

# EP-01

## CE compliance

**Single-axis robot positioner for single-axis robot Robonity series “ABAS”, “AGXS”, and “ABAR”.**  
**This robot positioner supports Ethernet, is equipped with an Ethernet port as standard, and achieves 37 % size reduction when compared to the conventional robot positioner.**  
**Following the TS series, usability is greatly improved.**



EP-01



Handy terminal  
 ▶ HT2 / HT2-D



Support software for PC  
 ▶ EP-Manager  
 \* Free download is available at the member site.

## Basic specifications

Item		EP-01	
Basic specifications	Driver model	EP-01-A10	EP-01-A30
	Number of controllable axes	Single-axis	
	Controllable robots	Single-axis robot Robonity series ABAS / AGXS / ABAR	
	Power capacity	420 VA	1600 VA
	Dimensions	W 40 × H 150 × D 130 mm	W 55 × H 150 × D 130 mm
	Weight	Approx. 0.6 kg	Approx. 1 kg
Input power supply	Control power supply	Single phase AC200 to 230V +/-10% 50/60Hz	
	Motor power supply	Single phase AC200 to 230V +/-10% 50/60Hz	
Control method		Closed loop vector control method	
Operating method		I/O point tracing (Positioning operation by specifying point number) / Remote command	
Operation types		Positioning, merge-positioning, push, and jog operations	
Position detection method		Optical encoder, battery absolute encoder, or battery-less absolute encoder is selected.	
Resolution		8,388,608 pulses/rev.	
Origin search method		Absolute	
Number of points		255 points	
Point type setting	(1) Standard setting: Set speed and acceleration in percent of the respective maximum settings.		
	(2) Custom setting: Set speed and acceleration in SI units.		
Point teaching method		Manual data input (coordinates input), Teaching, Direct teaching	
I/O interface		Selectable from the following: EtherNet/IP™, PROFINET, EtherCAT, NPN, CC-Link	
Input		Servo ON (SERVO), reset (RESET), start (START), interlock (/LOCK) origin search (ORG), teaching mode (TMODE), jog motion - (JOG-), jog motion + (JOG+), point number selection (PIN0 to PIN7)	
Output		Servo status (SRV-S), alarm (/ALM), operation end (END), operation in-progress (BUSY), control outputs (OUT0 to 3), point number output 0 to 7 (POUT0 to POUT7), feedback pulse output (A/B/Z) (option)	
External communications		Ethernet (In conformity with IEEE802.3 100BASE-TX, Applicable to Auto Negotiation)	
Power supply for brake		DC24V +/-10% 300mA (prepared by the customer)	
Safety circuit		Emergency stop input, main power input ready output, emergency stop contact output (1 system: When the HT2 is used.)	
Options	Handy terminal	HT2, HT2-D (with enable switch)	
	Support software for PC	EP-Manager	
General specifications	Operating temperature / Operating humidity	0°C to 40°C, 35% to 85%RH (non-condensing)	
	Storage temperature / Storage humidity	-10°C to 65°C, 10% to 85%RH (non-condensing)	
	Atmosphere	Indoor location not exposed to direct sunlight. No corrosive, flammable gases, oil mist, or dust particles	
	Anti-vibration	All XYZ directions 10 to 57Hz unidirectional amplitude 0.075mm 57 to 150Hz 9.8m/s <sup>2</sup>	
	Protective functions	Position detection error, power module error, temperature error, overload, overvoltage, low voltage, excessive position deviation, overcurrent, motor current error	
Protective structure		IP20	

Controllable robot **EP-01 ▶ Robonity (ABAS, AGXS, ABAR)**

CE marking  Field networks **EtherNet/IP**  **EtherCAT** 

■ Model Overview

Name		EP-01
Controllable robot		Single-axis robot Robonity (ABAS / AGXS / ABAR)
Input power	Main power supply	Single phase AC200 to 230V +/-10% 50/60Hz
	Control power supply	Single phase AC200 to 230V +/-10% 50/60Hz
Operating method		I/O point tracing (Positioning operation by specifying point number) / Remote command
Maximum number of controllable axes		Single-axis
Origin search method		Absolute

■ Ordering method

**EP-01**

Controller	Driver: Power capacity	Regenerative	I/O
	A10: 200W or less A30: 400W/750W	No entry: None R: With EP-RU	EP: EtherNet/IP™ PT: PROFINET ES: EtherCAT NS: NPN CC: CC-Link

Note. Whether the battery is provided with the robot positioner is selected by the robot order model.

