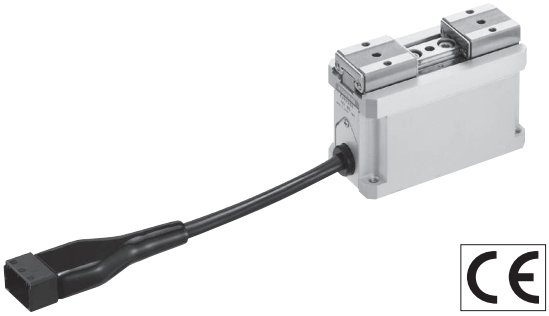
Electric hand

Standard type



Specifications

● Main unit basic specifications

Item		Type	EWHA12A	EWHA24A	EWHA36A
Motor			Two phase stepping motor		
Maximum speed (one side, when using positioning mode)		mm/s [in/sec]	70 [2.756]	35 [1.378]	24 [0.945]
Maximum speed (one side, when using gripping mode)		mm/s [in/sec]	35 [1.378]	10 [0.394]	10 [0.394]
Minimum speed (one side)		mm/s [in/sec]	1 [0.039]		
Maximum gripping force*1		N	12 to 17	22 to 35	33 to 47
Operating temperature range		°C [°F]	0 to 40 [32 to 104]		
Open/closed strokemm		mm [in.]	14 [0.551] (7 mm [0.276 in.] on one side)	20 [0.787] (10 mm [0.394 in.] on one side)	
Repeated positioning precisionmm		mm [in.]	±0.03 [0.001]	±0.05 [0.002]	
Dynamic allowable moment*2	Mp	N·m [in·lbf]	0.05 [0.4]	0.1 [0.9]	
	My	N·m [in·lbf]	0.03 [0.3]	0.1 [0.9]	
	Mr	N·m [in·lbf]	0.06 [0.5]	0.2 [1.8]	
Maximum payload (one side)*3		kg [lb]	0.3 (0.15) [0.661 (0.331)]	0.5 (0.25) [1.102 (0.551)]	
Mass		kg [lb]	0.17 [0.375]	0.26 [0.573]	
Applicable controllers			EWHC-NH,EWHCP-NH		

*1 The maximum gripping force at gripping level 10. For details on the gripping force and gripping speed, see the graph on page ㊵ .
*2 The dynamic allowable moment is safety coefficient 10 to the allowable moment (page ㊴). However, the value is not guaranteed.
*3 Total mass of both side claws mounted to table.

● See pages ㉟ and ㊱ for the controller specifications.

Order Codes

EWHA □ **A** - □ - □ - □

Elewave electric hand

Size
12: Gripping force 12 N
24: Gripping force 24 N
36: Gripping force 36 N

Controller type
Not specified: Without controller
C: With EWHC-NH (point input type)
CP: With EWHCP-NH (pulse array input type)

DIN rail mounting plate
Not specified: Without mounting plate
DP: With mounting plate (cannot be selected without controller)

Cable length (relay cable)
Not specified: Without cable
3L: 3 m [9.843 ft.]
5L: 5 m [16.404 ft.]

● Additional parts

Point input type controller

[Accessories]
・Power cable
・I/O cable

EWHC - NH - □

DIN rail mounting plate
Not specified: Without mounting plate
DP: With mounting plate

Cable (relay cable)*1

*1 Robot cable

EWHKA - □

Cable length
3L: 3 m [9.843 ft.]
5L: 5 m [16.404 ft.]

Pulse array input type controller

[Accessories]
・Power cable
・I/O cable
・Pulse array input cable
・Conversion cable for pulse array input connector

EWHCP - NH - □

DIN rail mounting plate
Not specified: Without mounting plate
DP: With mounting plate

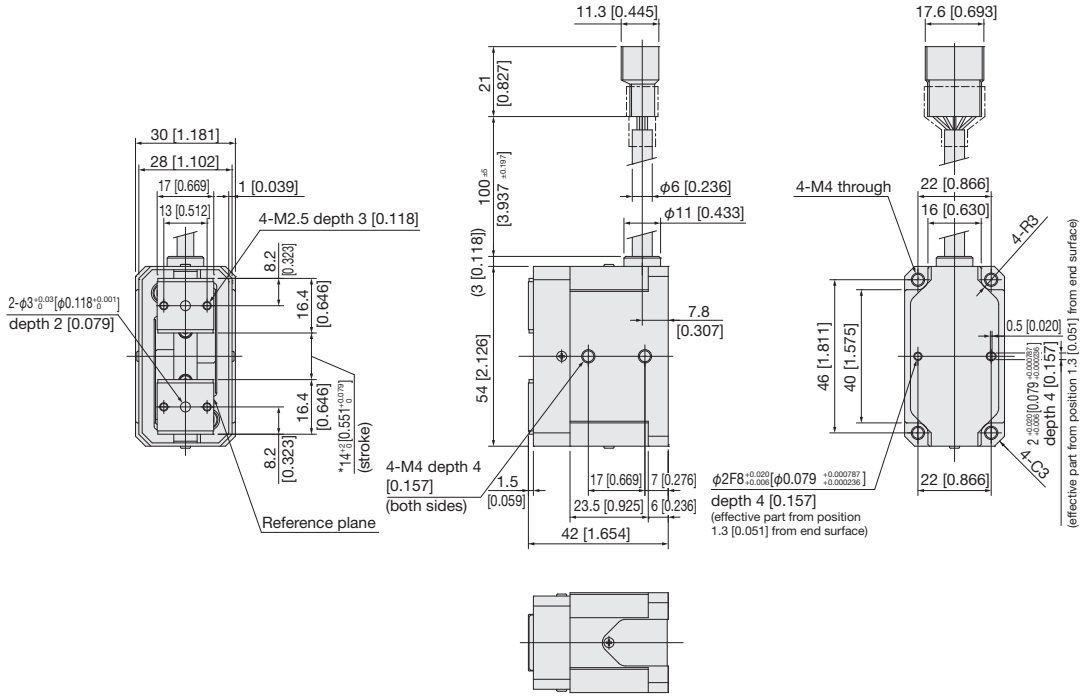
Teaching*2 box **EWHTB**

*2 See page ㊾ for the specifications and dimensions.

