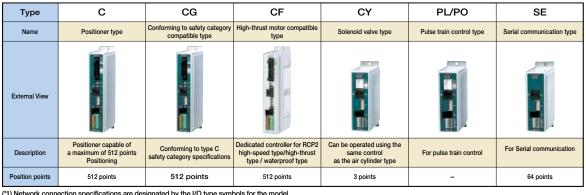
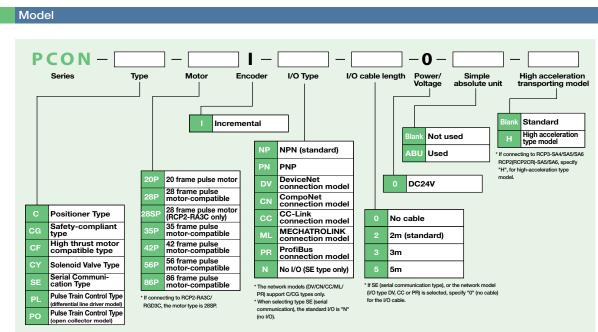


# List of models

These are the position controllers that can be used with the RCP3/RCP2 Series actuators. Our line-up has 6 types, which are compatible with various control systems.



(\*1) Network connection specifications are designated by the I/O type symbols for the model.



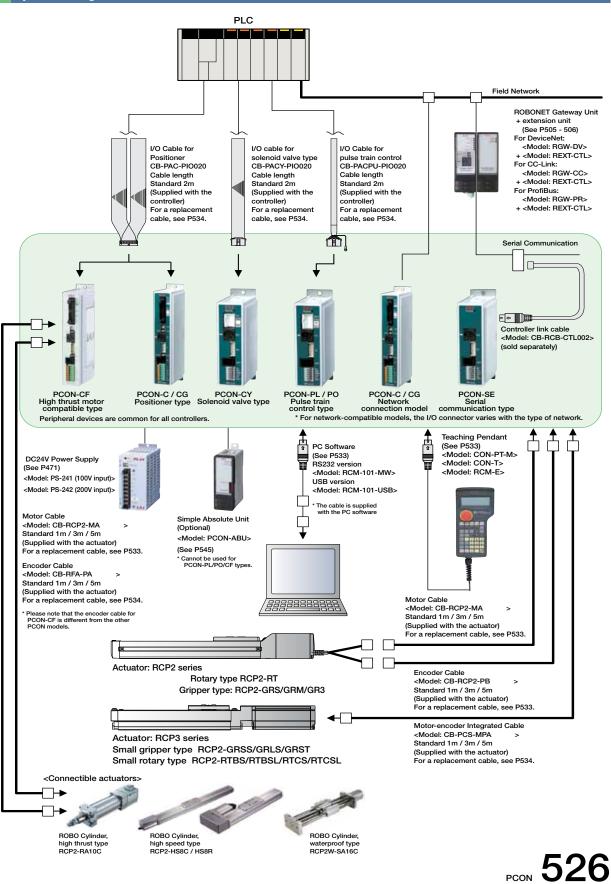
525 PCON



ype Mini Standard Controllers Integrated

PMEC /AMEC /ASEP /ASEP ROBO NET ERC2 PCON ACON



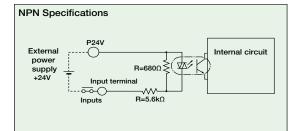


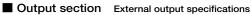


I/O Specifications

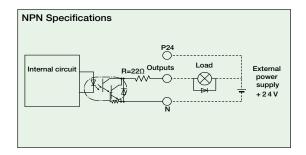
# Input section External input specifications

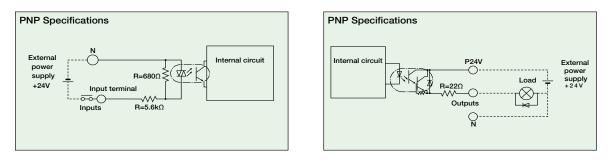
Item	Specifications
Input voltage	DC24V +/-10%
Input current	4mA/circuit
Leak current	1mA max./point
Isolation method	Photocoupler





Item	Specifications
Load Voltage	DC24V
Max. load current	50mA/point
Remaining voltage	2V or less
Isolation method	Photocoupler





# I/O Specifications

The 4 types of controllers (C/CG, CY, PL/PO, and SE) are classified by their respective I/O specifications. In addition, with the positioner type and solenoid valve type, the I/O signal details can be changed via the controller settings. As a result, a number of functions can be used.

