# IAI
Quality and Innovation

**Unit-connecting 1~16-axis Position & 1~8-axis Progamm Controller Series**

# R-unit

## RCON

Positioner Type

## RSEL

Program Type

## REC

EleCylinder Drive Unit

IAI's new controller series

# R-unit

This series of unit-connecting controllers allows you to freely select and combine connected actuators and control methods.

Positioner Type

## RCON

R-unit

Program Type

## RSEL

EleCylinder Drive Unit

## REC

1

# Unit-connecting controllers support a wide array of combinations!

Combine a driver unit with the exact number of required axes for a more compact controller and reduced installation space.
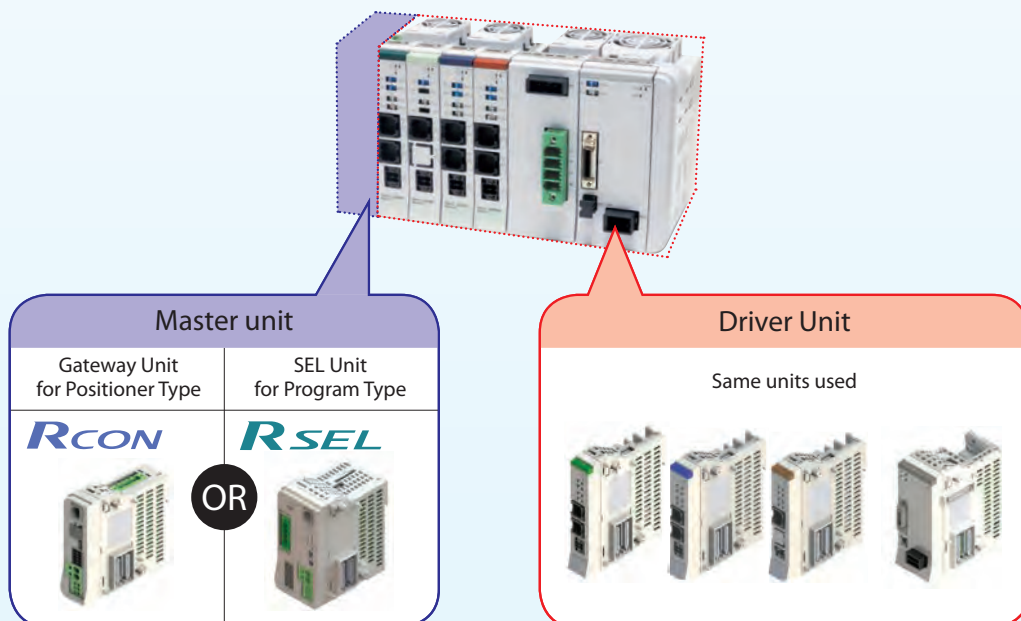This allows for mixed control of an actuator with both a 24V motor and 230V motor.



Master unit

Units connected with connectors

24V driver unit

230V driver unit (with power supply unit)
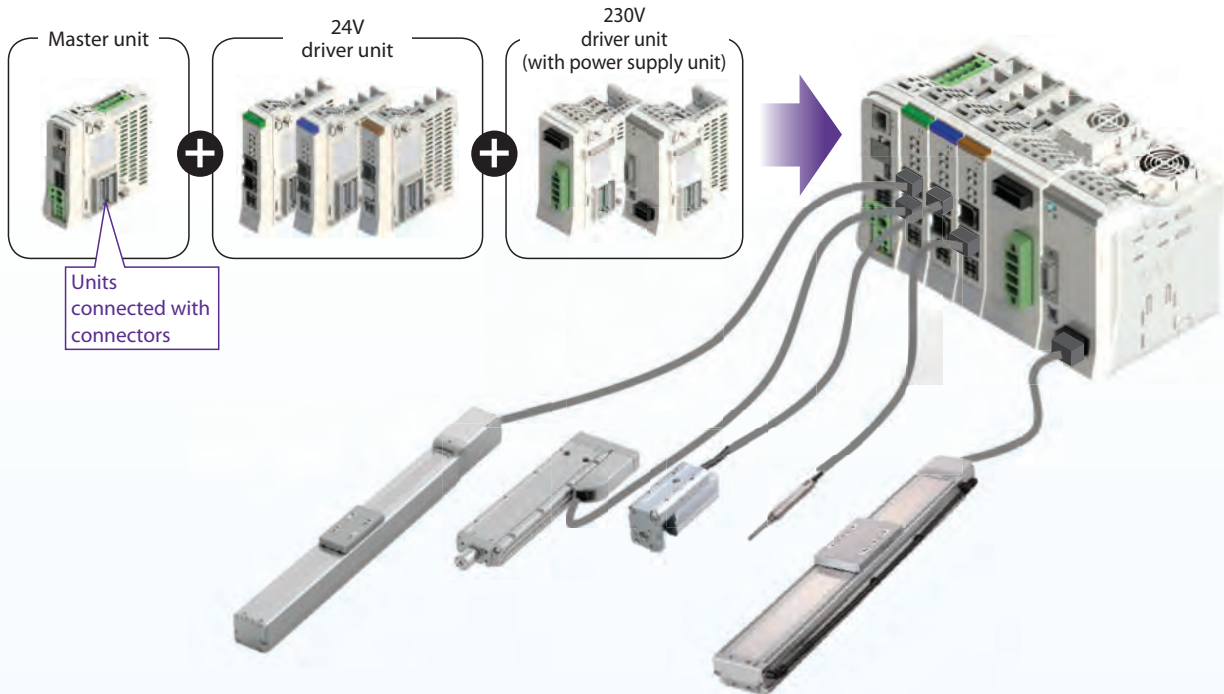
# Use the same driver units

The system can be changed just by switching out the master unit based on the control method.
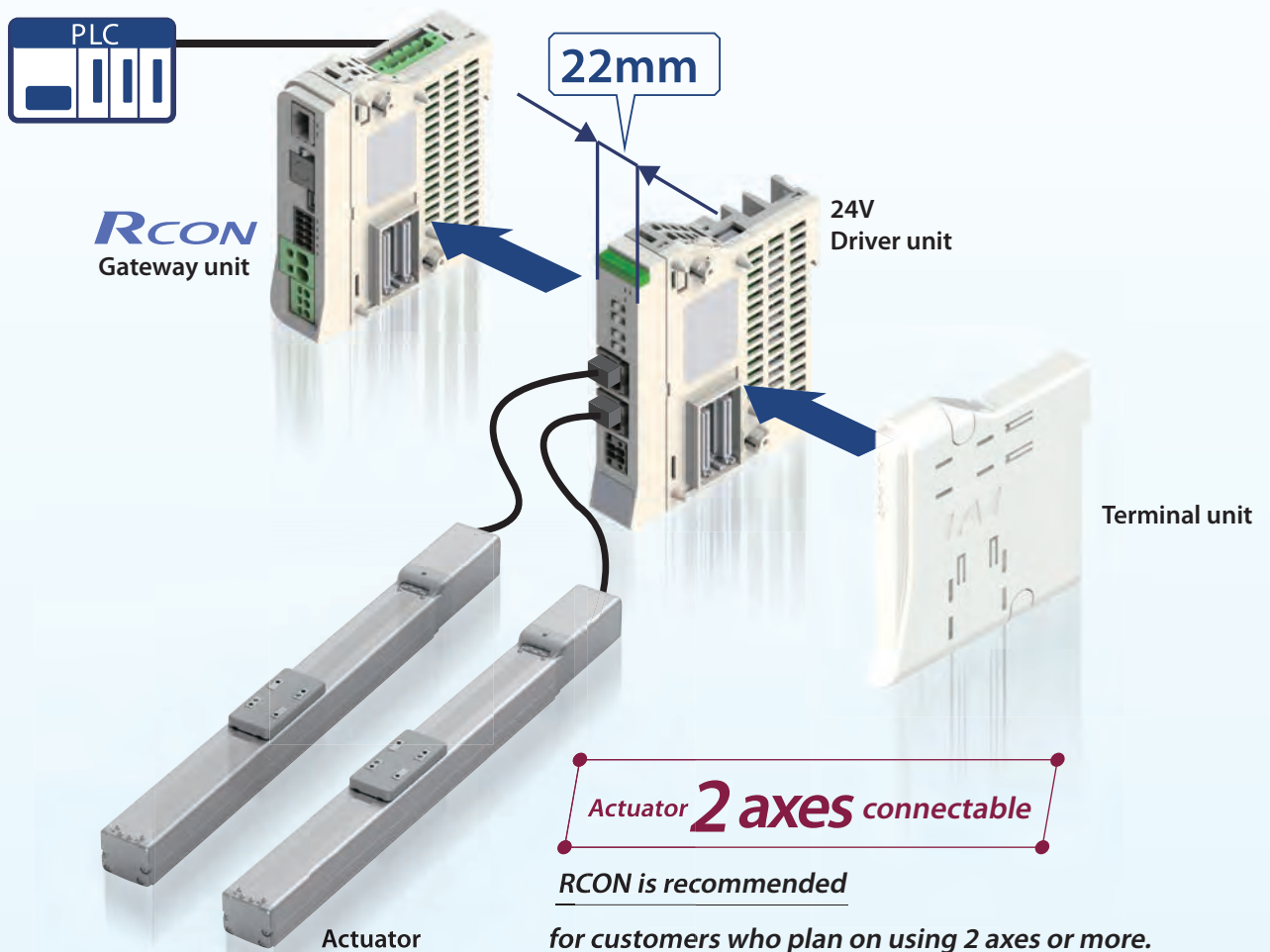This allows the same driver units to be used.

## R-unit



| Master unit | | Driver Unit |
|---|---|---|
| Gateway Unit for Positioner Type | SEL Unit for Program Type | Same units used |
| **RCON** | **RSEL** | |

OR

# Saves space inside the control panel
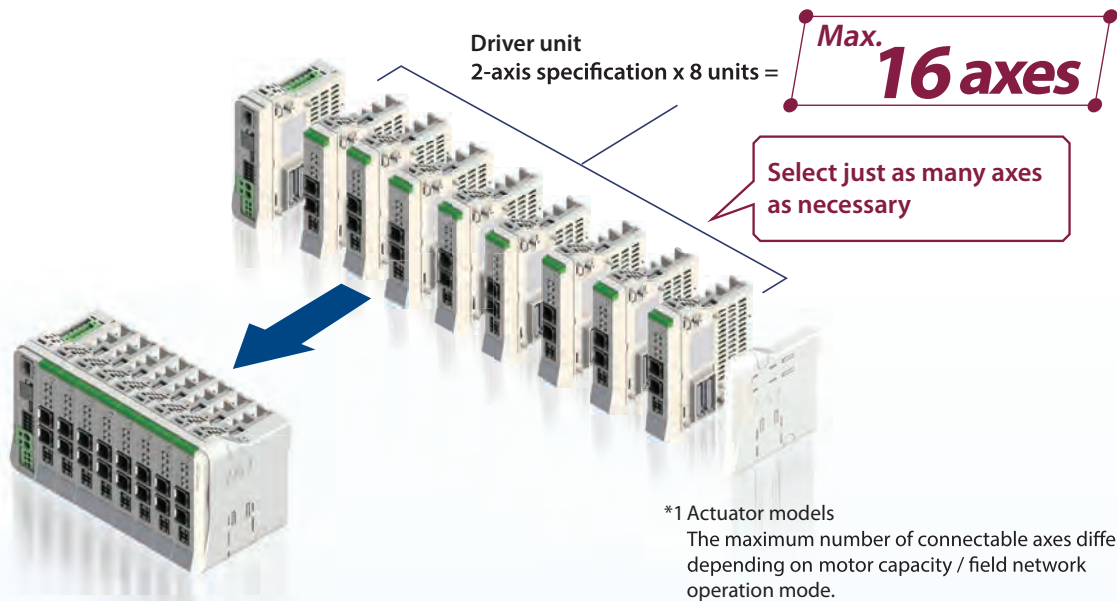
## RCON

**RCON is recommended for actuators with two axes or more.**

Up to 2 axes of actuators can be connected to one driver unit with 22mm width, making it ideal for saving space in the control panel.

PLC

**RCON Gateway unit**

**22mm**

**24V Driver unit**

**Terminal unit**

**Actuator**

Actuator **2 axes** connectable

*RCON is recommended for customers who plan on using 2 axes or more.*

# Up to 16 axes[*1] of actuators can be connected.

There will be no wasted space as only the necessary driver units will be added.

Driver unit
2-axis specification x 8 units =

**Max.**
**16 axes**

Select just as many axes as necessary

*1 Actuator models
The maximum number of connectable axes differs depending on motor capacity / field network operation mode.

# Saves up to 85%[*2] of control panel space and reduces costs by as much as 60%.
*2 IAI product comparison

Up to about 85% of control panel space can be saved,
compared with models that connect a 1-axis actuator to a single driver unit.

The conventional type (Comparison example below) requires network options installed to match the number of controllers.
RCON can control driver units for up to 16 axes of actuators with a single gateway,
allowing cost reductions up to 60%. It is especially recommended when using multiple axes.
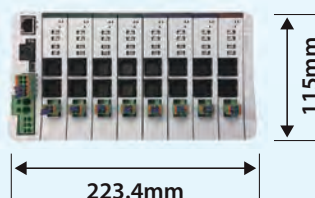
## PCON-CB x 16 units

30mm[*3]

**Driver unit x 16**

179mm

1010mm
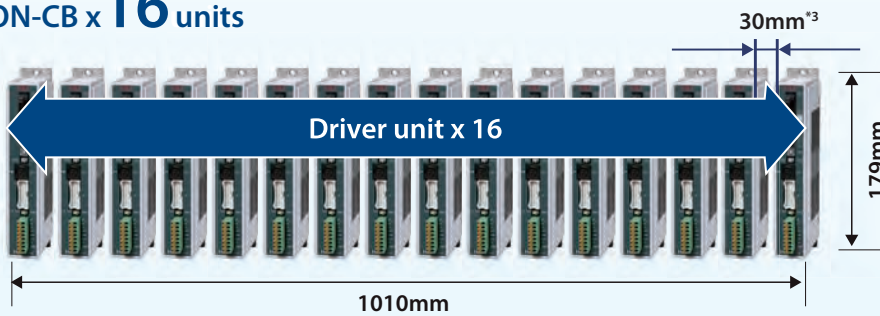
PCON-CB
PROFINET IO specification x 16 units

*3 Minimum distance required for natural heat dissipation of the controller

**60% cost reduction**

## RCON x 16-axis connection specification

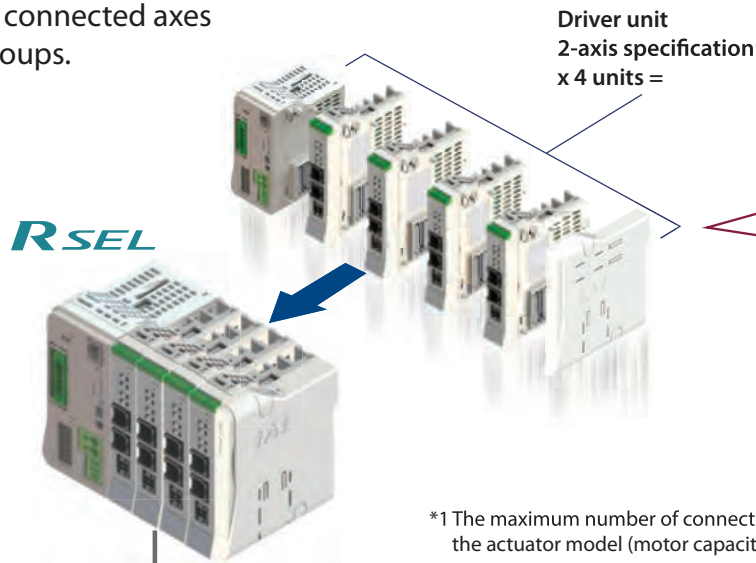**85%** *Space saving*

115mm

223.4mm

**RCON**
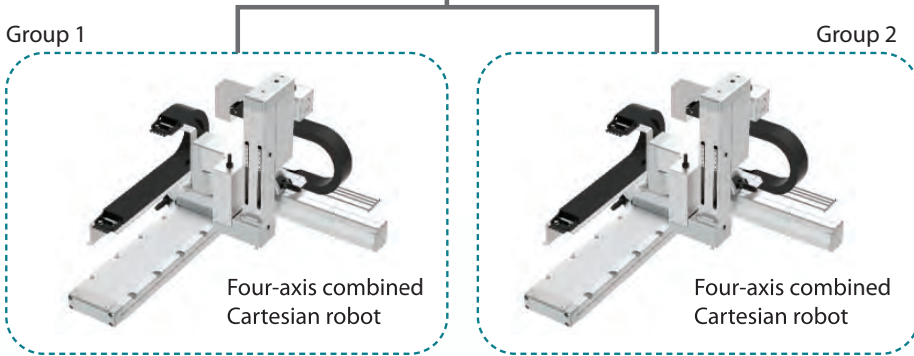
PROFINET IO specification
pulse motor 16 axes

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# RSEL

## Compact program controller that connects up to 16 axes[*1] of actuators

Supports both linear and arc interpolation operations.
Also allows control of connected axes
to be split into two groups.

**Driver unit
2-axis specification
x 4 units =**

**Max. 8 axes**

\* In the case that no EC
connecting unit is included.

**Select just as many
axes as necessary**

RSEL

*1 The maximum number of connectable axes differs depending on
the actuator model (motor capacity).

Group 1

Four-axis combined
Cartesian robot

Group 2

Four-axis combined
Cartesian robot

## Max. 67%[*2] space savings inside the control panel  *2 IAI product comparison

Up to about 67% of control panel space can be saved,
compared with models that connect a 4-axis actuator to a single driver unit.
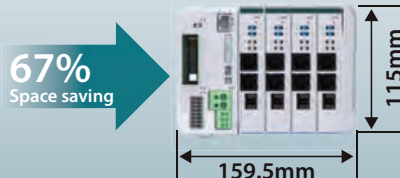
**MSEL x 2 units (8-axis connection)**

30mm[*3]

195mm

290mm
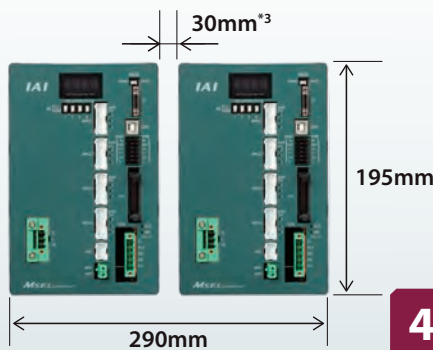
**MSEL
PROFINET IO specification
8 axes (4 axes x 2 units)**

*3 Minimum distance required for natural heat dissipation of the controller

**43% cost reduction**

**RSEL x 8-axis connection specification**
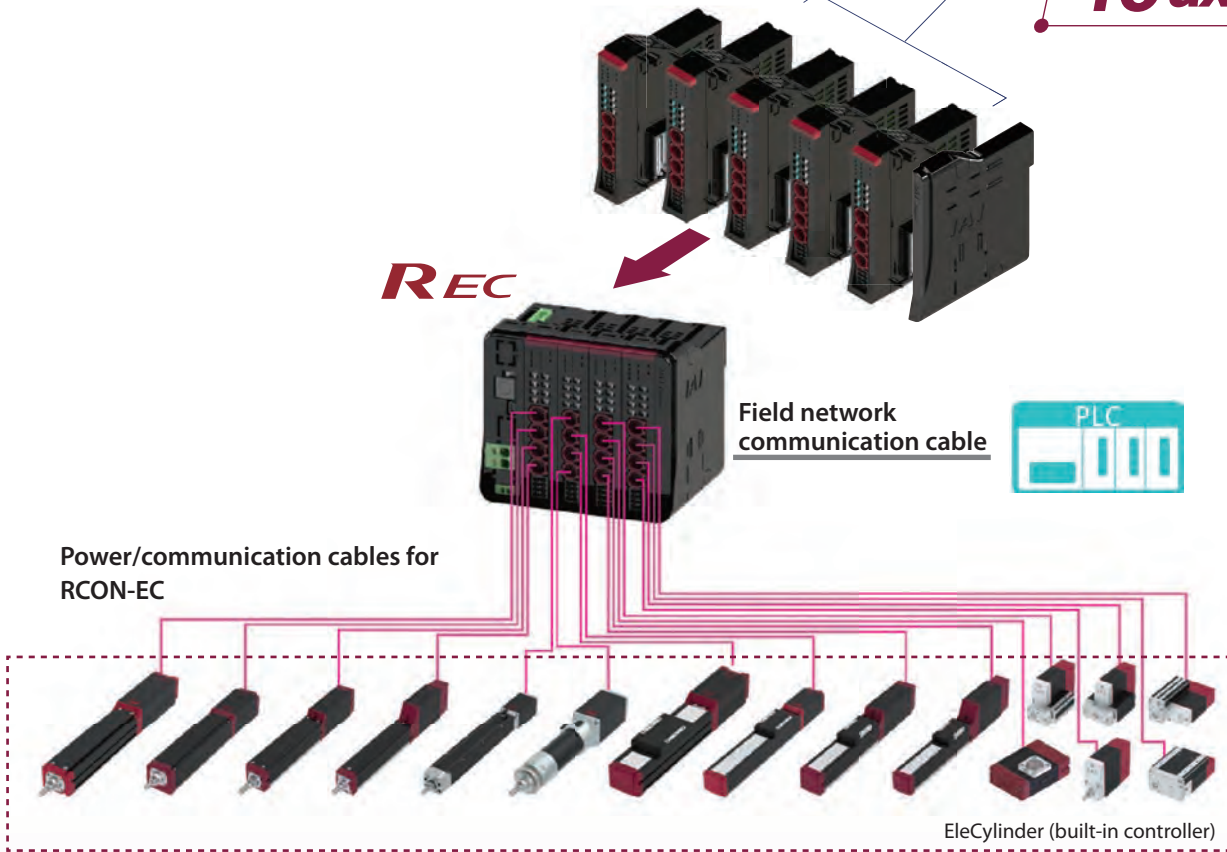
**67%**
Space saving

115mm

159.5mm

RSEL

**PROFINET IO specification
pulse motor 8 axes**

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# R EC

## Connect EleCylinder to a field network

This field network connection unit is specifically for use with EleCylinder.
It allows up to 16 axes of EleCylinder to be connected.
It is ideal for saving wiring and space inside the control panel.