DIN rail mounting plate **EW2DP**

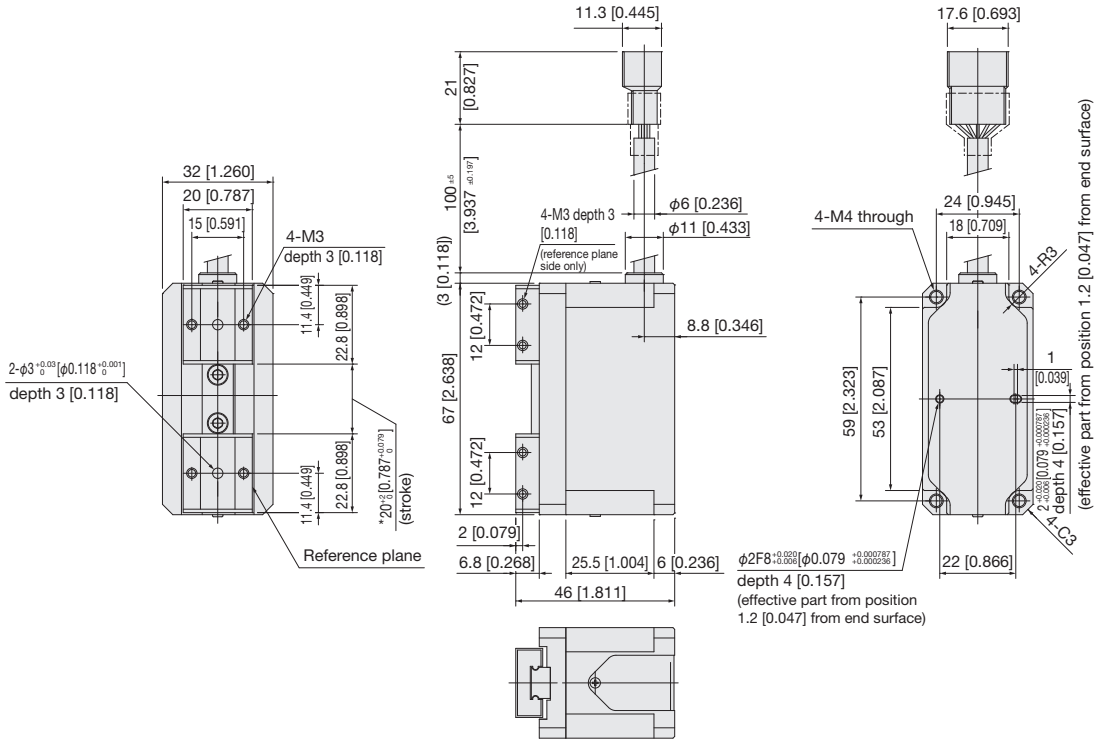
Electric hand dimensions mm [in.]

EWHA12A



*Dimensions of the origin position on the open side. Use the origin shift function when it is necessary to adjust the origin position.

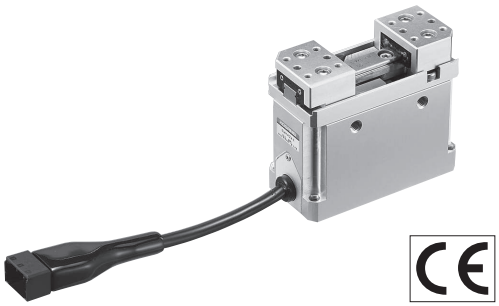
EWHA24A
EWHA36A



*Dimensions of the origin position on the open side. Use the origin shift function when it is necessary to adjust the origin position.

Electric hand

High-speed type



Specifications

● Main unit basic specifications

Item \ Type			EWHA6H	EWHA12H	EWHA24H	EWHA36H
Motor			Two phase stepping motor			
Maximum speed (one side, when using positioning mode)		mm/s [in/sec]	140 [5.512]	180 [7.087]	120 [4.724]	100 [3.937]
Maximum speed (one side, when using gripping mode)		mm/s [in/sec]	50 [1.969]	35 (10) [1.378 (0.394)]*1	20 [0.787]	10 [0.394]
Minimum speed		mm/s [in/sec]	1 [0.039]			
Maximum gripping force*2		N	5 to 9	11 to 16	22 to 32	34 to 46
Operating temperature range		°C [°F]	0 to 40 [32 to 104]			
Open/closed stroke		mm [in.]	14 [0.551] (7 mm [0.276 in.] on one side)	22 [0.866] (11 mm [0.433 in.] on one side)	26 [1.024] (13 mm [0.512 in.] on one side)	
Repeated positioning precision		mm [in.]	±0.03 [0.001]		±0.05 [0.002]	
Dynamic allowable moment*3	Mp	N·m [in·lbf]	0.03 [0.3]	0.06 [0.5]	0.09 [0.8]	
	My	N·m [in·lbf]	0.03 [0.3]	0.05 [0.4]	0.08 [0.7]	
	Mr	N·m [in·lbf]	0.05 [0.4]	0.13 [1.2]	0.22 [1.9]	
Maximum payload (one side)*4		kg [lb]	0.2 (0.1) [0.441 (0.220)]	0.3 (0.15) [0.661 (0.331)]	0.5 (0.25) [1.102 (0.551)]	
Mass		kg [lb]	0.15 [0.331]	0.29 [0.639]	0.35 [0.772]	0.36 [0.794]
Applicable controllers			EWHC-NH, EWHCP-NH			

*1 The maximum speed of the EWHA12H at gripping level 1 to 5 is 10 mm/s [0.394 in/sec].
*2 The maximum gripping force at gripping level 10. For details on the gripping force and gripping speed, see the graph on page ㊵.
*3 The dynamic allowable moment is safety coefficient 10 to the allowable moment (page ㊴). However, the value is not guaranteed.
*4 Total mass of both side claws mounted to table.

● See pages ㉟ and ㊱ for the controller specifications.

Order Codes

EWHA □ **H -** □ **-** □ **-** □

Elewave electric hand

Size
6: Gripping force 6N
12: Gripping force 12 N
24: Gripping force 24 N
36: Gripping force 36 N

Controller type
Not specified: Without controller
C: With EWHC-NH (point input type)
CP: With EWHCP-NH (pulse array input type)

DIN rail mounting plate
Not specified: Without mounting plate
DP: With mounting plate (cannot be selected without controller)

Cable length (relay cable)
Not specified: Without cable
3L: 3 m [9.843 ft.]
5L: 5 m [16.404 ft.]

