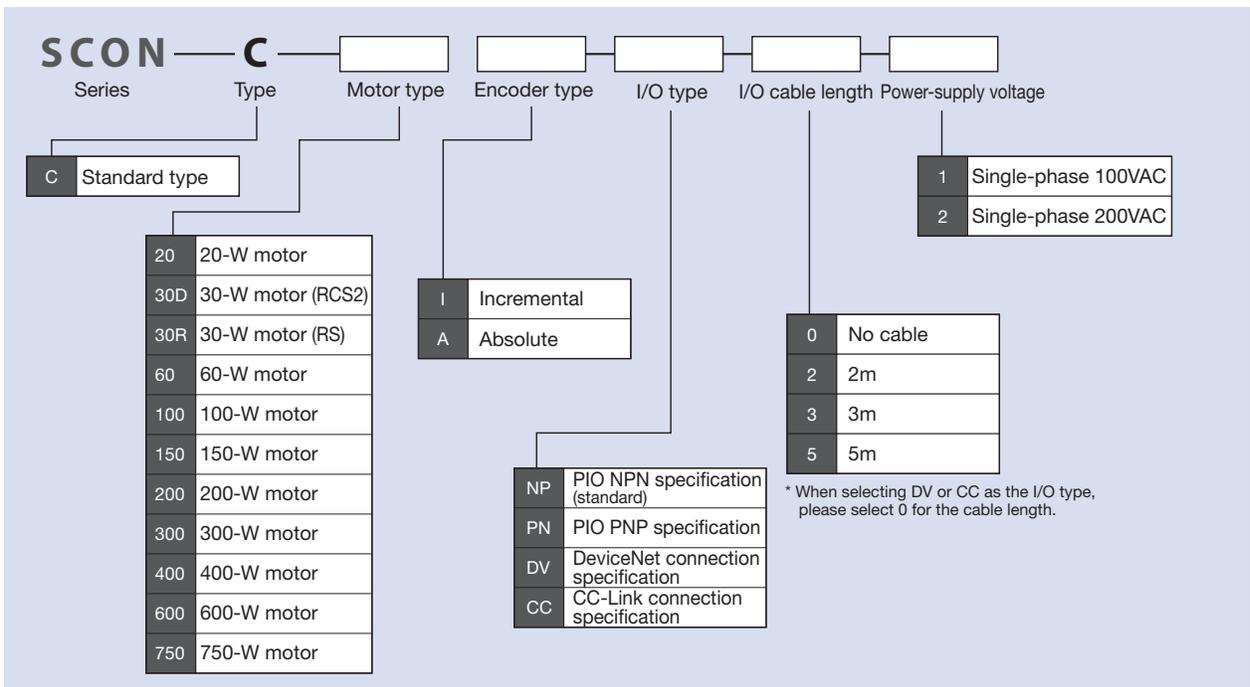# SCON Controller

S CON

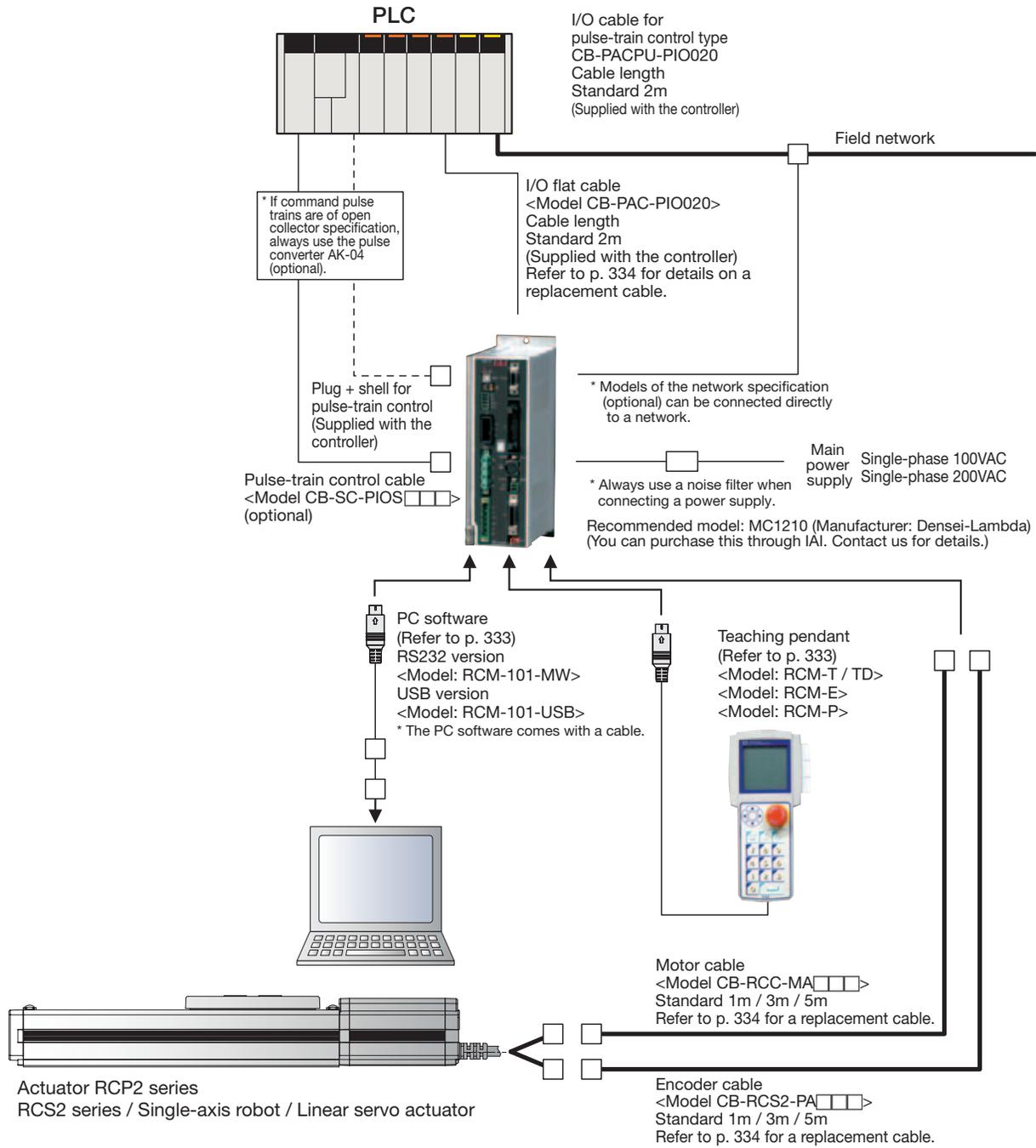## Position controller for RCS2 series

Type List

Position controller capable of operating RCP2 series actuator. Various control functions are combined into a single unit.