EC connection unit
4-axis specification
x 4 units =

Max.
**16 axes**

R EC

Field network
communication cable

PLC

Power/communication cables for
RCON-EC

EleCylinder (built-in controller)

## EC connection unit can be connected with other driver units connected to RCON/RSEL

EleCylinder can be used together with RoboCylinders and single-axis robots when it is connected to the EC connecting unit.

Operated by position

Supports the SEL language

*R*CON

*R*SEL

EC connection unit

**6**
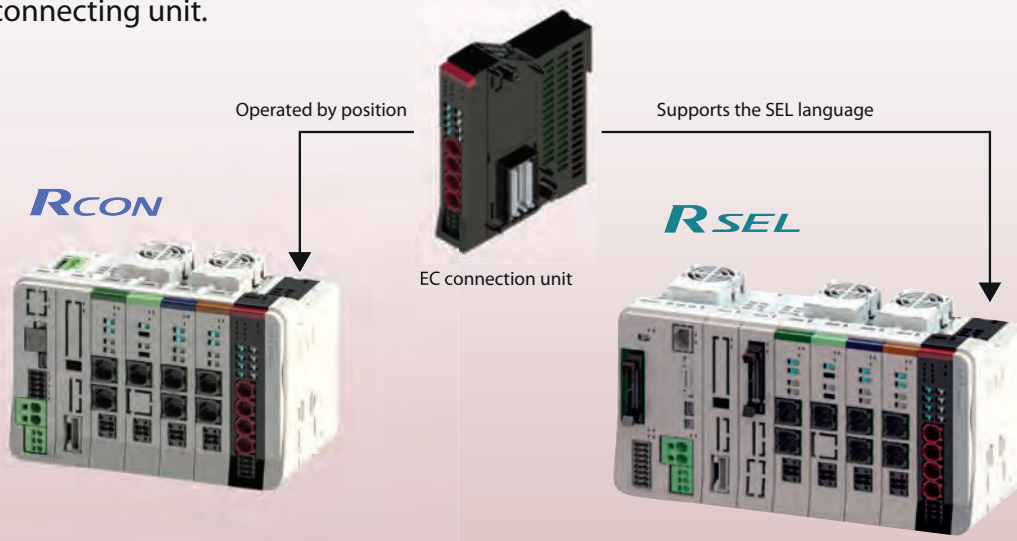
# Seven high-performance functions that only IAI is capable of delivering

## High function 1 — Compatibility: No.1 in the industry with seven field network types supported

IAI controller can be connected to various field networks as remote I/O station.

\* Connectable networks differ depending on the series.

CC-Link    CC-Link IE Field    DeviceNet™    EtherNet/IP™

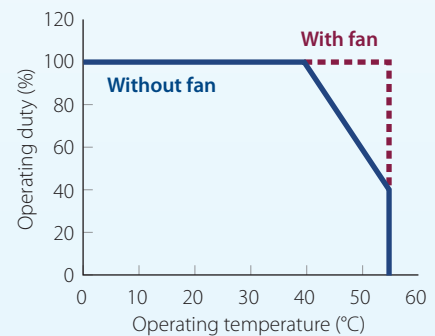EtherCAT®    PROFIBUS®    PROFINET®

## High function 2 — Supports controller installation environment temperatures of 0 ~ 55°C

Install the optional fan unit to enable use in environments of 0~55°C without lowering actuator operating duty. (One fan is required for each SEL unit and for every two 24V driver units.)
A fan unit is required for 230V power supply units and 230V driver units.

\* Simple absolute units support 0~40°C.

REC supports 55°C without a fan.

Fan unit
[RCON-FU]

**Easy removal!**
(Retrofitting is also possible.)

With fan

Without fan

Operating duty (%)

120
100
80
60
40
20
0

0   10   20   30   40   50   60
Operating temperature (°C)
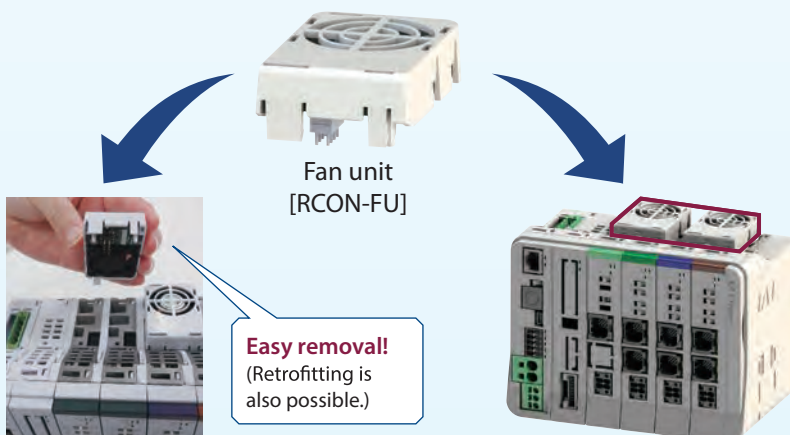
## High function 3 — Predictive maintenance/preventative maintenance function

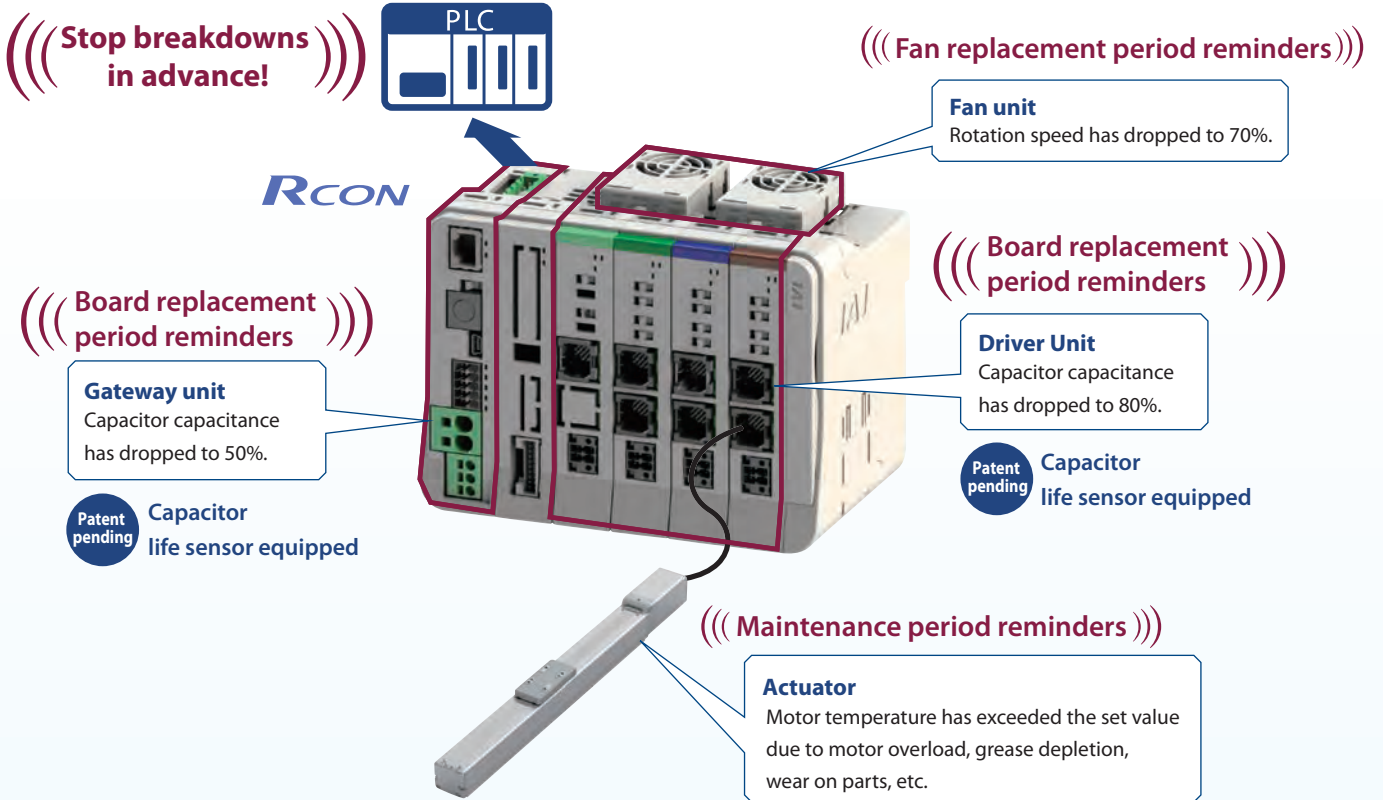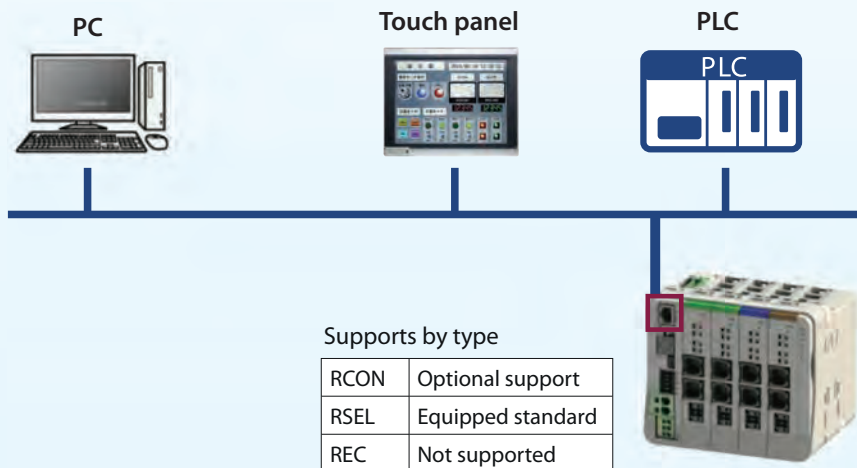R-units have a preventative maintenance function for the capacitor and a predictive maintenance function for the fan unit and actuator.



**(((Stop breakdowns in advance!)))**

RCON

**(((Fan replacement period reminders)))**

**Fan unit**
Rotation speed has dropped to 70%.

**(((Board replacement period reminders)))**

**Driver Unit**
Capacitor capacitance has dropped to 80%.

Patent pending — **Capacitor life sensor equipped**

**(((Board replacement period reminders)))**

**Gateway unit**
Capacitor capacitance has dropped to 50%.

Patent pending — **Capacitor life sensor equipped**

**(((Maintenance period reminders)))**

**Actuator**
Motor temperature has exceeded the set value due to motor overload, grease depletion, wear on parts, etc.

## High function 4 — Ethernet-equipped

Supports Ethernet connections. (Excluding REC.)



**PC**

**Touch panel**

**PLC**

Supports by type

| | |
|---|---|
| RCON | Optional support |
| RSEL | Equipped standard |
| REC | Not supported |

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* See P. 46 for connectable actuators.

## ● Models with 24V motors

Supports actuators equipped with a battery-less absolute encoder as well as those with simple absolute encoders and incremental encoders.

**RCP Series**
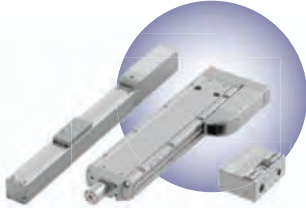
**RCA Series**

**RCD Series**

24V driver unit

**WU Series**

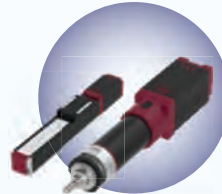**IK Series**

**EC Series**

EC connection unit

## ● Models with 230V motors

These products are capable of driving actuators equipped with 230V motors and 60W to 750W motors. 230V driver units support actuators equipped with battery-less absolute encoders and incremental encoders.
When connecting to extension unit+ SCON, actuators equipped with 12W to 3300W motors are operable and all encoders are supported.

**RCS Series**
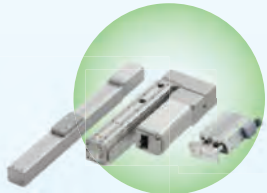
**IS(D)B Series**
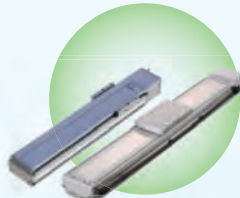
**SSPA Series**

230V driver unit
+ power supply unit

**NS(A) Series**

**DD(A) Series**

**ICSB Series**
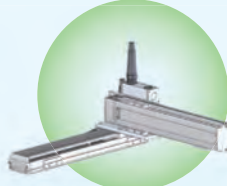
Extension unit
+ SCON connection
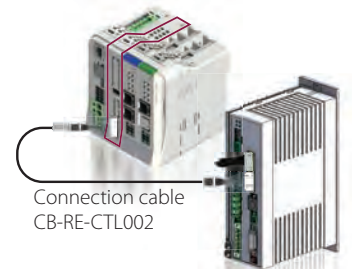
Connection cable
CB-RE-CTL002

## High function 6 — Motor power cutoff method can be selected

In accordance with customer safety function applications, the motor power cutoff method at emergency stop can be selected through the RCON wiring method.

**Actuator**
**All-axis motor power cutoff**

(Gateway unit)
All-axis motor power port

**Actuator**
**Single-axis motor power cutoff**
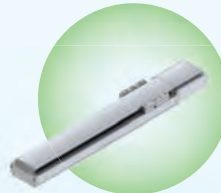
(24V driver unit)
Single-axis drive-source cutoff terminal

(230V driver unit)
Single-axis driver stop power cutoff terminal

## High function 7 — Helps visualize equipment with 24V power monitor

### Helps visualize equipment.

The following IAI 24VDC power supply (PSA-24) monitoring can be output to a PLC via an R unit.

● Output voltage ● Output current ● Power load factor ● Total energizing time
● Internal temperature ● Low fan speed warning

918[W]

Power supply peak power
Power supply rated power

Average power
12[W]

[W]

[sec]
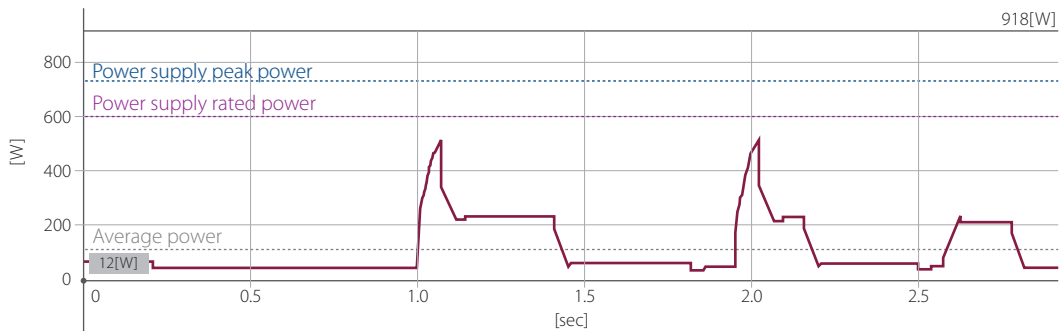
*The graph is a reference image.

PLC

**R-unit**

24VDC power supply (PSA-24)

**Equipped with communication function to R unit**

**10**
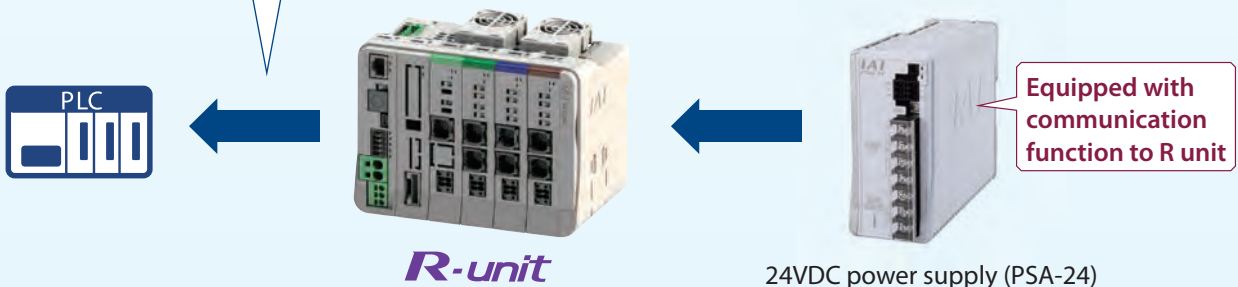
# Easy start-up and maintenance.

The actuator movable parts for each axis can be moved forward/backward, even without a teaching pendant or PC teaching software.

### Each axis JOG (+/-) switch

Backward    Forward

Actuator    Home (coordinate: 0 mm)

Backward

Movable part

Forward

Stroke end
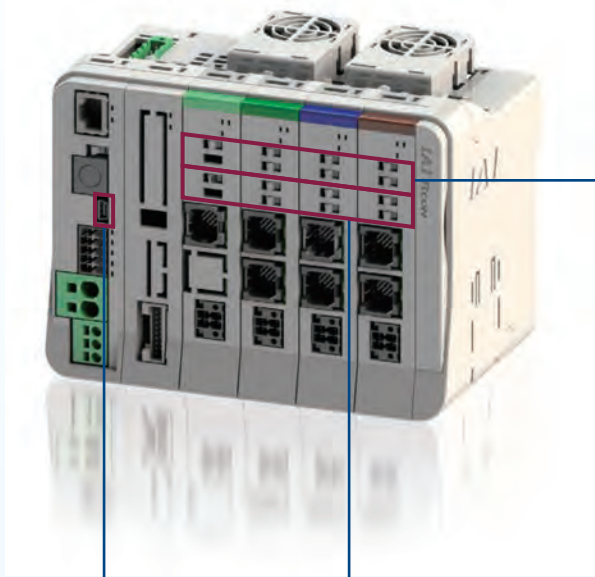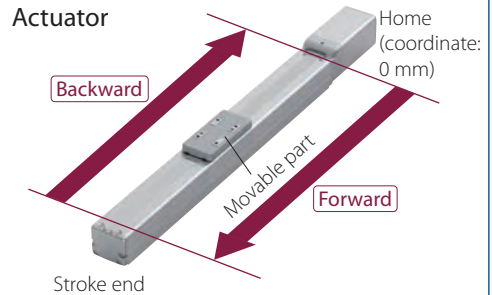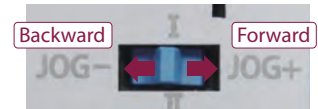
JOG switch enabled in manual mode with PC software/teaching pendant manual operation window closed.

### Each axis brake release switch

Actuator

Forced brake release

Movable part

RLS    NOM
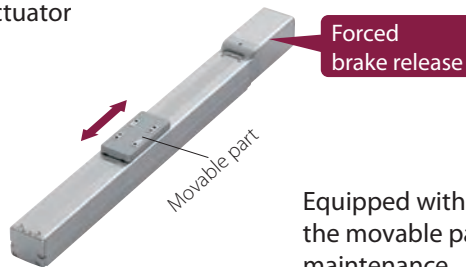
Equipped with a brake release switch for each axis, the movable parts can be moved by hand during maintenance.

### USB port

Connection to a PC is possible using a commercial USB cable.
Dedicated cables are not required.

*Compatible with miniUSB (mini-B).

# RCON

## Easy to program even for a beginner!

The PC-dedicated teaching software supports users.

Even beginners can operate easily because it shows operation procedures process by process from controller wiring to troubleshooting.

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## The PC-dedicated teaching software supporting screen (display example)

### Controller's various wiring

Wiring work can be done smoothly.
Wiring necessary for start up can be done, referring to the PC-dedicated teaching software.

