PCON·CB/CFB

**Position Controller for RCP6/RCP5/
RCP4 (PowerCon Applicable) /RCP3/RCP2**

Features

1 High-resolution battery-less absolute encoder compatible

The RCP6 equipped with a high-resolution battery-less absolute encoder is supported. Since no battery is needed to retain position data, less space is required in the control panel, which in turn leads to lower cost of your equipment. The resolution is increased from 800 pulses/rev to 8192 pulses/rev.

2 PowerCon Equipped

PowerCon (high-output driver), which can enable the pulse motor to perform at its maximum capacity, is now installed on a small controller. By using PowerCon, the output of the pulse motor is increased by 50%. It contributes to cycle time reduction and productivity improvement.

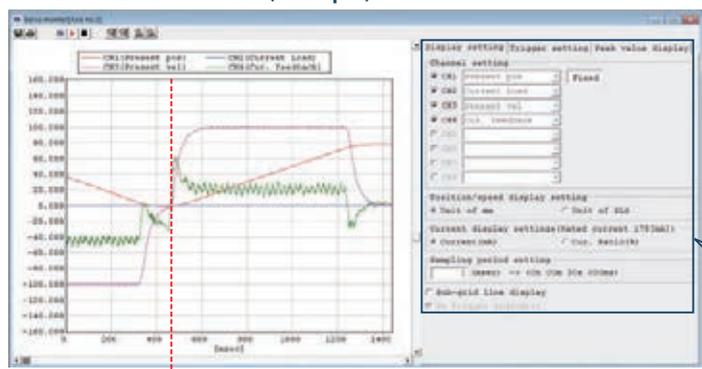### 3 Collision Detection Function Equipped

This function stops the operation immediately when the actuator comes into contact with an object.
The actuator stops without crashing, so that damage to the actuator can be minimized.

Stops immediately when the actuator collides

RCP6   Work
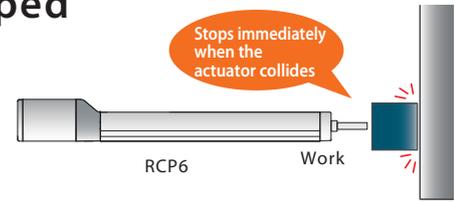
4 Enhanced Monitor Functions

The PC compatible software can display information about the actuator and controller in operation as waveforms.
*Information that can be displayed: Command current value, current speed/position, and PIO signals (start, positioning completion, alarm, etc.)
Using the trigger function, the end user can specify a particular moment, either a change in PIO signals or a designated moment during the actuator's operation time, to begin displaying the waveforms.

Monitor function screen (example)

Display settings   **Trigger settings**

* **Data acquiring starts from time of change of selected items.**

* **Items to be monitored can be selected.**

Signal: CSTR (start) turned ON

PCON-CB/CFB Controller

List of Models

Model number	PCON-CB/CGB, CFB/CGFB										
External view											
I/O type		Positioner type	Pulse-train type	Field network type							
				DeviceNet	CC-Link	PROFIBUS-DP	CompoNet	EtherCAT	EtherNet/IP	PROFINET IO	
I/O type model number		NP/PN	PLN/PLP	DV	CC	PR	CN	EC	EP	PRT	
PCON-CB/CGB	Battery-less absolute specification Incremental specification	○	○	○	○	○	○	○	○	○	
	Simple absolute spec. — With absolute battery	○	○	○	○	○	○	○	○	○	
	Simple absolute spec. — With absolute battery unit	○	○	○	○	○	○	○	○	○	
	Simple absolute spec. — Without absolute battery	○	○	○	○	○	○	○	○	○	
PCON-CFB/CGFB	Battery-less absolute specification Incremental specification	○	○	○	○	○	○	○	○	○	

Model Specification Items

< Controller>

PCON — [ ] — [ ] [ ] — [ ] — [ ] — 0 — [ ] — [ ]

Series | Type | Motor Type | Encoder Type | I/O Type | I/O Cable Length | Power Supply Voltage | Simple Absolute Specification | Controller Mounting Specification

Type

CB	Standard
CGB	Safety category compliant type
CFB	56SP/60P/86P motor-compatible type
CGFB	Safety category compliant, 56SP/60P/86P motor-compliant type