● Additional parts

Point input type controller

[Accessories]
・Power cable
・I/O cable

EWHC - NH - □

DIN rail mounting plate
Not specified: Without mounting plate
DP: With mounting plate

Cable (relay cable)[*1]
*1Robot cable

EWHKA - □

Cable length
3L: 3 m [9.843 ft.]
5L: 5 m [16.404 ft.]

Pulse array input type Controller

[Accessories]
・Power cable
・I/O cable
・Pulse array input cable
・Conversion cable for pulse array input connector

EWHCP - NH - □

DIN rail mounting plate
Not specified: Without mounting plate
DP: With mounting plate

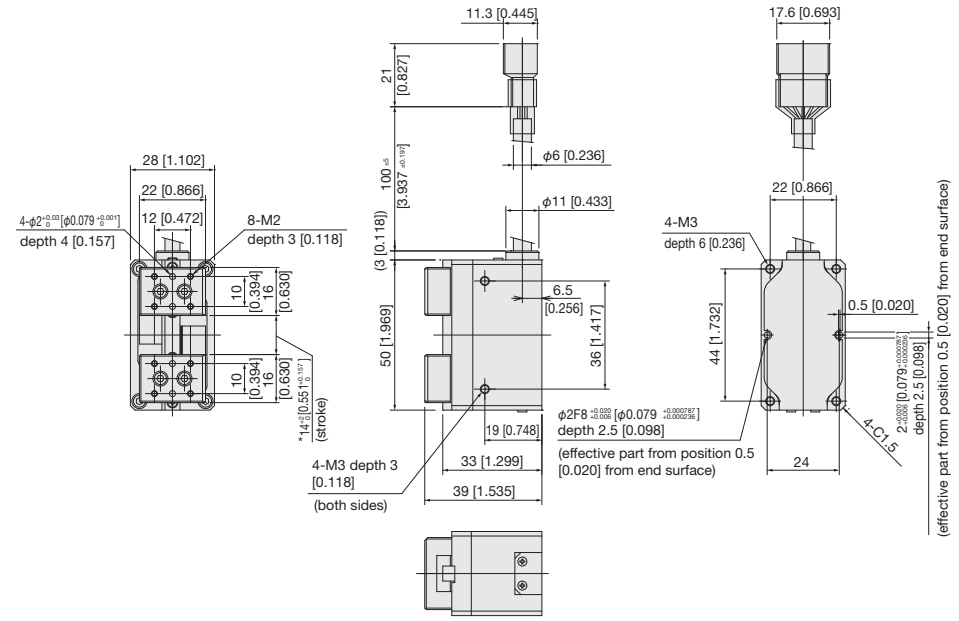
Teaching[*2] **box** **EWHTB**

*2 See page ㊾ for the specifications and dimensions.

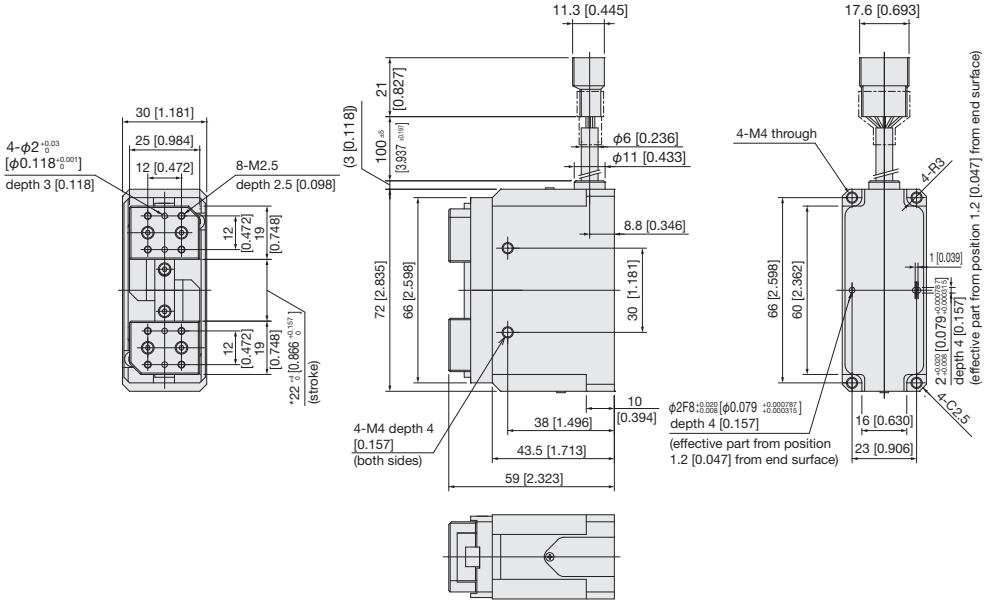
DIN rail mounting plate **EW2DP**

Electric hand dimensions mm [in.]

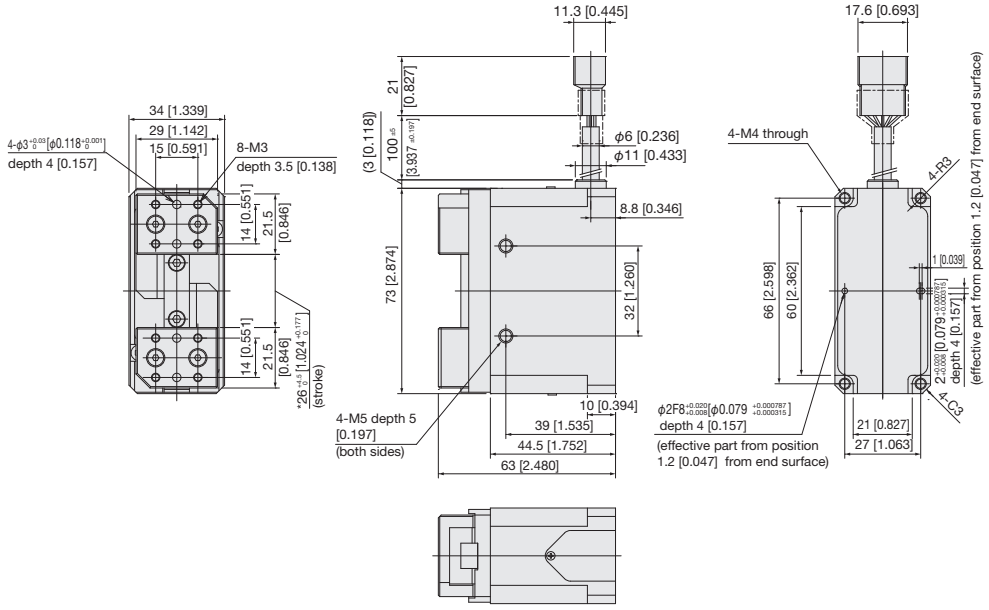
EWHA6H



EWHA12H



EWHA24H
EWHA36H



*Dimensions of the origin position on the open side. Use the origin shift function when it is necessary to adjust the origin position.