### Network wiring setting

Operation method of peripheral devices is shown.
Host PLC setting examples are displayed in addition to the RCON setting procedure.

### Actuator operation and adjustment

Operation procedures can be displayed according to your specific application
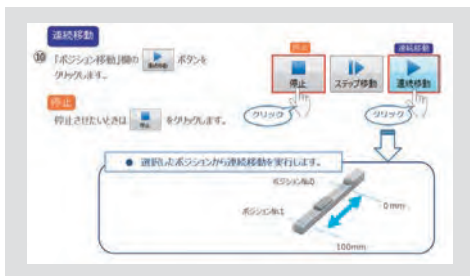
### Troubleshooting

Even if it fails, it can be repaired immediately.
In case of a trouble, IAI's troubleshooting is displayed.

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# R SEL

## Easy to program even for a beginner!

The "SEL Programming Tool" of the PC-dedicated teaching software supports users.

The "SEL Programming Tool" generates SEL programs by arranging the items whose operations are defined. Therefore, programming is possible without learning the SEL language.

The PC-dedicated teaching software for RSEL supports V.14.00.00.00 or later.

### Defined items

- Motion without interpolation
- Straight line interpolation motion
- Continuous motion of multiple coordinates without stops
- Arch motion
- Motion with limited thrust force (push motion)
- Circle motion

Drag & Drop

### Flowchart

- Start defining program
- Servo ON/OFF
- Linear interpolation motion
- Program definition completed

**Execution**

Servo ON

Interpolation motion

## Troubleshooting using the teaching pendant

The program controller teaching pendant (TB-02/03)
now offers troubleshooting functionality.
It suggests solutions to problems using a series of YES/NO questions.
(Supported by Ver. 2.70 or later.)

&lt;Error details&gt;



&lt;Solution&gt;



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# Motion control

**Coming soon**

The RCON supports motion networks.

**RCON**



**EtherCAT.**

It is possible to use RCON together with third-party servo amplifiers, to synchronize with different types of motors and to perform interpolation control.

## Connection image

Control panel

**PLC**

Master unit

🕐 **The function of synchronizing operation timing is equipped on the network.**

| Pulse motor | 24V AC servo motor | DC brushless motor | AC230V AC servo motor | | Third-party servo amplifier |
|---|---|---|---|---|---|

**PCON-CB
PCON-CFB**

**ACON-CB**

**DCON-CB**

**SCON-CB**

**RCON**

**Up to 8 axes**
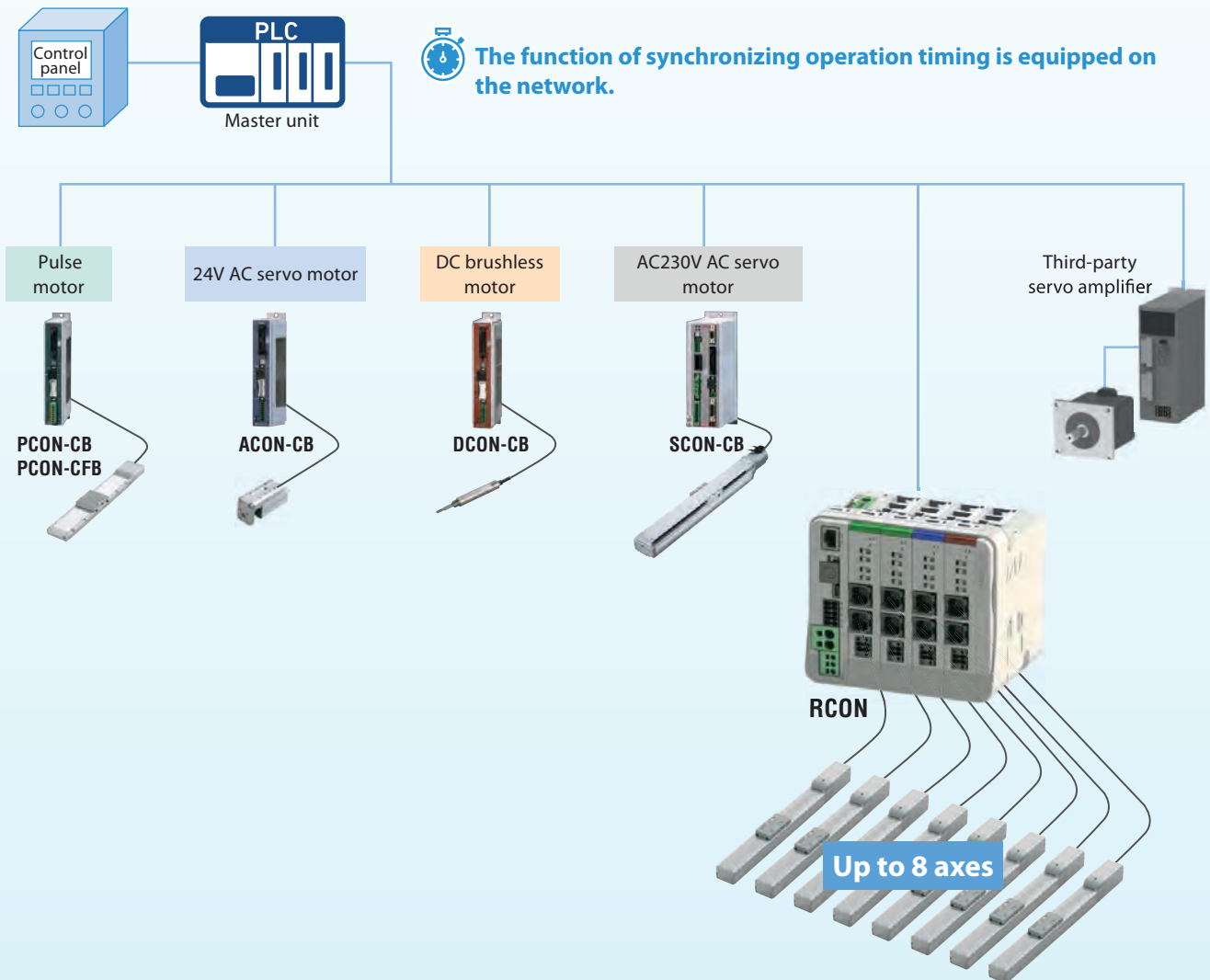
# Touch panel connection

Setting, alteration and monitor of the data in the controller can be performed directly from the touch panel via serial communication.

**Touch panel**

| Operate | Stop |
| Adjust | |

*RCON*

**Modbus protocol**

*R SEL*

**IAI dedicated protocol**

\* See each manufacturer's website for connectable models.
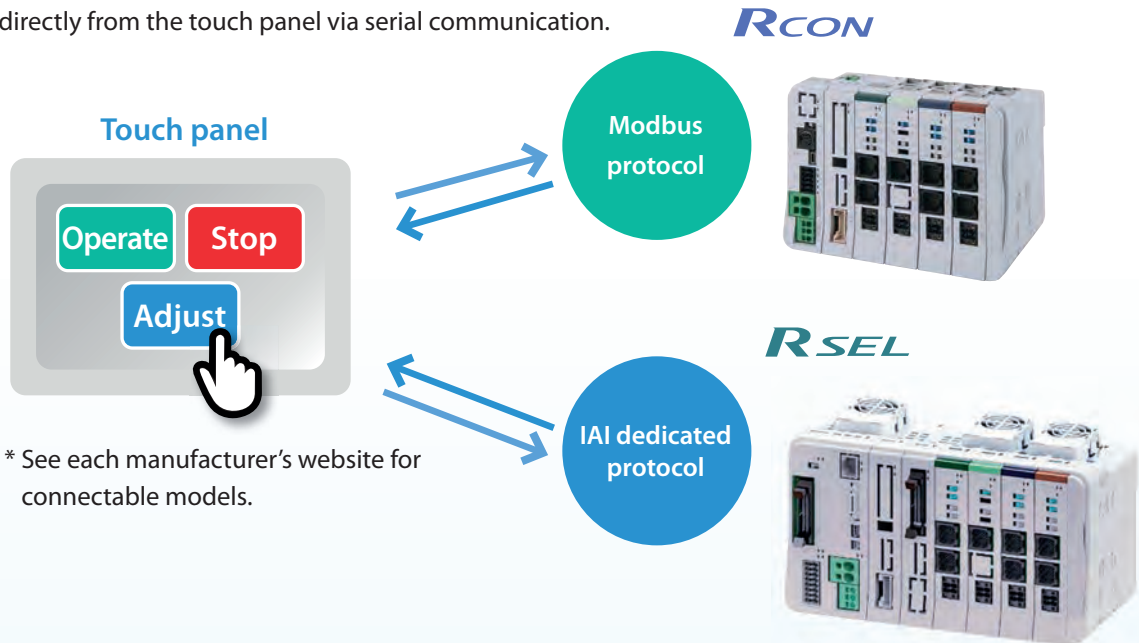
# Serial communication protocol

The RSEL makes XSEL communication protocol in multiple channels possible.
Conditions of the controller can be monitored by multiple devices.

Teaching connector
(execute, monitor)

Ethernet connector
(monitor)

USB connector
(monitor)

*R SEL*

SIO connector
(monitor)

**16**
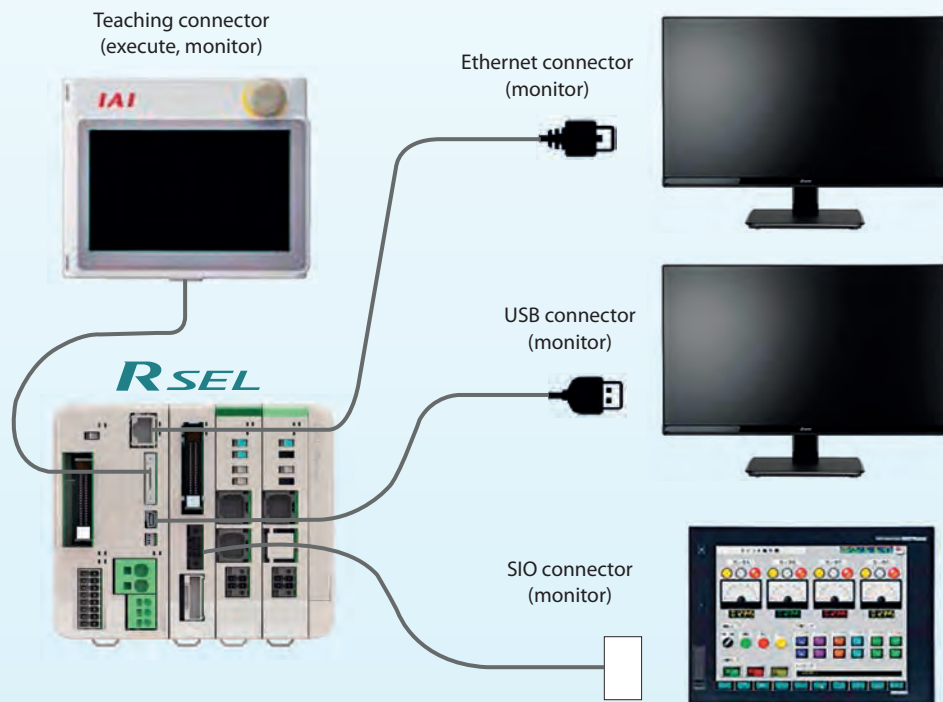
# Model Selection

Select from three types of R-units, based on your operation method and models to connect.

## Positioner Type

● For situations where the stop position will be registered in the position data, and then the position number will be specified for operation.

Max. number of connected axes: 16 axes

**R**CON

Refer to the selection pages beginning from P. 18

## Program Type

● For situations where Cartesian coordinate system operation is performed for multiple axes combining single axes.

Max. number of connected axes: 16 axes

**R**SEL

Refer to the selection pages beginning from P. 25

## EleCylinder Unit

● For situations where EleCylinder with ACR option is operated over a fieldbus.

Max. number of connected axes: 16 axes

**R**EC

Refer to the selection pages beginning from P. 33

# RCON
# Selection Method

## Step 1 — Select the actuators to connect. (Up to 16 axes.)

<Selection example>

| RCD Series | RCP2 Series | RCA2 Series | RCP6 Series | RCS4 Series | ISB Series | DDA Series | EC Series |

## Step 2 — Gateway unit selection

Select the gateway unit model from the network type.

| Network type | Gateway unit model |
|---|---|
| CC-Link | RCON-GW/GWG-CC |
| CC-Link IE Field | RCON-GW/GWG-CIE |
| DeviceNet | RCON-GW/GWG-DV |
| EtherCAT | RCON-GW/GWG-EC |
| EtherNet/IP | RCON-GW/GWG-EP |
| PROFIBUS | RCON-GW/GWG-PR |
| PROFINET | RCON-GW/GWG-PRT |

<Selection example>
← Selection ①

* GW: Gateway unit of standard specifications
  GWG: Gateway unit of safety category type.

Caution: Only one gateway unit can be connected per system. Split this among two or more units to connect 17 or more axes or if the power capacity is exceeded.

**Example: When connecting 18 axes**

Gateway unit — 18-axis

Gateway unit — 8-axis + Gateway unit — 10-axis

## Step 3 — Classify actuator types into three categories.

| Actuator type | | Selected actuator |
|---|---|---|
| Models with 24V motors | RCP2/3/4/5/6 Series<br>RCA/2 Series<br>RCD Series | <Selection example><br>RCD   RCP2   RCA2   RCP6 |
| Models with 230V motors | RCS2/3/4 Series<br>IS(D)B Series<br>SSPA Series<br>NS(A) Series<br>DD(A) Series | <Selection example><br>RCS4   ISB   DDA |
| Elecylinder (model with 24V motor) | EC Series | <Selection example><br>EC with ACR option |

## Step 4 — 24V driver unit selection (models with 24V motors)

Select the driver unit model and number of units according to the series name and motor type of the actuator.

| Actuator | | 24V driver unit | | | <Selection example> | | |
| Series | Motor type | External view | Number of axes connected to actuator | Model | Classification | Required units | |
|---|---|---|---|---|---|---|---|
| RCP2 RCP3 RCP4 RCP5 RCP6 | 20P, 28P 35P, 42P 56P | Pulse motor | 2-axis specification | RCON-PC-2 | RCP2-RTC   RCP2-GRSS | 1 | ← Selection ② |
| | | | 1-axis specification | RCON-PC-1 | RCP6-TA4C | 1 | ← Selection ② |
| | High thrust motor 56SP, 60P 86P | | 1-axis specification | RCON-PCF-1 | RCP6-RRA8R | 1 | ← Selection ② |
| RCA RCA2 | 2 5 10 20, 20S 30 | AC servo motor | 2-axis specification | RCON-AC-2 | RCA2-GS3NA   RCA2-TCA4NA | 1 | ← Selection ② |
| | | | 1-axis specification | RCON-AC-1 | - | - | |
| RCD | 3D | DC brush-less motor | 2-axis specification | RCON-DC-2 | - | - | |
| | | | 1-axis specification | RCON-DC-1 | RCD-RA1DA | 1 | ← Selection ② |

## Step 5 — Simple absolute unit selection

For actuators which are to use the simple absolute specification, select a number of simple absolute units (RCON-ABU-A/P) according to the number of axes.

*Connect to the driver unit with a cable (CB-ADPC-MPA005).
  The cable is supplied with the simple absolute unit.
Note: The ambient operating temperature of the simple absolute unit is within the
    range of 0~40℃.

RCON-ABU-A    RCON-ABU-P    Simple absolute battery

<Selection example>

This is an example in which a 2-axis RCA2 Series actuator is selected for simple absolute specification.

RCON-AC-2

**Actuators to be made compatible with simple absolute**

RCA2-GS3NA    RCA2-TCA4NA

Simple absolute unit

RCON-ABU-A x 2
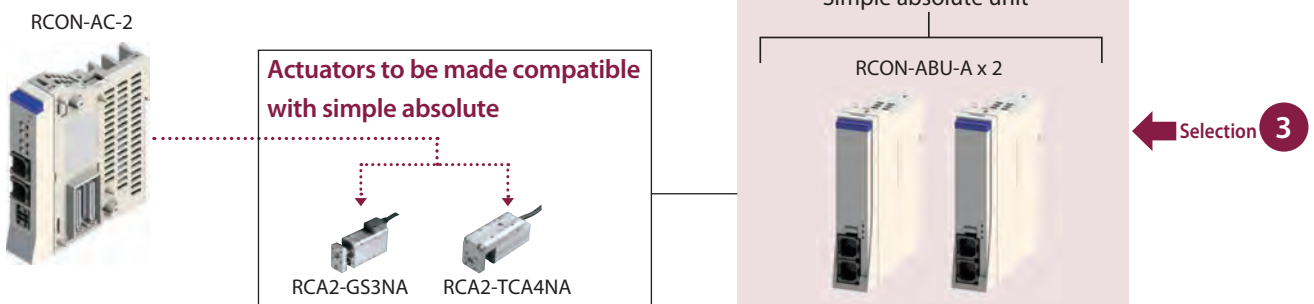
← Selection ③

## Step 6 — EC connection unit selection (EleCylinder model)

To connect an EC Series product, select the required number of connection units based on the number of units for connecting EC.

| Actuator | | EC connection unit | | | <Selection example> | | |
| Series | Motor type | External view | Number of axes connected to actuator | Model | Classification | Required units | |
|---|---|---|---|---|---|---|---|
| EC | 28P, 35P 42P, 56P | | 4-axis specification | RCON-EC-4 | EC-S6 with ACR option | 1 | ← Selection ④ |

## Step 7 — Classify models with 230V motors into two categories.

Models are classified as axes connected to a 230V driver unit and axes connected to an extension unit.

| Connection unit | Actuator specifications | Selected actuator |
|---|---|---|
| 230V driver unit | Specification that meets all conditions below<br>(Motor wattage [W])<br>60W~750W<br>(Encoder type)<br>Incremental<br>Battery-less Absolute | RCS4-RA6C-WA-100    ISB-LXM-WA-200 |
| Extension unit | Specification other than above | DDA-LT18CS-AM-200  *This is because the absolute multi-rotation specification cannot be connected using a 230V driver unit. |

## Step 8 — 230V driver unit selection

Select one 230V power supply unit and a number of driver units according to the actuators to connect.

| Unit name | External view | Number of axes connected to actuator | Model | <Selection example> Classification | Required units | |
|---|---|---|---|---|---|---|
| 230V power supply unit | | - | RCON-PS2-3 | - | 1 | ← Selection 5 |
| 230V driver unit | | 1-axis specification | RCON-SC-1 | RCS4   ISB | 2 | ← Selection 5 |

## Step 9 — Extension unit selection

(1) Select one if there are any actuators connected with an expansion unit.

| Unit name | External view | Number of axes connected to actuator | Model | <Selection example> Classification | Required units | |
|---|---|---|---|---|---|---|
| SCON extension unit | | Max. 16 axes | RCON-EXT | DDA | 1 | ← Selection 6 |

(2) Select a number of controllers (SCON-CB) to connect through the expansion unit according to the number of connected actuators.
*A number of SCON-CBs must be purchased according to the number of connected axes. (Max. number of connections: 16 axes.)

| Controller | External view | Number of axes connected to actuator | I/O type | <Selection example> Classification | Required units | |
|---|---|---|---|---|---|---|
| SCON-CB/CGB | | 1-axis specification | SCON-**-RC-* | DDA | 1 | ← Selection 7 |

### ● Example of connecting an extension unit and SCON-CB

One cable (CB-RE-CTL002) is supplied as standard with SCON-CB for RCON connection.
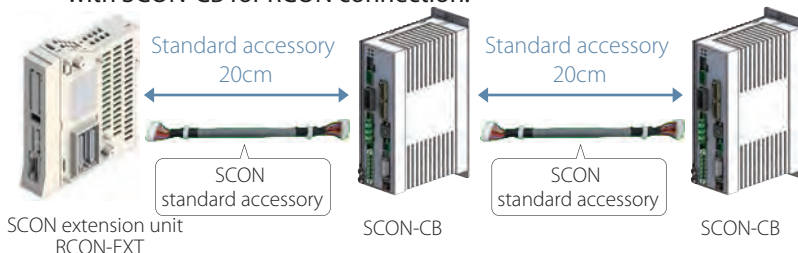
Standard accessory 20cm    Standard accessory 20cm

SCON standard accessory    SCON standard accessory

SCON extension unit RCON-EXT    SCON-CB    SCON-CB

**Additional information** If the connection cable is too short, purchase a separate cable to make the connection.

Model: CB-RE-CTL□□□
See P. 85

**x Required number of units**

Caution: The maximum cable length between devices is 3m.
The total cable length is 10m (max.).

## Step 10  Calculation of various unit control power capacities (CP)

Make sure that the total control power capacity of the units and EleCylinder connected to RCON is as follows.

| Item | Average current |
|---|---|
| Control power (CP) | 9.0A or less |

**How to check**

Add up while checking the "Control power capacity list" below.