Type	C				
Name	Positioner mode	Solenoid valve mode	Pulse-train control mode	Network specification (DeviceNet)	Network specification (CC-Link)
External view					
Description	Positioner supporting up to 512 positioning points	Same control actions as those used on air cylinders	Controller for pulse-train control	DeviceNet connection specification (optional)	CC-Link connection specification (optional)
Number of position points	512 points	7 points	(–)	512 points	512 points
Type of I/O	NP/PN			DV	CC

Model

SCON	C	Motor type	Encoder type	I/O type	I/O cable length	Power-supply voltage
Series	Type					

C Standard type

20	20-W motor
30D	30-W motor (RCS2)
30R	30-W motor (RS)
60	60-W motor
100	100-W motor
150	150-W motor
200	200-W motor
300	300-W motor
400	400-W motor
600	600-W motor
750	750-W motor

| I | Incremental |
| A | Absolute |

NP	PIO NPN specification (standard)
PN	PIO PNP specification
DV	DeviceNet connection specification
CC	CC-Link connection specification

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

| 1 | Single-phase 100VAC |
| 2 | Single-phase 200VAC |

* When selecting DV or CC as the I/O type, please select 0 for the cable length.

System Configuration

PLC

I/O cable for
pulse-train control type
CB-PACPU-PIO020
Cable length
Standard 2m
(Supplied with the controller)

Field network

* If command pulse
trains are of open
collector specification,
always use the pulse
converter AK-04
(optional).

I/O flat cable
<Model CB-PAC-PIO020>
Cable length
Standard 2m
(Supplied with the controller)
Refer to p. 334 for details on a
replacement cable.

Plug + shell for
pulse-train control
(Supplied with the
controller)

* Models of the network specification
(optional) can be connected directly
to a network.

Main
power
supply
Single-phase 100VAC
Single-phase 200VAC

Pulse-train control cable
<Model CB-SC-PIOS□□□>
(optional)

* Always use a noise filter when
connecting a power supply.

Recommended model: MC1210 (Manufacturer: Densei-Lambda)
(You can purchase this through IAI. Contact us for details.)

PC software
(Refer to p. 333)
RS232 version
<Model: RCM-101-MW>
USB version
<Model: RCM-101-USB>
* The PC software comes with a cable.

Teaching pendant
(Refer to p. 333)
<Model: RCM-T / TD>
<Model: RCM-E>
<Model: RCM-P>

Motor cable
<Model CB-RCC-MA□□□>
Standard 1m / 3m / 5m
Refer to p. 334 for a replacement cable.

Actuator RCP2 series
RCS2 series / Single-axis robot / Linear servo actuator

Encoder cable
<Model CB-RCS2-PA□□□>
Standard 1m / 3m / 5m
Refer to p. 334 for a replacement cable.

Pulse Converter AK-04 (Optional)

Content: Pulse converter (AK-04) + e-CON input/output connector

Use this converter if pulses output from the host controller are of open collector specification.
This converter is used to convert the open-collector command pulses output
from the host controller to differential pulses. Converting open collector pulses
to differential pulses improves noise resistance.
Two phases of differential pulses equivalent to those from the line driver 26C31
are output.
The e-CON connector is used as an input/output connector to simplify the field wiring.

Basic specifications
• Input power supply: DC24V±10% (Max 50mA)
• Input pulses: Open collector (collector current 12mA max.)
• Input frequency: 200kHz max.
• Output pulses: 26C31-equivalent differential output (Max 10mA)
  (Applicable wire: AWG 24~26, 0.14~0.3 mm² (max.)
   Outer diameter of finished wire ø1.0~1.2mm)
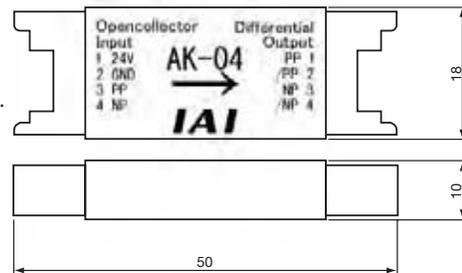
SCON **326**

SCON Controller

Controller - Integrated Type

Slider Type

Rod Type

Arm / Flat Type

Gripper / Rotary Type

Cleanroom Type

Splash Proof Type

Controller

Controller Models

Gateway unit

PS-24

ERC2

PCON

ACON

SCON

PSEL

ASEL

SSEL

XSEL

I/O Specifications

■ Input Part   External input specifications

Item	Specification
Input voltage	24VDC ± 10%
Input current	4mA/point
ON/OFF voltage	ON voltage ··· Min DC18.0V (3.5mA)
	OFF voltage ··· Max DC6.0V (1mA)
Insulation method	Photocoupler
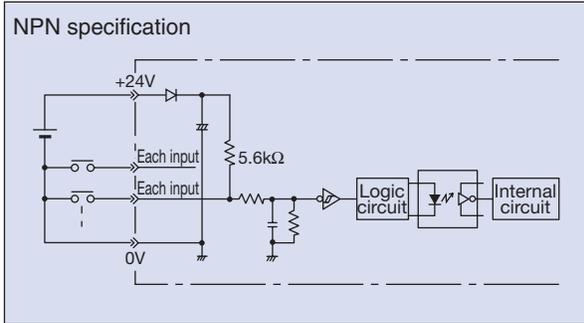
■ Output Part   External output specifications

Item	Specification
Load voltage	DC24V
Maximum load current	100mA/point 400mA/8 points
Residual voltage	Max 0.1mA/point
Insulation method	Photocoupler