Controller

Point input type

Specifications

Item	Type	EWHC-NH
Axis control	Motor drive system	Microstep drive
	Control method	Closed loop control*1
	Operating method	PTP, force control
	Origin detection method	Stroke end detection
	Position detection method	Encoder A/B phase output
	Minimum setting distance (angle)	0.01 mm [0.0003 in.]
	Acceleration setting	1 to 100 %
	Point setting	64 points
	Point input method	Numeric input, teaching input, direct teaching
External input/output	Point setting input	6 point (POS0～POS5) photocoupler receptor 5 mA TYP/point
	Control input	3 point (ORG, START, STOP) photocoupler receptor 5 mA TYP/point
	Control output	4 point (READY, BUSY, HOLD, INPOS) 30 mA Max./point
	Error detection output	Overload, wiring disconnection, data error, system error
	External communication	RS232C 1 ch (computer, TB communication)
	Motor drive output	Dedicated cable (with F.G.)
	Encoder input	Dedicated cable (shielded)
General specifications	Mass	0.2 kg [0.441 lb]
	Power supply	DC 24 V±10 %　1.0 A Max. (motor, I/O power supply shared)*2
	Operating temperature	0 to 40 °C [32 to 104°F]
	Operating humidity	35 to 85 % RH (without condensation)
	Storage temperature	-10 to 65 °C [14 to 149°F]
	Backup	Setting conditions retained in EEPROM
	Noise resistance	IEC61000-4-4 level 3
	Accessories	I/O cable, power cable

*1 Missed step detection and force control when gripping are performed via a rotary encoder.
*2 The maximum consumption current value differs according to the actuator. See the table below.

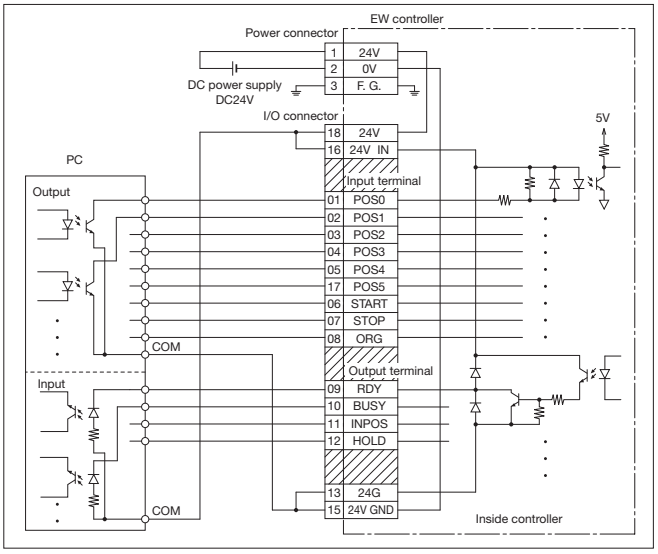
Maximum consumption current (electric hand)

(A)

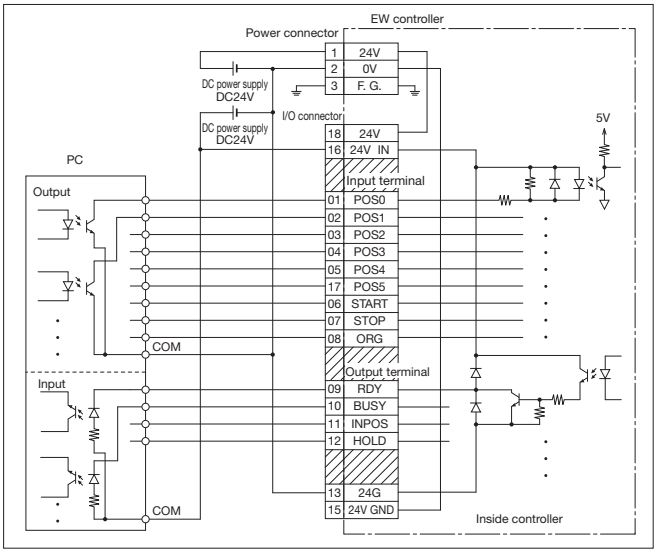
Model	EWM5□	EWHA12A	EWHA24A	EWHA36A	EWHA6H	EWHA12H	EWHA24H	EWHA36H
Maximum consumption current	0.6					1.0		

Controller Wiring Method

1. When using the internal power supply of the controller (electric hand)



2. When not using the internal power supply of the controller (electric hand)



Controller

Pulse array input type

Specifications

Item	Type	EWHCP-NH
Axis control	Motor drive system	Microstep drive
	Control method	Closed loop control*1
	Operating method	Position control and force control via pulse array input
	Origin detection method	Stroke end detection
	Position detection method	Encoder A/B phase output
	Pulse array input method	Differential line driver/open collector
	Maximum input pulse frequency*2	Max. 200 kpps (differential line driver)/Max. 60 kpps (open collector)
	Pulse array input instruction format	CW/CCW, pulse/code (positive/negative logic available)
External input/output	Control input	6 points (alarm reset, clear counter, pushing mode transfer, servo ON, pulse input prohibited/origin return stopped, origin return) 5 mA TYP/point
	Control output	4 points (preparations complete, pulse input reception available, positioning complete/pushing operation complete, zone output) 30 mA Max./point
	Error detection output	Overload, data error, system error
	External communication	RS232C 1 ch (computer, TB communication)
	Motor drive output	Dedicated cable (with F.G.)
	Encoder input	Dedicated cable (shielded)
	Pulse array input	Dedicated cable (twisted pair cable)
General specifications	Mass	0.2 kg [0.441 lb]
	Power supply	DC 24 V±10 % 1.0 A max. (motor, I/O power supply shared)*3
	Operating temperature	0 to 40 °C [32 to 104°F]
	Operating humidity	35 to 85 % RH (without condensation)
	Storage temperature	-10 to 65 °C [14 to 149°F]
	Backup	Setting conditions retained in EEPROM
	Noise resistance	IEC61000-4-4 level 3
	Accessories	I/O cable, power cable, pulse array input cable*4, conversion cable for pulse array input connector x 2*5