Motor Type

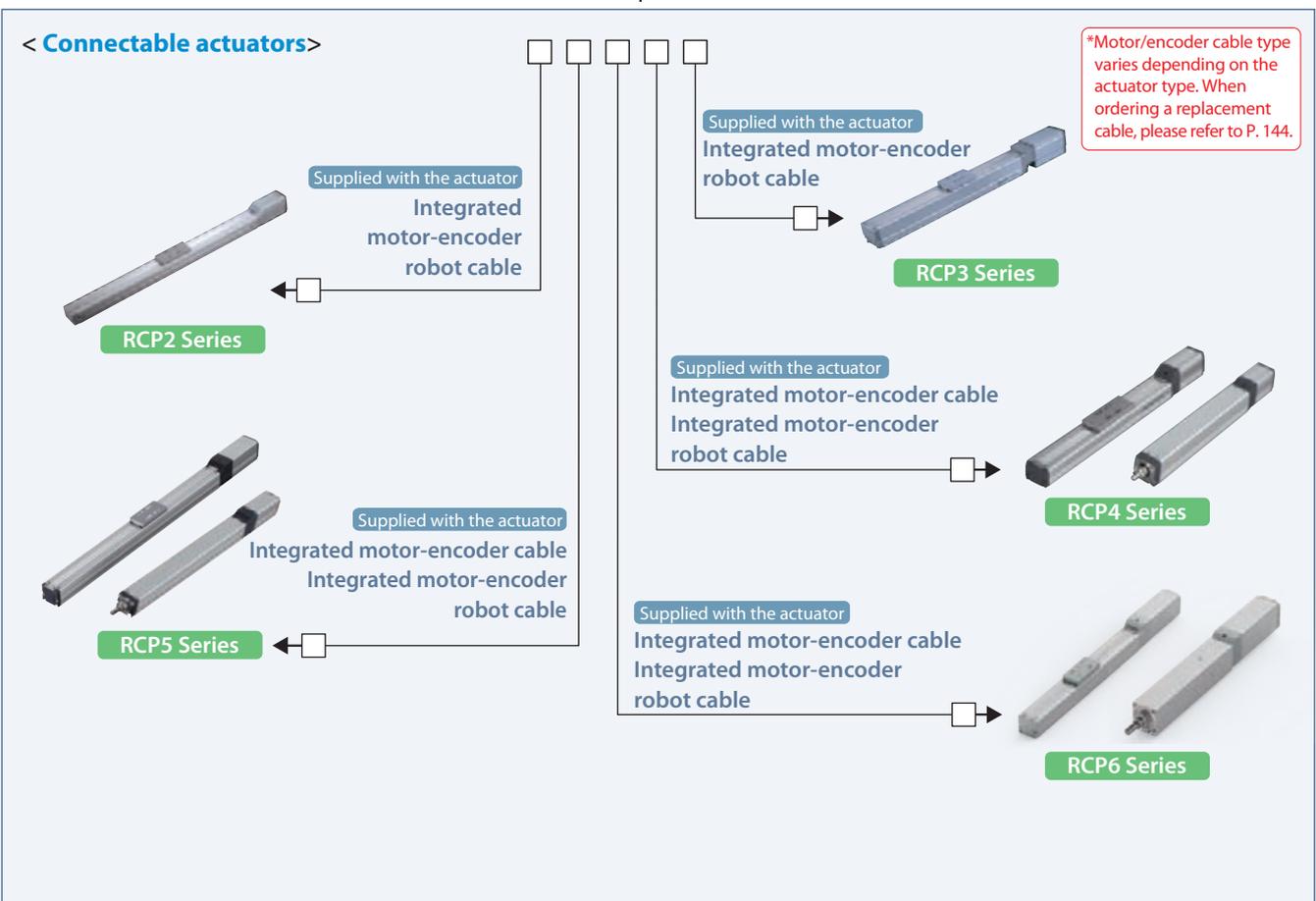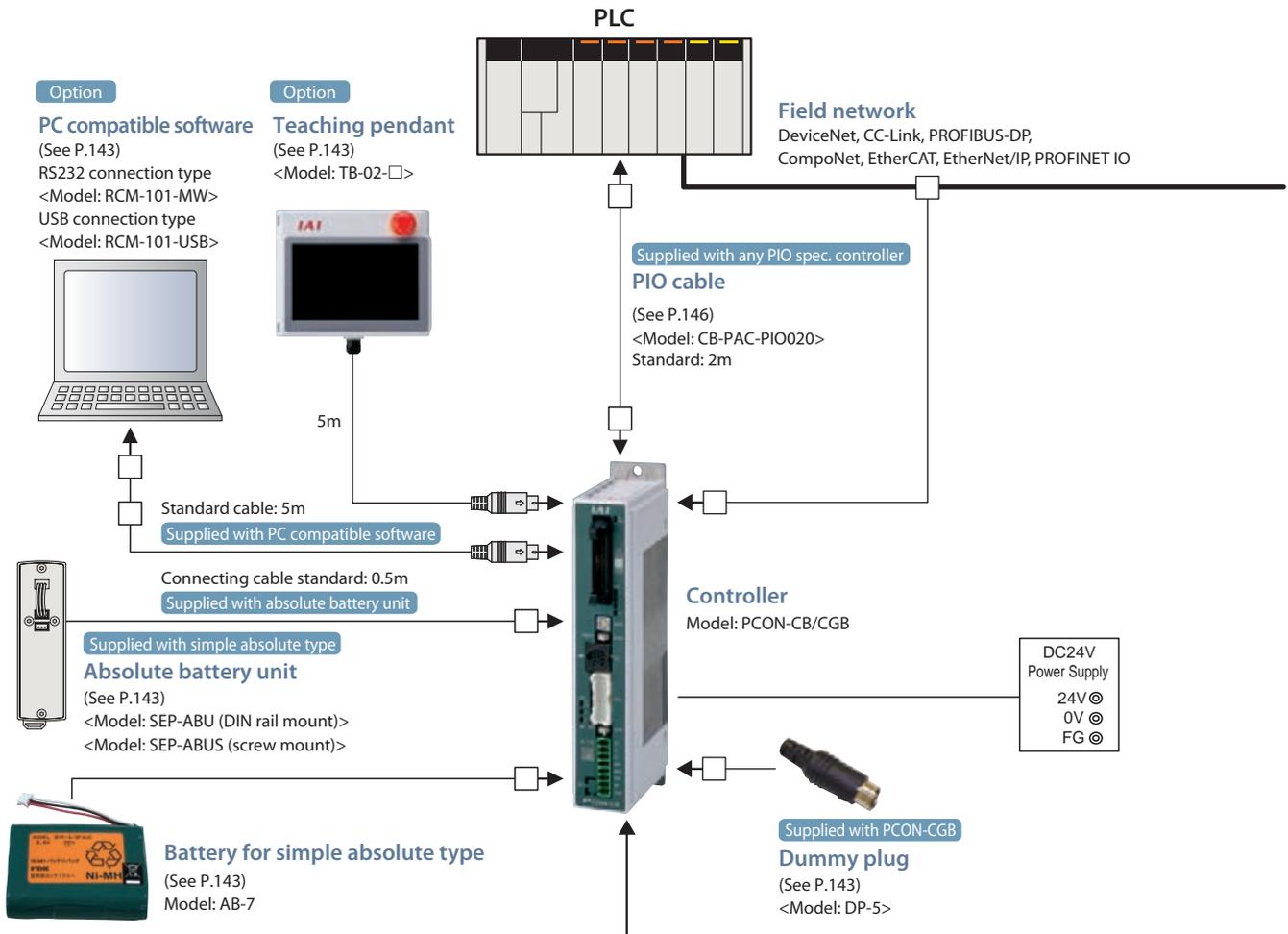| 20P	20□ Pulse motor
20SP	20□ High-thrust pulse motor
28P	28□ Pulse motor
28SP	28□ High-thrust pulse motor
35P	35□ Pulse motor
42P	42□ Pulse motor
42SP	42□ High-thrust pulse motor
56P	56□ Pulse motor
56SP	56□ High-thrust pulse motor
60P	60□ High-thrust pulse motor
86P	86□ High-thrust pulse motor

(e.g.) 20P : For 20□ pulse motor

Note
In general, the model number for motor type will be the same as the model number of the actuator's motor, but there is a few exceptions which the model number of controller and actuator do not match.
Below is the list of those models. Please be careful when these item(s) are selected.
<28SP applicable actuator> • Controller Motor Type [28SP] RCP2-RA3C

Encoder Type

WAI	Battery-less absolute specification Incremental specification
SA	Simple absolute spefication

I/O Type

NP	PIO (NPN)
PLN	Pulse train (NPN)
PN	PIO (PNP)
PLP	Pulse train (PNP)
DV	DeviceNet
CC	CC-Link
PR	PROFIBUS-DP
CN	CompoNet
EC	EtherCAT
EP	EtherNet/IP
PRT	PROFINET IO

I/O Cable Length

0	No cable
2	2m
3	3m
5	5m

* When a field network specification is selected, the I/O cable length is "O".

Power Supply Voltage

0	24VDC

Simple Absolute Specification

(Blank)	Battery-less absolute specification Incremental specification
AB	Simple absolute specification (With absolute battery. No battery unit included)
ABU	Simple absolute specification (With absolute battery and battery unit)
ABUN	Simple absolute specification (Without absolute battery and battery unit)

* PCON-CFB/CGFB does not support a simple absolute specification.

Controller Mounting Specification

(Blank)	Screw mounting specification
DN	DIN rail mounting specification

* The mounting type (screw or DIN rail) of the absolute battery unit and the controller must be the same.