# Control Function by Type

Туре	C/CG	CY	PL/PO	SE	Features
Name	Positioner type	Solenoid valve type	Pulse in-line control type	Serial communication type	reatures
Positioner mode	$\bigcirc$	×	×	(*1)	This is the basic operating mode, in which the user designates position numbers and inputs start signals.
Teaching mode	0	×	×	(*1)	In this mode, the slider (rod) moves based on an external signal, and the stopped positions can be registered as position data.
Solenoid valve mode	$\bigcirc$	$\bigcirc$	×	(*1)	The actuator can be moved simply by ON/OFF of position signals. This mode supports the same control signals you are already familiar with on solenoid valves of air cylinders.
Pulse train mode	×	×	0	×	In this mode, you can operate the actuator freely using pulse trains without inputting position data.
Network compatible	(*2)	×	×	(*3)	The controller can be connected to a DeviceNet or CC-Link network.

\*1 Operates using network communications or serial communications.

\*2 Can make a direct connection to a field network with the network specifications.

\*3 Can be connected to a field network using a gateway unit.





# Explanation of I/O Signal Functions

The table below explains the functions allocated to the controller's I/O signal. Since the signals that can be used vary depending on the controller type and settings, check the signal table for each controller to confirm the available functions.

# Signal Function Description

Classification	Signal abbreviations	Signal	Function description
	CSTR	PTP strobe signal (start signal)	Input this signal to cause the actuator to start moving to the position set by the command position number signal.
	PC1 to PC256	Command position number signal	This signal is used to input a target position number (binary input).
	BKRL	Brake forced release signal	This signal forcibly releases the brake.
	RMOD	Running mode switching signal	This signal can switch the running mode when the MODE switch on the controller is set to AUTO. (AUTO when this signal is OFF, or MANU when the signal is ON)
	*STP	Pause signal	Turning this signal OFF causes the moving actuator to decelerate to a stop. The actuator will resume the remaining movement if the signal is turned ON during the pause.
	RES	Reset signal	Turning this signal ON resets the alarms that are present. If this signal is turned ON while the actuator is paused ('STP is OFF), the remaining movement can be cancelled.
	SON	Servo ON signal	The servo remains on while this signal is ON, or off while the signal is OFF.
	HOME	Home return signal	Turning this signal ON performs home-return operation.
Input	MODE	Teaching mode signal	Turning this signal ON switches the controller to the teaching mode. (provided that CSTR, JOG+ and JOG- are all OFF and the actuator is not moving).
	JISL	JOG/INCHING switching signal	When the main signal is off, the JOG operation will be conducted for JOG+ and JOG When the signal is on, the unit will do the inching operation for JOG+ and JOG
	JOG+, JOG-	JOG signal	When the JISL signal is off and the JOG +/- signal turns on, the unit will jog in the + (positive) direction when the JOG + turns on and the - (negative) direction when the JOG - turns on. During the JOG operation, the unit slows to a stop when the JOG +/- signal turns off.
	PWRT	Teaching signal	In the teaching mode, specify a desired position number and then turn this signal ON for at least 20ms to write the current position to the specified position number.
	ST0 to ST6	Start position command	Turning this signal ON in the solenoid valve mode causes the actuator to move to the specified position. (Start signal is not required)
	TL	Torque limit selection signal	While this signal is ON, torque is limited by the value set by a parameter. The TLR signal turns on if torque has reached the specified value.
	DCLR	Deviation counter clear signal	The position deviation counter is continuously cleared while this signal is ON.
	PEND/INP	In position signal	This signal turns ON when the actuator has entered the positioning band after movement. If the actuator has exceeded the positioning band, PEND does not turn OFF, but INP does. PEND and INP can be swapped within parameters.
	PM1 to PM256	Positioning complete signal	This signal is used to output the position number achieved at the completion of positioning (binary output)
	HEND	Home return completion signal	This signal turns ON upon completion of home return.
	ZONE1	Zone signal	This signal turns ON when the current actuator position has entered the range specified by the parameters.
	PZONE	Position zone signal	Turns ON when the actuator moves into a position within the range of the target position data that was set. PZONE can be used together with ZONE1, but PZONE is valid only during movement to a specified position.
	RMDS	Running mode status signal	This outputs the operation mode status.
	*ALM	Controller alarm status signal	This signal remains ON while the controller is not in the alarm condition, and turns OFF when an alarm has occurred.
	MOVE	Moving signal	Turns ON while the actuator is moving (home return), including when there is push force.
	SV	Servo ON status signal	This signal turns ON when servo is ON.
Output	*EMGS	Emergency stop status signal	This signal remains ON while the controller is not in the emergency stop mode, and turns OFF once an emergency stop has been actuated.
	MODES	Mode status signal	The mode signal input turns it ON when it goes into teaching mode. It turns OFF when it goes into normal mode.
	WEND	Writing complete signal	This signal remains OFF after the controller has switched to the teaching mode. It turns ON upon completion of data write using the PWRT signal. If the PWRT signal is turned Off, this signal also turns OFF.
	PE0 to PE6	Current position number signal	This signal turns ON after the controller has completed moving to the target position in the solenoid valve mode.
	TLR	Torque limiting signal	This signal turns ON once the motor torque has reached the specified value in a condition where torque is being limited by the TL signal.
	LSO to LS2	Limit switch output signal	Each signal turns ON when the current actuator position has entered the positioning band before or after the target position. If the actuator has already completed home return, these signals are output even before a movement command is issued or while the servo is OFF.
	LOAD	Load output determination status signal	This signal turns ON once the motor torque has reached the specified value. (*PCON-CF dedicated signal)