NPN specification

NPN specification

PNP specification
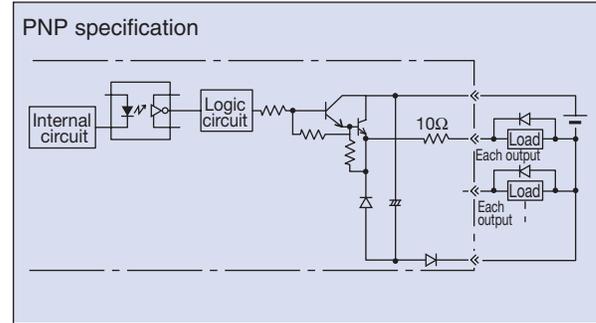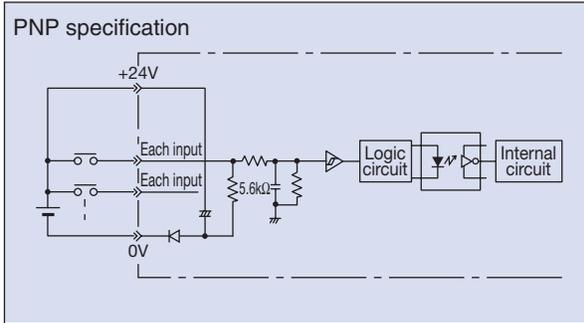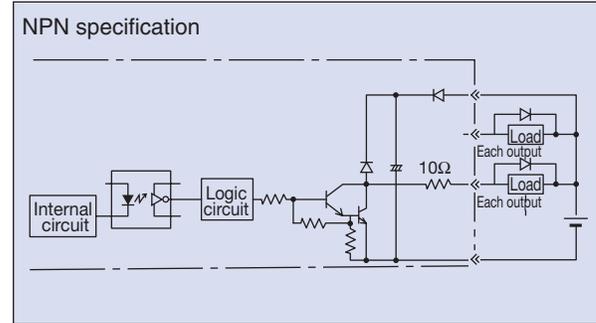
PNP specification

I/O Specifications

The SCON-C supports all of the control methods shown below.
It supports a maximum of 512 positioning points in the positioner mode and up to seven points in the solenoid valve mode.

■ Controller Functions by Type

Type	SCON-C	Features
Positioner mode	○	A basic operation mode in which the actuator is operated by specifying a position number and then inputting a start signal.
Teaching mode	○	In this mode, the slider (rod) can be moved by means of an external signal to store the achieved position as position data.
Solenoid valve mode	○	The actuator can be moved simply by ON/OFF of position signals. This mode supports the same control actions you are already familiar with on solenoid valves of air cylinders.
Pulse train mode	○	In this mode, you can operate the actuator freely using pulse trains without inputting position data.
Network support	○	The controller can be connected directly to a field network by selecting an applicable network option.

Explanation of I/O Signal Functions

The table below explains the functions assigned to the respective I/O signals of the controller.
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.

■ Controller Functions by Type

Category	Abbreviation	Signal name	Function description
Input	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~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 OFF 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.
	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	The actuator can be jogged with JOG+ and JOG- while this signal is OFF. The actuator performs inching operation with JOG+ and JOG- while this signal is ON.
	JOG+ JOG–	------	----
	PWRT	Teaching signal	In the teaching mode, specify a desired position number and then turn this signal ON for at least 20 ms to write the current position under the specified position number.
	ST0~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.
Output	PEND/INP	Position complete 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 using a parameter.
	PM1~PM256	Completed position number signal	This signal is used to output the position number achieved at completion of positioning (binary output).
	HEND	Home return complete 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 parameters.
	PZONE	Position zone signal	This signal turns ON when the current actuator position has entered the range specified by position data during position movement. PZONE can be used together with ZONE1, but PZONE is valid only during movement to a specified position.
	RMDS	Running mode status signal	This signal is used to output the running mode status.
	* ALM	Controller alarm status signal	This signal remains ON while the controller is normal, and turns OFF if an alarm has generated.
	MOVE	Moving signal	This signal remains ON while the actuator is moving (including the periods during home return and push-motion operation).
	SV	Servo ON status signal	This signal remains ON while the servo is on.
	* 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	This signal turns ON when the controller has switched to the teaching mode via MODE signal input. It turns OFF upon returning to the normal mode.
	WEND	Write 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~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~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.
	TRQS	---	--------

SCON 328

SCON Controller

I/O Signal Table

Pin number	Category	Number of positioning points	Parameter (PIO pattern) selection						Pulse train mode
			0	1	2	3	4	5	0
			Positioning mode	Teaching mode	256-point mode	512-point mode	Solenoid valve mode 1	Solenoid valve mode 2	Pulse train mode
			64 points	64 points	256 points	512 points	7 points	3 points	–
		Zone signal	○	×	×	×	○	○	×
		P zone signal	○	○	○	×	○	○	×
1A	24V		P24						P24
2A	24V		P24						P24
3A	–		NC						NC
4A	–		NC						NC
5A	Input	IN0	PC1	PC1	PC1	PC1	ST0	ST0	SON
6A		IN1	PC2	PC2	PC2	PC2	ST1	ST1 (JOG+)	RES
7A		IN2	PC4	PC4	PC4	PC4	ST2	ST2 (−)	HOME
8A		IN3	PC8	PC8	PC8	PC8	ST3	–	TL
9A		IN4	PC16	PC16	PC16	PC16	ST4	–	CSTP
10A		IN5	PC32	PC32	PC32	PC32	ST5	–	DCLR
11A		IN6	–	MODE	PC64	PC64	ST6	–	BKRL
12A		IN7	–	JISL	PC128	PC128	–	–	RMOD
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	PM1	PM1	PM1	PE0	LSO	PWR
2B		OUT1	PM2	PM2	PM2	PM2	PE1	LS1 (TRQS)	SV
3B		OUT2	PM4	PM4	PM4	PM4	PE2	LS2(−)	INP
4B		OUT3	PM8	PM8	PM8	PM8	PE3	–	HEND
5B		OUT4	PM16	PM16	PM16	PM16	PE4	–	TLR
6B		OUT5	PM32	PM32	PM32	PM32	PE5	–	* ALM
7B		OUT6	MOVE	MOVE	PM64	PM64	PE6	–	* EMGS
8B		OUT7	ZONE1	MODES	PM128	PM128	ZONE1	ZONE1	RMDS
9B		OUT8	PZONE	PZONE	PZONE	PM256	PZONE	PZONE	ALM1
10B		OUT9	RMDS	RMDS	RMDS	RMDS	RMDS	RMDS	ALM2
11B		OUT10	HEND	HEND	HEND	HEND	HEND	HEND	ALM4
12B		OUT11	PEND	PEND/WEND	PEND	PEND	PEND	–	ALM8
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	* BLM	* BLM	* BLM	* BLM	* BLM	* BLM	–
17B			–						–
18B			–						–
19B	0V		N						N
20B	0V		N						N