■ Robonity specification selection table

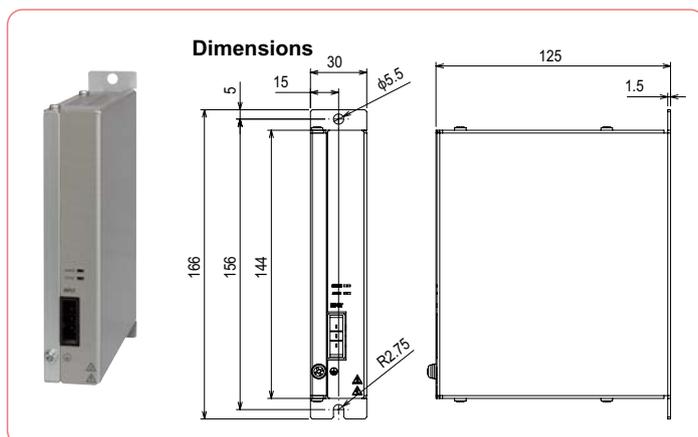
		Basic								Advanced						
		ABAS04	ABAS05	ABAS08	ABAS12	ABAS12H	ABAR04	ABAR05	ABAR08	AGXS05	AGXS05L	AGXS07	AGXS10	AGXS12	AGXS16	AGXS20
Driver	EP-01-A10	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	EP-01-A30					●										
Regenerative unit EP-RU	Vertical		(1)	(2)	(4)	(6)	(7)	(8)	(10)		(12)	(12)	(10)	(14)	(10)	(10)
	Horizontal			(3)	(5)			(9)	(11)				(13)	(14)	(15)	(15)

Conditions required for regenerative unit

- (1) Stroke of lead 5 or 10 is 650 mm or more.
- (2) Stroke of lead 5 or 20 is 450 mm or more and stroke of lead 10 is 150 mm or more.
- (3) Stroke of lead 20 is 250 to 750 mm.
- (4) Stroke of lead 5, 10, or 20 is 150 mm or more and stroke of lead 32 is 300 to 750 mm.
- (5) Stroke of lead 10 or 20 is 250 to 750 mm and stroke of lead 32 is 400 to 750 mm.
- (6) Stroke of lead 5, 10, or 20 is 300 mm or more and stroke of lead 32 is 300 to 750 mm.
- (7) Stroke of all leads is 250 mm or more.
- (8) Stroke of all leads is 150 mm or more.
- (9) Stroke of lead 20 is 300 to 400 mm.
- (10) All strokes of all leads
- (11) Stroke of lead 10 or 20 is 150 to 500 mm.
- (12) Stroke of all leads is 500 mm or more.
- (13) Stroke of lead 10, 20, or 30 is 300 to 800 mm.
- (14) Stroke of all leads is 400 mm or more.
- (15) Stroke of lead 20 is 400 to 850 mm and stroke of lead 40 is 600 to 950 mm.

Note. The selection table is a guideline for the necessity of the regenerative unit, and may differ depending on the actual operating conditions.

■ Regenerative unit EP-RU



● Basic specifications

Item	EP-RU
Model	KFX-M5850-00
Dimensions	W30 × H144 (Not including installation stay) × D125 mm
Weight	650 g
Regenerative voltage	Approx. 380V or more
Regenerative stop voltage	Approx. 360V or less
Absorbable electric power	40W
Accessory	Cable for connection with controller (300 mm)

Note. Always leave an empty space (gap of about 20 mm) between this unit and the adjacent controller.

Also, always use the dedicated cable when connecting the controller.

Features

Basic model: LBAS

Advanced model: LGXS

Basic model: LBAR

Basic model: ABAS

Advanced model: AGXS

Basic model: ABAR

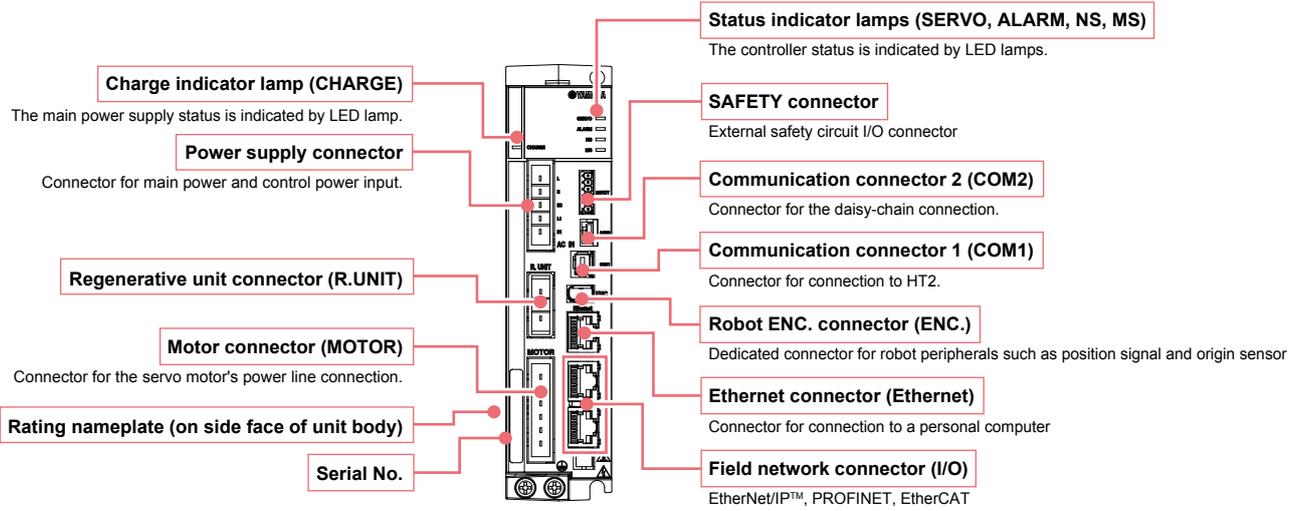
Acceleration/Deceleration Inertia Moment