**Control power capacity list**

| Item | Specifications | | | Power capacity | &lt;Selection example&gt; |
|---|---|---|---|---|---|
| Control power capacity (per unit) | Master unit (including terminal unit) | Gateway unit | Without Ethernet | 0.8A | |
| | | | With Ethernet | 1.0A | |
| | 24V driver unit (common for all types) | Without brake | | 0.2A | x **4** units |
| | | With brake (1-axis specification) | | 0.4A | x **1** unit |
| | | With brake (2-axis specification) | | 0.6A | |
| | 230V driver unit | Without brake | | 0.2A | x **1** unit |
| | | With brake | | 0.5A | x **1** unit |
| | Extension unit | | | 0.1A | x **1** unit |
| | Simple absolute unit (common to all types) | | | 0.2A | x **2** units |
| | EC connection unit (per unit) | | | 0.1A | x **1** unit |
| | 24V specification EleCylinder (per axis) | Without brake | | 0.3 A | x **1** axis |
| | | With brake | | 0.5 A | |
| | 230V specification EleCylinder (per axis) | Without brake | | 0.32 A | |
| | | With brake | EC-S10□, EC-S10X□ | 0.54 A | |
| | | With brake | EC-S13□, EC-S13X□ EC-S15□, EC-S15X□ | 1.2A | |

\* For selection of the unit, power capacity of the master unit is not included for calculation. However, for 24V power selection, include the master unit power capacity.

&lt;Selection example&gt;



| Extension unit | 24V driver unit | | | | | EC connection unit | 230V driver unit | Simple absolute unit |
|---|---|---|---|---|---|---|---|---|
| RCON-EXT | RCON-PC-2 | RCON-PC-1 | RCON-PCF-1 | RCON-AC-2 | RCON-DC-1 | RCON-EC-4 | RCON-SC-1 x 2 units | RCON-ABU-A x 2 units |

| | RCP2 | RCP2 | RCP6 | RCP6 | RCA2 | RCA2 | RCD | EC | RCS4 | ISB |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Without brake | Without brake | With brake | Without brake | | Without brake | Without brake | Without brake | With brake | Without brake |

0.1A + 0.2A + 0.2A + 0.4A + 0.2A + 0.2A + 0.1A + 0.3A + 0.5A + 0.2A + (0.2A x 2)
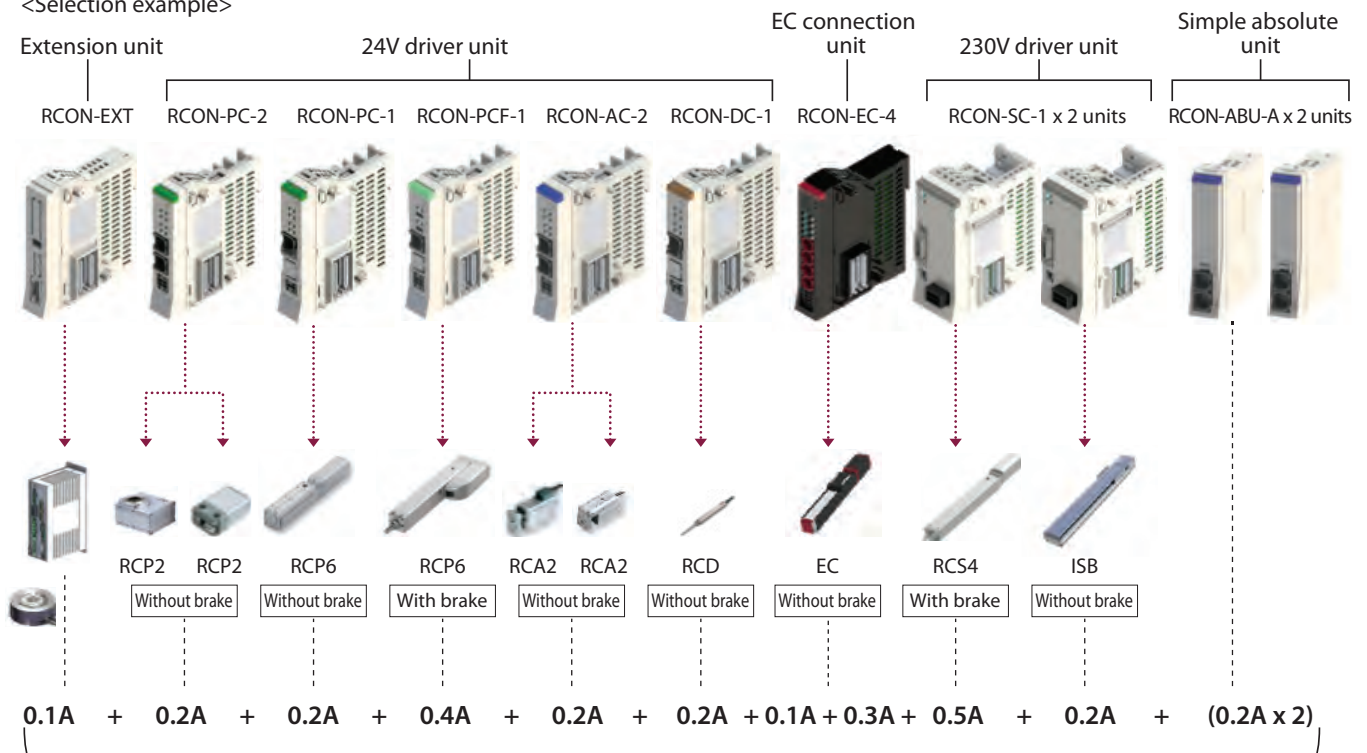
Total **2.8A** < **9.0A**

**OK**

(The total was confirmed to be 9.0A or less. If the value is larger than 9.0A, another gateway unit is required.)

## Step 11  Calculation of various unit motor power capacities (MP)

Make sure that the total motor power capacity of the units connected to RCON is as follows.

| Item | Average current |
|---|---|
| Motor power (MP) | 37.5A or less |

**How to check**

Add up while checking the "Motor power capacity list" below.
If the maximum current is listed, add the maximum current.
If not, add the rated current.

### ● 24V driver unit

| Item | Actuator/driver unit | | | | Rated current | Max. current | | <Selection example> |
|---|---|---|---|---|---|---|---|---|
| | | Series | Motor type | | | When energy-saving is set | | |
| Motor power capacity (per 1-axis actuator) | Pulse motor /RCON-PC | RCP2 RCP3 | 20P/20SP/28P | Without PowerCon | 0.8A | - | - | x 2 axes |
| | | | 28P*/35P/42P/56P | | 1.9A | - | - | |
| | | RCP4 RCP5 RCP6 | 28P/35P/42P/ 42SP/56P | Without PowerCon | 1.9A | - | - | |
| | | | | With PowerCon | 2.3A | - | 3.9A | x 1 axis |
| | Pulse motor /RCON-PCF | RCP2 RCP4 RCP5 RCP6 | 56SP/60P/ 86P | Without PowerCon | 5.7A | - | - | x 1 axis |
| | AC servo motor /RCON-AC | RCA RCA2 | 5W | Standard / Hi-accel./decel. | 1.0A | - | 3.3A | |
| | | | 10W | Standard / Hi-accel./decel. / Energy-saving | 1.3A | 2.5A | 4.4A | x 1 axis |
| | | | 20W | | 1.3A | 2.5A | 4.4A | x 1 axis |
| | | | 20W(20S) | | 1.7A | 3.4A | 5.1A | |
| | | | 30W | | 1.3A | 2.2A | 4.0A | |
| | — | | - | - | - | - | - | |
| | | | - | | - | - | - | |
| | | | - | | - | - | - | |
| | DC brush-less motor /RCON-DC | RCD | 3W | Standard | 0.7A | - | 1.5A | x 1 axis |

\* Applicable models: RCP2-RA3, RCP2-RGD3

### ● EC connection unit

| Item | Actuator/EC connection unit | | | | Power source current | | |
|---|---|---|---|---|---|---|---|
| | | Series | Motor type | Type | Energy-saving disabled | | Energy-saving enabled |
| | | | | | Power source current | Maximum | |
| Motor power capacity (per 1-axis actuator) | 24V pulse motor | EC | 35P/42P/56P | Other than the below | 2.3A | 3.9A | 1.9A |
| | | | 28P | S3□/RR3□ | - | - | 1.9A |
| | | | | RP4/GS4/GW4/TC4/TW4/ RTC9/GRB10/GRB13 | - | - | 1.7A |
| | | | 20P | GRB8 | - | - | 0.7A | x 1 axis |

<Selection example>

24V driver unit

EC connection unit

RCON-PC-2   RCON-PC-1   RCON-PCF-1   RCON-AC-2   RCON-DC-1   RCON-EC-4



| Actuator | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Series | RCP2 | RCP2 | RCP6 | RCP6 | RCA2 | RCA2 | RCD | EC |
| Motor type | 28P | 20P | 35P | 60P | 10W | 20W | 3W | 42P |

Total

$0.8A + 0.8A + 3.9A + 5.7A + 4.4A + 4.4A + 1.5A + 3.9A = $ **25.4A** $< 37.5A$

**OK**

(The total was confirmed to be 37.5A or less. If the value is larger than 37.5A, another gateway unit is required.)

## Step 12 · 230V motor power limiting

Make sure that the total motor wattage (W) of the actuators connected to RCON-SC is as follows.

*Some limitations apply. See "Actuators that cannot connect to R-units" (P. 46) for details.

| Connected power | Total max. output of connected axes |
|---|---|
| Single-phase 230VAC (*) | 1600W |

(*) Max. output of connected axes is 2400W, if three-phase 230VAC is connected.

**How to check**

Confirm the motor wattage (W) in the actuator specifications. For some models, it is necessary to calculate the power capacity using the "motor wattage for calculation." See P.52 for details.

<Selection example>

230V driver unit

RCON-SC-1 x 2 units

RCON-PS2-3 (*)

Single-phase 230VAC

(*) Only one RCON-PS2-3 can be used per RCON/RSEL system.

| Actuator | | |
|---|---|---|
| Series | RCS4 | ISB |
| Motor wattage (W) | 100W | 200W |

Total
= **300W** < 1600W

| OK |

## Step 13 · Fan unit selection

If the controller installation environment may exceed 40°C, a fan unit will be required. (Up to 55°C.) (*)

**(1) 24V driver unit fan unit**

The number of fan units is the total number of driver units divided by 2.

If the total number of 24V driver units is an odd number, add 1 to the total number and divide it by 2.

When ordering, be sure to specify the gateway unit model.

<Selection example>

24V driver units (5 units + 1) : 2 = 3 units

Fan unit [RCON-FU] x 3 units
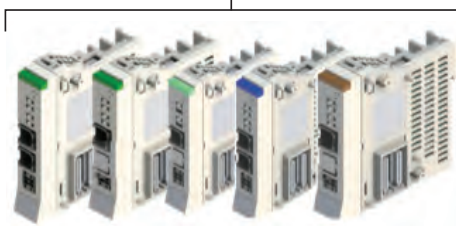
← Selection **8**

Note: The ambient operating temperature of the simple absolute unit is within the range of 0~40°C even when a fan unit is installed.

(*) The operating temperature of the gateway unit/driver unit is within the range of 0~55°C.

However, temperature derating may occur depending on whether a fan unit is installed.

Operation without derating is possible without a fan unit at 0 ~ 40°C;

however, at 40 ~ 55°C, actuator operating duty must be reduced by 20% every 5°C.
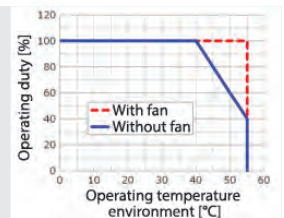
**(2) 230V driver unit and power supply unit fan units**

A single fan unit is always included with each installation unit. (There is no need to specify the model.)

<Selection example>

230V driver units x 2 units

RCON-FUH x 2 units (supplied)

230V power supply unit  RCON-FU x 1 unit (supplied)

## Step 14  Terminal units

Select the terminal unit to connect based on the unit connected to the left of the terminal unit.
(Units are designed to prevent incorrect connections. Confirm the model first before installing a unit.)

| Unit connected to left | Terminal unit single product model number | Supplied unit and cautions when ordering | |
|---|---|---|---|
| RCON-SC | RCON-GW-TRS | Supplied with 230V power supply unit (select "TRN (no terminal unit)" for the gateway unit option) | ← Selection ⑨ |
| Other than RCON-SC | RCON-GW-TR | Supplied with gateway unit | |

## Step 15  Unit models to be ordered

Order using the model name for each unit.

<Selection example>

| Order model (x number of units) | Name/specification | | |
|---|---|---|---|
| RCON-GW-CC-FU3-TRN | Gateway unit (with 3 fans, without terminal unit) | ① | ⑧ |
| RCON-EXT | SCON expansion unit | ⑥ | |
| RCON-PC-2 | 24V driver unit (RCP Series connection, 2-axis specification) | ② | |
| RCON-PC-1 | 24V driver unit (RCP Series connection, 1-axis specification) | ② | |
| RCON-PCF-1 | 24V driver unit (RCP Series connection, 1-axis specification, for high thrust) | ② | |
| RCON-AC-2 | 24V driver unit (RCA Series connection, 2-axis specification) | ② | |
| RCON-DC-1 | 24V driver unit (RCD Series connection, 1-axis specification) | ② | |
| RCON-ABU-A   x   2 units | Simple absolute unit (for RCA Series connection) | ③ | |
| RCON-EC-4 | EC connection unit | ④ | |
| RCON-PS2-3 | 230V power supply unit | ⑤ | ⑨ |
| RCON-SC-1   x   2 units | 230V driver unit | ⑤ | |
| SCON-***-RC | RCON connection specification SCON controller *Select the model to order based on the actuator to connect. | ⑦ | |



**Combined**
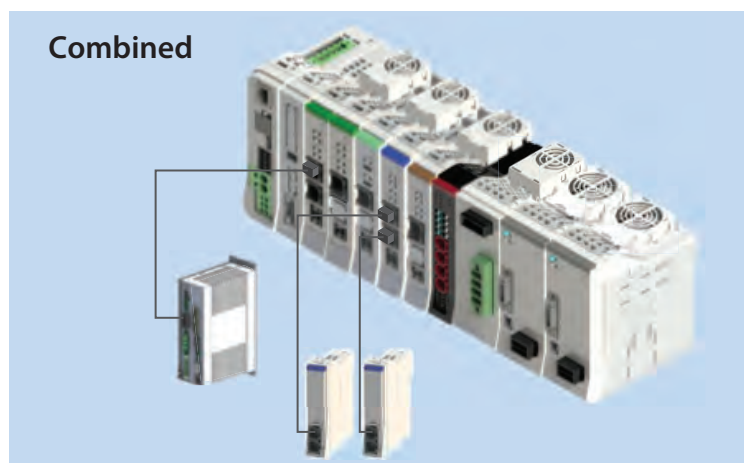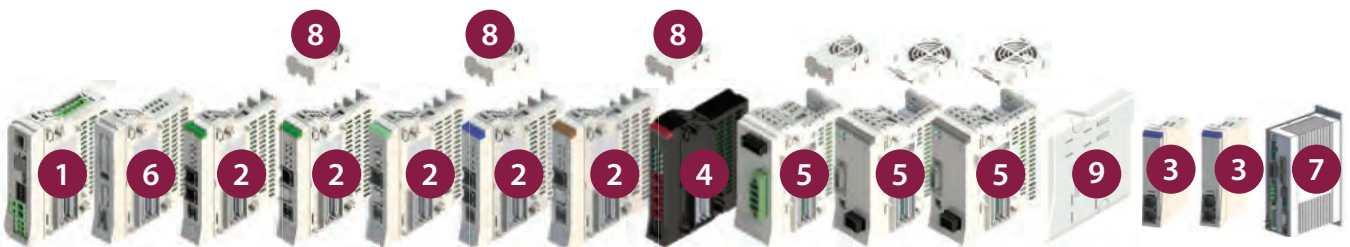
# RSEL Selection Method

## Step 1  Select the actuator to connect. (Up to 16 axes)

(Note) See P. 46 for non-connectable actuators and limitations on connection.
* Make sure to select optional "ACR" as the EleCylinder model.

\<Selection example\>
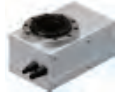
| RCS2 Series | RCA2 Series | RCP6 Series | WU Series | RCS4 Series | IS(P)B Series | EC Series |

## Step 2  SEL unit selection

Select the SEL unit model from the following I/O types.

| I/O type | | SEL unit model |
|---|---|---|
| Not used | | RSEL-G-E |
| PIO specification | NPN | RSEL-G-NP |
| | PNP | RSEL-G-PN |
| CC-Link | | RSEL-G-CC |
| | (Bifurcated connector supplied) | RSEL-G-CC2 |
| CC-Link IE Field | | RSEL-G-CIE |
| DeviceNet | | RSEL-G-DV |
| | (Bifurcated connector supplied) | RSEL-G-DV2 |
| EtherCAT | | RSEL-G-EC |
| EtherNet/IP | | RSEL-G-EP |
| PROFI BUS | | RSEL-G-PR |
| PROFI NET | | RSEL-G-PRT |

← Selection ①

**Caution:** Only one SEL unit can be connected per system. Split this among two or more units to connect more than the maximum connectable axes or if the power capacity is exceeded.

**Example: When connecting 14 axes**

❌ SEL unit — Actuators connected to the 24V driver unit: 14 axes

✓ SEL unit 8-axis + SEL unit 6-axis
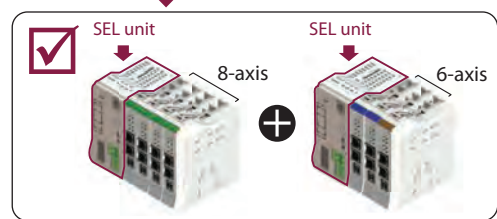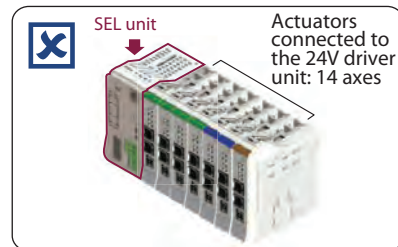
Maximum connectable axes to the driver unit and EC connection unit.
* 24V/230V driver unit: up to 8 axes
* EC connection unit:   up to 16 axes

## Step 3  Classify actuator types into three categories.

*See P. 46 for actuators that cannot be connected.

| Actuator type | | Selected actuator |
|---|---|---|
| Models with 24V motors | RCP2/3/4/5/6 Series<br>RCA/2 Series<br>RCD Series<br>WU Series | \<Selection example\><br>RCA2   RCP6   WU |
| Models with 230V motors | RCS2/3/4 Series<br>IS(D)B Series<br>SSPA Series<br>NS(A) Series<br>DD(A) Series | \<Selection example\><br>RCS2   RCS4   ISB   ISPB |
| EleCylinder (equipped with a 24 V motor) | EC Series | \<Selection example\><br>EC |

## Step 4 — 24V driver unit selection (models with 24V motors)

Select the driver unit model and number of units according to the series name and motor type of the actuator.

| Actuator | | 24V driver unit | | | <Selection example> | |
|---|---|---|---|---|---|---|
| Series | Motor type | External view | Number of axes connected to actuator | Model | Classification | Required units |
| RCP2 RCP3 RCP4 RCP5 RCP6 WU | 20P, 28P 35P, 42P 56P | Pulse motor | 2-axis specification | RCON-PC-2 | WU-S | 1 ← Selection 2 |
| | | | 1-axis specification | RCON-PC-1 | RCP6-RTFML | 1 ← Selection 2 |
| | High thrust motor 56SP, 60P 86P | | 1-axis specification | RCON-PCF-1 | - | - |
| RCA RCA2 | 2 5 10 20, 20S 30 | AC servo motor | 2-axis specification | RCON-AC-2 | - | - |
| | | | 1-axis specification | RCON-AC-1 | RCA2-GS3NA | 1 ← Selection 2 |
| RCD | 3D | DC brush-less motor | 2-axis specification | RCON-DC-2 | - | - |
| | | | 1-axis specification | RCON-DC-1 | - | - |

## Step 5 — Simple absolute unit selection

For actuators which are to use the simple absolute specification, select a number of simple absolute units (RCON-ABU-A/P) according to the number of axes.

* Connect to the driver unit with a cable (CB-ADPC-MPA005).
  The cable is supplied with the simple absolute unit.
Note: The ambient operating temperature of the simple absolute unit is within the range of 0~40℃.

RCON-ABU-A    RCON-ABU-P    Simple absolute battery

<Selection example>

This is an example in which an RCA2 Series actuator is selected for simple absolute specification.