*1 Missed step detection and force control when gripping are performed via a rotary encoder.
*2 The actual maximum input pulse count is regulated by the maximum speed of each actuator.
*3 The maximum consumption current value differs according to the actuator. See the table below.
*4 The length of the pulse array input cable is 1 m [3.281 ft.].
*5 Note that the method for connecting the pulse array input cable differs for the differential line driver input and open collector input (see the instruction manual for details).

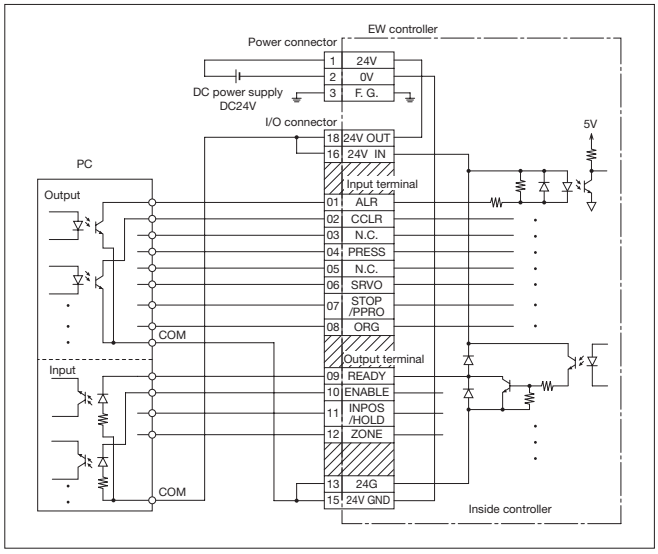
Maximum consumption current (NS slider, electric hand)

(A)

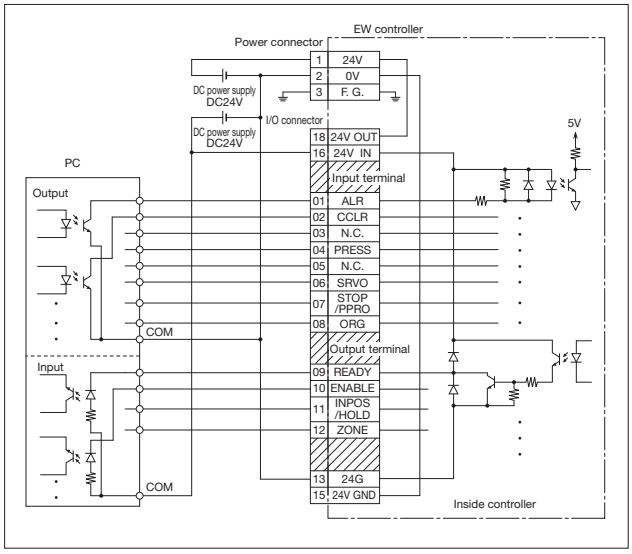
Model	EWM5 □	EWHA12A	EWHA24A	EWHA36A	EWHA6H	EWHA12H	EWHA24H	EWHA36H
Maximum consumption current	0.6	0.6				1.0		

Controller Wiring Method

1. When using the internal power supply of the controller (electric hand)



2. When not using the internal power supply of the controller (electric hand)

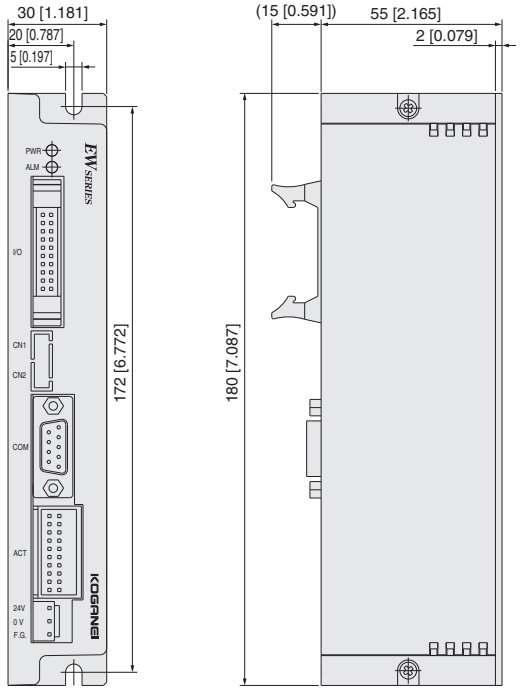


Controller dimensions mm [in.]

(point input type)

EWHC-NH- □

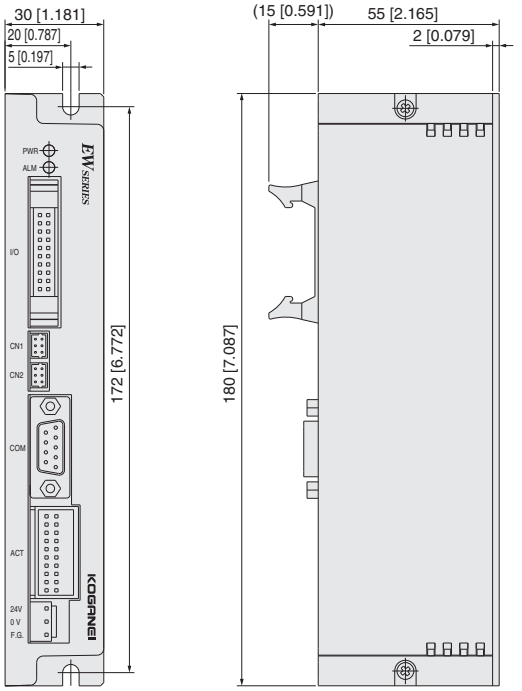
DIN rail mounting plate
Not specified: Without
DP: With (cannot be selected without controller)