System Configuration

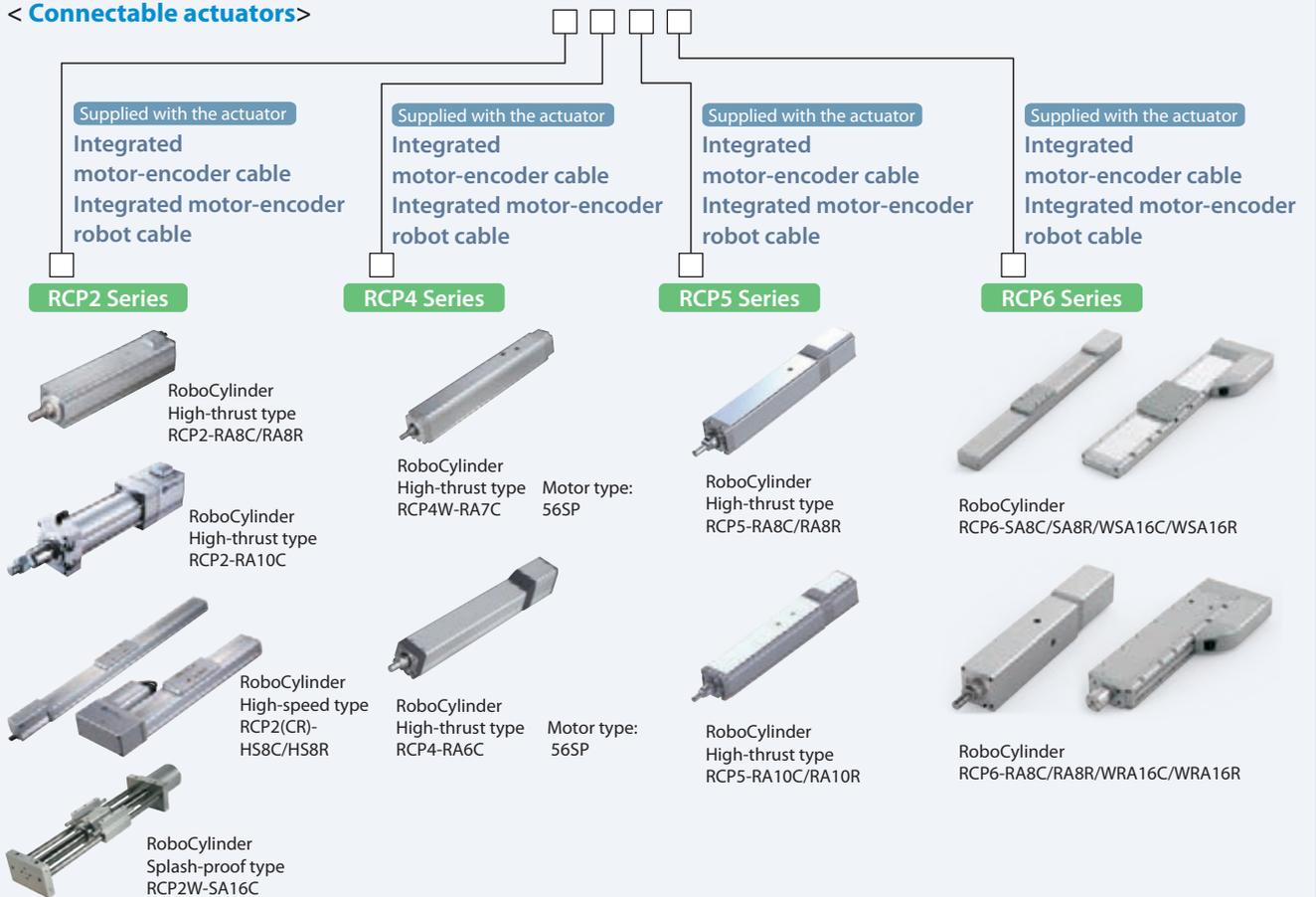### ■ PowerCON150 <PCON-CB/CGB>

PLC

RS232 connection type
<Model: RCM-101-MW>
USB connection type
<Model: RCM-101-USB>

<Model: TB-02-□>

Field network
DeviceNet, CC-Link, PROFIBUS-DP,
CompoNet, EtherCAT, EtherNet/IP, PROFINET IO

Supplied with any PIO spec. controller
PIO cable
(See P.146)
<Model: CB-PAC-PIO020>
Standard: 2m

5m

Standard cable: 5m
Supplied with PC compatible software

Connecting cable standard: 0.5m
Supplied with absolute battery unit

Supplied with simple absolute type
Absolute battery unit
(See P.143)
<Model: SEP-ABU (DIN rail mount)>
<Model: SEP-ABUS (screw mount)>

Controller
Model: PCON-CB/CGB

**DC24V
Power Supply**
24V ◎
0V ◎
FG ◎

Battery for simple absolute type
(See P.143)
Model: AB-7

Supplied with PCON-CGB
Dummy plug
(See P.143)
<Model: DP-5>

< Connectable actuators>

*Motor/encoder cable type varies depending on the actuator type. When ordering a replacement cable, please refer to P. 144.

Supplied with the actuator
Integrated motor-encoder robot cable

RCP3 Series

Supplied with the actuator
Integrated motor-encoder robot cable

RCP2 Series

Supplied with the actuator
**Integrated motor-encoder cable
Integrated motor-encoder robot cable**

RCP4 Series

Supplied with the actuator
**Integrated motor-encoder cable
Integrated motor-encoder robot cable**

RCP5 Series

Supplied with the actuator
**Integrated motor-encoder cable
Integrated motor-encoder robot cable**

RCP6 Series

System Configuration

■ 56SP/60P/86P Motor Compatible <PCON-CFB/CGFB>

PLC

Option
PC compatible software
(See P.143)
RS232 connection type
<Model: RCM-101-MW>
USB connection type
<Model: RCM-101-USB>

Option
Teaching pendant
(See P.143)
<Model: TB-02-□>

Field network
DeviceNet, CC-Link, PROFIBUS-DP,
CompoNet, EtherCAT, EtherNet/IP, PROFINET IO

Supplied with any PIO spec. controller
PIO cable
(See P.146)
<Model: CB-PAC-PIO020>
Standard: 2m

5m

Supplied with PC
compatible software

Controller
Model: PCON-CFB/CGFB

**DC24V
Power Supply**
24V ◎
0V ◎
FG ◎

Supplied with PCON-CGFB
Dummy plug
(See P.143)
<Model: DP-5>

< Connectable actuators>

Supplied with the actuator	Supplied with the actuator	Supplied with the actuator	Supplied with the actuator
Integrated motor-encoder cable **Integrated motor-encoder robot cable**	**Integrated motor-encoder cable** **Integrated motor-encoder robot cable**	**Integrated motor-encoder cable** **Integrated motor-encoder robot cable**	**Integrated motor-encoder cable** **Integrated motor-encoder robot cable**