Option

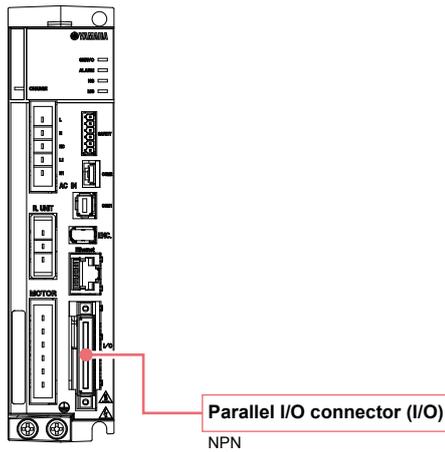
Single-axis robot positioner EP-01

## Part names

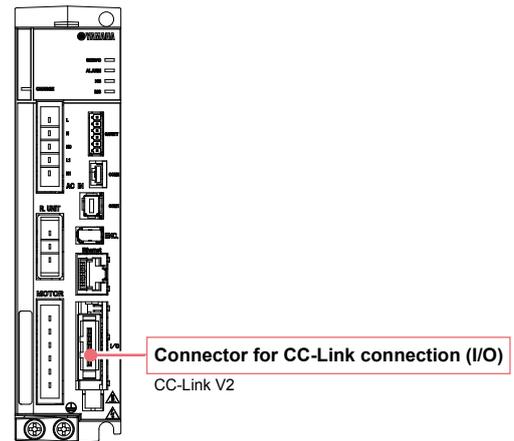
### EP-01 (EtherNet/IP™, PROFINET, EtherCAT)



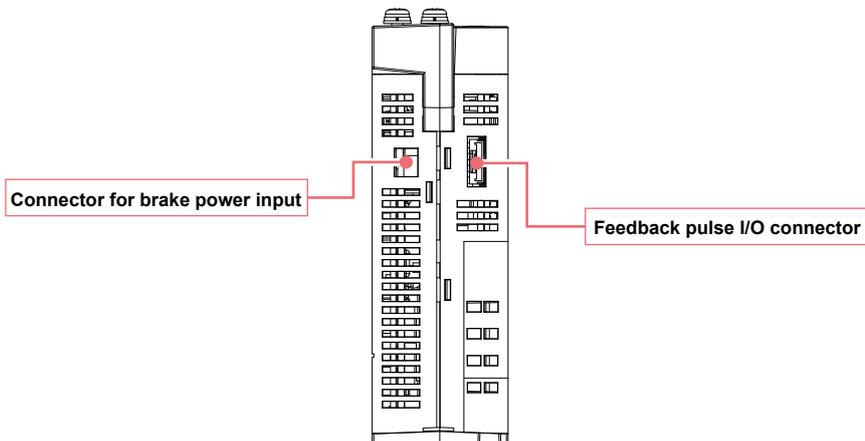
### EP-01 (NPN)



### EP-01 (CC-Link)



### EP-01 (Bottom view)



Features

Motorless  
Slider type  
Basic model

LBAS

Motorless  
Slider type  
Advanced model

LGXS

Motorless  
Ind type  
Basic model

LBAR

With motor  
Slider type  
Basic model

ABAS

With motor  
Slider type  
Advanced model

AGXS

With motor  
Ind type  
Basic model

ABAR

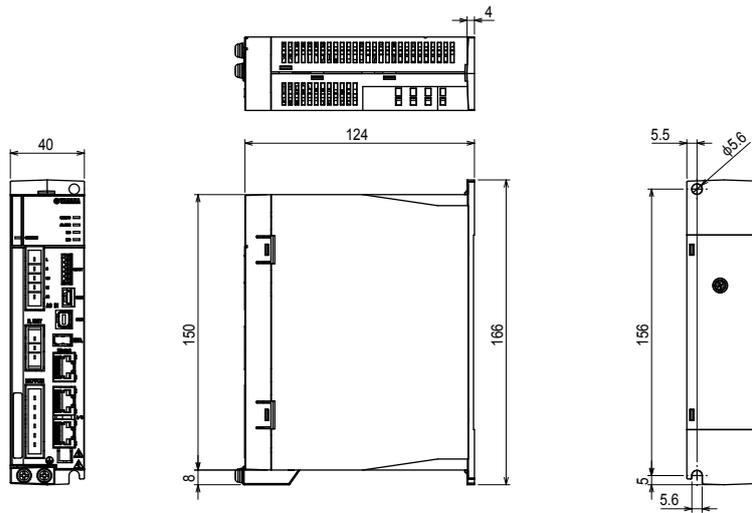
Acceleration/Deceleration  
Inertia Moment