(pulse array input type)

EWHCP-NH- □

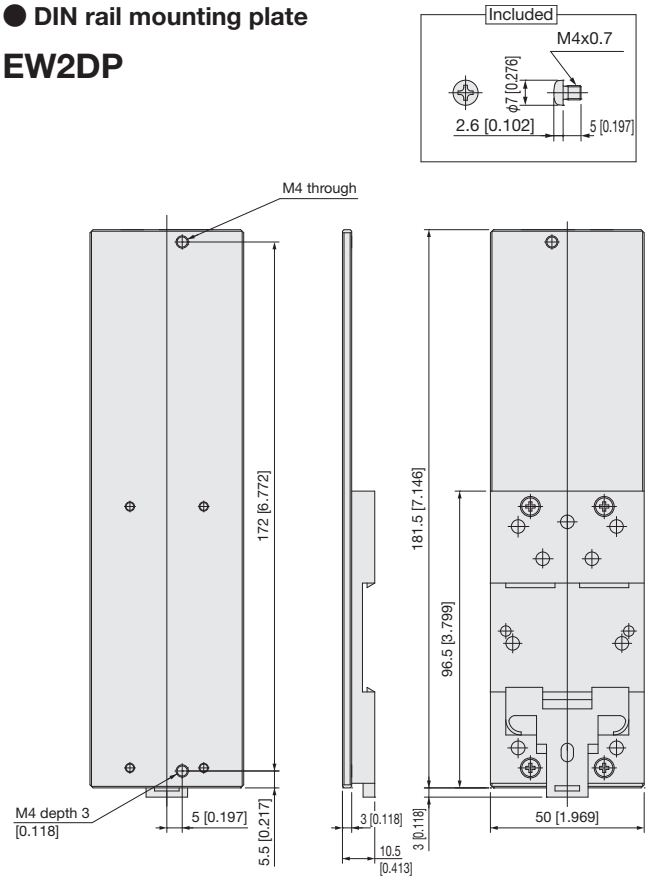
DIN rail mounting plate
Not specified: Without
DP: With (cannot be selected without controller)



Controller dimensions mm [in.]

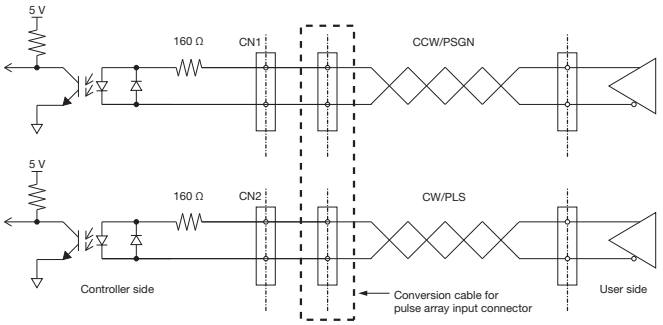
● **DIN rail mounting plate**

EW2DP

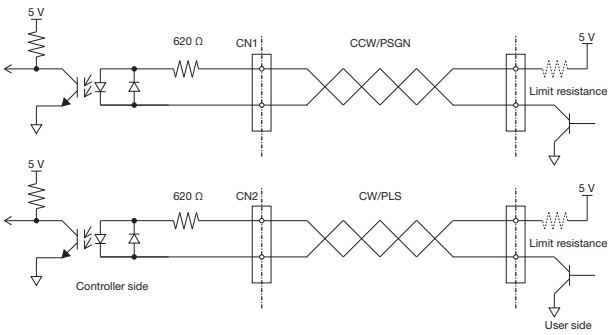


Controller wiring method (pulse array input type)

● **Differential line driver input circuit**



● **Open collector input circuit**



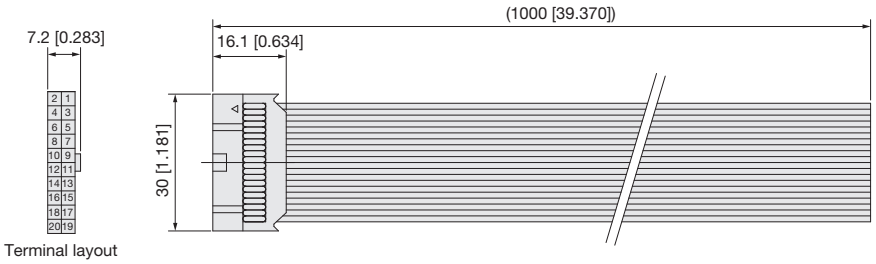
[Caution] When applying voltage of 5.5 V or higher, add current limit resistance (10 mA or less).

Controller dimensions mm [in.]

● Controller included

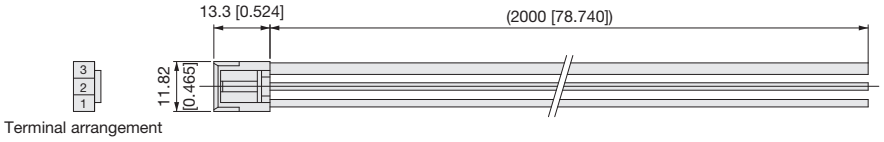
• I/O cable

EW2KI



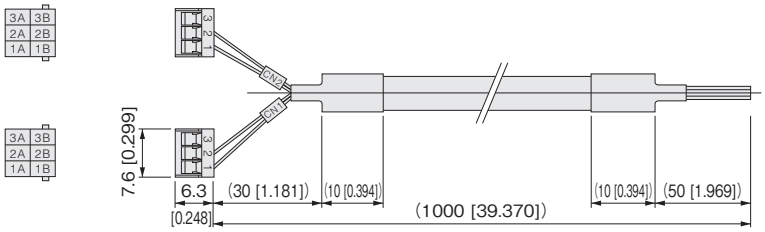
• Power cable

EW2KP



• Pulse array input cable (pulse array input type controller only)

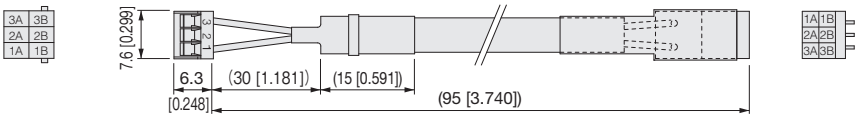
EWHKY



• Conversion cable for pulse array input connector (pulse array input type controller only)

*Make sure to use this conversion cable when the pulse array input signal is a differential line driver.

