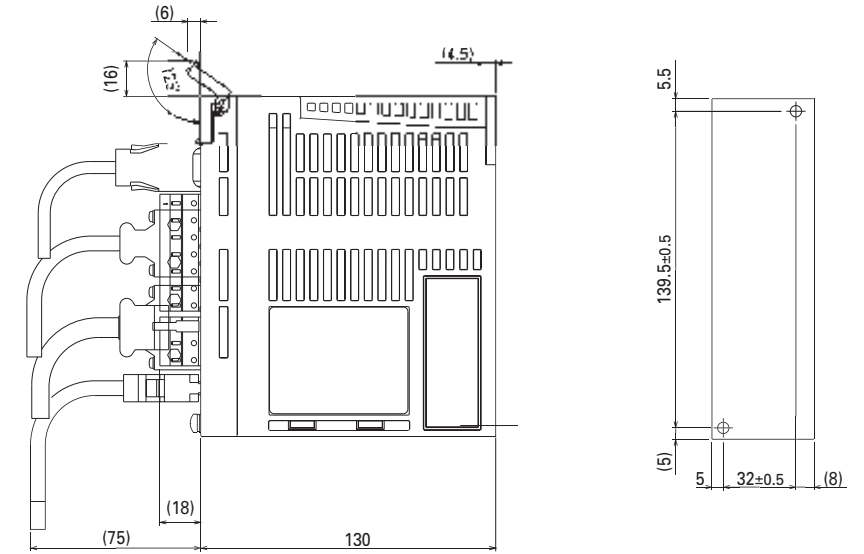
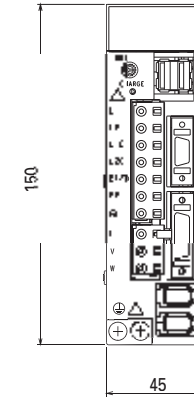
Type	Rated speed (maximum number of rotations)	Capacity	International standards CE, UL/cUL	Shaft end (not using decelerator)	Enclosure rating	①			②			Application
						100 V	200 V single phase	200 V three phase	100 V	200 V single phase	200 V three phase	
Cylinder	3000 r/min (5000 r/min)	30 W	Approved	Straight With key and tap Straight with tap	IP55 (excluding shaft opening)	—	—	—	WTA3HL	WTA3H	—	<ul style="list-style-type: none"> Low-inertia machines Machines with fast tact time Robots Assembly machines Conveyors
		50 W				WNA5L	WNA5H	—	WTA5HL	WTA5H	—	
		100 W				WN01L	WN01H	—	WT01HL	WT01H	—	
		200 W				WN02L	WN02H	—	WT02HL	WT02H	—	
		400 W				WN04L	WN04H	—	—	WT04H	—	
		750 W				—	WN08H	—	—	WT08H*	WT08H	
		1 kW		—	—	—	—	—	WT10H	—		
		1.5 kW		—	—	—	—	—	WT15H	—		
		2 kW		—	—	—	—	—	WT20H	—		
		3 kW		—	—	—	—	—	WT30H	—		
		4 kW		—	—	—	—	—	WT50H	—		
		5 kW		—	—	—	—	—	WT50H	—		
	1500 r/min (3000 r/min)	450 W	Approved	With key and tap Straight	IP67 (excluding shaft opening)	—	—	WN05H	—	—	WT05H	<ul style="list-style-type: none"> Machines requiring high torque Simple processing machines Assembly machines Transfer machines
		850 W				—	—	WN10H	—	—	WT10H	
		1.3 kW				—	—	WN15H	—	—	WT15H	
		1.8 kW				—	—	WN20H	—	—	WT20H	
		2.9 kW				—	—	—	—	—	WT30H	
		4.4 kW				—	—	—	—	—	WT50H	
	5.5 kW	—	—	—	—	—	WT60H					
	7.5 kW	—	—	—	—	—	WT75H	—				
	1500 r/min (2000 r/min)	11 kW	Approved	With key and tap Straight	IP67 (excluding shaft opening)	—	—	—	—	—	WT150H	<ul style="list-style-type: none"> Machines requiring high torque Simple processing machines Assembly machines Transfer machines
		15 kW				—	—	—	—	—	WT150H	
	1000 r/min (2000 r/min)	300 W	Approved	With key and tap Straight	IP67 (excluding shaft opening)	—	—	WN05H	—	—	WT05H	<ul style="list-style-type: none"> Machines requiring high torque Simple processing machines Assembly machines Transfer machines
		600 W				—	—	WN10H	—	—	WT08H	
900 W		—				—	WN10H	—	—	WT10H		
1.2 kW		—				—	WN15H	—	—	WT15H		
2 kW		—				—	WN20H	—	—	WT20H		
3 kW		—				—	—	—	—	WT30H		
4 kW		—				—	—	—	—	WT50H		
5.5 kW		—				—	—	—	—	WT60H		
Slim profile	100 W	Approved	Straight With key and tap Straight with tap	IP55 (excluding shaft opening) IP67	WN01L	WN01H	—	WT01HL	WT01H	—	<ul style="list-style-type: none"> Machines with limited motor depth Machines requiring water-resistant motors Semiconductor manufacturing machines Food-processing machines AGVs 	
	200 W				WN02L	WN02H	—	WT02HL	WT02H	—		
	400 W				WN04L	WN04H	—	—	WT04H	—		
	750 W				—	WN08H	—	—	WT08H*	WT08H		
	1.5 kW				—	—	—	—	WT15H	—		