I/O Signal table

# Positioner types (PCON-C / CG / CF)

					Parameters (se	lect PIO pattern)			
	5		0	1	2	3	4	5	
Pin	Classification		Positioning mode	Teaching mode	256-point mode	512-point mode	Solenoid Valve Mode 1	Solenoid Valve Mode 2	
No.	assif	Positioning Points	64 points	64 points	256 points	512 points	7 points	3 points	
	Ö	Zone signal	0	×	×	×	0	0	
		P-zone signal	0	0	0	×	0	0	
1A	24V				P	24			
2A	24V				Р	24			
ЗA	-				N	IC			
4A	-				Ν	IC			
5A		IN0	PC1	PC1	PC1	PC1	ST0	ST0	
6A	1	IN1	PC2	PC2	PC2	PC2	ST1	ST1 (JOG+)	
7A		IN2	PC4	PC4	PC4	PC4	ST2	ST2 (-)	
8A	1	IN3	PC8	PC8	PC8	PC8	ST3	-	
9A	1	IN4	PC16	PC16	PC16	PC16	ST4	-	
10A	]	IN5	PC32	PC32	PC32	PC32	ST5	-	
11A	1	IN6	_	MODE	PC64	PC64	ST6	-	
12A	1	IN7	-	JISL	PC128	PC128	-	-	
13A	Input	IN8	-	JOG+	-	PC256	-	-	
14A	1	IN9	BKRL	JOG-	BKRL	BKRL	BKRL	BKRL	
15A	1	IN10	RMOD	RMOD	RMOD	RMOD	RMOD	RMOD	
16A	1	IN11	HOME	HOME	HOME	HOME	HOME	-	
17A	1	IN12	*STP	*STP	*STP	*STP	*STP	-	
18A	1	IN13	CSTR	CSTR/PWRT	CSTR	CSTR	-	-	
19A	1	IN14	RES	RES	RES	RES	RES	RES	
20A	1	IN15	SON	SON	SON	SON	SON	SON	
1B		OUT0	PM1	PM1	PM1	PM1	PE0	LSO	
2B	1	OUT1	PM2	PM2	PM2	PM2	PE1	LS1 (TRQS)	
3B	1	OUT2	PM4	PM4	PM4	PM4	PE2	LS2 ()	
4B	1	OUT3	PM8	PM8	PM8	PM8	PE3	-	
5B	1	OUT4	PM16	PM16	PM16	PM16	PE4	-	
6B	1	OUT5	PM32	PM32	PM32	PM32	PE5	-	
7B		OUT6	MOVE	MOVE	PM64	PM64	PE6	-	
8B	Output	OUT7	ZONE1	MODES	PM128	PM128	ZONE1	ZONE1	
9B	Output	OUT8	PZONE	PZONE	PZONE	PM256	PZONE	PZONE	
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	-	LOAD/TRQS	LOAD/TRQS	LOAD/TRQS	-	
17B	-				N	ic			
18B	-				N	IC			
19B	0V					N			
20B	ov		N						

(Note) The names of signals above inside () are functions before the unit returns h (Note) Signals with asterisks (\*) are normally ON, and OFF during operation.