Option

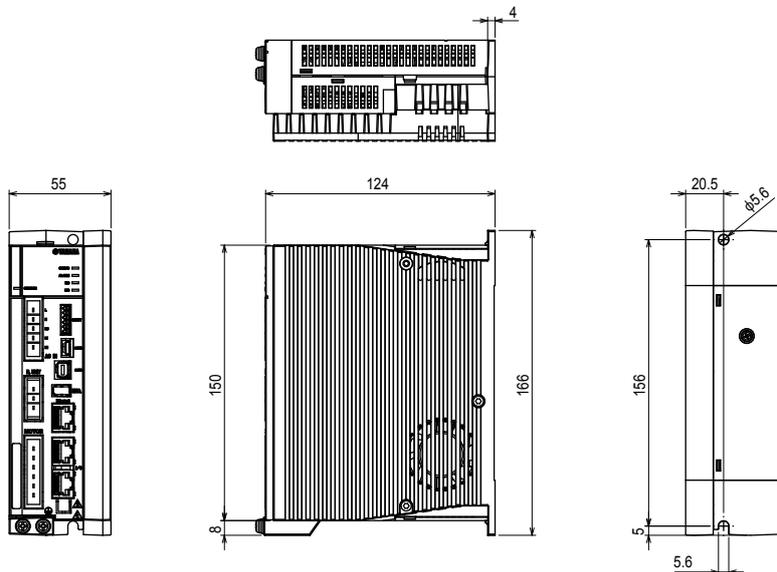
Single-axis Robot positioner  
EP-01

■ Dimensions

■ EP-01-A10



■ EP-01-A30



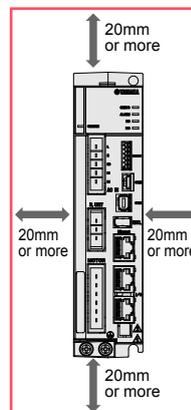
■ Installation conditions

- Install the EP-01 inside the control panel.
- Install the EP-01 on a metal wall vertically.
- Install the EP-01 in a well ventilated location, with space on all sides of the EP-01 (See fig. at right.).
- Ambient temperature : 0 to 40°C
- Ambient humidity : 35 to 85% RH (no condensation)

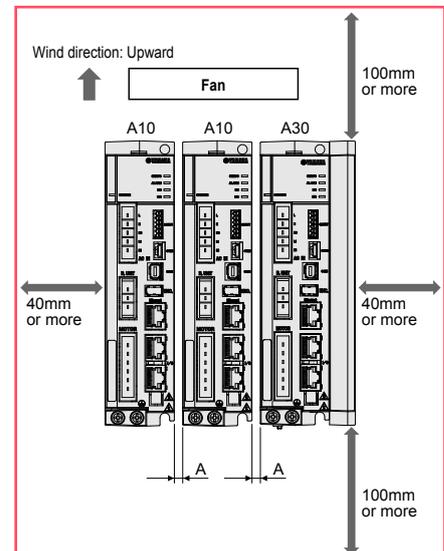
[When multiple EP-01 robot positioners are used]

- Install a fan to cool the controller main body sufficiently.
- When installing multiple controllers, keep at least 1 mm between the controllers.
- Install the controllers in a well-ventilated area with sufficient space around them. (See figure 2.)
- If the distance to the adjacent EP-01 is 20 mm or less (A in figure 2), set the effective load factor to 75% or less.

(Fig. 1)



(Fig. 2)



## Data overview

Point data and parameter data settings must be specified in order to operate a robot from a EP series controller.