Wiring Diagram

■ Connection Diagram for Positioner Mode

PIO connector (NPN)

Pin number	Category	Signal name
1A	Power supply	24V
2A		24V
3A	—	Not used
4A	—	Not used
5A	Input	IN0
6A		IN1
7A		IN2
8A		IN3
9A		IN4
10A		IN5
11A		IN6
12A		IN7
13A		IN8
14A		IN9
15A		IN10
16A		IN11
17A		IN12
18A		IN13
19A		IN14
20A		IN15
1B	Output	OUT0
2B		OUT1
3B		OUT2
4B		OUT3
5B		OUT4
6B		OUT5
7B		OUT6
8B		OUT7
9B		OUT8
10B		OUT9
11B		OUT10
12B		OUT11
13B		OUT12
14B		OUT13
15B		OUT14
16B		OUT15
17B	—	Not used
18B	—	Not used
19B	Power supply	0V
20B		0V

DC24V±10%

* Connect 24V between pins 1A and 2A, and 0V between pins 19B and 20B.

■ Connection Diagram for Pulse-Train Control Mode (Differential Output)

Twisted pair
Shield

PULSE connector (NPN)

Pin number	Category	Signal name
1		Not used
2		Not used
3	Input	PP
4		/PP
5		NP
6		/NP
7	Output	AFB
8		/AFB
9		BFB
10		/BFB
11		ZFB
12		/ZFB
13	Ground	GND
14		GND
Shell	Shield	Shield

PIO connector (NPN)

Pin number	Category	Signal name
1A	Power supply	24V
2A		24V
3A		Not used
4A		Not used
5A	Input	SON
6A		RES
7A		HOME
8A		TL
9A		CSTP
10A		DCLR
11A		BKRL
12A		RMOD
13A~20A	—	Not used
1B	Output	PWR
2B		SV
3B		INP
4B		HEND
5B		TLR
6B		*ALM
7B		*EMGS
8B		RMDS
9B		ALM1
10B		ALM2
11B		ALM4
12B		ALM8
13B~18B	—	Not used
19B	Power supply	0V
20B		0V

DC24V±10%

* The shield of the twisted pair cable connected to the PULSE connector must be connected to the shell. Keep the cable length to 10 m or less.
* Connect 24V between pins 1A and 2A, and 0V between pins 19B and 20B.

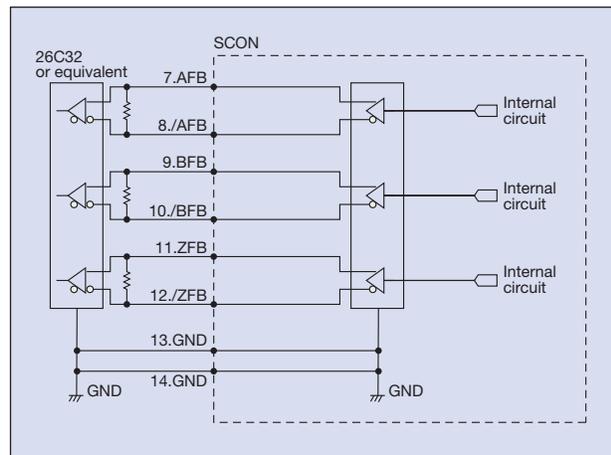## Input/Output Specifications of Pulse-Train Control Type (Differential Line Driver Specifications)

■ Input Part

Maximum input pulses: Line driver interface 500kpps
Open collector interface 200kpps (AK-04 is needed)
Insulation method: Photocoupler insulation

SCON

26C31 or equivalent

3.PP
4./PP   180Ω   Internal circuit

5.NP
6./NP   180Ω   Internal circuit
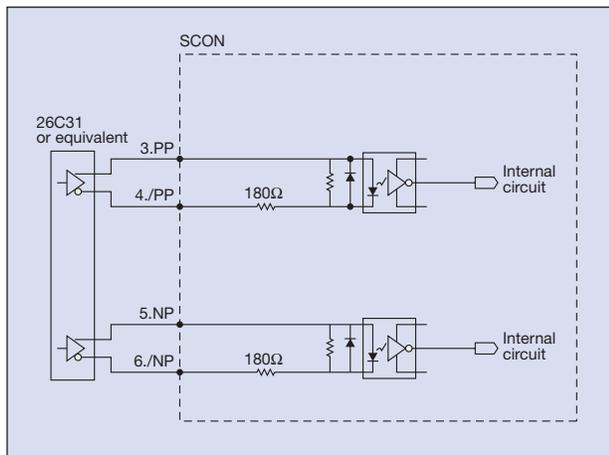
■ Output Part

Output method: Line driver output
Insulated/not insulated: Not insulated

SCON

26C32 or equivalent

7.AFB
8./AFB   Internal circuit

9.BFB
10./BFB   Internal circuit

11.ZFB
12./ZFB   Internal circuit

13.GND
14.GND
GND   GND

Controller - Integrated Type
Slider Type
Rod Type
Arm / Flat Type
Gripper / Rotary Type
Cleanroom Type
Splash Proof Type
Controller
Controller Models
Gateway unit
PS-24
ERC2
PCON
ACON
SCON
PSEL
ASEL
SSEL
XSEL

SCON Controller

Controller-Integrated Type
Slider Type
Rod Type
Arm / Flat Type
Gripper / Rotary Type
Cleanroom Type
Splash Proof Type
Controller
Controller Models
Gateway unit
PS-24
ERC2
PCON
ACON
SCON
PSEL
ASEL
SSEL
XSEL