# Solenoid valve type (PCON-CY)

Positioning Points Zone signal P-zone signal	0 Solenoid valve mode 0 3 points × ×	1 Solenoid valve mode 1 3 points × O
Zone signal	3 points ×	3 points
Zone signal	×	
<b>-</b>		× ○
P-zone signal	×	0
IN0	ST0	ST0
IN1	ST1 (JOG+)	ST1 (JOG+)
IN2	ST2 (RES)	ST2 (RES)
IN3	SON	SON
OUT0	LS0	PE0
OUT1	LS1 (TRQS)	PE1 (TRQS)
OUT2	LS2 (-)	PE2 (-)
OUT3	SV	PZONE
OUT4	HEND	HEND
OUT5	* ALM	* ALM
t	IN2 IN3 OUT0 OUT1 OUT2 OUT3 OUT4 OUT5	IN2         ST2 (RES)           IN3         SON           OUT0         LS0           OUT1         LS1 (TROS)           OUT2         LS2 (-)           OUT3         SV           OUT4         HEND

(Note) The names of signals above inside () are functions before the unit retur (Note) Signals with asterisks (\*) are normally ON, and OFF during operation.

# Pulse Train Type (PCON-PL/PO)

		Parameters (sel	ect PIO pattern)
5		0	1
icati		Standard mode	Push mode
assif	Positioning Points	-	-
ö	Zone signal	×	×
	P-zone signal	×	×
24V			
0V			
	IN0	SON	SON
1	IN1	TL	TL
Input	IN2	HOME	HOME
1	IN3	RES	RES / DCLR
	OUT0	SV	SV
0	OUT1	INP	INP / TLR
Output	OUT2	HEND	HEND
	OUT3	* ALM	* ALM
		* PP	* PP
		PP	PP
input		* NP	* NP
		NP	NP
		Image: Description of the second se	Standard mode           Positioning Points         -           Zone signal         ×           P-zone signal         ×           24V         -           0V         -           1N0         SON           IN1         TL           IN2         HOME           IN3         RES           OUT0         SV           OUT1         INP           OUT2         HEND           OUT3         *ALM           Input         -           Input         -

(Note) Signals with asterisks (\*) are normally ON, and OFF during operation.





# Differential Receiver Method (PCON-PL)

. input pul le Length		quency : Max. : Max.		
		PIO conne	ctor	Shield
Pin N	lumber	Classification	Signal	/ X
	1	External 24V	24V	
	2	External 0V	0V	
	3	Input	SON	
	4	Input	TL	
	5	Input	HOME	
	6	Input	RES	
	7	Output	sv	
	8	Output	INP	
	9	Output	HEND	
1	10	Output	* ALM	
1	11		/PP	
1	12		PP	
1	13	Differential input	/NP	
1	14		NP	

# Open Collector Method (PCON-PO)

FG

\* The shield on the twisted pair cable connected to the pulse connector must be connected to the mounting plate.

Max. input pulse frequency	:	Max. 60 kpps
Cable Length	:	Max. 2m

Mounting plate

Signal       nal 24V     24V       rnal 0V     0V       aput     SON       aput     HOME       aput     RES       aput     SV       aput     INP       aput     HEND	
rnal 0V 0V apput SON apput TL apput HOME apput RES atput SV atput INP atput HEND	
pput SON pput TL pput HOME pput RES pput SV pput SV pput INP put HEND	
pput TL nput HOME nput RES utput SV utput INP utput HEND	
hput HOME hput RES itput SV itput INP itput HEND	
itput RES itput SV itput INP itput HEND	
Itput SV Itput INP Itput HEND	
Itput INP Itput HEND	
Itput HEND	
itout * AL M	
, man 1	
llector input /PP	
N.C PP	
llector input /NP	
N.C NP	
FG	
ed pair cable connected to the pulse	
llecto	rinput /NP NP