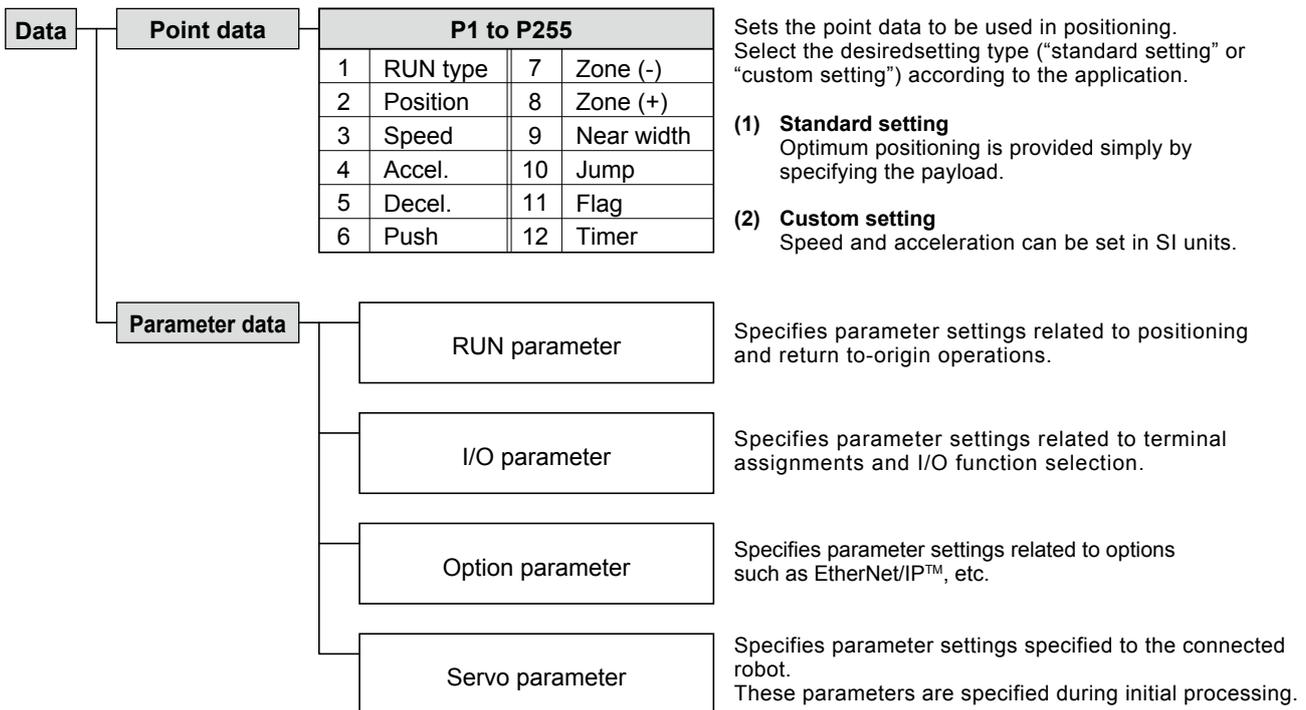
### Point data

The point data used in positioning operations includes items such as the “RUN type”, “Position”, and “Speed”, etc. Up to 255 points (P1 to P255) can be registered. There are two point data setting types: “Standard setting” type that automatically defines optimal positioning simply by specifying the payload and “Custom setting” type that allows setting the speed (mm/s) and acceleration (m/s<sup>2</sup>) in SI units. Select the desired setting type according to the application.

### Parameter data

Parameter data is divided into the following categories: “RUN parameters”, “I/O parameters”, “option parameters”, and “servo parameters”.

### Data structure



## Point data

### Point data item list

P1 to P255		
Item		Description
1	RUN type	Specifies the positioning operation pattern.
2	Position	Specifies the positioning target position or movement amount.
3	Speed	Specifies the positioning speed.
4	Accel.	Specifies the positioning acceleration.
5	Decel.	Specifies the positioning deceleration (as a percentage of the acceleration).
6	Push	Specifies the electrical current limit value for “Push” operations.
7	Zone (-)	Specifies the “personal zone” output range.
8	Zone (+)	
9	Near width	Specifies the “near width” zone (distance tolerance relative to target position).
10	Jump	Specifies the next movement destination, or the next merge operation merge destination point No. following positioning completion.
11	Flag	Specifies other information related to the positioning operation.
12	Timer	Specifies the waiting time (delay) after positioning completion.