EWHKC

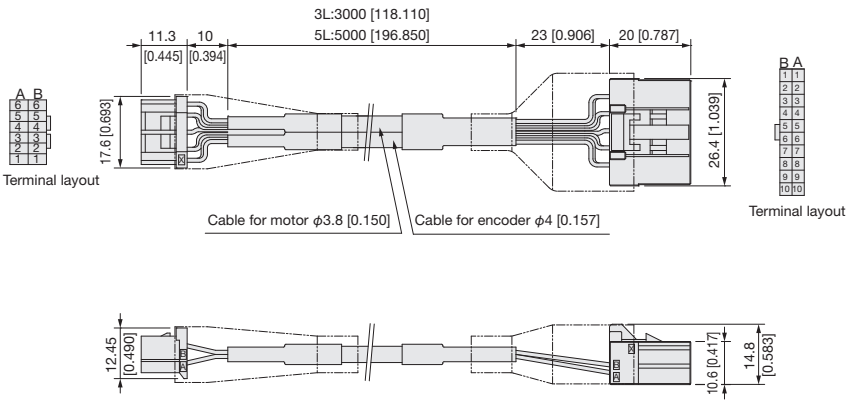


● Cable

• Relay cable (robot cable)

EWHKA-□

3L: 3 m [9.843 ft.]
5L: 5 m [16.404 ft.]



Main unit side connector

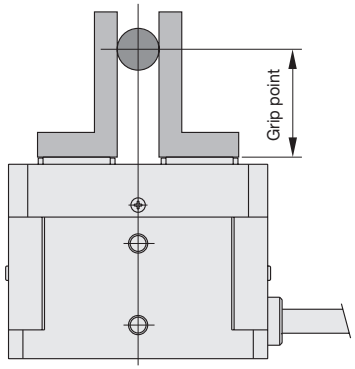
No.	Parts	Color
A1	F.G.	Brown
A2	A+	Red
A3	A-	Yellow
A4	B+	Green
A5	B-	White
A6	BRK	Black
B1	Shield	
B2	GND	Red
B3	5V	Yellow
B4	EA	Green
B5	EB	White
B6	EC	Black

Controller side connector

No.	Parts	Color
A1	A+	Red
B1	B+	Green
A2	A-	Yellow
B2	B-	White
A3	F.G.	Brown
B3	BRK	Black
A4	COM1	—
B4	COM2	—
A5		—
B5		—
A6	F.G.	—
B6	GND 5V	—
A7	DV+	Yellow
B7	DV-	Red
A8	EA+	—
B8	EA-	Green
A9	EB+	—
B9	EB-	White
A10	EC+	—
B10	EC-	Black

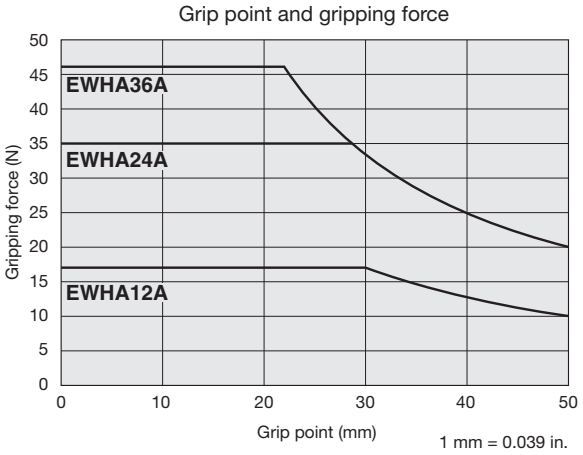
● Electric hand

● Grip point gripping force limitation

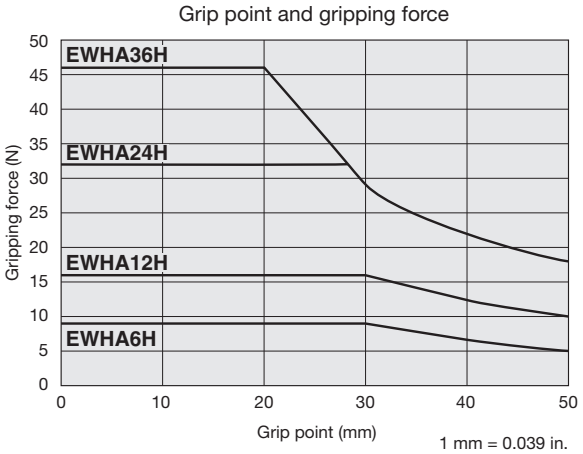


● Grip point and gripping force graph

[Standard type]

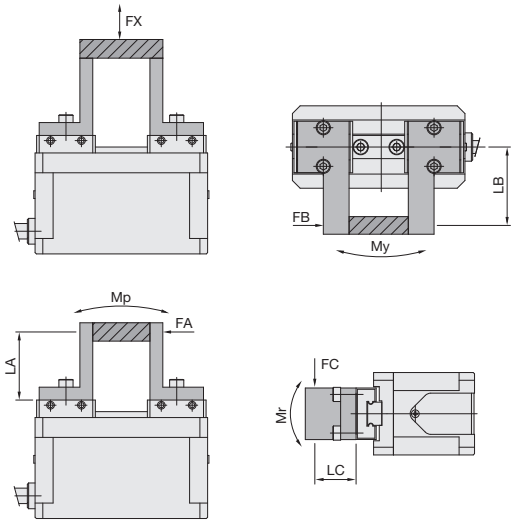


[High-speed type]



*Indicates the grip point of the maximum gripping force for each size. Set a grip point at or below the allowable moment (Mp).