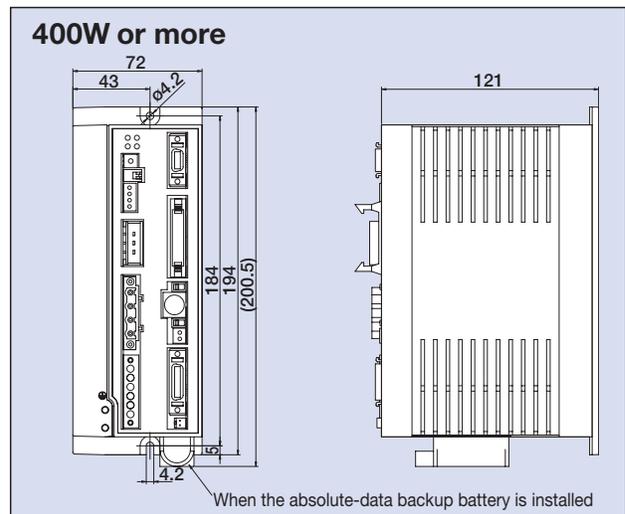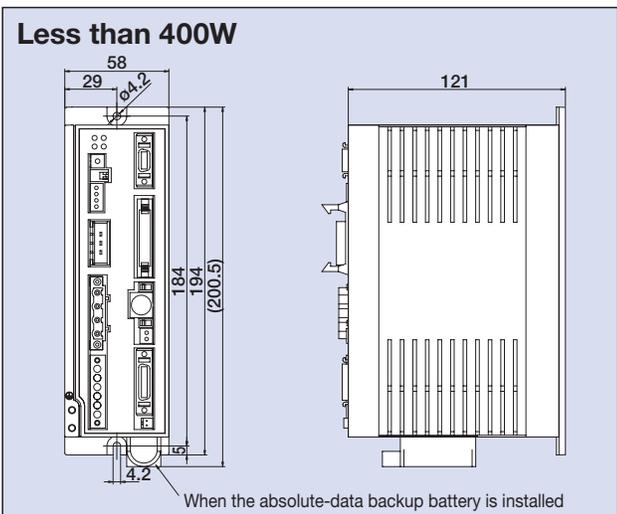## Input/Output Specifications of Pulse-Train Control Type (Open Collector Specifications)
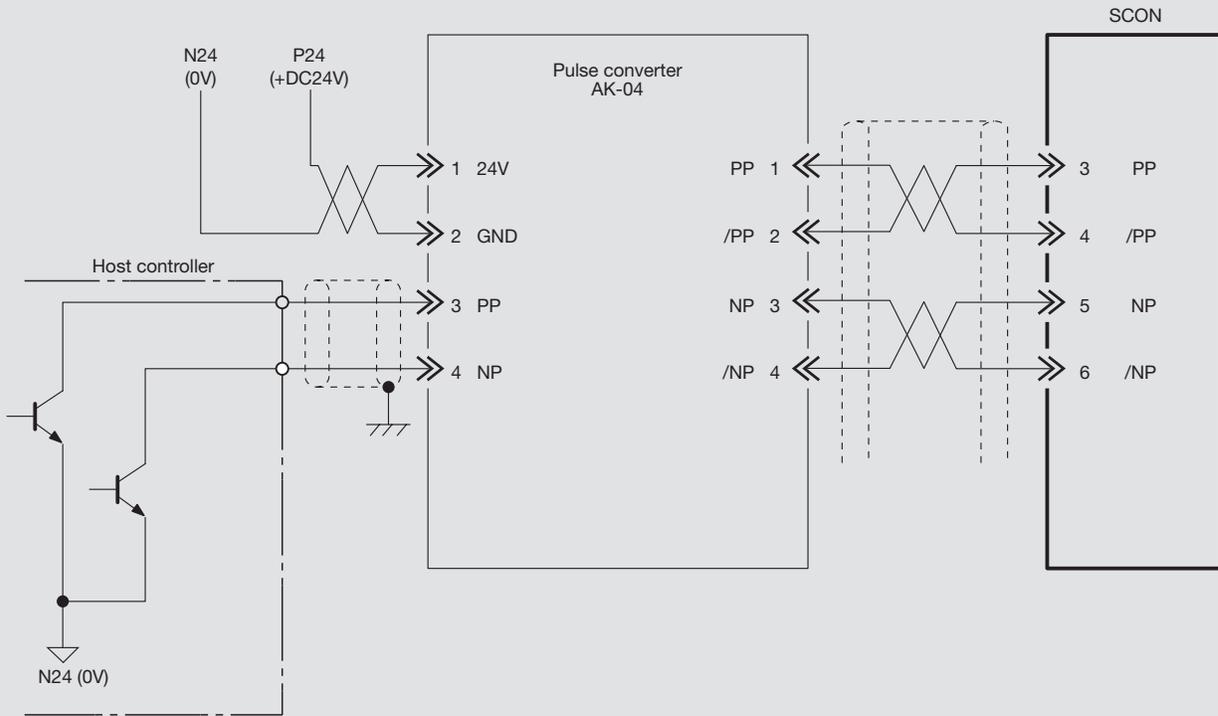
* Use the PIO interface power supply as the 24-VDC power supply to be connected to the AK-04.
* Minimize the cable length between the pulse output unit (PLC) and AK-04. Also keep the cable length between the AK-04 and PULSE connector to 2 m or less.