*Power supply wiring must be partly changed when using 200-V single-phase Servo Drivers. The power supply input specifications are 220 to 230 VAC (+10% to -15%).

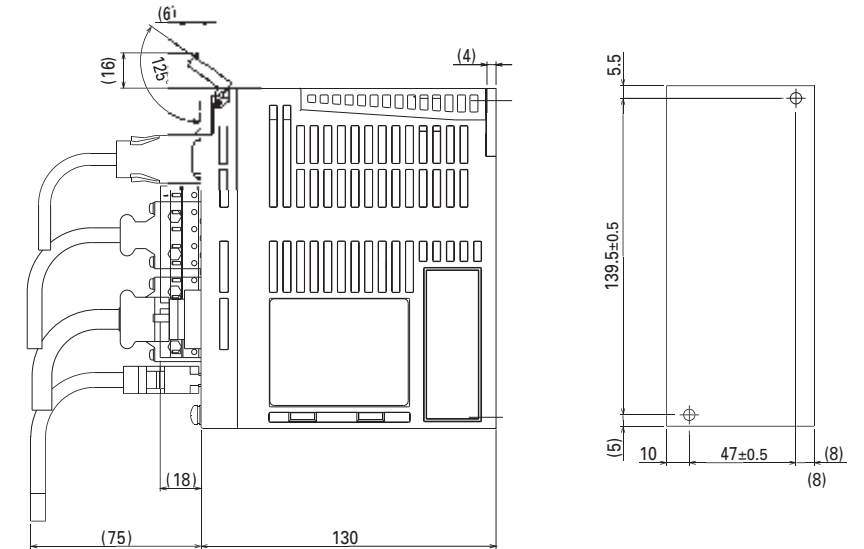
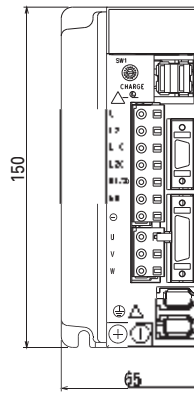
Dimensions of AC Servo Driver with MECHATROLINK-II Communications

AC Servo Drivers

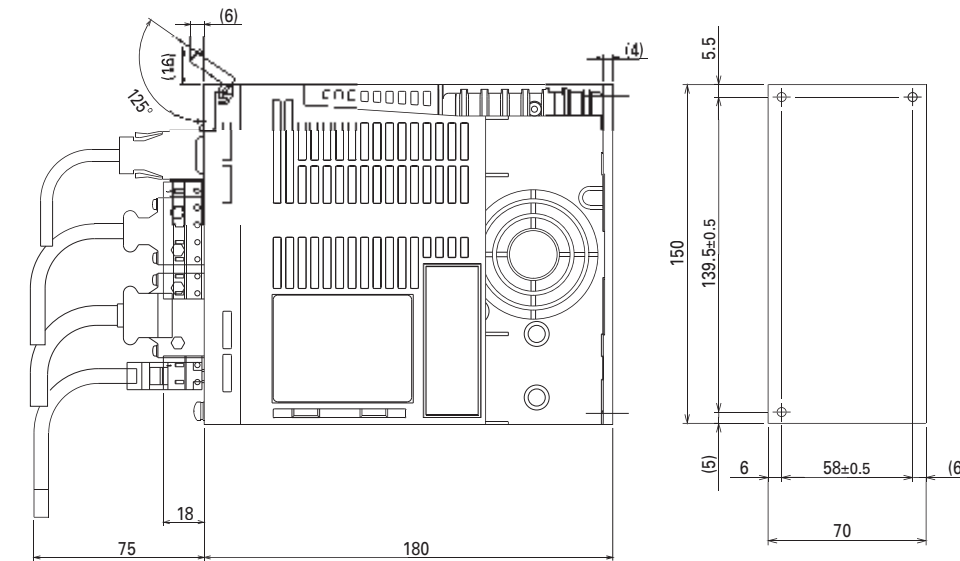
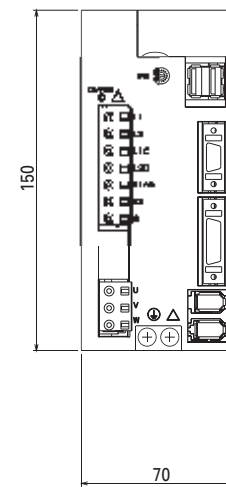
- 200 VAC: 50 W, 100 W or 200 W
R88D-WNA5H-ML2/WN01H-ML2/WN02H-ML2
- 100 VAC: 50 W, 100 W or 200 W
R88D-WNA5L-ML2/WN01L-ML2/WN02L-ML2