● Allowable load and static allowable moment



●Mp = FA x LA (N·m [in·lbf])
●M = FB x LB (N·m [in·lbf])
●Mr = FC x LC (N·m [in·lbf])

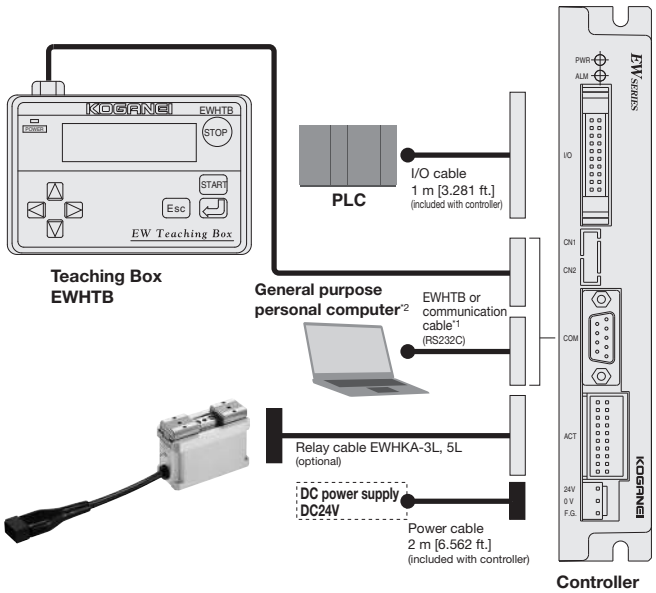
[Standard type]

Type \ Load and moment	FX N	Mp N·m [in·lbf]	My N·m [in·lbf]	Mr N·m [in·lbf]
EWHA12A	40	0.51 [4.5]	0.3 [2.7]	0.6 [5.3]
EWHA24A EWHA36A	120	1.0 [8.9]	1.0 [8.9]	2.0 [17.7]

[High-speed type]

Type \ Load and moment	FX N	Mp N·m [in·lbf]	My N·m [in·lbf]	Mr N·m [in·lbf]
EWHA6H	59	0.26 [2.3]	0.26 [2.3]	0.46 [4.1]
EWHA12H	118	0.57 [5.0]	0.48 [4.2]	1.29 [11.4]
EWHA24H EWHA36H	154	0.9 [8.0]	0.75 [6.6]	2.16 [19.1]

● System configuration (example)



*1 RS232C cable (for reference)
Specifications: D-sub 9 pin (female) <> D-sub 9 pin (female)/cross cable
Type: C232R-ECO915 (1.5 m [4.921 ft.])/C232R-ECO930 (3.0 m [9.843 ft.])
Manufacturer: Elecom Co., Ltd.
The communication cable must be provided by the customer.

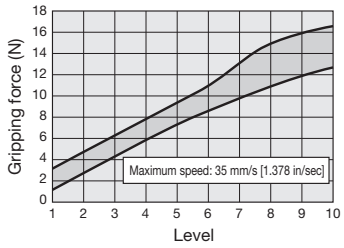
*2 The support software for setting the controller can be downloaded from the KOGANEI website free of charge.

● Gripping force range

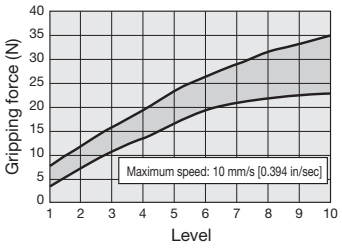
Force is generated within the lower graph range at the set level. However, the gripping force repeat precision in the same position is within 5 %.

[Standard type]

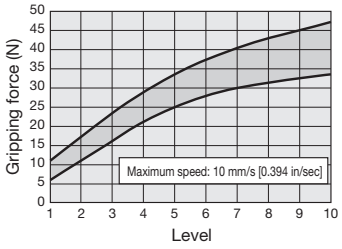
EWHA12A



EWHA24A

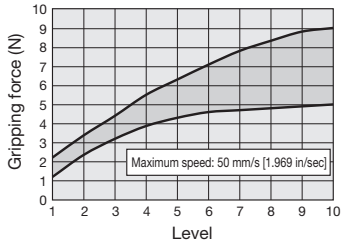


EWHA36A

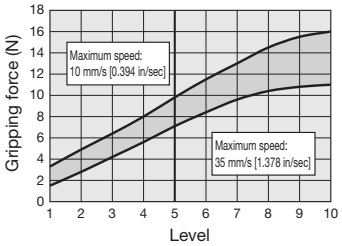


[High-speed type]

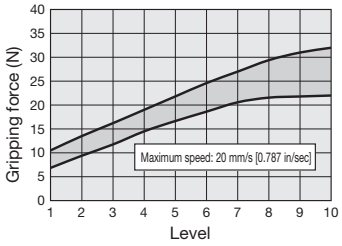
EWHA6H



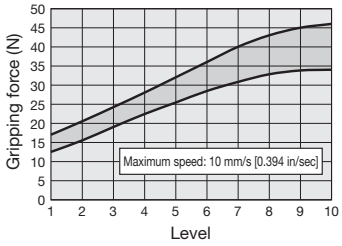
EWHA12H



EWHA24H



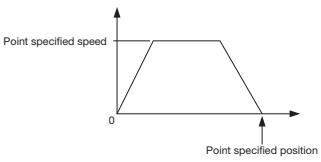
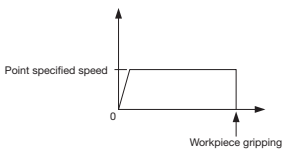
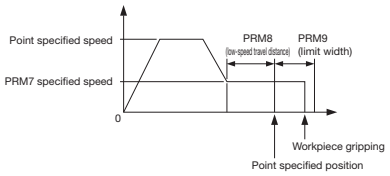
EWHA36H



*The maximum speed up to level 5 is 10 mm/s [0.394 in/sec].

*The above gripping force range is an estimate.

● Electric hand operation mode (for the point input type controller)

Mode	Positioning Acceleration or deceleration is performed and movement is stopped at the specified point.		Gripping* Perform operation at a constant speed and gripping at the set force.		Gripping with acceleration/deceleration movement Perform acceleration/deceleration movement and add gripping operation.
Setting value	A	I	C	O	U
Description	Move to the position of the specified point with the coordinates of 0 as the origin position	Move to the position of the specified point from the current position	Operate to close side	Operate to open side	Move to the specified point and perform gripping operation at the speed of PRM7 from the distance before the point specified at PRM8
Operation pattern					
Remarks	—		—		Suitable for high-frequency soft gripping.	

*Do not use C to O, or O to C motion in gripping mode as it will result in malfunction.