Specification Table

Item	Specification	
Motor capacity	Less than 400W	400W or more
Connectable actuators	RCS2 series actuator / Single-axis robot / Linear servo actuator	
Number of controlled axes	1 axis	
Operation method	Positioner type / Pulse-train control type	
Number of positioning points	512 points	
Backup memory	EEPROM	
I/O connector	40-pin connector	
Number of I/O points	16 input points / 16 output points	
I/O power supply	Externally supplied 24VDC ± 10%	
Serial communication	RS485 1ch	
Peripheral communication cable	CB-PAC-PIO □□□	
Command pulse-train input method	Differential line driver method / Open collector method (Conversion of open collector pulses to differential pulses using a pulse converter (Note 1))	
Maximum input pulse frequency	Differentia line driver method: 500kpps max. / Open collector method (with a pulse converter): 200kpps max.	
Position detection method	Incremental encoder / Absolute encoder	
Emergency stop function	Available (built-in relay)	
Forced release of electromagnetic brake	Brake release switch ON/OFF	
Motor cable	CB-RCC-MA □□□ (20m max.)	
Encoder cable	CB-RCS2-PA □□□ (20m max.)	
Input power supply	Single-phase 100~115VAC±10% Single-phase 200~230VAC±10%	Single-phase 200~230VAC±10%
Power-supply capacity	20W / 74VA 30W / 94VA 60W / 186VA 100W / 282VA 150W / 376VA 200W / 469VA	400W / 844VA 600W / 1212VA 750W / 1569VA
Dielectric strength voltage	DC500V 100MΩ or more	
Vibration resistance	XYZ directions 10~57Hz One-side amplitude 0.035mm (continuous), 0.075mm (intermittent) 58~150Hz 4.9m/s2 (continuous), 9.8m/s2 (intermittent)	
Ambient operating temperature	0~40℃	
Ambient operating humidity	10~95% (non-condensing)	
Operating ambience	Free from corrosive gases	
Protection class	IP20	
Weight	Approx. 800g (+25g for absolute specification)	Approx. 1.1kg
External dimensions	58mm(W) ×194mm(H) ×121mm(D)	72mm(W) ×194mm(H) ×121mm(D)

(Note 1) For the command-pulse input method, use the differential line driver method offering higher noise resistance. If the open collector method must be used, use an optional pulse converter (AK-04) to convert open collector pulses to differential pulses.

External Dimensions

Less than 400W

When the absolute-data backup battery is installed

400W or more

When the absolute-data backup battery is installed

Name of Each Part
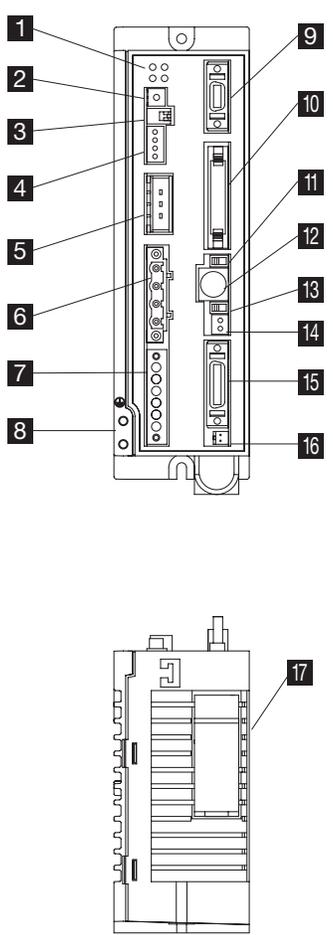
1 LED indicators

These LED indicate the condition of the controller.

Name	Color	Description
PWR		This LED comes on when the system becomes ready (= the CPU is functioning properly after the power has been turned on).
SV		This LED comes on when the servo turns on.
ALM		This LED remains lit while an alarm is present.
EMG		This LED remains lit while an emergency stop is actuated.

2 Rotary switch

This switch sets an address to identify each controller when multiple controllers are linked.

3 Piano switches

Controller system switches.

Name	Description
1	Operation mode selector switch OFF: Positioner mode, ON: Pulse-train control mode * The setting will become effective after the power is reconnected.
2	Remote update switch (normally set to OFF) OFF: Normal operation mode, ON: Update mode * The setting will become effective after the power is reconnected or following a software reset.

4 System I/O connector

A connector for the emergency stop switch, etc.

5 Regenerative unit connector

A connector for the resistor unit that absorbs regenerative current produced when the actuator decelerates to a stop.

6 Motor connector
(compatible with XSEL, ECON and RCS)
A connector for the actuator's motor cable.

7 Power-supply connector

An AC power-supply connector. Divided into the control power input and motor power input.

8 Grounding screw

A screw for protective grounding. Always connect this screw to ground.

9 Dedicated pulse-train control connector

A connector used to operate the controller in the pulse-train control mode. It remains unconnected if the controller is operated in the positioner mode.

10 PIO connector

A connector for a cable used to perform parallel communication with a PLC and other peripherals.

11 Running mode selector switch

Name	Description
MANU	Do not accept PI commands.
AUTO	Accept PI commands.

* The emergency stop switch on the teaching pendant becomes effective when the line is connected, regardless of whether this switch is set to AUTO or MANU. Take note that an emergency stop will be actuated momentarily when the teaching-pendant or SIO communication cable is disconnected. This is a normal phenomenon and does not indicate an error.

12 SIO connector

A connector for a teaching-pendant or PC communication cable.

13 Brake release switch

A switch to forcibly release the electromagnetic brake equipped on the actuator.
* A 24-VDC power supply for driving the brake must be connected.

14 Brake power-supply connector

A connector for supplying 24-VDC brake power. (Required only when an actuator with brake is connected.)

15 Encoder/sensor connector (compatible with XSEL-P/Q)

A connector for the encoder/sensor cables.

16 Absolute-data backup battery connector

A connector for the absolute-data backup battery. (Required only when an absolute-encoder actuator is used.)

17 Absolute-data backup battery holder

A battery holder into which the absolute-data backup battery is set.

SCON Controller

Left sidebar navigation:
Controller - Integrated Type | Slider Type | Rod Type | Arm / Flat Type | Gripper / Rotary Type | Cleanroom Type | Splash Proof Type | **Controller** | Controller Models | Gateway unit | PS-24 | ERC2 | PCON | ACON | **SCON** | PSEL | ASEL | SSEL | XSEL

Options

■ Teaching Pendant
An input device that provides all functions you need for trial operation and adjustment, such as position data input, test operation, as well as monitoring of current axis positions and input/output signals.