17







PCON Controller

### **Command Pulse Input State** Command pulse train state During forward operation Input terminal During reversed operation Forward pulse train PP•/PP ↓\_\_\_ Ł NP•/NP Reversed pulse train ¥ ¥ The forward pulse train causes the motor to rotate forward, and the reverse pulse train causes the motor to rotate in reverse. logic Pulse train PP•/PP Ł Ł Ł ¥ ÷. Negative Symbols NP•/NP Low High The command pulse is used for the amount of motor rotation, and the command symbol is used for rotational direction. 1 PP•/PP ¥ A/B phase pulse train NP•/NP **↓** ↑ ↓ ↑ ¥ An A/B phase pulse with a 90° phase difference (multiplier is 4) is used to generate commands for the amount of rotation and rotational direction. ſ f Forward pulse train PP•/PP 1 Reversed pulse train NP•/NP f ┐┍┓┍ Positive logic f Pulse train PP•/PP f NP•/NP Symbols High Low

# Table of specifications

A/B phase pulse train

Item				Specifications			
Controller type	CF	с	CG	CY	PL	PO	SE
Connected actuator (*1)	RCP2-RA10C RCP2-HS8C (R) RCP2W-SA16C			RCP3 / RCP2 serie	es actuator (Note 1)		
Number of control axes				1-axis			
Operating method		Positioner type		Solenoid valve type	Pulse train	input type	Serial communication typ
Positioning Points		512 points		3 points	-	-	64 points
Backup memory				EEPROM			
I/O connector		40-pin connector		12-pin connector	14-pin ce	onnector	None
Number of I/O	16	input points/16 output po	ints	4 input points/6 output points	4 input points/4	1 output points	None
I/O power			External supp	y DC24V±10%			-
Serial Communication				RS485 1ch			
Peripheral device communication cable		CB-PAC-PIO			CB-PACPU	-PIO 🗆 🗆 🗆	CB-RCB-CTL002
Command pulse train input method			-		Differential line driver	Open collector	-
Max. input pulse frequency (Note 2)			-		Max. 200 kpps	Max. 60 kpps	-
Position detection method				Incremental encoder			
Drive-source cutoff relay at emergency stop	Integ	rated			External		
Forced release of electromagnetic brake	B	ake release switch ON/O	FF	ON/OFF	terminal signal inside the	power terminal for bra	ke release
Input Supply Voltage				DC 24 V ± 10%			
Power Supply Capacity	Max. 6A (*2)			2A max.			
Dielectric strength voltage		DC500V 1MΩ					
Vibration resistance		XYZ directions	10 to 57Hz,	One side amplitude: 0.035 58 to 150Hz, 4.9m/s <sup>2</sup> (co	imm (continuous), 0.075m ntinuous), 9.8m/s² (interm		
Ambient operating temperature				$0 \sim 40^\circ \! \mathrm{C}$			
Ambient operating humidity			1	0 - 95% (non-condensing	1)		
Ambient operating atmosphere				Without corrosion gases			
Protection class				IP20			
Weight	Approx. 320g	Appro	x. 300g		Approx	. 130g	

PP•/PP

NP•/NP

 (Note 1) The high-thrust type (RA10C), high-speed type (HS8C/HS8R) and waterproof type (RCP2W-SA16) cannot be operated.
 (Note 2) With the open collector specification, keep the maximum input frequency to 60 kpps or below to prevent malfunction. For applications exceeding 60kpps, use the differential line driver.

 ('1)
 RCP2-RA10C/HS8C/HS8R and RCP2W-SA16C can only operate with PCON-CF.

 Other RCP2
 RCP3 Series actuators can be operated with C / CG / CY / PL / PO / SE.

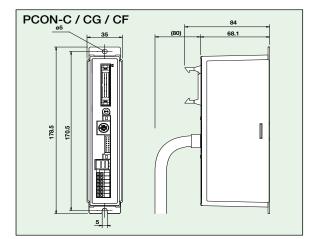
 ('2)
 Inrush current peak: 10A

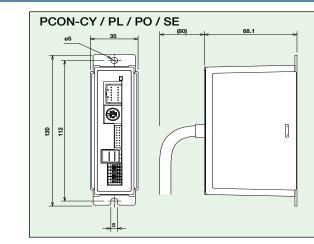




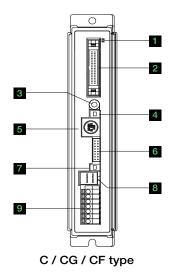
# PCON Controller

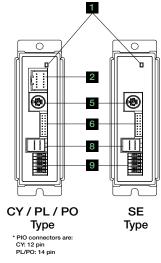
# **External Dimensions**





# Name of Each Part





# 1 LED display

These LED colors indicate the condition of the controller.