RCP2 Series | **RCP4 Series** | **RCP5 Series** | **RCP6 Series**

RoboCylinder
High-thrust type
RCP2-RA8C/RA8R

RoboCylinder
High-thrust type
RCP2-RA10C

RoboCylinder
High-speed type
RCP2(CR)-HS8C/HS8R

RoboCylinder
Splash-proof type
RCP2W-SA16C

RoboCylinder
High-thrust type
RCP4W-RA7C　Motor type: 56SP

RoboCylinder
High-thrust type
RCP4-RA6C　Motor type: 56SP

RoboCylinder
High-thrust type
RCP5-RA8C/RA8R

RoboCylinder
High-thrust type
RCP5-RA10C/RA10R

RoboCylinder
RCP6-SA8C/SA8R/WSA16C/WSA16R

RoboCylinder
RCP6-RA8C/RA8R/WRA16C/WRA16R

PIO I/O Interface

■ Input part External input specification

Item	Specification
Input voltage	24VDC ±10%
Input current	5mA, 1 circuit
ON/OFF voltage	ON voltage, 18VDC min. OFF voltage, 6VDC max.
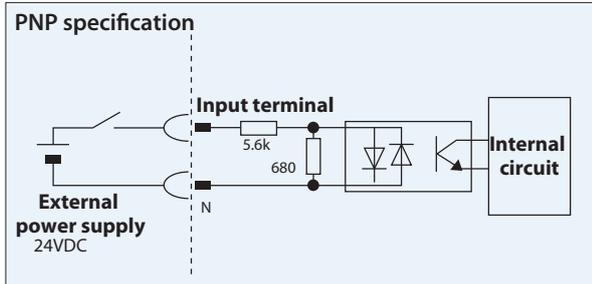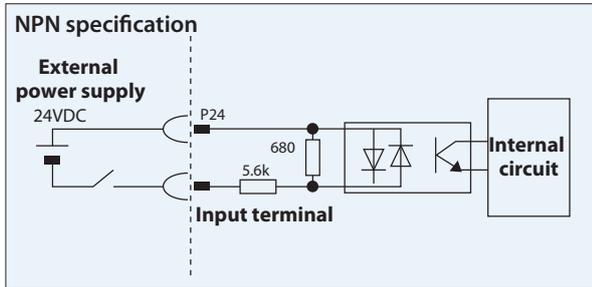
■ Output part External output specification

Item	Specification
Load voltage	24VDC
Maximum load current	50mA, 1 circuit
Leak current	2mA max. /point

NPN specification

PNP specification

NPN specification

PNP specification
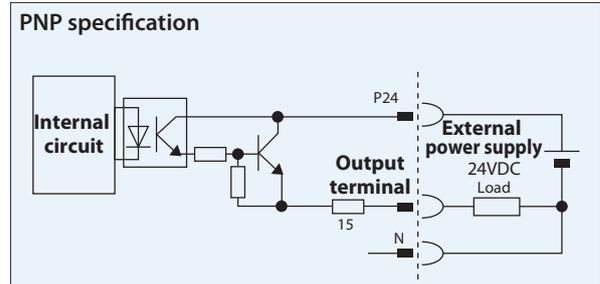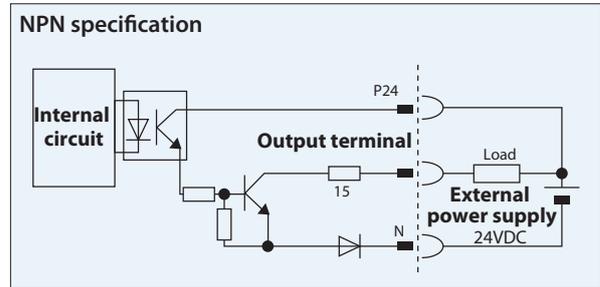
Types of PIO Patterns (Control Patterns)

This controller has eight different control methods.

Please select the PIO pattern that best suits your application in Parameter No.25, "PIO Pattern Selection".

Type	Set value of parameter No.25	Mode	Overview
PIO Pattern 0	0 (Factory setting)	Positioning mode (Standard type)	• Number of positioning points: 64 points • Position number command: Binary Coded Decimal (BCD) • Zone signal output[*1] : 1 point • Position zone signal output[*2] : 1 point
PIO Pattern 1	1	Teaching mode (Teaching type)	• Number of positioning points: 64 points • Position number command: Binary Coded Decimal (BCD) • Position zone signal output[*2] : 1 point • Jog (inching) operation using PIO signals is supported. • Current position data can be written to the position table using PIO signals.
PIO Pattern 2	2	256-point mode (256 positioning points)	• Number of positioning points: 256 points • Position number command: Binary Coded Decimal (BCD) • Position zone signal output[*2] : 1 point
PIO Pattern 3	3	512-point mode (512 positioning points)	• Number of positioning points: 512 points • Position number command: Binary Coded Decimal (BCD) • No zone signal output
PIO Pattern 4	4	Solenoid valve mode 1 (7-point type)	• Number of positioning points: 7 points • Zone signal output[*1] : 1 point • Position number command: Individual number signal ON • Position zone signal output[*2] : 1 point
PIO Pattern 5	5	Solenoid valve mode 2 (3-point type)	• Number of positioning points: 3 points • Position number command: Individual number signal ON • Completion signal: A signal equivalent to a LS (limit switch) signal can be output. • Zone signal output[*1] : 1 point • Position zone signal output[*2] : 1 point
PIO Pattern 6 (Note 1)	6	Pulse-train control mode for incremental	• Differential pulse input (200 kpps max.) • Home return function • Zone signal output[*1] : 2 points • No feedback pulse output
PIO Pattern 7 (Note 1)	7	Pulse-train control mode for absolute	• Reference point setting (1 point) • Home return function • Differential pulse input (200 kpps max.) • No feedback pulse output • Zone signal output[*1] : 2 points

*1 Zone signal output: Please set the desired zone range in Parameter No.1/2 or 23/24, and it will remain effective once home return is completed.

*2 Position zone signal output: This command function relates to the position number. Set the desired zone range in the position table, and this function will only become enabled when the corresponding position is specified; it will be disabled for all other position commands.

(Note 1) Pulse train control mode is available only the pulse train control type is specified (PCON-CB-PLN and PLP) at the time of purchase.

PIO Patterns and Signal Assignments

The table below lists the signal assignments for the I/O flat cable under different PIO patterns.

Connect an external device (such as a PLC) according to this table.