RCON-AC-1

RCA2-GS3NA

**Actuators to be made compatible with simple absolute**

Simple absolute unit
RCON-ABU-A
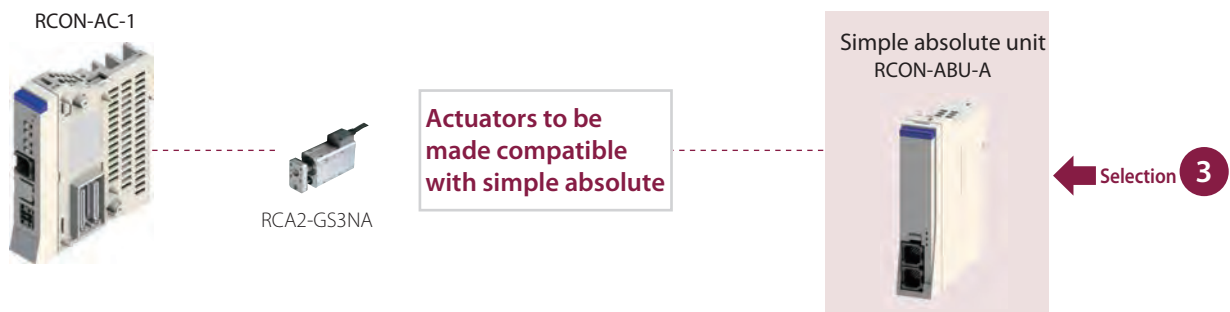
← Selection 3

## Step 6 — Selection of EC connection unit (EleCylinder model)

For connection of the EC Series, select the necessary number of connection units according to the number of connected EC units.

| Actuator | | EC connection unit | | | <Selection example> | |
|---|---|---|---|---|---|---|
| Series | Motor type | External view | Number of axes connected to actuator | Model | Classification | Required units |
| EC | 28P, 35P 42P, 56P | | 4-axis specification | RCON-EC-4 | EC-RR6    EC-GRB10 | 1 ← Selection 4 |

## Step 7 | Classify models with 230V motors into two categories.

Models are classified as axes connected to a 230V driver unit and axes connected to an extension unit.

| Connection unit | Actuator specifications | Selected actuator | |
|---|---|---|---|
| 230V driver unit | Specification that meets all conditions below<br>(Motor wattage [W])<br>60W~750W<br>(Encoder type)<br>Incremental<br>Battery-less Absolute | RCS4-WRA16R-WA-400 | IS(P)B-LXL-WA-400 |
| Extension unit | Specification other than above | RCS2-RTC8L-I-20 | *This is because the 20W specification cannot be connected to RCON-SC. |

## Step 8 | 230V driver unit selection

Select one 230V power supply unit and a number of driver units according to the actuators to connect.

| Unit name | External view | Number of axes connected to actuator | Model | <Selection example> | |
|---|---|---|---|---|---|
| | | | | Classification | Required units |
| 230V power supply unit | | - | RCON-PS2-3 | - | 1 ← Selection 5 |
| 230V driver unit | | 1-axis specification | RCON-SC-1 | RCS4    ISB | 3 ← Selection 5 |

## Step 9 | Extension unit selection

(1) Select only one of two models listed below if there are any 230VAC servo actuators connected with an extension unit. (Those two different type can not be used in one system.)

| Unit name | External view | Number of axes connected to actuator | Model | <Selection example> | |
|---|---|---|---|---|---|
| | | | | Classification | Required units |
| SCON extension unit | | Max. 8 axes | RCON-EXT | - | - |
| PIO/SIO/SCON extension unit | | Max. 8 axes | RCON-EXT-NP/PN | RCS2-RTC8L-I-20 | 1 ← Selection 6 |

(2) Select a number of controllers (SCON) to connect through the expansion unit according to the number of connected actuators.      *A number of SCONs must be purchased according to the number of connected axes. (Max. number of connections: 8 axes.)

| Controller | External view | Number of axes connected to actuator | I/O type | <Selection example> | |
|---|---|---|---|---|---|
| | | | | Classification | Required units |
| SCON-CB/CGB | | 1-axis specification | SCON-**-RC-* | RCS2-RTC8L-I-20 | 1 ← Selection 7 |

## ● Example of connecting an SCON connection expansion unit and SCON-CB

One cable (CB-RE-CTL002) is supplied as standard with SCON-CB for RSEL connection.
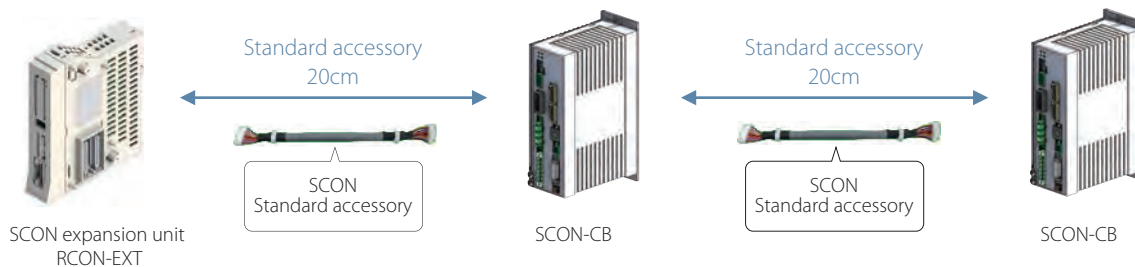


| | | | | |
|---|---|---|---|---|
| SCON expansion unit RCON-EXT | Standard accessory 20cm / SCON Standard accessory | SCON-CB | Standard accessory 20cm / SCON Standard accessory | SCON-CB |

| Additional information | If the connection cable is too short, purchase a separate cable to make the connection. |
|---|---|

Model: CB-RE-CTL□□□
See P. 85

**x Required number of units**

Caution: The maximum cable length between devices is 3m. The total cable length is 10m (max.).

(3) When selecting a PIO unit

A PIO unit can be connected to increase the number of PIO IO points. (The maximum number of input points is 144 and maximum number of output points is 144.)
There are 16 input points and 16 output points for a single unit, with a maximum of 8 units connected.
(If connecting a PIO/SIO/SCON expansion unit, the maximum will be 7 units.)

If the number of input points or output points is evenly divisible by 16, order that number of PIO units.
If the number is not evenly divisible, order a number of PIO expansion units equal to the number rounded up to the next whole number.

<Selection example>
In this example, the number of PNP specification IO points is increased by 24 input points and 20 output points.

PIO unit [RCON-PN]

**24 input points : 16 = 1.5** ➡ **2 units**

Selection **8**

## Step 10 Calculation of various unit control power capacities (CP)

Make sure that the total control power capacity of the units connected to RSEL is as follows.

| Item | Average current |
|---|---|
| Control power (CP) | 9.0A or less |

**How to check**

Add up while checking the "Control power capacity list" below.

### Control power capacity list

| Item | Specification | | | Power capacity | <Selection example> |
|---|---|---|---|---|---|
| Control power capacity (per unit) | Master unit (including terminal unit) | SEL unit | | 1.2A | |
| | 24V driver unit (common for all types) | Without brake | | 0.2A | x 1 unit |
| | | With brake (1-axis specification) | | 0.4A | x 1 unit |
| | | With brake (2-axis specification) | | 0.6A | x 1 unit |
| | 230V driver unit | Without brake | | 0.2A | |
| | | With brake | | 0.5A | x 3 units |
| | Extension unit (common for all types) | | | 0.1A | x 3 units |
| | Simple absolute unit (common to all types) | | | 0.2A | x 1 unit |
| | EC connection unit (per unit) | | | 0.1A | x 1 unit |
| | 24V specification EleCylinder (per axis) | Without brake | | 0.3A | x 1 unit |
| | | With brake | | 0.5A | x 1 unit |
| | 230V specification EleCylinder (per axis) | Without brake | | 0.32A | |
| | | With brake | EC-S10☐ /S10X☐ | 0.54A | |
| | | | EC-S13☐ /S13X☐ | 1.2A | |
| | | | EC-S15☐ /S15X☐ | | |

\* For selection of the unit, power capacity of the master unit is not included in calculation.
   However, for 24V power selection, include the master unit power capacity.

<Selection example>



| Extension unit | 24V driver unit | EC connection unit | 230V driver unit | Simple absolute unit |
|---|---|---|---|---|
| RCON-EXT-PN  RCON-PN x 2 units | RCON-PC-2  RCON-PC-1  RCON-AC-1 | RCON-EC-4 | RCON-SC-1 x 3 units | RCON-ABU-A |

|  |  |  | WU With brake | RCP6 With brake | RCA2 Without brake | EC With brake | EC Without brake | RCS4 With brake | ISB With brake | ISPB With brake |
|---|---|---|---|---|---|---|---|---|---|---|

0.1A  +  0.1A  +  0.1A  +  0.6A  +  0.4A  +  0.2A + 0.1A + 0.5A + 0.3A  +  0.5A  +  0.5A  + 0.5A + 0.2A

Total **4.1A** < **9.0A**

**OK**

(The total was confirmed to be 9.0A or less. If the value is larger than 9.0A, another SEL unit is required.)

# Step 11 Calculation of various unit motor power capacities (MP)

Make sure that the total motor power capacity of the units connected to RSEL is as follows.

| Item | Average current |
|---|---|
| Motor power (MP) | 37.5A or less |

**How to check**

Add up while checking the "Motor power capacity list" below.
If the maximum current is listed, add the maximum current.
If not, add the rated current.

## ● 24V driver unit

| Item | Actuator/driver unit | | | | Rated current | Max. current | | \<Selection example\> |
|---|---|---|---|---|---|---|---|---|
| | Series | Motor type | | | | When energy-saving is set | | |
| Motor power capacity (per 1-axis actuator) | Pulse motor /RCON-PC | RCP2 RCP3 | 20P/20SP/28P | Without PowerCon | 0.8A | - | - | |
| | | | 28P*/35P/42P/56P | Without PowerCon | 1.9A | - | - | |
| | | RCP4 RCP5 RCP6 WU | 28P/35P/42P/ 42SP/56P | Without PowerCon | 1.9A | - | - | |
| | | | | With PowerCon | 2.3A | - | 3.9A | x **3** axes |
| | Pulse motor /RCON-PCF | RCP2 RCP4 RCP5 RCP6 | 56SP/60P/86P | Without PowerCon | 5.7A | - | - | |
| | AC servo motor /RCON-AC | RCA RCA2 | 5W | Standard / Hi-accel./decel. | 1.0A | - | 3.3A | |
| | | | 10W | Standard / High accel/decel / Energy saving | 1.3A | 2.5A | 4.4A | |
| | | | 20W | | 1.3A | 2.5A | 4.4A | x **1** axis |
| | | | 20W(20S) | | 1.7A | 3.4A | 5.1A | |
| | | | 30W | | 1.3A | 2.2A | 4.0A | |
| | DC brush-less motor /RCON-DC | RCD | 3W | Standard | 0.7A | - | 1.5A | |

\* Applicable models: RCP2-RA3, RCP2-RGD3

## ● EC connection unit

| Item | Actuator / connection unit | | | | Power source current | | | \<Selection example\> |
|---|---|---|---|---|---|---|---|---|
| | Series | Motor type | Type | | Energy-saving disabled | | Energy-saving enabled | |
| | | | | | Power source current | Maximum | | |
| Motor power capacity (per 1-axis actuator) | 24V pulse motor | EC | 35P/42P/56P | Other than specified below | 2.3A | 3.9A | 1.9A | x **1** axis |
| | | | 28P | S3□/RR3□ | - | - | 1.9A | |
| | | | | RP4/GS4/GW4/TC4/TW4/ RTC9/GRB10/GRB13 | - | - | 1.7A | x **1** axis |
| | | | 20P | GRB8 | - | - | 0.7A | |

\<Selection example\>

24V driver unit

RCON-PC-2　RCON-PC-1　RCON-AC-1

EC connection unit

RCON-EC-4



| Actuator | | | | | |
|---|---|---|---|---|---|
| Series | WU | RCP6 | RCA2 | EC | EC |
| Motor type | 28P | 42P | 10W | 42P | 28P |

Total

(3.9A　x　2) + 3.9A　+　4.4A　+　3.9A　+　1.7A = **21.7A** < 37.5A

OK

(The total was confirmed to be 37.5A or less. If the value is larger than 37.5A, another SEL unit is required.)

## Step 12  230V motor power limiting

Make sure that the total motor wattage (W) of the actuators connected to RCON-SC is as follows.

*Some limitations apply. See "Actuators that cannot connect to R-units" (P. 46) for details.

| Connected power | Total max. output of connected axes |
|---|---|
| Single-phase 230VAC (*) | 1600W |

(*) Max. output of connected axes is 2400W, if three-phase 230VAC is connected.

### How to check

Confirm the motor wattage (W) in the actuator specifications. For some models, it is necessary to calculate the power capacity using the "motor wattage for calculation." See P.52 for details.

<Selection example>

230V driver unit

RCON-SC-1 x 3 units

RCON-PS2-3 (*)

(*) Only one RCON-PS2-3 can be used per RCON/RSEL system.

Single-phase 230VAC

| Actuator | | | |
|---|---|---|---|
| Series | RCS4 | ISB | ISPB |
| Motor wattage (W) | 400W | 400W | 400W |

Total
= **1200W** < **1600W**
**OK**

## Step 13  Fan unit selection

If the controller installation environment may exceed 40°C, a fan unit will be required. (Up to 55°C.) (*)

### (1) SEL unit and 24V driver unit fan units

A single fan unit can be installed to a SEL unit.

The number of fan units for 24V driver units is the total number of 24V driver units divided by 2.

If the total number of 24V driver units is an odd number, add 1 to the total number and divide it by 2.

When ordering, be sure to specify the number of units for the SEL unit model.
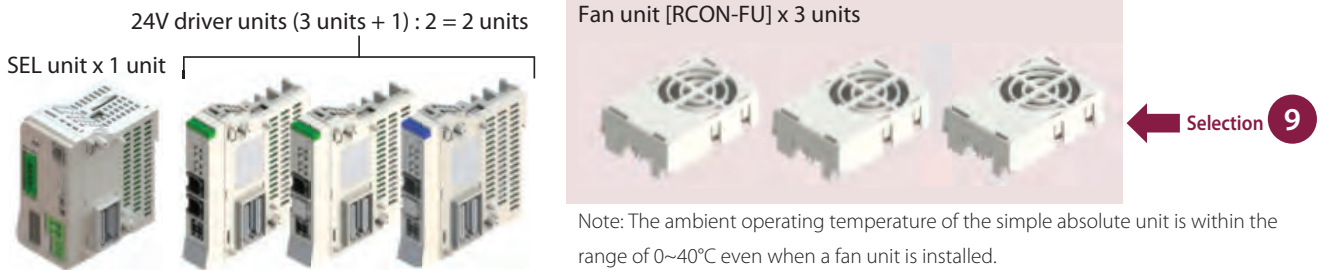
<Selection example>

24V driver units (3 units + 1) : 2 = 2 units

SEL unit x 1 unit

Fan unit [RCON-FU] x 3 units

← Selection ⑨

Note: The ambient operating temperature of the simple absolute unit is within the range of 0~40°C even when a fan unit is installed.

(*) The operating temperature of the gateway unit/driver unit is within the range of 0~55°C.

However, temperature derating may occur depending on whether a fan unit is installed.

Operation without derating is possible without a fan unit at 0 to 40°C;

however, at 40 to 55°C, actuator operating duty must be reduced by 20% every 5°C.

### (2) 230V driver unit and 230V power supply unit fan units

A single fan unit is always included with each installation unit. (There is no need to specify the model.)

<Selection example>

230V driver units x 3 units

RCON-FUH x 3 units (supplied)

230V power supply unit

RCON-FU x 1 unit (supplied)

## Step 14 Terminal units

Select the terminal unit to connect based on the unit connected to the left of the terminal unit.
(Units are designed to prevent incorrect connections. Confirm the model first before installing a unit.)

| Unit connected to left | Terminal unit single product model number | Supplied unit and cautions when ordering | |
|---|---|---|---|
| RCON-SC | RCON-GW-TRS | Supplied with 230V power supply unit (select "TRN (no terminal unit)" for the SEL unit option). | ← Selection 10 |
| Other than RCON-SC | RCON-GW-TR | Supplied with SEL unit. | |

## Step 15 Unit models to be ordered

Order using the model name for each unit.

<Selection example>

| Order model (x number of units) | Name/specification | |
|---|---|---|
| RSEL-G-DV2-FU3-TRN | SEL unit (with 3 fans, without terminal unit) | 1  9 |
| RCON-EXT-NP | PIO/SIO/SCON extension unit | 6 |
| RCON-NP      x      2 units | PIO unit | 8 |
| RCON-PC-2 | 24V driver unit      (RCP Series connection, 2-axis specification) | 2 |
| RCON-PC-1 | 24V driver unit      (RCP Series connection, 1-axis specification) | 2 |
| RCON-AC-1 | 24V driver unit      (RCA Series connection, 1-axis specification) | 2 |
| RCON-ABU-A | Simple absolute unit      (for RCA Series connection) | 3 |
| RCON-EC-4 | EC connection unit | 4 |
| RCON-PS2-3 | 230V power supply unit | 5  10 |
| RCON-SC-1      x      3 units | 230V driver unit | 5 |
| SCON-***-RC | RCON connection specification SCON controller *Select the model to order based on the actuator to connect. | 7 |

3

**Combined**

# REC
## Selection Method
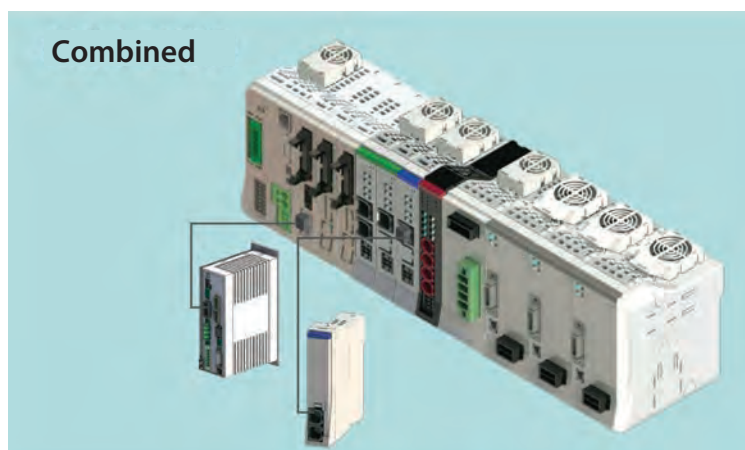
**Step 1** Select the EleCylinder with ACR option to connect. (Up to 16 axes.)

<Selection example>

| EC-S6□AH | EC-S7□AH | EC-S3 | EC-TC4 | EC-GS4 | EC-RR6 | EC-S13 |

\* Only EC with ACR option can be connected to RCON-EC unit.

**Step 2** EC gateway unit selection

Select the EC gateway unit model from the network type.

| Network type | Gateway unit model |
|---|---|
| CC-Link | REC-GW-CC |
| CC-Link IE Field | REC-GW-CIE |
| DeviceNet | REC-GW-DV |
| EtherCAT | REC-GW-EC |
| EtherNet/IP | REC-GW-EP |
| PROFIBUS® | REC-GW-PR |
| PROFINET® | REC-GW-PRT |

← Selection **1**

**Caution** Only one EC gateway unit can be connected per system.
Split this among two or more units to connect 17 or more axes or if the power capacity is exceeded.

**Example: When connecting 20 axes**

EC gateway unit
20-axis

EC gateway unit    EC gateway unit
16-axis            4-axis
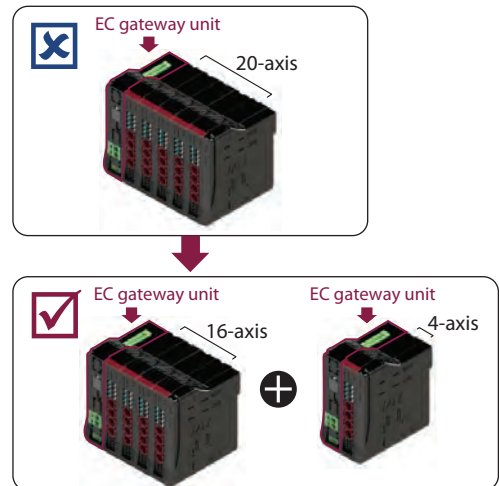
**Step 3** EC connection unit selection

Up to 4 axes of EleCylinder can be connected to one EC connection unit.
Select the required number of EC connection units based on the number of units for connecting EleCylinder.

| Actuator | EC connection unit | | | <Selection example> | |
|---|---|---|---|---|---|
| Series | External view | Number of axes connected to actuator | Model | Classification | Required units |
| EC | | 4-axis specification | RCON-EC-4 | EC Series x 7 axes | 2 |

← Selection **2**

## Step 4   Calculation of control power capacity (CP)

Confirm that the total control power capacity of each unit connected to REC and EleCylinder is less than the value specified below.

| Item | Average current |
|---|---|
| Control power (CP) | Less than 9.0A |

**How to check**

Add up referring to the "Control power capacity table" below.

| Item | Specification | | | Power source current | |
|---|---|---|---|---|---|
| Control power capacity | Master unit | | | 0.8A | |
| | EC connection unit | | | 0.1A | x **2** axes |
| | 24V specification EleCylinder (per unit) | Without brake | | 0.3A | x **4** axes |
| | | With brake | | 0.5A | x **2** axes |
| | 230V specification EleCylinder (per axis) | Without brake | | 0.32A | |
| | | With brake | EC-S10□/S10X□ | 0.54A | |
| | | | EC-S13□/S13X□ | 1.2A | x **1** axis |
| | | | EC-S15□/S15X□ | | |

\* Power capacity of the master unit is not included in calculation.