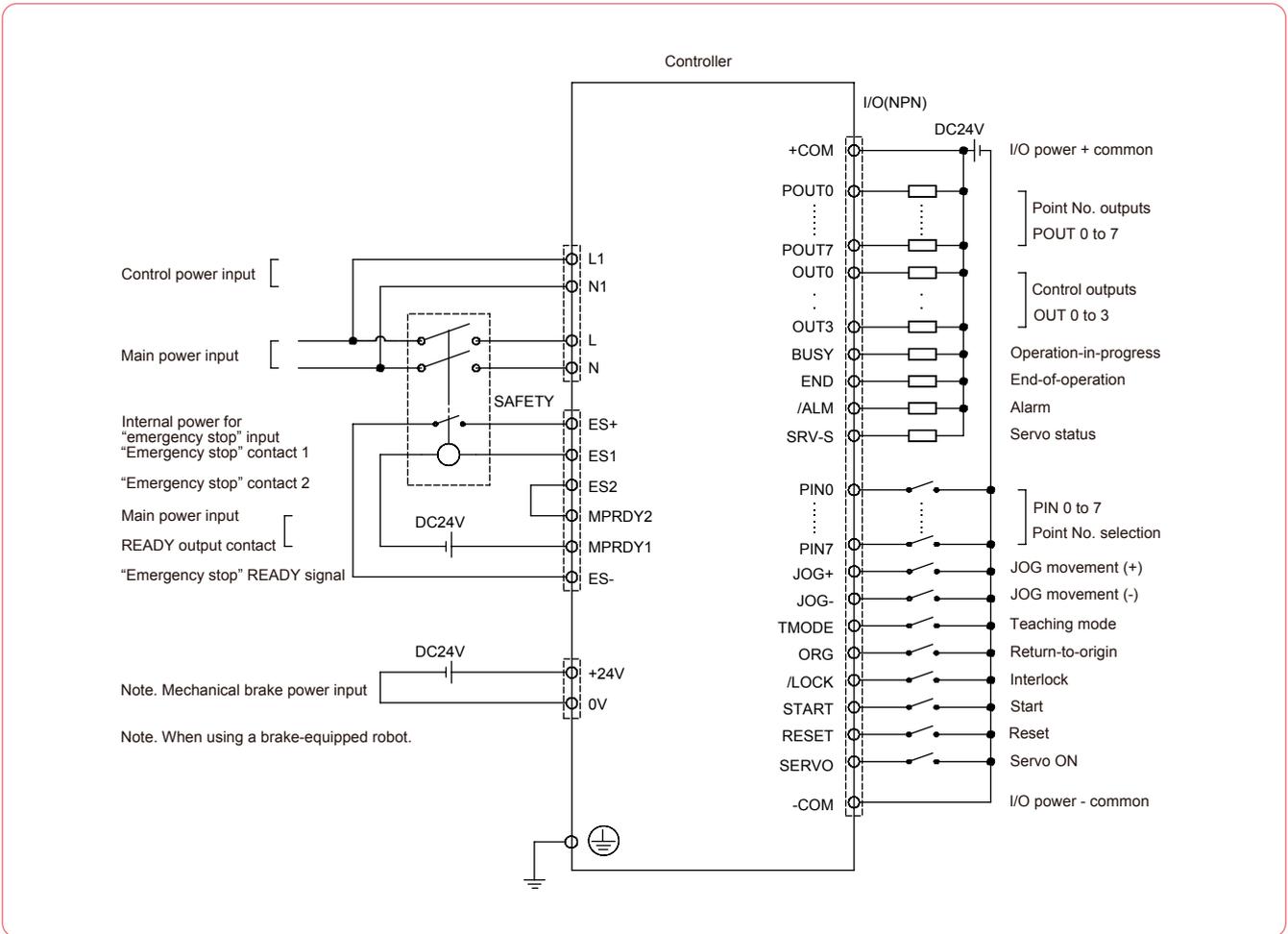
### “Standard setting” and “custom setting”

There are 2 setting types for point data (“standard setting” or “custom setting”). Select the desired setting type according to the application.

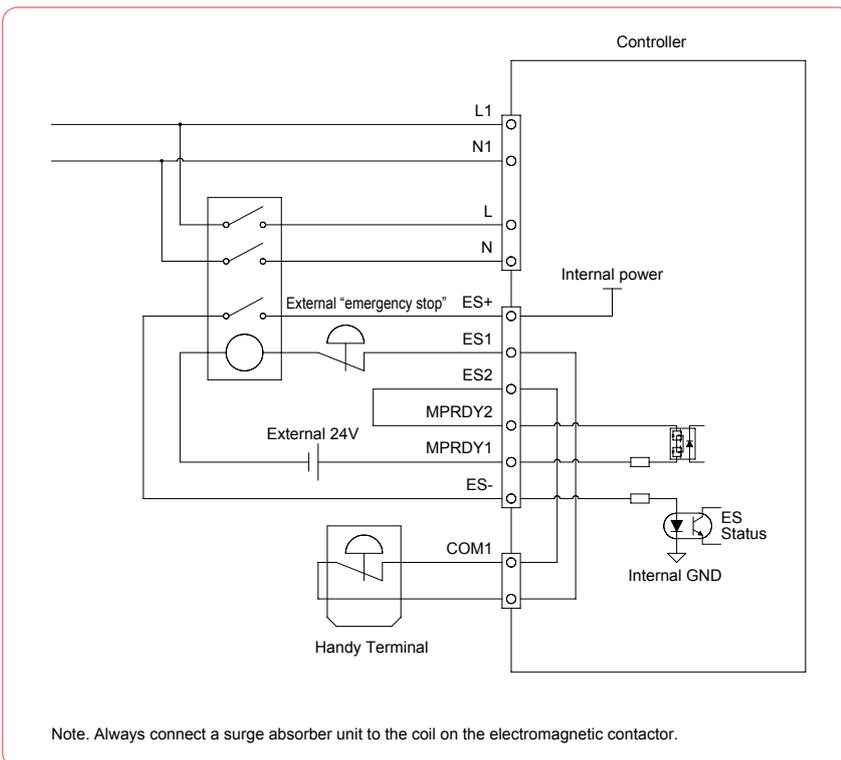
The maximum number of setting points for both setting types is 255 points (P1 to P255).

Setting Type	Description
Standard setting	Optimum positioning is provided simply by specifying the payload. This setting type is well-suited to assembly and transport applications.
Custom setting	Since the speed and acceleration can be changed arbitrarily in SI units, the positioning can be set freely. This setting type is suited for machining and inspection systems.