Pin No.	Category	PIO function	Parameter No.25, "PIO Pattern Selection"					
			0	1	2	3	4	5
			Positioning mode	Teaching mode	256-point mode	512-point mode	Solenoid valve mode 1	Solenoid valve mode 2
	Input	Number of positioning points	64 points	64 points	256 points	512 points	7 points	3 points
		Home return signal	○	○	○	○	○	—
		Jog signal	—	○	—	—	—	—
		Teaching signal (writing of current position)	—	○	—	—	—	—
		Brake release	○	—	○	○	○	○
	Output	Moving signal	○	○	—	—	—	—
		Zone signal	○	△ (Note 1)	△ (Note 1)	—	○	○
		Position zone signal	○	○	○	—	○	○
1A	24V		P24					
2A	24V		P24					
3A	Pulse Input		-					
4A			-					
5A	Input	IN0	PC1	PC1	PC1	PC1	ST0	ST0
6A		IN1	PC2	PC2	PC2	PC2	ST1	ST1(JOG+)
7A		IN2	PC4	PC4	PC4	PC4	ST2	ST2 (Non-Functional)
8A		IN3	PC8	PC8	PC8	PC8	ST3	-
9A		IN4	PC16	PC16	PC16	PC16	ST4	-
10A		IN5	PC32	PC32	PC32	PC32	ST5	-
11A		IN6	-	MODE	PC64	PC64	ST6	-
12A		IN7	-	JISL	PC128	PC128	-	-
13A		IN8	-	JOG+	-	PC256	-	-
14A		IN9	BKRL	JOG-	BKRL	BKRL	BKRL	BKRL
15A		IN10	RMOD	RMOD	RMOD	RMOD	RMOD	RMOD
16A		IN11	HOME	HOME	HOME	HOME	HOME	-
17A		IN12	*STP	*STP	*STP	*STP	*STP	-
18A		IN13	CSTR	CSTR/PWRT	CSTR	CSTR	-	-
19A		IN14	RES	RES	RES	RES	RES	RES
20A		IN15	SON	SON	SON	SON	SON	SON
1B	Output	OUT0	PM1 (ALM1)	PM1 (ALM1)	PM1 (ALM1)	PM1 (ALM1)	PE0	LSO
2B		OUT1	PM2 (ALM2)	PM2 (ALM2)	PM2 (ALM2)	PM2 (ALM2)	PE1	LS1(TRQS)
3B		OUT2	PM4 (ALM4)	PM4 (ALM4)	PM4 (ALM4)	PM4 (ALM4)	PE2	LS2 (Note2)
4B		OUT3	PM8 (ALM8)	PM8 (ALM8)	PM8 (ALM8)	PM8 (ALM8)	PE3	-
5B		OUT4	PM16	PM16	PM16	PM16	PE4	-
6B		OUT5	PM32	PM32	PM32	PM32	PE5	-
7B		OUT6	MOVE	MOVE	PM64	PM64	PE6	-
8B		OUT7	ZONE1	MODES	PM128	PM128	ZONE1	ZONE1
9B		OUT8	PZONE/ZONE2	PZONE/ZONE1	PZONE/ZONE1	PM256	PZONE/ZONE2	PZONE/ZONE2
10B		OUT9	RMDS	RMDS	RMDS	RMDS	RMDS	RMDS
11B		OUT10	HEND	HEND	HEND	HEND	HEND	HEND
12B		OUT11	PEND	PEND/WEND	PEND	PEND	PEND	-
13B		OUT12	SV	SV	SV	SV	SV	SV
14B		OUT13	*EMGS	*EMGS	*EMGS	*EMGS	*EMGS	*EMGS
15B		OUT14	*ALM	*ALM	*ALM	*ALM	*ALM	*ALM
16B		OUT15	LOAD/TRQS *ALML	*ALML	LOAD/TRQS *ALML	LOAD/TRQS *ALML	LOAD/TRQS *ALML	*ALML
17B	Pulse Input		-					
18B			-					
19B	0V		N					
20B	0V		N					

(Note) In the table above, asterisk * symbol accompanying each code indicates a negative logic signal. PM1~PM8 are alarm binary code output signals that are used when an alarm generates.
(Note 1) In all PIO patterns other than 3, this signal can be sswitched with PZONE by setting Parameter No. 149 accordingly.
(Note 2) The setting will not become effective until the home return is completed.
Reference) Negative logic signal
Signals denoted by * are negative logic signals. Negative logic input signals are processed when turned OFF. Negative logic output signals normally remain ON while the power is supplied, and turn OFF when the signal is output.
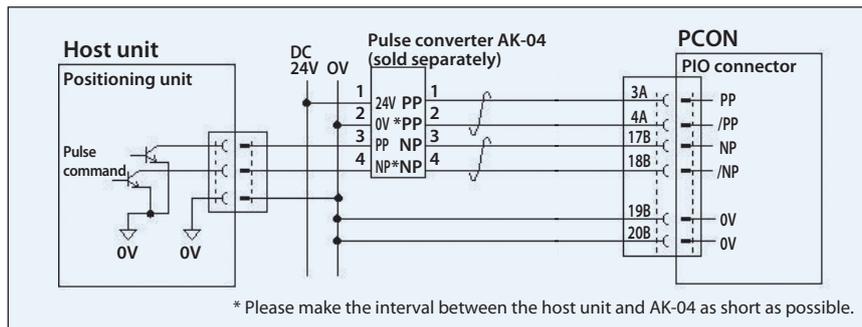
Pulse-train Control Circuit

■ Host Unit = Differential Type
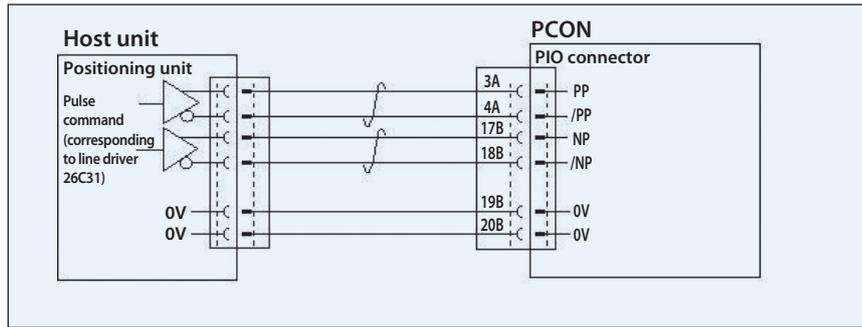
■ Host Unit = Open Collector Type

The AK-04 (optional) is needed to input pulses.

* Please make the interval between the host unit and AK-04 as short as possible.

⚠ **Caution: Use the same power supply for open collector input/output to/from the host and for the AK-04.**

Command Pulse Input Patterns

	Command pulse-train pattern	Input terminal	Forward	Reverse
Negative logic	Forward pulse-train	PP•/PP		
	Reverse pulse-train	NP•/NP		
	A forward pulse-train indicates the amount of motor rotation in the forward direction, while a reverse pulse-train indicates the amount of motor rotation in the reverse direction.			
	Pulse-train	PP•/PP		
	Sign	NP•/NP	Low	High
	The command pulses indicate the amount of motor rotation, while the sign indicates the rotating direction.			
	Phase A/B pulse-train	PP•/PP		
		NP•/NP		
	Command phases A and B having a 90° phase difference (multiplier is 4) indicate the amount of rotation and the rotating direction.			
Positive logic	Forward pulse-train	PP•/PP		
	Reverse pulse-train	NP•/NP		
	Pulse-train	PP•/PP		
	Sign	NP•/NP	High	Low
	Phase A/B pulse-train	PP•/PP		
		NP•/NP		

PCON-CB/CFB Controller

I/O Signals in Pulse-train Control Mode

The table below lists the signal assignments for the flat cable in the pulse-train control mode.
Connect an external device (such as PLC) according to this table.