&lt;Selection example&gt;



| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Without brake | Without brake | With brake | Without brake | | Without brake | With brake | With brake |

0.1A   +   0.3A   +   0.3A   +   0.5A   +   0.3A   +   0.1A   +   0.3A   +   0.5A   +   1.2A

Total   **3.6A** < **9.0A**

**OK**

(It is confirmed that the current is less than 9.0A. If it is greater than 0.9A, another gateway unit is needed.)

## Step 5  Calculation of motor power capacity (MP)

Make sure that the total motor power capacity of the units connected to REC is as follows.

| Item | Average current |
|---|---|
| Motor power (MP) | 37.5A or less |

**How to check**

Add up while checking the "Motor power capacity list" below.
If the maximum current is listed, add the maximum current.
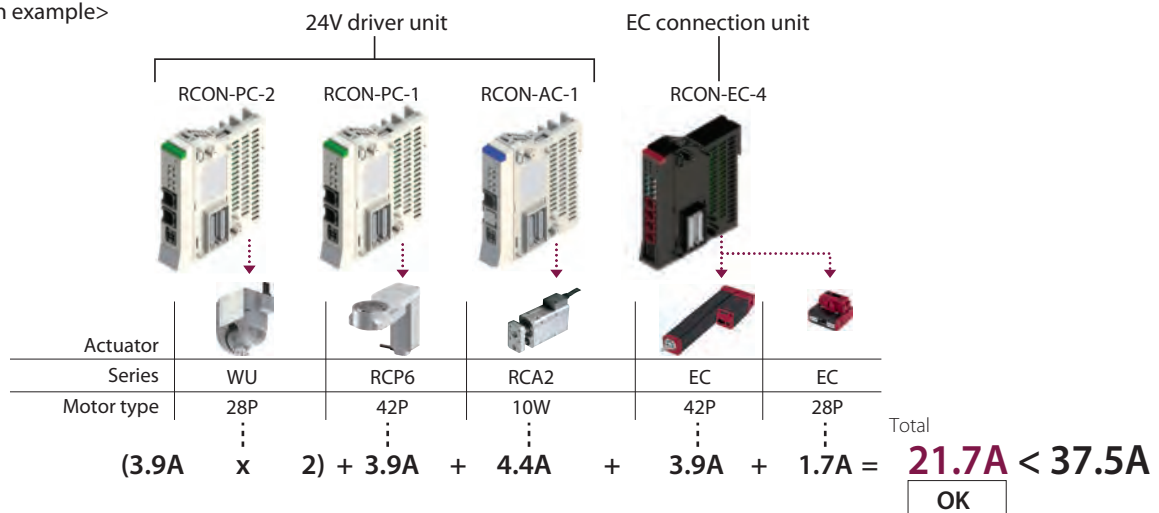If not, add the rated current.

### Motor power capacity list

| Item | Actuator / connection unit | | | | Power source current | | | <Selection example> |
|---|---|---|---|---|---|---|---|---|
| | | Series | Motor type | Type | Energy-saving disabled | | Energy-saving enabled | |
| | | | | | Rate current | Maximum | | |
| Motor power capacity (per 1-axis actuator) | 24V pulse motor | EC | 35P/42P/56P | Other than the below | 2.3A | 3.9A | 1.9A | x **3** axes |
| | | | 28P | S3□/RR3□ | - | - | 1.9A | x **1** axis |
| | | | | RP4/GS4/GW4/TC4/TW4/RTC9/GRB10/GRB13 | - | - | 1.7A | x **2** axes |
| | | | 20P | GRB8 | - | - | 0.7A | |

<Selection example>

EC connection unit

RCON-EC-4 x 2



| Actuator | | | | | | |
|---|---|---|---|---|---|---|
| Series | S6 | S6 | RR3 | TC4 | GS4 | RR7*R |
| Motor type | 42P | 42P | 28P | 28P | 28P | 56P |

Total

$$3.9A + 3.9A + 1.9A + 1.7A + 1.7A + 3.9A = \textbf{17.0A} < \textbf{37.5A}$$

**OK**

(The total was confirmed to be 37.5A or less. If the value is larger than 37.5A, another EC gateway unit is required.)

## Step 6  Selection of 230V specification motor power

When connecting a 230V specification EleCylinder, determine the number of power supply units for DC motors according to the total motor wattage.

**DC power source for driving motors**

| Connecting power | Max. connectable axes (per power supply unit) | Max. connecting motor wattage |
|---|---|---|
| PSA-200-2 (AC230V) | 6 axes | 1600W |

**How to check**

Confirm the motor wattage from the actuator specification.

<Selection example>

DC power source (AC230V)

| Series | EC-S13 |
|---|---|
| Motor wattage | 200W |

Total
= **200W** < **1600W (one unit)**

OK

## Step 7  Unit models to be ordered

Order using the model name for each unit.

<Selection example>

| Order model (x number of units) | Name/specification | |
|---|---|---|
| REC-GW-CC | EC gateway unit (with terminal unit) | 1 |
| RCON-EC-4   x   2 units | EC connection unit | 2 |

**Combined**

RCON          RSEL          REC

(1) (3)    (2)    (4) (6)    (2)        (1)    (3)    (2)    (6)    (2)        (1)    (4)

(5)                              (5)
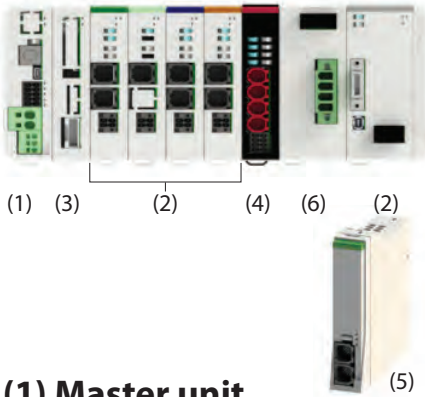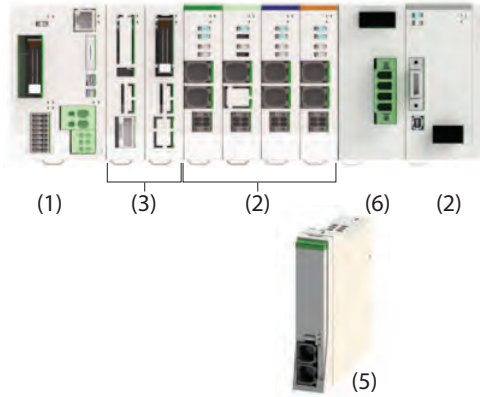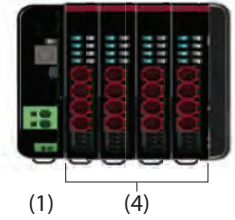
## (1) Master unit

RCON – ☐ – ☐ – ☐

Series          Type          I/O type          Options

| GW | Standard type |
|---|---|
| GWG | Safety category spec type |

| CC | CC-Link connection specification |
|---|---|
| CIE | CC-Link IE Field connection specification |
| DV | DeviceNet connection specification |
| EC/ ECM | EtherCAT/ EtherCAT motion connection specification |
| EP | EtherNet/IP connection specification |
| PR | PROFIBUS-DP connection specification |
| PRT | PROFINET IO connection specification |

| ET | Ethernet-equipped |
|---|---|
| FU☐ | Fan unit mounting (☐: Specify the number of units, 1 ~ 8) |
| TRN | Without terminal unit |

*. For fan units, this is the number connected to the 24V driver unit.
· A terminal unit is required during operation.
  However, when connecting/ordering an RCON-SC, connect the terminal unit supplied with the 230V power supply unit.

RSEL – G – ☐ – ☐ – ☐

Series          Type          I/O type          I/O Cable Length          Options

| E | Not used |
|---|---|
| NP | PIO specification (NPN16/16) |
| PN | PIO specification (PNP16/16) |
| CC | CC-Link connection specification |
| CC2 | CC-Link connection specification (bifurcated connector supplied) |
| CIE | CC-Link IE Field connection specification |
| DV | DeviceNet connection specification |
| DV2 | DeviceNet connection specification (bifurcated connector supplied) |
| EC | EtherCAT connection specification |
| EP | EtherNet/IP connection specification |
| PR | PROFIBUS-DP connection specification |
| PRT | PROFINET IO connection specification |

| 0 | Without cable |
|---|---|
| 2 | 2m (Standard) |
| 3 | 3m |
| 5 | 5m |

*If a specification other than PIO was selected for the I/O type, this will be "0 (without cable)".

| FU☐ | Fan unit mounting (☐: Specify the number of units, 1 ~ 5) |
|---|---|
| TRN | Without terminal unit |

*. For fan units, this is the number connected to the master unit and 24V driver unit.
· A terminal unit is required during operation.
  However, when connecting/ordering an RCON-SC, connect the terminal unit supplied with the 230V power supply unit.

REC – GW – ☐ – ☐

Series          Type          I/O type          Options

| CC | CC-Link connection specification |
|---|---|
| CIE | CC-Link IE Field connection specification |
| DV | DeviceNet connection specification |
| EC | EtherCAT connection specification |
| EP | EtherNet/IP connection specification |
| PR | PROFIBUS-DP connection specification |
| PRT | PROFINET IO connection specification |

| TRN | Without terminal unit |
|---|---|

* A terminal unit is required during operation.

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## (2) Driver unit

RCON – ☐☐ – ☐

| | |
|---|---|
| Series | Type |

**Type**

| PC | Pulse motor |
|---|---|
| PCF | High thrust pulse motor |
| AC | AC servo motor |
| DC | DC brush-less motor |
| SC | 230V AC servo motor |

**Number of Axes**

| 1 | 1-axis specification |
|---|---|
| 2 | 2-axis specification |

*Type: Only 1-axis can be selected for PCF and SC.

24V specification

| | | | |
|---|---|---|---|
| Type: PC 1.2A motor 1 axis 2 axes | | 20P | 20☐ pulse motor |
| | | 20SP | 20☐ pulse motor (For RA2AC/RA2BC) |
| | | 28P | 28☐ pulse motor |
| | | 35P | 35☐ pulse motor |
| | | 42P | 42☐ pulse motor |
| | | 42SP | 42☐ pulse motor (For RCP4-RA5C) |
| | | 56P | 56☐ pulse motor |
| Type: PCF 4A motor 1 axis | | 56SP | 56☐ high thrust pulse motor |
| | | 60P | 60☐ high thrust pulse motor |
| | | 86P | 86☐ high thrust pulse motor |

| | | |
|---|---|---|
| Type: AC 2-30W motor 1 axis 2 axes | 2 | 2W servo motor |
| | 5 | 5W servo motor |
| | 10 | 10W servo motor |
| | 20 | 20W servo motor |
| | 20S | 20W servo motor (For RCA2-SA4/RCA-RA3) |
| | 30 | 30W servo motor |

| | | |
|---|---|---|
| Type: DC 3D motor 1 axis 2 axes | 3D | 2.5W DC brush-less motor |

230V specification

| | | |
|---|---|---|
| Type: SC 60-750W motor 1 axis | 30R | 30W (for RS) |
| | 60 | 60W servo motor |
| | 100 | 100W servo motor |
| | 150 | 150W servo motor |
| | 200 | 200W servo motor |
| | 200S | 200W servo motor (for DD) |
| | 400 | 400W servo motor |
| | 600 | 600W servo motor |
| | 750 | 750W servo motor |

## (3) Extension unit

RCON – ☐☐ – ☐

| | |
|---|---|
| Series | Extension |

**Extension**

| EXT | SCON extension |
|---|---|
| EXT-NP | PIO/SIO/SCON extension (NPN specification) |
| EXT-PN | PIO/SIO/SCON extension (PNP specification) |
| NP | PIO (NPN specification) |
| PN | PIO (PNP specification) |

**I/O Cable Length**

| 0 | No cable |
|---|---|
| 2 | 2m (Standard) |
| 3 | 3m |
| 5 | 5m |

*No I/O cable length selection required if SCON extension (EXT) is selected.

## (4) EC connection unit

RCON – EC – 4

| | | |
|---|---|---|
| Series | Type | Number of Axes |

* EC without ACR option cannot be connected to RCON-EC even though the cable for RCON-EC connection is used.

## (5) Simple absolute unit

RCON – ABU – ☐

| | | |
|---|---|---|
| Series | Absolute Unit | Type |

**Type**

| P | Pulse motor |
|---|---|
| A | AC servo motor |

## (6) 230V power supply unit

RCON – PS2 – 3 – ☐

| | | | |
|---|---|---|---|
| Series | Type | Power supply voltage | Options |

**Power supply voltage**

| 3 | Three-phase/single-phase 230V |
|---|---|

**Options**

| TRN | Without terminal unit |
|---|---|

Only one RCON-PS2-3 can be used per RCON/RSEL.

## (7) SCON controller (RCON-EXT connection specification)

SCON – ☐ – ☐ – ☐ – ☐ – RC – 0 – ☐

| | | | | | | |
|---|---|---|---|---|---|---|
| Type | Motor type | Encoder Type | Options | I/O type | I/O Cable Length | Power supply voltage |

Contact IAI for model selection items

# (1) Master unit

| Model | RCON-GW/GWG | | | | | | |
|---|---|---|---|---|---|---|---|
| **I/O type** | Field network | | | | | | |
| | CC-Link | CC-Link IE Field | DeviceNet | EtherCAT | EtherNet/IP | PROFIBUS | PROFINET |
| | CC-Link connection specification | CC-Link IE Field connection specification | DeviceNet connection specification | EtherCAT connection specification | EtherNet/IP connection specification | PROFIBUS-DP connection specification | PROFINET IO connection specification |
| I/O type model number | CC | CIE | DV | EC | EP | PR | PRT |
| Without fan | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| With 24V driver fan — FU1 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| FU2 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| FU3 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| FU4 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| FU5 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| FU6 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| FU7 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| FU8 | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

| Model | RSEL-G | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **I/O type** | | PIO connection | | Field network | | | | | | |
| | Not used | NPN specification | PNP specification | CC-Link | CC-Link IE Field | DeviceNet | EtherCAT | EtherNet/IP | PROFIBUS | PROFINET |
| | | | | CC-Link connection specification | CC-Link IE Field connection specification | DeviceNet connection specification | EtherCAT connection specification | EtherNet/IP connection specification | PROFIBUS-DP connection specification | PROFI NET connection specification |
| I/O type model number | E | NP | PN | CC/CC2 | CIE | DV/DV2 | EC | EP | PR | PRT |
| Without fan | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| With 24V driver fan — FU1 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| FU2 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| FU3 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| FU4 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| FU5 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

| Model | REC-GW | | | | | | |
|---|---|---|---|---|---|---|---|
| **I/O type** | Field network | | | | | | |
| | CC-Link | CC-Link IE Field | DeviceNet | EtherCAT | EtherNet/IP | PROFIBUS | PROFINET |
| | CC-Link connection specification | CC-Link IE Field connection specification | DeviceNet connection specification | EtherCAT connection specification | EtherNet/IP connection specification | PROFIBUS-DP connection specification | PROFI NET connection specification |
| I/O type model number | CC | CIE | DV | EC | EP | PR | PRT |

## (2) Driver unit

| Series code | | RCON | | | |
|---|---|---|---|---|---|
| Motor type | | 24V | | | 230V |
| | | Pulse motor | | AC servo motor | DC brush-less motor | AC servo motor |
| | | Standard type | High thrust type | | | |
| Type code | | PC | PCF | AC | DC | SC |
| Number of Axes | 1 | ○ | ○ | ○ | ○ | ○ |
| | 2 | ○ | — | ○ | ○ | — |

## (3) Extension unit

| Series code | RCON | | | | |
|---|---|---|---|---|---|
| Type name | SCON extension | PIO/SIO/SCON extension | | PIO | |
| | | NPN specification | PNP specification | NPN specification | PNP specification |
| Type code | EXT | EXT-NP | EXT-PN | NP | PN |

## (4) EC connection unit

| Series code | RCON |
|---|---|
| Type name | EC connection unit |
| Type code | EC-4 |

## (5) Simple absolute unit

| Series model | RCON | |
|---|---|---|
| Motor type | Pulse motor | AC servo motor |
| Type code | ABU-PC | ABU-AC |

## (6) 230V power supply unit

| Series code | RCON |
|---|---|
| Type name | 230V power supply unit |
| Type code | PS2-3 |

## (7) SCON controller (RCON-EXT connection specification)

| Model | SCON-CB/CGB | |
|---|---|---|
| I/O type | RCON connection specification | |
| I/O type model number | RC | |
| Supported encoders | Battery-less absolute Incremental Absolute Index absolute | Absolute Absolute multi-rotation |
| 12~150W | ○ | ○ |
| 200W | ○ | ○ |
| (100S/200S/300S) | ○ | ○ |
| 300~400W | ○ | ○ |
| 600W | ○ | ○ |
| 750W | ○ | ○ |
| 3000~3300W | ○ | — |

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# RCON

**PLC**

**Field network** — DeviceNet, CC-Link, CC-Link IE Field, EtherCAT, EtherNet/IP, PROFIBUS-DP, PROFINET IO

For RC/EC PC Software: USB cable

For RCM-101-USB: Supplied with PC teaching software

**RCON-EXT connection specification SCON controller [I/O type: RC]**

Motor power Three-phase/single-phase 230VAC

## Motor-encoder cables / power/communication cables (EC connection) *1

**Connectable actuators**

**Connection with "extension unit"**
RCS2/3/4 Series
IS(D)B Series
SSPA Series
DD(A) Series
*See P. 46 for actuators that cannot be connected.

**Connection with "24V driver unit"**
RCP2/3/4/5/6 Series
RCA/2 Series
RCD Series

**Connection with "EC connection unit"**
EC Series *2

**Connection with "230V driver unit"**
(60W~750W equipped actuator)
RCS2/3/4 Series
IS(D)B Series
SSPA Series
DD(A) Series
*See P. 40 for actuators that cannot be connected.

*1 The motor/encoder cable is supplied with the actuator.
The motor/encoder cables are different according to the actuator type to be connected.
Prepare power/communication cables separately for the number of connected axes.
See P. 79 for information on ordering single cables.

*2 The EleCylinder can operate only a double solenoid.
When connecting a 230V specification, a DC power supply for motor driving is needed. See P. 77 for details.

Note 1: A 60W regenerative resistor is built-in both RCON-SC and RCON-PS2.
There is generally no need for regenerative resistance. However, if there is insufficient regenerative resistance, use the external "regenerative resistance unit".

## Unit Configuration

RCON has a locking configuration and uses the unit connection method. Units that can be connected will have the same connector.
However, there are restrictions on unit arrangement. Connect each unit with these restrictions in mind.
Connect each prepared unit in order starting from the left, with the gateway unit serving as the standard unit when looking at the front surface.
*The system will not operate normally if units are not connected in the following order.



Connection order
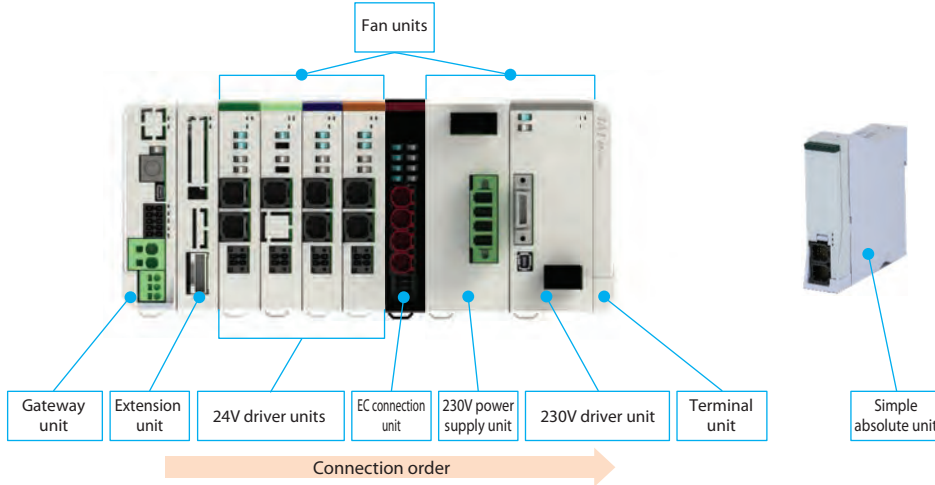
| Unit name | Number of connected units | Additional information |
|---|---|---|
| Gateway unit | 1 | Placed at far left |
| Extension unit | 1 | Placed to right of gateway unit |
| 24V driver unit | (Max.) 16 | Can be rearranged within the unit area |
| EC connection unit | (Max.) 4 | |
| 230V power supply unit | 1 | Make sure to connect to the left of the leftmost connected 230V driver unit |
| 230V driver unit | (Max.) 16 | Can be rearranged within the 230V driver unit area |
| Terminal unit | 1 | Place at far right (type differs according to driver connected to left) |

(Note) Some limitations apply on the number of connectable axes. See P. 46 for details.