**NPN type input / output wiring diagram**



**Emergency stop circuit example**



**I/O Specifications**

Item	Description
EtherNet/IP™	EtherNet/IP™ adapter (2 ports)
PROFINET	PROFINET Slave 1 node
EtherCAT	EtherCAT Slave 1 node
NPN	Input 16 points, 24VDC +/-10%, 5.1mA/point, positive common Output 16 points, 24VDC +/-10%, 50mA/point, sink type
CC-Link	CC-Link Ver.2.00 compatible, Remote station device (1 station double setting)

Features

Model series  
Silver type  
Basic model

LBAS

Model series  
Silver type  
Advanced model

LGXS

Model series  
Red type  
Basic model

LBAR

Model series  
Silver type  
Basic model

ABAS

Model series  
Silver type  
Advanced model

AGXS

Model series  
Red type  
Basic model

ABAR

Acceleration/Deceleration  
Inertia Moment

Option

Single-axis robot  
positioner

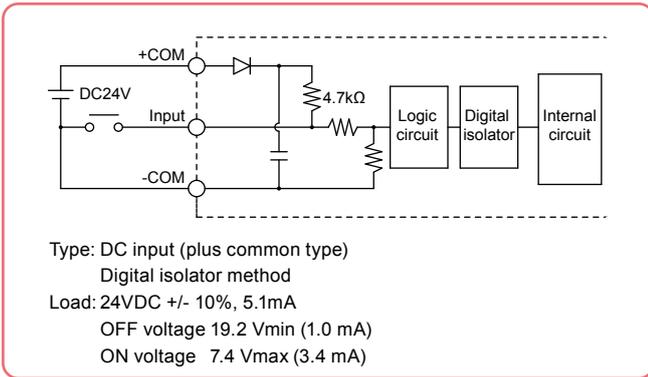
EP-01

## I/O signals (NPN)

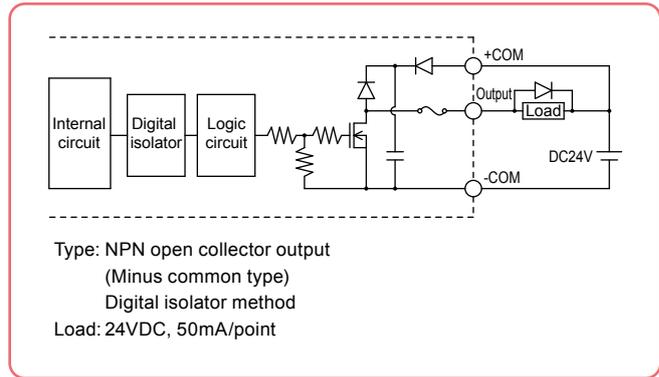
No.	Signal Name	Description	No.	Signal Name	Description	
A1	+COM	I/O power input, positive common	B1	POUT0	Point No. outputs	
A2			B2	POUT1		
A3	NC	No connection	B3	POUT2		
A4	NC		B4	POUT3		
A5	PIN0	Point No. select	B5	POUT4		
A6	PIN1		B6	POUT5		
A7	PIN2		B7	POUT6		
A8	PIN3		B8	POUT7		
A9	PIN4		B9	OUT0		
A10	PIN5		B10	OUT1		
A11	PIN6		B11	OUT2		
A12	PIN7		B12	OUT3		
A13	JOG+ (A15: ON) SPD (A15: OFF)	JOG movement (+ direction)	Speed switching	B13	BUSY	Operation-in-progress
A14	JOG-	JOG movement (- direction)		B14	END	Operation-end
A15	TMODE	Teaching mode (ON: I/O teaching mode OFF: I/O positioning mode)		B15	/ALM	Alarm
A16	ORG	Return-to-origin		B16	SRV-S	Servo status
A17	/LOCK	Interlock		B17	NC	No connection
A18	TEACH (A15: ON) START (A15: OFF)	Current position teaching	Start	B18	NC	
A19	RESET	Reset		B19		I/O power input, negative common
A20	SERVO	Servo ON		B20	-COM	

## NPN type I/O circuit details

### Input circuit



### Output circuit



## Feedback pulse I/O signal table

### Basic specifications

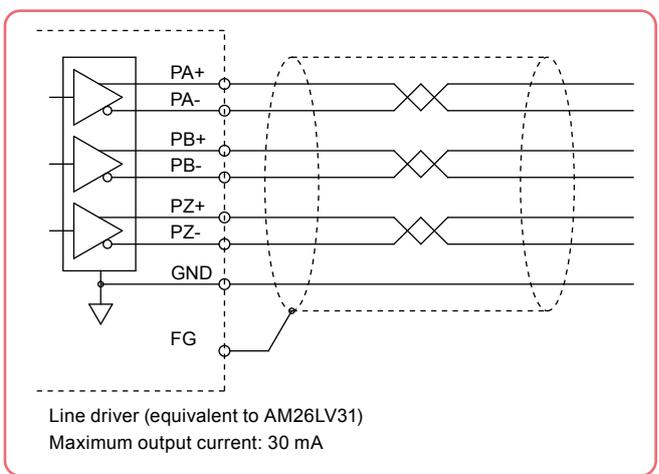
Item	Specification
Output signal	ABZ-phase pulse
Number of pulses per rotation	Variably changed in a range of 4 to 16384
Maximum rotation speed	6000 rpm
Maximum operating frequency	2 Mbps