Pin number	Category	I/O number	Signal abbreviation	Signal name	Parameter No.25, "PIO pattern 6/7"
1A	24V		P24	Power supply	I/O power supply +24V
2A	24V		P24	Power supply	I/O power supply +24V
3A	Pulse Input		PP	Differential pulse-train input (+)	Differential pulses are input from the host. Up to 200kpps can be input.
4A			/PP	Differential pulse-train input (-)	
5A	Input	IN0	SON	Servo ON	The servo is ON while this signal is ON, and OFF while the signal is OFF.
6A		IN1	RES	Reset	Present alarms are reset when this signal is turned ON.
7A		IN2	HOME	Home return	Home return operation is performed when this signal is turned ON.
8A		IN3	TL	Torque limit selection	When this signal is turned ON, the motor torque is limited to the value set by the parameter.
9A		IN4	CSTP	Forced stop	The actuator is forcibly stopped when this signal has remained ON for 16ms or more. The actuator decelerates to a stop at the torque set in the controller and the servo turns OFF.
10A		IN5	DCLR	Deviation counter clear	This signal clears the deviation counter.
11A		IN6	BKRL	Forced brake release	The brake is forcibly released.
12A		IN7	RMOD	Operation mode switching	The operation mode can be switched when the MODE switch on the controller is set to AUTO. (AUTO when this signal is OFF, and to MANU when the signal is ON.)
13A		IN8	RSTR*1	Reference position movement command	When this signal turns on, the actuator moves to the reference position set in parameter No.167. *1: Used only in PIO Pattern 7.
14A		IN9	NC	-	Not used
15A		IN10	NC	-	Not used
16A		IN11	NC	-	Not used
17A		IN12	NC	-	Not used
18A		IN13	NC	-	Not used
19A		IN14	NC	-	Not used
20A		IN15	NC	-	Not used
1B	Output	OUT0	PWR	System ready	This signal turns ON when the controller becomes ready after the main power supply has been turned on.
2B		OUT1	SV	Servo ON status	This signal turns ON when the servo is ON.
3B		OUT2	INP	Positioning complete	This signal turns ON when the amount of remaining travel pulses in the deviation counter falls within the in-position band.
4B		OUT3	HEND	Home return complete	This signal turns ON upon completion of home return.
5B		OUT4	TLR	Torque limited	This signal turns ON upon reaching the torque limit while the torque is limited.
6B		OUT5	#ALM	Controller alarm status	This signal turns ON when the controller is normal, and turns OFF when an alarm generates.
7B		OUT6	#EMGS	Emergency stop status	This signal turns ON when the emergency stop of the controller is cancelled, and turns OFF when an emergency stop is actuated.
8B		OUT7	RMDS	Operation mode status	The operation mode status is output. This signal turns ON when the controller is in the manual mode.
9B		OUT8	ALM1	Alarm code output signal	An alarm code is output when an alarm generates. For details, refer to the operation manual.
10B		OUT9	ALM2		
11B		OUT10	ALM4		
12B		OUT11	ALM8		
13B		OUT12	#ALML	Minor failure alarm	This signal turns ON when the controller is normal, and turns OFF when a message-level alarm has been generated.
14B		OUT13	REND*1	Reference position movement complete	This signal turns ON when movement to the reference point set in parameter No. 167 is completed. *1: Used only in PIO Pattern 7.
15B		OUT14	ZONE1	Zone signal 1	This signal turns ON when the current position of the actuator falls within the parameter-set range.
16B		OUT15	ZONE2	Zone signal 2	
17B	Pulse Input		NP	Differential pulse-train input (+)	Differential pulses are input from the host. Up to 200kpps can be input.
18B			/NP	Differential pulse-train input (-)	
19B	0V		N	Power supply	I/O power supply 0V
20B	0V		N	Power supply	I/O power supply 0V

Note) # indicates a negative logic signal. Negative logic signals are normally ON while the power is supplied, and turn OFF when the signal is output.

Field Network Specification: Explanation of Operation Modes

If the PCON-CB is controlled via a field network, you can select one of the following five modes to operate the actuator.
Please note that the data areas required on the PLC side will vary depending on the mode.

■ Mode Description

	Mode	Description
0	Remote I/O mode	Similarly to the PIO specification, this mode operates by directing bytes to ON/OFF via a network. The number of positioning points and functions will vary depending on the operation patterns (PIO patterns) set by the controller's parameters.
1	Position/simple direct value mode	The target position value is directly input, while all other operational conditions (speed, acceleration, etc) are set by indicating the position number corresponding to the desired operating conditions from the position data table.
2	Half direct value mode	The actuator is operated by directly inputting values for speed, acceleration rate and push current, as well as the target position.
3	Full direct value mode	The actuator is operated by directly inputting values for the target position, speed, acceleration rate and push current, etc. In addition, you are able to read the current position, current speed, and the specified current, etc.
4	Remote I/O mode 2	This mode is the same as the remote I/O mode above, with the added functionality of reading current position and the command motor current.

■ Required Data Size for Each Network

|		DeviceNet	CC-Link	PROFIBUS-DP	CompoNet	EtherCAT	EtherNet/IP	PROFINET IO
0	Remote I/O mode	2 bytes	1 station	2 bytes	2 bytes	2 bytes	2 bytes	2 bytes
1	Position/simple direct value mode	8 bytes	1 station	8 bytes	8 bytes	8 bytes	8 bytes	8 bytes
2	Half direct value mode	16 bytes	2 stations	16 bytes	16 bytes	16 bytes	16 bytes	16 bytes
3	Full direct value mode	32 bytes	4 stations	32 bytes	32 bytes	32 bytes	32 bytes	32 bytes
4	Remote I/O mode 2	12 bytes	1 station	12 bytes	12 bytes	12 bytes	12 bytes	12 bytes

■ List of Functions by Operation Mode

	Remote I/O mode	Position/simple direct value mode	Half direct value mode	Full direct value mode	Remote I/O mode 2
Number of positioning points	512 points	768 points	Unlimited	Unlimited	512 points
Operation by direct position data input	—	○	○	○	—
Direct speed/ acceleration input	—	—	○	○	—
Push-motion operation	○	○	○	○	○
Current position read	—	○	○	○	○
Current speed read	—	—	○	○	—
Operation by position number input	○	○	—	—	○
Completed position number read	○	○	—	—	○

* ○ indicates that the operation is supported, and — indicates that it is not supported.
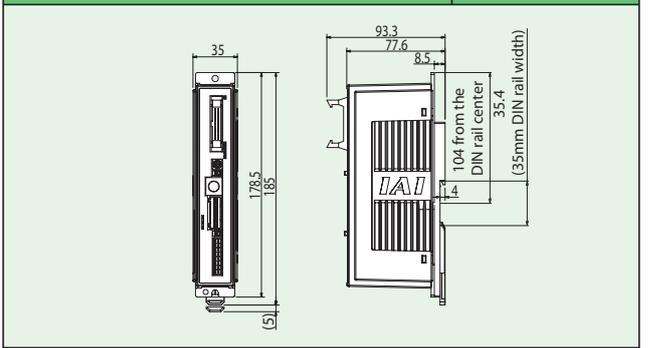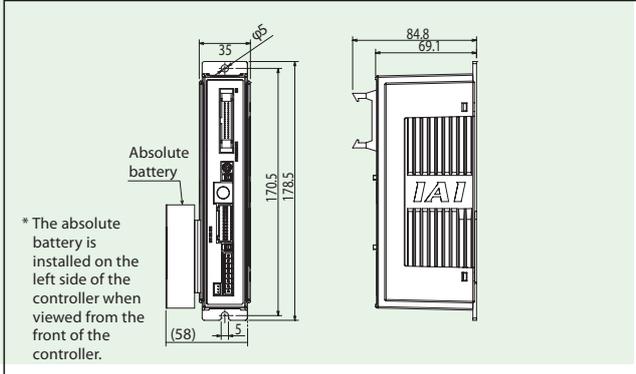
External Dimensions