### ■ Unit name and single product model number list

| | Product name | Model | Reference page |
|---|---|---|---|
| Master unit/gateway unit | CC-Link connection specification | RCON-GW/GWG-CC | P54 |
| | CC-Link IE Field connection specification | RCON-GW/GWG-CIE | P55 |
| | DeviceNet connection specification | RCON-GW/GWG-DV | P53 |
| | EtherCAT connection specification | RCON-GW/GWG-EC | P57 |
| | EtherCAT motion connection specification | RCON-GW/GWG-ECM | P57 |
| | EtherNet/IP connection specification | RCON-GW/GWG-EP | P58 |
| | PROFIBUS-DP connection specification | RCON-GW/GWG-PR | P56 |
| | PROFINET IO connection specification | RCON-GW/GWG-PRT | P59 |
| Extension unit | SCON extension | RCON-EXT | P63 |
| 24V driver unit | Pulse motor 1-axis specification | RCON-PC-1 | P61 |
| | Pulse motor 2-axis specification | RCON-PC-2 | |
| | High thrust pulse motor 1-axis specification | RCON-PCF-1 | |
| | AC servo motor 1-axis specification | RCON-AC-1 | |
| | AC servo motor 2-axis specification | RCON-AC-2 | |
| | DC brush-less motor 1-axis specification | RCON-DC-1 | |
| | DC brush-less motor 2-axis specification | RCON-DC-2 | |
| EC connection unit | EC connection unit 4-axis specification | RCON-EC-4 | P64 |
| 230V power supply unit | 230VAC input power supply | RCON-PS2-3 | P62 |
| 230V driver unit | AC230V motor 1-axis specification | RCON-SC-1 | P62 |
| Terminal unit | For 24V | RCON-GW-TR | P65 |
| | For 230V | RCON-GW-TRS | |
| Simple absolute unit | For RCON-PC | RCON-ABU-P | P64 |
| | For RCON-AC | RCON-ABU-A | |
| Fan unit | Other than the below | RCON-FU | P77 |
| | For 230V driver | RCON-FUH | |

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# RSEL

Options
**PC teaching software**
(See P. 76)
<Model: XSEL PC Software, IA-101-X>

Options
**Teaching pendant**
(See P. 75)
<Model: TB-03><Model: TB-02>

SEL unit (NP/PN specification) option
**PIO cable**
(See P. 85)
<Model: CB-PAC-PIO***>

Supplied with SEL unit
**Dummy plug**
(See P. 78)
<Model: DP-4S>

Supplied with SEL unit
**System I/O connector**
(See P. 78)
<Model: DFMC1,5/8-ST-3,5>

Options
**Fan unit**
(See P. 77)
<Model: RCON-FU(H)>

For XSEL PC Software : USB cable, Ethernet cable

For IA-101-X(A): Supplied with PC teaching software

Options
**24VDC power supply**
(See P. 77)
<Model: PSA-24>

Supplied with unit
SCON connection, PIO/SIO connection
**Extension SIO port connector**
(See P. 78)
<Model: FMC1,5/3-STF-3,5>

Supplied with 230V driver unit
**Dummy plug**
(See P. 78)
<Model: DP-6>

Supplied with SCON (RC specification)
**Connection cable**
(See P. 85)
<Model: CB-RE-CTL002>

Supplied with 24V driver unit
**Drive source shutoff connector**
(See P. 78)
<Model: DFMC1,5/2-STF-3,5>

Options
**Regenerative resistance unit (Note 1)**
(See P. 78)
<Model: RESU-2/ RESUD-2>

Supplied with power supply unit

**RCON-EXT connection specification SCON controller [I/O type: RC]**

Supplied with simple absolute unit
**Connection cable**
(See P. 81)
<Model: CB-ADPC-MPA050>

**Power supply connector**
(See P. 78)
<Model: SPC5/4-STF-7,62>

Supplied with SCON connection extension unit
**Terminal connector**
(See P. 78)
<Model: RCON-EXT-TR>

Supplied with the EC connection unit
**Drive power cutoff connector**
(See P. 78)
<Model: DEMC1.5/4-ST-3.5>

Motor power
Three-phase/
single-phase
230VAC

Options
**Simple absolute unit**
(See P. 64)
<Model: RCON-ABU-P (for pulse motor)>
<Model: RCON-ABU-A (for AC servo motor)>

# Motor-encoder cables / power/communication cables (EC connection) *1

**Connectable actuators**

| Connection with "extension unit" | Connection with "24V driver unit" | | Connection with "EC connection unit" | Connection with "230V driver unit" |
|---|---|---|---|---|
| RCS2/3/4 Series IS(D)B Series SSPA Series DD(A) Series | RCP2/3/4/5/6 Series WU Series | RCA/2 Series | RCD Series | EC Series *2 |

*See P. 46 for actuators that cannot be connected.

(60W~750W equipped actuator)
RCS2/3/4 Series
IS(D)B Series
SSPA Series
DD(A) Series
*See P. 40 for actuators that cannot be connected.

*1 The motor/encoder cable is supplied with the actuator.
The motor/encoder cables are different according to the actuator type to be connected.
See P. 79 when ordering a spare cable.

*2 The EleCylinder can operate only a double solenoid.
When connecting a 230V specification, a DC power supply for motor driving is needed. See P. 77 for details.

Note 1: A 60W regenerative resistor is built-in both RCON-SC and RCON-PS2.
There is generally no need for regenerative resistance. However, if there is insufficient regenerative resistance, use the external "regenerative resistance unit".

RSEL has a locking configuration and uses the unit connection method. Units that can be connected will have the same connector. However, there are restrictions on unit arrangement. Connect each unit with these restrictions in mind.
Connect each prepared unit in order starting from the left, with the SEL unit serving as the standard unit when looking at the front surface.
* The system will not operate normally if units are not connected in the following order.



Fan units

| SEL unit | Extension unit | PIO unit | 24V driver units | EC connection unit | 230V power supply unit | 230V driver unit | Terminal unit | Simple absolute unit |

Connection order
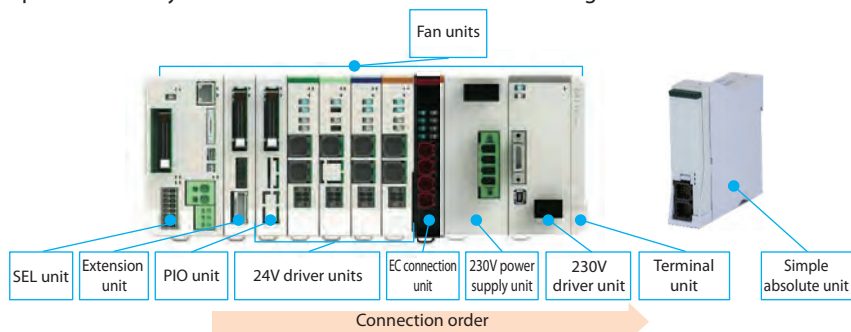
| Unit name | Number of connected units | Additional information |
|---|---|---|
| SEL unit | 1 | Placed at far left |
| Extension unit (SCON connection specification) | 1 | Select either type |
| Extension unit (PIO unit) | (Max.) 8 | If connecting a PIO/SIO/SCON extension unit, the maximum will be 7 |
| 24V driver unit | (Max.) 8 | Can be rearranged within the 24V driver unit |
| EC connection unit | (Max.) 4 | |
| 230V power supply unit | 1 | Make sure to connect to the left of the leftmost connected 230V driver unit |
| 230V driver unit | (Max.) 8 | Can be rearranged within the 230V driver unit |
| Terminal unit | 1 | Place at far right (type differs according to driver connected to left) |

(Note) Some limitations apply on the number of connectable axes. Refer to P. 46 for details.

### ■ Unit name and single product model number list

| | Product name | Model | Reference page |
|---|---|---|---|
| Master unit/ SEL unit | No IO connection specification | RSEL-G-E | P60 |
| | PIO (NPN) connection specification | RSEL-G-NP | |
| | PIO (PNP) connection specification | RSEL-G-PN | |
| | CC-Link connection specification | RSEL-G-CC | P54 |
| | CC-Link connection specification (bifurcated connector supplied) | RSEL-G-CC2 | |
| | CC-Link IE Field connection specification | RSEL-G-CIE | P55 |
| | DeviceNet connection specification | RSEL-G-DV | P53 |
| | DeviceNet connection specification (bifurcated connector supplied) | RSEL-G-DV2 | |
| | EtherCAT connection specification | RSEL-G-EC | P57 |
| | EtherNet/IP connection specification | RSEL-G-EP | P58 |
| | PROFIBUS-DP connection specification | RSEL-G-PR | P56 |
| | PROFINET IO connection specification | RSEL-G-PRT | P59 |
| Extension unit | SCON extension | RCON-EXT | P63 |
| | PIO/SIO/SCON extension (NPN specification) | RCON-EXT-NP | |
| | PIO/SIO/SCON extension (PNP specification) | RCON-EXT-PN | |
| | PIO (NPN specification) | RCON-NP | |
| | PIO (PNP specification) | RCON-PN | |
| 24V driver unit | Pulse motor 1-axis specification | RCON-PC-1 | P61 |
| | Pulse motor 2-axis specification | RCON-PC-2 | |
| | High thrust pulse motor 1-axis specification | RCON-PCF-1 | |
| | AC servo motor 1-axis specification | RCON-AC-1 | |
| | AC servo motor 2-axis specification | RCON-AC-2 | |
| | DC brush-less motor 1-axis specification | RCON-DC-1 | |
| | DC brush-less motor 2-axis specification | RCON-DC-2 | |
| EC connection unit | EC connection unit 4-axis specification | RCON-EC-4 | P64 |
| 230V power supply unit | 230VAC input power supply | RCON-PS2-3 | P62 |
| 230V driver unit | AC230V motor 1-axis specification | RCON-SC-1 | P62 |
| Terminal unit | For 24V | RCON-GW-TR | P65 |
| | For 230V | RCON-GW-TRS | |
| Simple absolute unit | For RCON-PC | RCON-ABU-P | P64 |
| | For RCON-AC | RCON-ABU-A | |
| Fan unit | Other than the below | RCON-FU | P77 |
| | For 230V driver | RCON-FUH | |

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## System Configuration

**REC**

| Options | Options |
|---|---|

**PC teaching software**
(See P. 63)
<Model: RCM-101-USB>

**Teaching pendant**
(See P. 63)
<Model: TB-03><Model: TB-02>

**PLC**

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

*1 The power/communication cable is supplied with the actuator. See P. 79 for information on ordering single cables.

For RC/EC PC Software: USB cable

For RCM-101-USB: Supplied with PC teaching software

**Supplied with the EC connection unit**

**Drive source shutoff connector**
(See P. 78)
<Model: DEMC1.5/4-ST-3.5>

Power/communication cable *1

Connect with "EC connection unit" *2

**EC Series (24V specification)**

**EC Series (230V specification)**

| Options |
|---|

**24VDC power supply**
(See P. 65)
<Model: PSA-24>

| Options |
|---|

**DC power supply for driving motor**
(See P. 77)
<Model: PSA-200-2>

* Make sure to use a noise filter when connecting the power.
<Recommendable models>
NF2010A-UP (manufacturer: Soshin Electric)
NAC-10-472 (manufacturer: COSEL)

**Supplied with the actuator**

**Motor power cable**
(See P. 86)
<Model: CB-EC-PW□□□-RB>

*2 The EleCylinder can control only a double solenoid. A motor driving power is needed to connect a 230V specification. See P. 77 for details.

## Unit Configuration

The REC has a unit-connecting configuration. Every unit has the same connector and locking configuration.
However, there are restrictions on unit arrangement. Connect each unit with these restrictions in mind.
Connect each prepared unit in order starting from the left, with the EC gateway unit serving as the standard unit when looking at the front surface.
* The system will not operate normally if units are not connected in the following order.

EC gateway unit | EC connection unit | Terminal unit
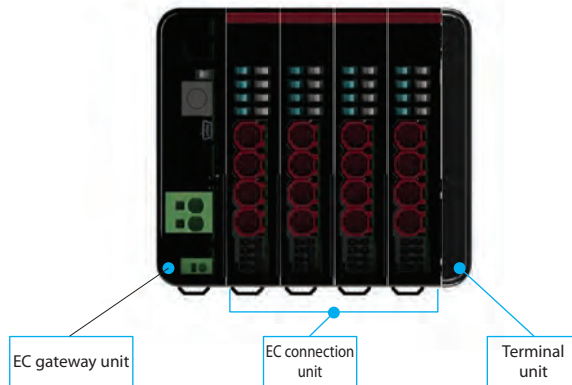
| Unit name | Number of connected units | Additional information |
|---|---|---|
| EC gateway unit | 1 | Placed at far left |
| EC connection unit | (Max.) 4 | Can be rearranged within the unit area (max. number of connectable axes is 16 axes) |
| Terminal unit | 1 | Placed at far right |

(Note) Some limitations apply on the number of connectable axes. Refer to P. 46 for details.

| Product name | | Model | Reference page |
|---|---|---|---|
| Master unit/ EC gateway unit | CC-Link connection specification | REC-GW-CC | P54 |
| | CC-Link IE Field connection specification | REC-GW-CIE | P55 |
| | DeviceNet connection specification | REC-GW-DV | P53 |
| | EtherCAT connection specification | REC-GW-EC | P57 |
| | EtherNet/IP connection specification | REC-GW-EP | P58 |
| | PROFIBUS-DP connection specification | REC-GW-PR | P56 |
| | PROFINET IO connection specification | REC-GW-PRT | P59 |
| EC connection unit | EC connection unit 4-axis specification | RCON-EC-4 | P64 |
| Terminal unit | For REC | RCON-GW-TRE | P65 |

## ■ Actuators not connectable to the R-unit

| Master unit | Unit | Driver unit | | | Expansion unit | EC connection unit (RCON-EC) |
|---|---|---|---|---|---|---|
| | | 24V driver unit (RCON-PC/PCF/AC/DC) | 230V driver unit (RCON-SC) | | SCON extension unit/POI/SIO/ SCON extension unit (RCON-EXT) | |
| | Actuator | 24V pulse motor/ 24V AC servo motor/ actuator equipped with DC brush-less motor | Actuator equipped with 230V AC servo motor | | | EleCylinder |
| RCON (Note 1) | | Wrist unit: WU<br>Table top: TT(A)<br>SCARA robot: IXP<br>Pulse press: RCP6<br><Actuators to meet the following specifications><br>Actuators equipped with an absolute encoder | Servo press: RCS2/RCS3<br><br>SCARA robot: IX/IXA<br><br>RoboCylinder: RCS3-CT8C/CTZ5C (single-phase power supply)<br><br>Rotary: DD/DDA (single phase power supply) | | Servo press: RCS2/RCS3<br><br>SCARA robot: IX/IXA<br><br>* RCON cannot connect to PIO/ SIO/SCON extension unit. | EleCylinder without "ACR" option model |
| RSEL | | Table top: TT(A)<br>SCARA robot: IXP<br>Pulse press: RCP6<br><Actuators to meet the following specifications><br>Actuators equipped with an absolute encoder | <Actuators to meet the following specifications><br>* Actuators equipped with less than 60W and more than 750W motors.<br>  (Except RS-30)<br>* Actuators equipped with an absolute encoder and multi-rotation absolute. | | | |
| REC | | Not connectable | Not connectable | | Not connectable | |

(Note1) EtherCAT motion network specification (ECM) cannot connect to some actuators.

| Actuator (unit) | Motion network |
|---|---|
| | ECM |
| Rotary index mode | Not connectable |
| EleCylinder (RCON-EC) | Not connectable |

## ■ Limitations on connection

Some limitations apply on the number of connectable actuator axes in each type. Select so that the following conditions are met.

[RCON]
* Make sure that the total number of the connected actuators is less than 16 axes. A multi-slider is calculated as two axes.
* Only the EC connection unit cannot be connected.
  Make sure to include the 24V/230V driver unit or a SCON-CB RCON specification in the connection.
* The number of maximum connectable axes differs depending on the operation mode.
  Refer to the number of maximum connectable axes (on P. 67).
* The following actuators have limit on the number of max. connectable axes by the 230V power supply unit (only three-phase specification is connectable).
  When connecting more than the maximum number of connectable actuators specified in the table below, use the SCON-CB RCON specification connected with an extension unit.
  When using actuators other than specified below, select an appropriate one by calculating the power supply capacity (P. 51).

| Actuator model | Max. number of connections |
|---|---|
| DD(A)-LT18(C)□/T18□ | 8 axes |
| DD(A)-LH18(C)□/H18□ | 2 axes |
| RCS3-CTZ5C | 8 axes |
| RCS3-CT8C | 3 axes |

[RSEL]
* Make sure that the total number of the connected actuators is less than 16 axes. A multi-slider is calculated as two axes.
  However, the total number of the connected actuators for the 24V/230V driver unit or an extension unit (SCON connection specification) is up to 8 axes.
* The following actuators have limit on the number of max. connectable axes by the 230V power supply unit (only three-phase specification is connectable).
  When connecting more than the maximum number of connectable actuators specified in the table below, use the SCON-CB RCON specification connected with an extension unit.
  When using actuators other than specified below, select an appropriate one by calculating the power supply capacity (P. 51).

| Actuator model | Max. number of connections |
|---|---|
| DD(A)-LT18(C)□/T18□ | 8 axes |
| DD(A)-LH18(C)□/H18□ | 2 axes |
| RCS3-CTZ5C | 8 axes |
| RCS3-CT8C | 3 axes |

[REC]
* Make sure that the total number of the connected actuators is less than 16 axes.

## ■ Recognition of connections

The recognition order of the actuators connected to the R-unit is as specified in the right table. When the connection is over the connectable limitation, actuators of low priority cannot be recognized.

| Priority order | Unit name |
|---|---|
| High | 24V driver unit |
| ↓ | 230V driver unit |
| | Extension unit (SCON connection specification) |
| Low | EC connection unit |

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## ■ General specifications

### ■ RCON

| Item | | Specifications | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Power supply voltage | | 24VDC ± 10%<br>200VAC~230VAC ±10% (power supply unit) | | | | | | |
| Power supply current | | Differs with system configuration | | | | | | |
| Number of axes controlled | | 1 to 16 axes *For maximum axes, see "Maximum number of connectable axes" (P. 67) | | | | | | |
| Supported encoders | 24V series | Incremental (including ABZ parallel)<br>Battery-less absolute *1 | | | | | | |
| | 230V series | Incremental (including ABZ parallel), battery-less absolute, quasi absolute, index absolute<br>(SCON connection specification) absolute, absolute multi-rotation | | | | | | |
| Supported field networks | | CC-Link, CC-Link IE Field, DeviceNet, EtherCAT, EtherNet/IP,<br>PROFIBUS-DP, PROFINET IO, EtherCAT motion | | | | | | |
| Configuration units | | Gateway unit, driver unit, extension unit, EC connection unit,<br>power supply unit, fan unit, terminal unit, simple absolute unit | | | | | | |
| SIO interface | Teaching port | Communication method | RS485 | | | | | |
| | | Communication speed | 9.6/19.2/38.4/57.6/115.2/230.4kbps | | | | | |
| | USB port | Communication method | USB | | | | | |
| | | Communication speed | 12Mbps | | | | | |
| Emergency stop/enable operation | | Collective system support with gateway unit STOP signal input, equipped with connectors capable of shutting off the drive power supply to individual axes of each driver unit | | | | | | |
| Data recording device | | FRAM 256kbit (gateway unit, 24V driver unit)   SRAM 4Mbit (230V driver unit) | | | | | | |
| Ethernet (optional) | | 10/100BASE-T (RJ-45 connector)   XSEL serial communication protocol (format B) *1 | | | | | | |
| Data input method | Teaching port | Touch panel teaching pendant | | | | | | |
| | USB | PC teaching software | | | | | | |
| Calendar function | Retention function | Approx. 10 days | | | | | | |
| | Charging time | Approx. 100 hours | | | | | | |
| Safety category compliance | | B (the safety category specification supports up to 4 external circuits) | | | | | | |
| Protection functionality | | Overcurrent, abnormal humidity, encoder disconnection, overload | | | | | | |
| Preventative/predictive maintenance function | | Low electrolytic capacitor capacity and low fan rotation speed | | | | | | |
| Ambient operating temperature | | (Without fan) 0~40℃, (with fan) 0~55℃ *0~40℃ for simple absolute units | | | | | | |
| Ambient operating humidity | | 5% RH to 85% RH (non-condensing or freezing) | | | | | | |
| Operating atmosphere | | Avoid corrosive gas and excessive dust | | | | | | |
| Vibration resistance | | Frequency: 10~57Hz / Amplitude: 0.075mm, Frequency: 57~150Hz / Acceleration: 9.8m/s$^2$<br>XYZ directions   Sweep time: 10 minutes   Number of sweeps: 10 times | | | | | | |
| Shock resistance | | Drop height: 800mm   1 corner, 3 edges, 6 faces | | | | | | |
| Electric shock protection mechanism | 24V | Class III | | | | | | |
| | 230V | Class I | | | | | | |
| Degree of protection | | IP20 | | | | | | |
| Insulation withstanding voltage | | 500VDC 10MΩ | | | | | | |
| Cooling method | | Natural cooling and forced cooling by fan unit (option) | | | | | | |
| Connections between each unit | | Unit connection method | | | | | | |
| Installation/mounting method | | DIN rail (35mm) mounting | | | | | | |
| Regulations/standards | Unit name | Gateway unit | 24V driver unit | 230V driver unit | 230V power supply unit | Simple absolute unit | SCON extension unit | EC connection unit |
| | CE Marking | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | UL | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

*1 In the case of field network (SSN), the RCP5 (encoder resolution 800) is considered incremental for setting.