### Signal table

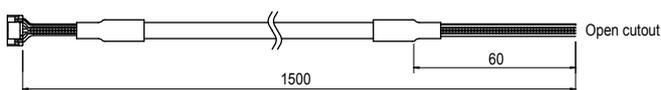
Signal name	Description	Wire color	Remarks
GND	Signal ground	White	
PA+	A-phase plus signal	Yellow	Twist pair (1)
PA-	A-phase minus signal	White	
PB+	B-phase plus signal	Green	Twist pair (2)
PB-	B-phase minus signal	White	
PZ+	Z-phase plus signal	Red	Twist pair (3)
PZ-	Z-phase minus signal	White	
FG	Frame ground	(Shield)	

## Details of feedback pulse output circuit

### Output circuit



## Feedback pulse output cable



Model KFX-M532M-00

# Accessories and part options

## EP-01

### Standard accessories

The icons indicated at the right end show the controllers that each component can use.

● Power connector + Operation lever



Model	Power connector	KFX-M5382-00
	Operation lever	KEF-M657M-00

EP-01

● Regeneration unit short-circuit connector



Model	KEK-M4431-00
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EP-01

YHX

RCX320

● HT2 dummy connector



Model	KEK-M5869-00
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EP-01

YHX

● SAFETY connector



Model	KEK-M4432-10
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EP-01

YHX

● Brake power cable (1 m) Note

Note. Included in the robot with brake.



Model	KFX-M532K-10
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EP-01

● I/O cables (2 m/20-core×2) Note

Note. Included in the robot with NPN specifications.



Model	KCA-M4421-20
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EP-01

TS-S2

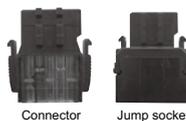
TS-SH

TS-X

TS-P

● CC-Link connector Note

Note. Included in the robot with CC-Link specifications.



Model	Connector <small>Note</small>	KCA-M4872-00
	Jump socket	KCA-M4873-00

EP-01

TS-S2

TS-SH

TS-X

TS-P

Note. This is a single connector type. (Insert two connectors into a branching socket.)

See next page for optional parts

Features

Controllers  
 Silver type  
 Basic model

LBAS

Controllers  
 Silver type  
 Advanced model

LGXS

Controllers  
 Red type  
 Basic model

LBAR

Controllers  
 Silver type  
 Basic model

ABAS

Controllers  
 Silver type  
 Advanced model

AGXS

Controllers  
 Red type  
 Basic model

ABAR

Acceleration/Deceleration  
 Inertia Moment

Option

Single-axis robot positioner  
 EP-01

## Options

The icons indicated at the right end show the controllers that each component can use.

### ● Handy terminal HT2/HT2-D



		HT2	HT2-D
Model	3.5m	KFX-M5110-0E	KFX-M5110-1E
	10m	KFX-M5110-2E	KFX-M5110-3E
Enable switch		–	Available
CE marking		Not supported	Applicable

EP-01

### ● Support software EP-Manager



Download from website (member site)

Model	KFX-M4990-00
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#### ● EP-Manager environment

OS	Microsoft Windows 10 (32bit/64bit)
CPU	Exceeding the environment recommended by the OS being used
Memory	Exceeding the environment recommended by the OS being used
Communication port	Ethernet port (100BASE-TX) Ethernet cable (category 5 or higher)
Display	1024×768 or higher resolution, 256 colors or higher
Applicable controllers	EP-01

EP-01

Note. Windows is the registered trademark of US Microsoft Corporation in U.S.A. and other countries.

Note. Ethernet is a registered trademark of the XEROX Corporation, USA.

### ● Absolute battery

#### ● Absolute battery basic specifications

Item	Absolute battery
Battery type	Lithium metallic battery
Battery capacity	3.6V/2700 mAh
Data holding time	About 10 years
Dimensions	φ17 × L47 mm
Weight	20.3 g



Model	KFX-M53G0-00
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Note. The absolute battery is subject to wear and requires replacement.

EP-01

### ● Battery holder kit



Model	KFX-M53G7-00
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Note. Set number containing the battery holder and two tie-up bands.

EP-01

### ● CC-Link termination connector



Model	KCA-M4874-00
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EP-01

TS-S2

TS-SH

TS-X

TS-P

### ● Feedback pulse output cable



Model	KFX-M532M-00
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EP-01

### ● Daisy chain and gateway connection cable



Model	KFX-M532L-00
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EP-01