\<PCON-CB/CGB\>

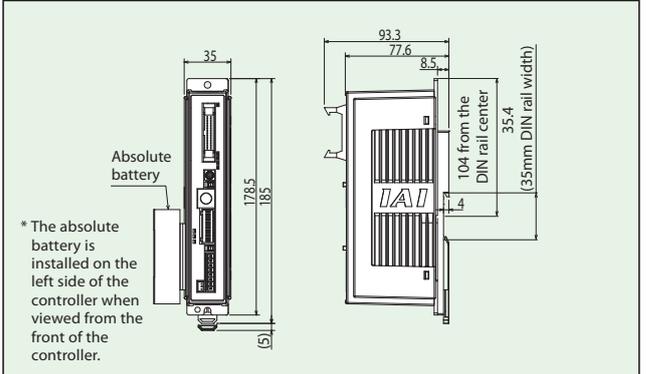| Battery-less Absolute/Incremental Specifications	Screw Mounting Spec.
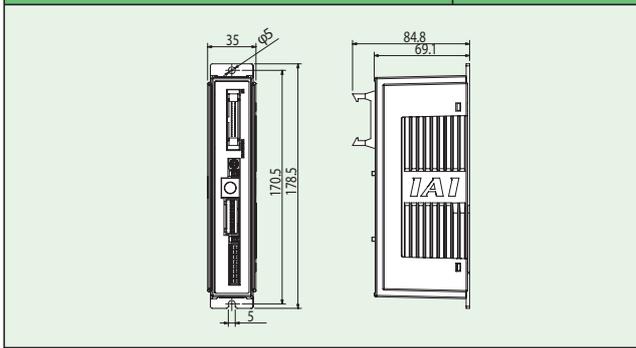
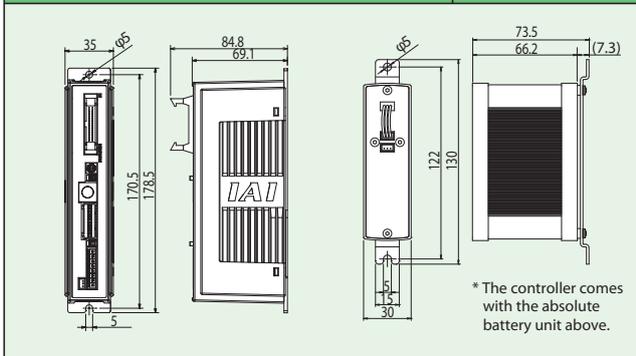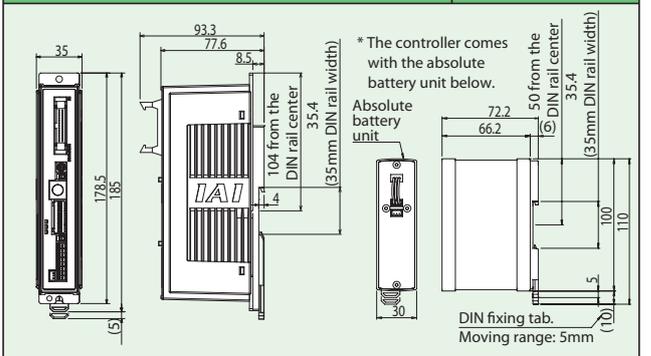| Battery-less Absolute/Incremental Specifications	DIN Rail Mounting Spec.

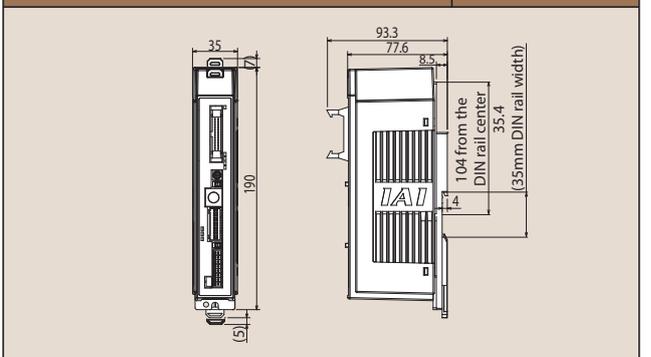| Simple Absolute Specification w/ Absolute Battery	Screw Mounting Spec.

Absolute battery

* The absolute battery is installed on the left side of the controller when viewed from the front of the controller.

Simple Absolute Specification w/ Absolute Battery	DIN Rail Mounting Spec.

Absolute battery

* The absolute battery is installed on the left side of the controller when viewed from the front of the controller.

Simple Absolute Specification w/ Absolute Battery Unit	Screw Mounting Spec.

* The controller comes with the absolute battery unit above.

Simple Absolute Specification w/ Absolute Battery Unit	DIN Rail Mounting Spec.

* The controller comes with the absolute battery unit below.

Absolute battery unit

DIN fixing tab.
Moving range: 5mm

\<PCON-CFB/CGFB\>

Battery-less Absolute/Incremental Specifications	Screw Mounting Spec.
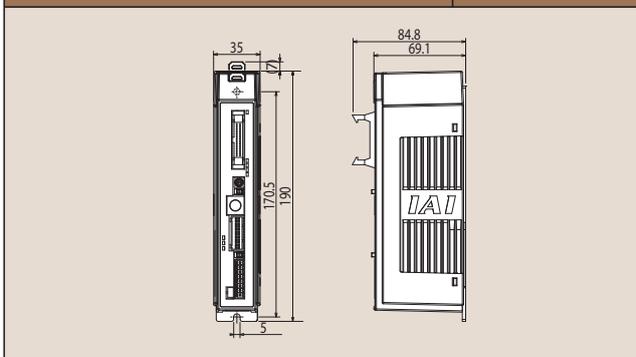
Battery-less Absolute/Incremental Specifications	DIN Rail Mounting Spec.