Lit (green) Servo ON Lit (red) Alarm activated Unlit Servo OFF Blinking (green) Automatic servo-off Emergency stop

### 2 PIO connector

Connects a cable for communicating with a PLC or other external equipment.

# 3 Address-setting rotary switch

This switch sets the addresses for controllers used when the unit is linked with other controllers.

# 4 Mode switch

Switches between manual teaching operations (MANU) and automatic operations (AUTO).

# Operation details

MANU

AUTO

gateway unit to a controller.

Pin No.	Signal	Name	Remarks
1	SGA	Positive side, RS485 differential signal	
2	SGB	Negative side, RS485 differential signal	
3	5V	+5V output	For RS232/485 conversion
4	ENBL	Enable signal	
5	EMGA	EMG line connection to external equipment	
6	24V	24-V power for T/P	For T/P
7	0V	GND	
8	EMGB	EMG line connection to external equipment	
9	0V	EMG line connection to external equipment ground	

# 6 Encoder brake connector

Connects the encoder/brake cable for the actuator.

# 7 Brake release switch

This switch forces the brake to release.

# 8 Motor connector

Connects the motor cable for the actuator.

# 9 Power terminal block

Main power for controller(s), emergency stop

# C / CG type

Terminal number	Signal	Name
7	S1	External drive-source cutoff for TP_
6	S2	EMG terminal
5	MPI	Motor drive-source cutoff terminal
4	MPO	Motor drive-source cutoff terminal
3	24V	Positive side of the 24-V power supply
2	0V	Negative side of the 24-V power supply
1	EMG	EMG signal (application of 24 V)

CY / PL / PO / SE type

Terminal number	Signal	Name	
6	BK	BK release	
5	MPI	Motor drive-source cutoff terminal	
4	MPO	Motor drive-source cutoff terminal	
3	24V	Positive side of the 24-V power supply	
2	0V	Negative side of the 24-V power supply	
1	EMG	EMG signal (application of 24 V)	











I/O commands are not accepted. Data can be written from a teaching pendant or PC.

I/O commands are valid, while operations from a teaching pendant or PC are not accepted. However, monitoring is possible.

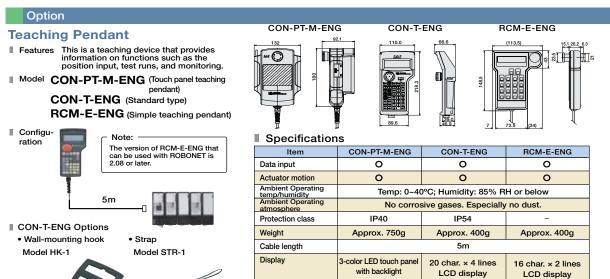
# 5 SIO connector

Connects a teaching pendant, PC cable, controller, or

# Operation details

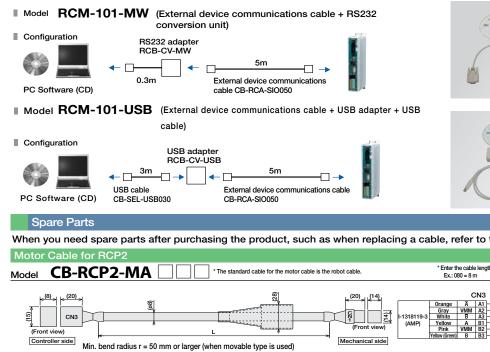
Pin No.	Signal	Name	Remarks
1	SGA	Positive side, RS485 differential signal	
2	SGB	Negative side, RS485 differential signal	
3	5V	+5V output	For RS232/485 conversion
4	ENBL	Enable signal	
5	EMGA	EMG line connection to external equipment	
6	24V	24-V power for T/P	For T/P
7	0V	GND	
8	EMGB	EMG line connection to external equipment	
9	0V	EMG line connection to external equipment ground	

### PCON Controller



# PC Software (Windows Only)

Features A startup support software for inputting positions, performing test runs, and monitoring. With enhancements for adjustment functions, the startup time is shortened.





When you need spare parts after purchasing the product, such as when replacing a cable, refer to the list of models below.