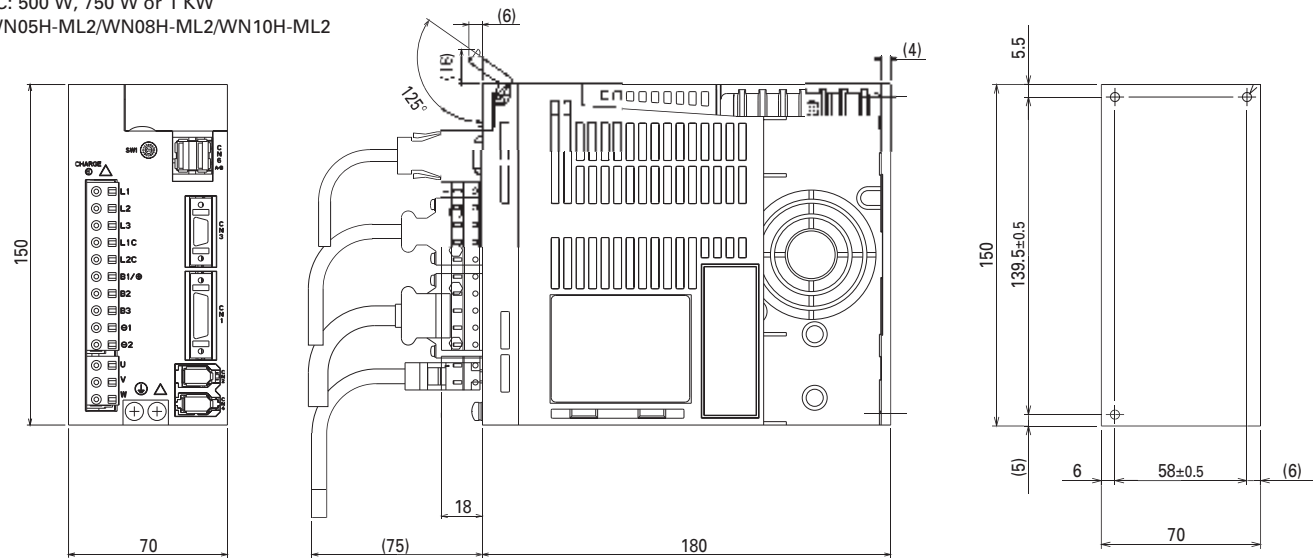
- 200 VAC: 400 W
R88D-WN04H-ML2



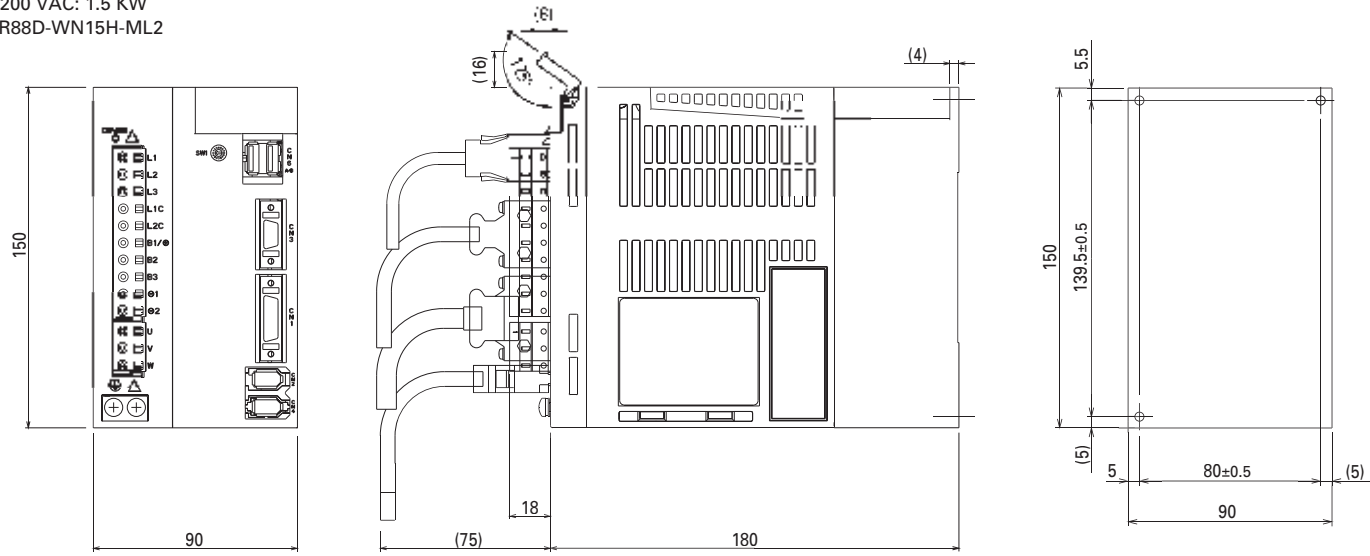
- 100 VAC: 400 W
R88D-WN04L-ML2



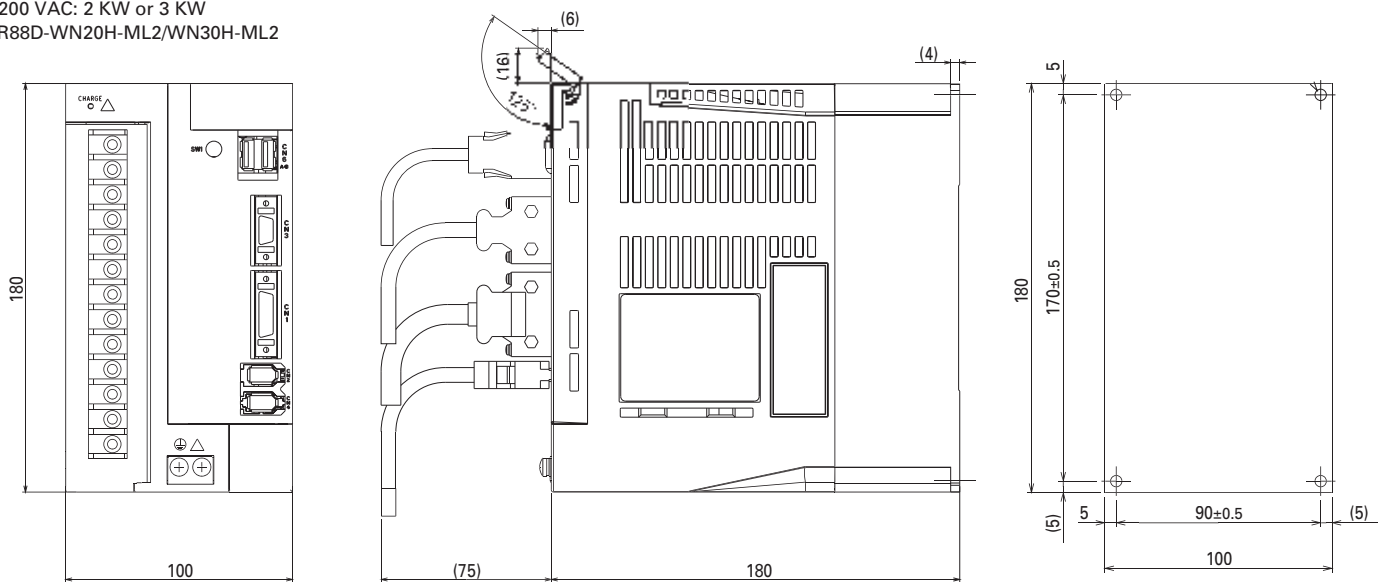
• 200 VAC: 500 W, 750 W or 1 KW
R88D-WN05H-ML2/WN08H-ML2/WN10H-ML2



• 200 VAC: 1.5 KW
R88D-WN15H-ML2



• 200 VAC: 2 KW or 3 KW
R88D-WN20H-ML2/WN30H-ML2



MEMO.

A series of horizontal dashed lines for taking notes.