Name	Teaching Pendant	Simple teaching pendant	Data setting unit
Model	RCM-T (standard specification) RCM-TD (with deadman switch *1)	RCM-E	RCM-P
Standard price	–	–	–
External view			
Features	A standard, user-friendly teaching pendant equipped with a large LCD screen. A deadman switch type ensuring added safety is also available.	An economical type offering the same functions as the RCA-T at a substantially lower price.	An affordable data setting unit that provides all editing functions other than those relating to axis operation. * This unit does not support operations relating to axis movement.
Display	21 characters x 16 lines on LCD	16 characters x 2 lines on LCD	16 characters x 2 lines on LCD
Weight	Approx. 550g	Approx. 400g	Approx. 360g
Cable length	5m	5m	5m
Ambient operating temperature, humidity	Temperature: 0~40°C, Humidity: 85% RH or below		
External dimensions			
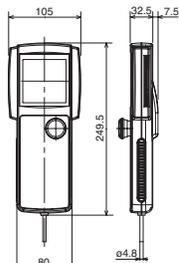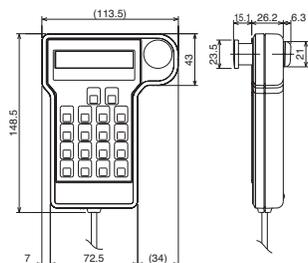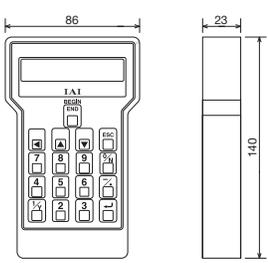
*1 The deadman switch is a safety switch that cuts off the drive source when released to disable operation.

■ PC Software
A software program that helps input position data and perform test operation.
It significantly facilitates debugging operation by offering wide-ranging functions including jogging, inching, step operation and continuous operation.

■ RS232 Communication Type
Model RCM-101-MW

<Content> PC software (CD-ROM), PC cable (communication cable + RS232 conversion unit)

■ USB Communication Type
Model RCM-101-USB

<Content> PC software (CD-ROM), PC cable (communication cable + USB conversion unit + USB cable)

■ Regenerative Resistance Unit
❙ Features This unit returns regenerative electric current when the motor builds heat as it decelerates. Please verify the total W of the actuator from the chart at the right, as it is necessary to make preparations to the regenerative resistance.

❙ Model REU-2 (SCON/SSEL)

❙ Specifications

| Weight	0.9kg
Built-in regenerative resistor	220Ω 80W
Unit-controller connection cable (supplied)	CB-SC-REU010 (SSEL)

* Please arrange one each of REU-2 and REU-1 (page 372), when two regenerative units are necessary.

❙ Guide for Determining Necessary Number of Units

	Horizontal	Vertical
0 unit	~200W	~100W
1 unit	~750W	~400W
2 units		~750W

* There may be times when more regenerative resistance is needed than listed above depending on operating conditions.

❙ External Dimensions
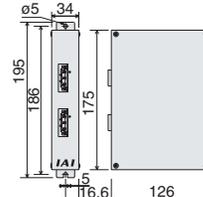
■ Battery for Absolute Data Storage
❙ Features This battery is for storing absolute data for the operating actuator.
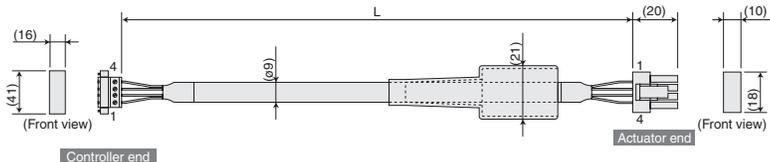
❙ Model AB-5

Spare Parts

Should you require spare parts after the purchase of your product for replacing the original cables, etc., refer to the model names specified below.

Motor Cable / Motor Robot Cable

Model CB-RCC-MA□□□/CB-RCC-MA□□□-RB

* □□□ indicates the cable length (L). Lengths up to 30 m can be specified. Example) 080 = 8 m

Wire	Color	Signal	No.		No.	Signal	Color	Wire
0.75sq	Green	PE	1		1	U	Red	0.75sq (crimped)
	Red	U	2		2	V	White	
	White	V	3		3	W	Black	
	Black	W	4		4	PE	Green	

Encoder Cable / Encoder Robot Cable

Model CB-RCS2-PA□□□/CB-X2-PA□□□

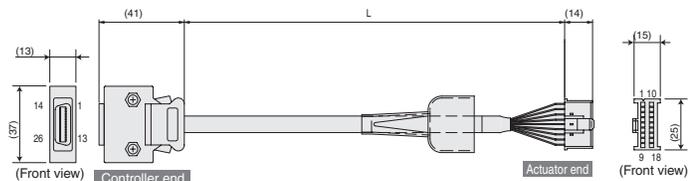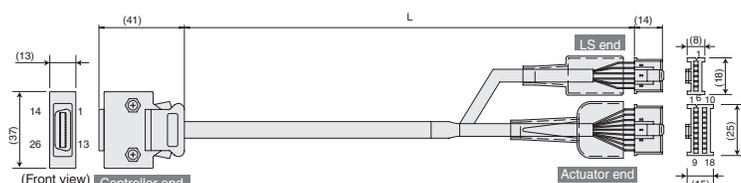* □□□ indicates the cable length (L). Lengths up to 30 m can be specified. Example) 080 = 8 m

Wire	Color	Signal	No.		No.	Signal	Color	Wire
AWG26 (soldered)	–	–	10		1	A	Pink	AWG26 (crimped)
	–	–	11		2	A	Green	
	–	E24V	12		3	B	White	
	Grey / White	0V	13		4	B	Blue / Red	
	Brown / White	LS	26		5	Z	Orange / White	
	–	CLEEP	25		6	Z	Green / White	
	–	OT	24		7	LS+	Brown / White	
	–	RSV	23		8	–	–	
	–	–	9		9	FG	Drain	
	–	–	18		10	SD	Blue	
	–	–	19		11	SD	Orange	
	Pink	A+	1		12	BAT+	Black	
	Purple	A–	2		13	BAT–	Yellow	
	White	B+	3		14	VCC	Green	
	Blue / Red	B–	4		15	GND	Brown	
	Orange / White	Z+	5		16	LS–	Grey / White	
	Green / White	Z–	6		17	BK–	Grey	
	Blue	SRD+	7		18	BK+	Red	
	Orange	SRD–	8					
	Black	BAT+	14					
	Yellow	BAT–	15					
	Green	VCC	16					
	Brown	GND	17					
	Grey	BKR–	20					
	Red	BKR+	21					
			22					