Specification List

Item				Description	
				PCON-CB/CGB	**PCON-CFB/CGFB**
Number of controlled axes				1 axis	
Power supply voltage				24VDC±10%	
Load current (including control-side current consumption) (Note 1)	RCP2 RCP3	Motor type	20P, 28P, 28SP	1A max.	
			35P, 42P, 56P	2.2A max.	
			60P, 86P		6A max.
	RCP4 RCP5	Motor type	28P, 35P, 42P, 42SP, 56P	High-output setting disabled: 2.2A max.	
				High-output setting enabled: 3.5A rated/4.2A max.	
			56SP, 60P, 86P		6A max.
	RCP6	Motor type	28P, 35P, 42P, 56P	High-output setting disabled: 2.2A max.	
				High-output setting enabled: 3.5A rated/4.2A max.	
			56SP, 60P		6A max.
Electromagnetic brake power (for actuator with brake)				24VDC±10% 0.15A max.	24VDC±10% 0.5A max.
Inrush current (Note 2)				8.3A	10A
Momentary power failure resistance				500μs max.	
Compatible encoder				High-resolution battery-less absolute encoder: Resolution 8,192 pulses/rev	
				Battery-less absolute encoder: Resolution 800 pulses/rev	
				Incremental encoder: Resolution 800 pulses/rev	
Actuator cable length				20m max.	
External interface	PIO specification			Dedicated 24VDC signal input/output (NPN/PNP selection) ... Input max. of 16 points, output max. of 16 points, cable length max. of 10m	
	Field network specification			DeviceNet, CC-Link, PROFIBUS-DP, CompoNet, EtherCAT, EtherNet/IP, PROFINET IO	
Data setting, input method				PC compatible software, touch panel teaching pendant	
Data retention memory				Position data and parameters are saved in non-volatile memory. (No limit to rewrite)	
Operation mode				Positioner mode / pulse-train control mode (selectable by parameter setting)	
Number of positioner-mode positions				Up to 512 points for positioner type or up to 768 points for network type *The total number of positioning points varies depending on which PIO pattern is selected.	
Pulse-train interface	Input pulse			Differential type (line-driver type): 200kpps max., cable length up to 10m	
				Open-collector method: Not supported * If the host uses open-collector outputs, use AK-04 (optional, sold separately) to change them to differential outputs.	
	Command pulse magnification (Electronic gear: A/B)			1/50 < A/B < 50/1 Setting range of A and B (set by parameters): 1~4,096	
	Feedback pulse output			None	
Insulation resistance				Not less than 10MΩ at 500VDC	
Electric shock protection mechanism				Class I, basic insulation	
Mass (Note 3)	Battery-less absolute specification / Incremental specification			Screw mounting type: Not more than 250g DIN rail mounting type: Not more than 285g	Screw mounting type: Not more than 270g DIN rail mounting type: Not more than 305g
	Simple absolute specification (including 190g for battery)			Screw mounting type: Not more than 450g DIN rail mounting type: Not more than 485g	
Cooling method				Natural air cooling	Forced air cooling
Environment	Ambient operating temperature			0~40°C	
	Ambient operating humidity			Not more than 85% RH (non-condensing)	
	Operating ambience			Free from corrosive gases	
	Degree of protection			IP20	

Note 1) 0.3A higher for the field network specification.
Note 2) Inrush current flows for approx. 5msec after the power is input (at 40°C). Please note that the inrush current value varies depending on the impedance of the power line.
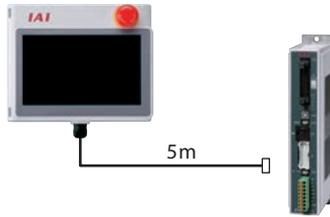Note 3) 30g heavier for the field network specification.

Options

Touch panel teaching pendant

▊ **Features** A teaching device equipped with functions such as position teaching, trial operation, and monitoring.

▊ **Model** **TB-02-C**

▊ **Configuration**

5m

▊ **Specifications**

| Rated voltage	24VDC
Power consumption	3.6W or less (150mA or less)
Ambient operating temperature	0~40℃
Ambient operating humidity	20~80% RH (Non-condensing)
Environmental resistance	IP20
Weight	470g (TB-02 unit only)

PC compatible software (Windows only)

▊ **Features** The start-up support software which comes equipped with functions such as position teaching, trial operation, and monitoring.
A complete range of functions needed for making adjustments contributes to a reduced start-up time.

▊ **Model** **RCM-101-MW** (with an external device communication cable + RS232 conversion unit)

Please contact IAI for the current supported versions.

▊ **Configuration**

PC compatible software (CD)

RS232 conversion adapter RCB-CV-MW

0.3m

5m

External device communication cable CB-RCA-SIO050
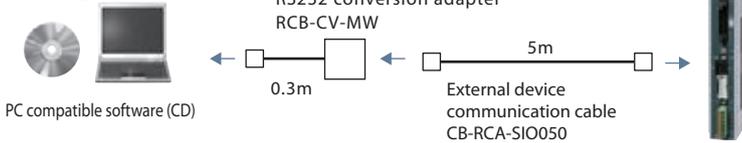
Supported Windows versions: XP SP2 or later / Vista / 7 / 8

▊ **Model** **RCM-101-USB** (with an external device communication cable +USB conversion adapter + USB cable)

Please contact IAI for the current supported versions.

▊ **Configuration**

PC compatible software (CD)

USB cable: CB-SEL-USB030

3m

USB conversion adapter: RCB-CV-USB

5m

External device communication cable: CB-RCA-SIO050
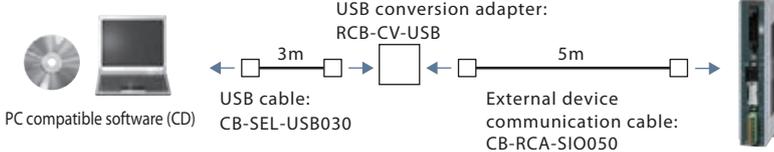
Absolute battery unit

▊ **Overview** A battery unit, supplied as an accessory for the simple absolute specification, which serves to back up the current position of the controller.

▊ **Model** **SEP-ABU** (DIN rail mounting specification)

  SEP-ABUS (Screw mounting specification)

▊ **Specification**

Item	Specification
Ambient operating temp. & humidity	0~40℃ (around 20℃ is desirable), 95% RH or less (non-condensing)
Operating ambience	Free from corrosive gases
Absolute battery	Model: AB-7 (Ni-MH battery/Life: approx. 3 years)
Absolute battery unit connecting cable	Model: CB-APSEP-AB005 (length: 0.5m)
Weight	Standard type: approx.230g/Dust-proof type: approx.260g

Replacement battery

▊ **Overview** Replacement battery used with the absolute battery box.

▊ **Model** **AB-7**
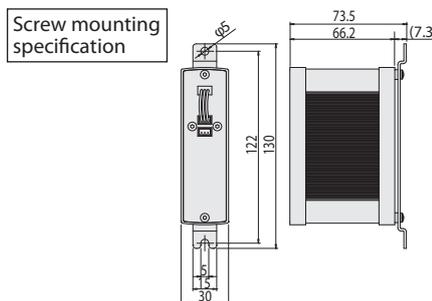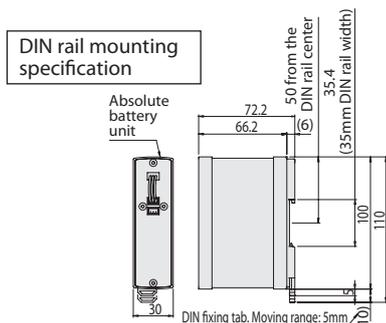
Dummy plug

▊ **Overview** This plug is required when the safety category specification (PCON-CGB/CGFB) is used.

▊ **Model** **DP-5**

DIN rail mounting specification

Absolute battery unit

72.2
66.2
(6)
50 from the DIN rail center
35.4 (35mm DIN rail width)
100
110
30
5
(110)
DIN fixing tab. Moving range: 5mm

Screw mounting specification

73.5
66.2
(7.3)
ø5
122
130
5
15
30