Connect the shield to the hood via a clamp.
Note 3

Drain wire and braided shield wire
Note 2

Encoder Cable / Encoder Robot Cable for RCS2-RT6/RT6R/RT7

Model CB-RCS2-PLA□□□/CB-X2-PLA□□□

* □□□ indicates the cable length (L). Lengths up to 30 m can be specified. Example) 080 = 8 m

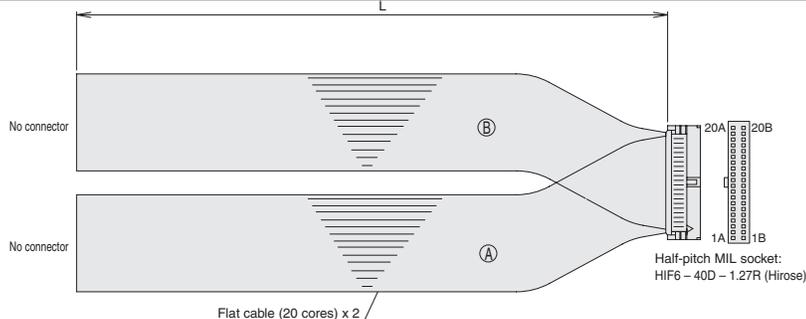| Wire	Color	Signal	No.		No.	Signal	Color	Wire
AWG26 (soldered)	–	–	10		1	E24V	White / Blue	AWG26 (crimped)
	–	–	11		2	0V	White / Yellow	
	White / Orange	E24V	12		3	LS	White / Red	
	White / Green	0V	13		4	CLEEP	White / Black	
	White / Blue	LS	26		5	OT	White / Purple	
	Brown / Yellow	CLEEP	25		6	RSV	White / Grey	
	Brown / Red	OT	24					
	Brown / Black	RSV	23					
	–	–	9		No.	Signal	Color	Wire
	–	–	18		1	A	White / Blue	AWG26 (crimped)
	–	–	19		2	A	White / Yellow	
	White / Blue	A+	1		3	B	White / Red	
	White / Yellow	A–	2		4	B	White / Black	
	White / Red	B+	3		5	Z	White / Purple	
	White / Purple	B–	4		6	Z	White / Grey	
	White / Grey	Z+	5		7	–	–	
	Orange	Z–	6		8	–	–	
	Green	SRD+	7		9	FG	Drain	
	Grey	SRD–	8		10	SD	Orange	
	Purple	BAT+	14		11	SD	Green	
	Red	BAT–	15		12	BAT+	Purple	
	Black	VCC	16		13	BAT–	Red	
	Blue	GND	17		14	VCC	Black	
	Yellow	BKR–	20		15	GND		
		BKR+	21		16	–	–	
			22		17	BK–	Blue	
					18	BK+	Yellow	

Connect the shield to the hood via a clamp.

Drain wire and braided shield wire

("White/blue" and other designations under "Wire color" indicate the band color/insulator color.)

I/O Flat Cable

Model CB-PAC-PIO□□□

* □□□ indicates the cable length (L). Lengths up to 10 m can be specified. Example) 080 = 8 m

HIF6 – 40D – 1.27R

No.	Signal name	Cable color	Wire	No.	Signal name	Cable color	Wire
1A	24V	Brown-1	Flat cable Ⓐ (pressure-welded) AWG28	1B	OUT0	Brown-3	Flat cable Ⓑ (pressure-welded) AWG28
2A	24V	Red-1		2B	OUT1	Red-3	
3A	–	Orange-1		3B	OUT2	Orange-3	
4A	–	Yellow-1		4B	OUT3	Yellow-3	
5A	IN0	Green-1		5B	OUT4	Green-3	
6A	IN1	Blue-1		6B	OUT5	Blue-3	
7A	IN2	Purple-1		7B	OUT6	Purple-3	
8A	IN3	Grey-1		8B	OUT7	Grey-3	
9A	IN4	White-1		9B	OUT8	White-3	
10A	IN5	Black-1		10B	OUT9	Black-3	
11A	IN6	Brown-2		11B	OUT10	Brown-4	
12A	IN7	Red-2		12B	OUT11	Red-4	
13A	IN8	Orange-2		13B	OUT12	Orange-4	
14A	IN9	Yellow-2		14B	OUT13	Yellow-4	
15A	IN10	Green-2		15B	OUT14	Green-4	
16A	IN11	Blue-2		16B	OUT15	Blue-4	
17A	IN12	Purple-2		17B	–	Purple-4	
18A	IN13	Grey-2		18B	–	Grey-4	
19A	IN14	White-2		19B	0V	White-4	
20A	IN15	Black-2		20B	0V	Black-4	

Half-pitch MIL socket:
HIF6 – 40D – 1.27R (Hirose)

Flat cable (20 cores) x 2

SCON Pulse-Train Control Cable

Model CB-SC-PIOS□□□

* □□□ indicates the cable length (L). Lengths up to 10 m can be specified. Example) 080 = 8 m
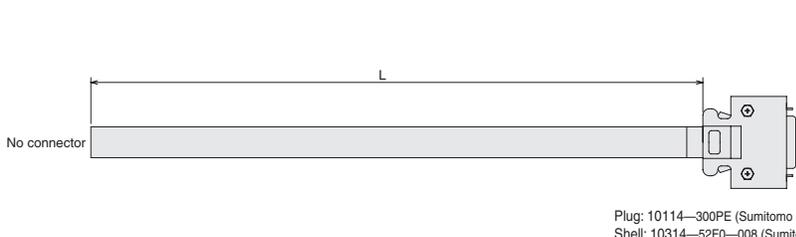
Wire	Color	Signal	No.
0.2sq (soldered)	Black	Unused	1
	White / Black	Unused	2
	Red	PP	3
	White / Red	/PP	4
	Green	NP	5
	White / Green	/NP	6
	Yellow	AFB	7
	White / Yellow	/AFB	8
	Brown	BFB	9
	White / Brown	/BFB	10
	Blue	ZFB	11
	White / Blue	/ZFB	12
	Grey	GND	13
	White / Grey	GND	14

Connect the shield to a cable clamp.

Plug: 10114—300PE (Sumitomo 3M)
Shell: 10314—52F0—008 (Sumitomo 3M)