## ■ RSEL-G

| Item | | Specifications | |
|---|---|---|---|
| Power supply voltage | | 24VDC ±10%<br>200VAC~230VAC ±10% (power supply unit) | |
| Power supply current | | Differs with system configuration | |
| Number of axes controlled | | 1 to 16 axes *Some limitations apply on the number of connectable axes depending on the actuators and types. (Refer to P. 46) | |
| Supported encoders | 24V series | Incremental (including ABZ parallel)<br>Battery-less absolute | |
| | 230V series | Incremental (including ABZ parallel), battery-less absolute, quasi absolute, index absolute<br>(SCON connection specification) absolute, absolute multi-rotation | |
| Supported field networks | | CC-Link, CC-Link IE Field, DeviceNet, EtherCAT, EtherNet/IP,<br>PROFIBUS-DP, PROFINET IO | |
| Configuration units | | SEL unit, driver unit, SCON extension unit, PIO/SIO/SCON extension unit, PIO unit, power supply unit,<br>fan unit, terminal unit, simple absolute unit, EC connection unit | |
| Serial communication function | Teaching port | Communication method | RS232C |
| | | Communication speed | Max. 115.2kbps |
| | USB port | Communication method | USB |
| | | Communication speed | 12Mbps full speed |
| | | Ethernet (RJ-45), PSA-24 communication | |
| Emergency stop/Enable operation | | Collective system support with SEL unit STOP signal input | |
| Data recording device | | Flash ROM + non-volatile RAM (FRAM) *No battery required | |
| Safety category compliance | | B (the safety category specification supports up to 4 external circuits) | |
| Safety circuit configuration | | Duplication allowed | |
| Emergency stop input | | B contact input (external power supply, duplication possible, can be selected from internal power supply) | |
| Enable input | | B contact input (external power supply, duplication possible, can be selected from internal power supply) | |
| Speed setting | | From 1mm/s upper limit depends on the actuator specification | |
| Acceleration/deceleration setting | | From 0.01G upper limit depends on the actuator specification | |
| Number of axis groups | | 2 (max. 8 axes per group) | |
| Programming language | | Super SEL language | |
| No. of programs | | 512 (up to 99 [BCD specification] or 255 [binary specification] can be selected by input signal) | |
| Number of programmable steps | | 20000 steps | |
| Multi-tasking programs | | 16 programs | |
| Number of positions | | 36000 positions (varies based on number of axis groups) | |
| Data input method | Teaching port | Touch panel teaching pendant, PC teaching software | |
| | USB | PC teaching software | |
| | Ethernet | | |
| Standard I/O (when selecting PIO specification) | | (I/O slot selection) Input 16 points/output 16 points | |
| Expansion I/O | | Up to 8 PIO units can be connected | |
| Ethernet | | 10/100BASE-T (RJ-45 connector) | |
| | | XSEL serial communication protocol (format B)*1 | |
| USB | | USB 2.0 (Mini-B), XSEL serial communication protocol (format B)*1 | |
| Clock function | Retention time | Approx. 10 days | |
| | Charging time | Approx. 100 hours | |
| SD card | | SD/SDHC (used only for update function) | |
| Protection functionality | | Overcurrent, abnormal temperature, encoder disconnection, overload | |
| Preventative/predictive maintenance function | | Low electrolytic capacitor capacity and low fan rotation speed | |
| Ambient operating temperature | | (Without fan) 0~40°C, (with fan) 0~55°C *0~40°C for simple absolute units | |
| Ambient operating humidity | | 5% RH to 85% RH (non-condensing or freezing) | |
| Operating atmosphere | | Avoid corrosive gas and excessive dust | |
| Vibration resistance | | Frequency: 10~57Hz/Amplitude: 0.075mm, Frequency: 57~150Hz/Acceleration: 9.8m/s$^2$<br>XYZ directions      Sweep time: 10 minutes      Number of sweeps: 10 times | |
| Shock resistance | | Drop height: 800mm      1 corner, 3 edges, 6 faces | |
| Electric shock protection mechanism | 24V | Class III | |
| | 230V | Class I | |
| Degree of protection | | IP20 | |
| Insulation withstanding voltage | | 500VDC 10MΩ | |
| Cooling method | | Natural cooling and forced cooling by fan unit (option) | |
| Connections between each unit | | Unit connection method | |
| Installation/mounting method | | DIN rail (35mm) mounting | |

| Regulations/standards | Unit name | SEL unit | 24V driver unit | 230V driver unit | 230V power supply unit | Simple absolute unit | SCON extension unit | PIO/SIO/SCON extension unit | PIO unit |
|---|---|---|---|---|---|---|---|---|---|
| | CE Marking | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | UL | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

*1 XSEL serial communication protocol (format B) can communicate only with 1 port.
The order of priority is teaching port (high priority), USB, then Ethernet (low priority), with no response for low priority.

## ■ REC-GW

| Item | | Specifications | |
|---|---|---|---|
| Power supply voltage | | 24VDC ±10% | |
| Power supply current | | Differs with system configuration | |
| Number of axes controlled | | 1~16-axis | |
| Supported encoders | EC connection | EleCylinder connection only<br>Incremental, battery-less absolute | |
| Supported field networks | | CC-Link, CC-Link IE Field, DeviceNet, EtherCAT, EtherNet/IP,<br>PROFIBUS-DP, PROFINET IO | |
| Configuration units | | EC gateway unit, EC connection unit, terminal unit | |
| Data input method | | Teaching port | Touch panel teaching pendant |
| | | USB | PC teaching software |
| Serial communication function | Teaching port | Communication method | RS485 |
| | | Communication speed | 9.6/19.2/38.4/57.6/115.2/230.4kbps |
| | USB port | Communication method | USB |
| | | Communication speed | 12Mbps full speed |
| Emergency stop/Enable operation | | Equipped with connectors capable of shutting off the drive power supply to individual axes of the EC connection unit | |
| Safety category compliance | | Not supported | |
| Ambient operating temperature | | 0~55°C | |
| Ambient operating humidity | | 5% RH to 85% RH (non-condensing or freezing) | |
| Operating atmosphere | | Avoid corrosive gas and excessive dust | |
| Vibration resistance | | Frequency: 10~57Hz / Amplitude: 0.075mm, Frequency: 57~150Hz / Acceleration: 9.8m/s$^2$<br>XYZ directions    Sweep time: 10 minutes    Number of sweeps: 10 times | |
| Shock resistance | | Drop height: 800mm    1 corner, 3 edges, 6 faces | |
| Electric shock protection mechanism | | Class III | |
| Degree of protection | | IP20 | |
| Insulation withstanding voltage | | 500VDC 10MΩ | |
| Cooling method | | Natural cooling | |
| Connections between each unit | | Unit connection method | |
| Installation/mounting method | | DIN rail (35mm) mounting | |
| Regulations/standards | Unit name | EC gateway unit | EC connection unit |
| | CE Marking | ○ | ○ |
| | UL | ○ | ○ |

## Encoder resolution

| Item | Motor type | Model | | Encoder type | Value [pulse/r] |
|---|---|---|---|---|---|
| 24V driver unit | Pulse motor | RCP6 | | Battery-less Absolute | 8192 |
| | | RCP5/RCP4/RCP3/RCP2 | | Battery-less Absolute | 800 |
| | | | | Incremental | |
| | | WU | | Battery-less Absolute | 8192 |
| | AC servo motor | RCA | | Battery-less Absolute | 16384 |
| | | | | Incremental | 800 |
| | | RCA2 | □□N/NA | Incremental | 1048 |
| | | | Other than the above | | 800 |
| | DC brush-less motor | RCD | RA1R/GRSN RA1DA/GRSNA | Incremental | 480 |
| 230V driver unit | AC servo motor | RCS4/RCS3 | | Battery-less Absolute | 16384 |
| | | | | Incremental | |
| | | RCS2 | □□5N | Incremental | 1600 |
| | | | SR□7BD | Incremental | 3072 |
| | | | Models other than the above | Incremental | 16384 |
| | | | | Battery-less Absolute | |
| | | ISB/ISDB | | Battery-less Absolute | 131072 |
| | | | | Incremental | 16384 |
| | | ISDBCR/SSPA/ISA/ISDA/IF/FS | | Battery-less Absolute | 131072 |
| | | | | Incremental | 16384 |
| | | NSA | | Battery-less Absolute | 131072 |
| | | NS | S□ | Incremental | 2400 |
| | | | Models other than the above | | 16384 |
| | | — | | - | - |
| | | DD/DDA | □18S | Index absolute | 131072 |
| | | | □18P | Index absolute | 1048576 |
| EC connection unit | Pulse motor | EC | | Battery-less Absolute Incremental | 800 |
| | AC servo motor | | | Battery-less Absolute | 16384 |

## Generated heat (per unit)

| Unit name | Unit model | Type | Value |
|---|---|---|---|
| 24V driver unit | RCON-PC | PowerCon: No | 5.0W |
| | | PowerCon: Yes | 8.0W |
| | RCON-PCF | PowerCon: No | 19.2W |
| | RCON-AC | Standard / High accel/decel / Energy saving | 4.5W |
| | RCON-DC | Standard | 3.0W |
| 230V driver unit | RCON-SC | | 54W |
| Power supply unit | RCON-PS2 | | 42W |

## Inrush current

| Unit name | Unit model | Type | Value |
|---|---|---|---|
| 24V driver unit | RCON-PC | | 8.3A |
| | RCON-PCF | | 10A |
| | RCON-AC | | 10A |
| | RCON-DC | | 10A |
| 230V driver unit | RCON-SC | | 25A |
| EC connection unit | RCON-EC | (For 4-axis connection) | 40A |

For R-units, make sure for each unit that the calculated results for control power and motor power do not exceed the current limit value for selection calculation, based on the connection configuration. When selecting a 230V driver unit, ensure that the total motor wattage (W) does not exceed the total wattage (W) for the maximum number of connectable axes. Only one RCON-PS2-3 can be used per RCON/RSEL system.

*The maximum number of connectable axes varies by series.

### Current limit value

| Item | Current limit value |
|---|---|
| Control power | 9.0A or less |
| Motor power | 37.5A or less |

### Total motor wattage (W)

| Item | | Total wattage (W) for max. number of connectable axes |
|---|---|---|
| Motor power | Single-phase 230VAC | 1600W |
| | Three-phase 230VAC | 2400W |

### DC power supply for driving motor

| Connected power supply | Max. number of connected axes (per power supply unit) | Max. connectable total motor wattage |
|---|---|---|
| AC230V | 6-axis | 1600W |

### ▌ Power supply capacity
### <Control power>

| Item | Unit | | | Power capacity |
|---|---|---|---|---|
| Control power capacity (per unit) | Master unit (including terminal unit) | Gateway unit | Without Ethernet | 0.8A |
| | | | With Ethernet | 1.0A |
| | | SEL unit | | 1.2A |
| | | EC gateway unit | | 0.8A |
| | 24V driver unit (common for all types) | Without brake | | 0.2A |
| | | With brake (1-axis specification) | | 0.4A |
| | | With brake (2-axis specification) | | 0.6A |
| | 230V driver unit (including 230V power supply unit) | Without brake | | 0.2A |
| | | With brake | | 0.5A |
| | Extension unit (common for each unit) | | | 0.1A |
| | Simple absolute unit (common to all types) | | | 0.2A |
| | EC connection unit (per unit) | | | 0.1A |
| | 24V specification EleCylinder (per axis)* | Without brake | | 0.3A |
| | | With brake | | 0.5A |
| | 230V specification EleCylinder (per axis)* | Without brake | | 0.32A |
| | | With brake | EC-S10□, EC-S10X□ | 0.54A |
| | | | EC-S13□, EC-S13X□ | 1.2A |
| | | | EC-S15□, EC-S15X□ | |

\* Calculate all the axes of connected EleCylinder.
(Note) When selecting a unit, do not include the power supply capacity of the master unit for calculation.
Since the 24V input power current of the 230V power supply is minimal, it is negligible for calculation.
However, include input power current of the master unit when selecting a 24V power supply.

### <Motor power>
### ● 24V driver unit

| Item | Actuator/driver unit | | | | Rated current | Max. current | |
|---|---|---|---|---|---|---|---|
| | | Series | Motor type | | | | When energy-saving is set |
| Motor power capacity (per 1-axis actuator) | Pulse motor /RCON-PC | RCP2 RCP3 | 20P/20SP/28P | Without PowerCon | 0.8A | - | - |
| | | | 28P*/35P/42P/56P | | 1.9A | - | - |
| | | RCP4 RCP5 RCP6 | 28P/35P/42P/ 42SP/56P | Without PowerCon | 1.9A | - | - |
| | | | | With PowerCon | 2.3A | - | 3.9A |
| | Pulse motor /RCON-PCF | RCP2 RCP4 RCP5 RCP6 | 56SP/60P/86P | Without PowerCon | 5.7A | - | - |
| | AC servo motor /RCON-AC | RCA RCA2 | 5W | Standard / Hi-accel./decel. | 1.0A | - | 3.3A |
| | | | 10W | Standard / High accel./decel. Energy saving | 1.3A | 2.5A | 4.4A |
| | | | 20W | | 1.3A | 2.5A | 4.4A |
| | | | 20W (20S) | | 1.7A | 3.4A | 5.1A |
| | | | 30W | | 1.3A | 2.2A | 4.0A |
| | DC brush-less motor /RCON-DC | RCD | 3W | Standard | 0.7A | - | 1.5A |

\* Applicable models: RCP2-RA3, RCP2-RGD3

## ● 230V driver unit

| Actuator motor wattage type | Motor power capacity [VA] | Max. instantaneous motor power capacity [VA] |
|---|---|---|
| 30R (for RS) | 138 | 414 |
| 60 | 138 | 414 |
| 60 (RCS3-CTZ5) | 197 | 591 |
| 100 | 234 | 702 |
| 150 | 328 | 984 |
| 200 | 421 | 1263 |
| 200S (DD) | 503 | 1509 |
| 400 | 920 | 2760 |
| 400 (RCS3-CT8) | 1230 | 3690 |
| 600 | 1164 | 2328 |
| 600 (DD) | 1462 | 4386 |
| 750 | 1521 | 3042 |

## Calculate the power capacity of the following actuators using the "motor wattage for calculation."

| Item | Actuator motor wattage | Motor wattage for calculation | |
|---|---|---|---|
| | | Single phase | Three-phase |
| RCS3-CTZ5C | 60W | - | 120W |
| RCS3-CT8C | 400W | - | 800W |

## ● EC connection unit
### (24V specification EleCylinder)

| Item | | Actuator/connection unit | | | Power supply current | | |
|---|---|---|---|---|---|---|---|
| | | Series | Motor type | Type | Energy-saving disabled | | Energy-saving enabled |
| | | | | | Rated current | Max. | |
| Motor power capacity (per 1-axis actuator) | 24V pulse motor | EC | 35P/42P/56P | Other than the below | 2.2A | 3.9A | 1.9A |
| | | | 28P | S3□/RR3□ | - | - | 1.9A |
| | | | | RP4/GS4/GW4/TC4/TW4/RTC9/GRB10/GRB13 | - | - | 1.7A |
| | | | 20P | GRB8 | - | - | 0.7A |

### (230V specification EleCylinder)

| Item | Actuator type | Motor wattage [W] | Motor power capacity [VA] | Max. instantaneous motor power capacity [VA] |
|---|---|---|---|---|
| Motor power capacity (per one axis of actuator) | EC-S10□, EC-S10X□ | 100 | 238 | 714 |
| | EC-S13□, EC-S13X□ | 200 | 402 | 1206 |
| | EC-S15□, EC-S15X□ | 400 | 772 | 2316 |

⚠️ Caution

· When acceleration/deceleration of all the axes are operated with the duty ratio of 100%, it is necessary to calculate the motor power using the maximum current value.
(If the max. current value is not specified, use the rated current for calculation.)

# Master unit

∎ Features This unit is used in order to connect to the field network.
It connects a 24VDC power supply and teaching.
(A terminal unit is supplied.)

## ∎ DeviceNet connection specification

∎ Model: **RCON-GW/GWG-DV**    ∎ Model: **RSEL-G-DV/DV2**    ∎ Model: **REC-GW-DV**

## ∎ Specifications

|  | RCON | RSEL | REC |
|---|---|---|---|
| Operation type | Positioner Type | Program Type | Positioner Type |
| Power supply input voltage | 24VDC ± 10% | | |
| Power supply current | 0.8A (with Ethernet: 1.0A) | 1.2A | 0.8A |
| Ambient operating temperature & humidity | 0~55°C#, 5%RH to 85%RH (non-condensing or freezing) | | |
| Operating atmosphere | Avoid corrosive gas and excessive dust | | |
| Safety category compliance | GWG specification: 4 compatible | 4 compatible | - |
| Degree of protection | IP20 | | |
| Mass | 167g | 270g | 135g |
| Accessories | (GWG specification) Dummy plug DP-5 | Dummy plug DP-4S | - |
| External dimensions | W 30mm × H 115mm × D 95mm | W 56.6mm × H 115mm × D 95mm | W 30mm × H 115mm × D 95mm |
| PC teaching software | RCM-101-USB | IA-101-X-* | RCM-101-USB |
| Teaching pendant | TB-02/TB-03 | | |

# A fan unit must be attached during use in environments exceeding 40°C (excluding REC)

| Connector area | | Cable connector model | Remarks |
|---|---|---|---|
| System IO | Cable side | (RCON) DFMC1,5/5-ST-3,5 | Standard accessories |
| | | (RSEL) DFMC1,5/8-ST-3,5 | Standard accessories |
| Drive-source cutoff | Cable side | (REC) DFMC1,5/4-ST-3,5 | Standard accessories |
| Network | Cable side | MSTB2,5/5-STF-5,08 AUM | Standard accessories |
| | | TMSTBP2,5/5-STF-5,08 AUM (bifurcated) *For DV2 | Standard accessories |
| | Controller side | MSTB2,5/5-GF-5,08 AU | |

## ∎ Network connection cable

| Pin No. | Signal name (color scheme) | Description | Compatible wire diameter |
|---|---|---|---|
| 1(6) | V- (black) | Power supply cable - side | |
| 2(7) | CAN L (blue) | Signal data Low side | |
| 3(8) | - | Drain (shield) | DeviceNet dedicated cable |
| 4(9) | CAN H (white) | Signal data High side | |
| 5(10) | V+ (red) | Power supply cable + side | |

*() indicates the bifurcated connector specification

Network connector

Red (V+)
White (CAN H)
Shield
Blue (CAN L)
Black (V-)

5
4
3
2
1

# CC-Link connection specification


■ Model: **RCON-GW/GWG-CC**


■ Model: **RSEL-G-CC/CC2**


■ Model: **REC-GW-CC**

## Specifications

| | RCON | RSEL | REC |
|---|---|---|---|
| Operation type | Positioner Type | Program Type | Positioner Type |
| Power supply input voltage | 24VDC ± 10% | | |
| Power supply current | 0.8A (with Ethernet: 1.0A) | 1.2A | 0.8A |
| Ambient operating temperature & humidity | 0~55℃#, 5%RH to 85%RH (non-condensing or freezing) | | |
| Operating atmosphere | Avoid corrosive gas and excessive dust | | |
| Safety category compliance | GWG specification: 4 compatible | 4 compatible | - |
| Degree of protection | IP20 | | |
| Mass | 167g | 270g | 135g |
| Accessories | (GWG specification) Dummy plug DP-5 | Dummy plug DP-4S | - |
| External dimensions | W 30mm × H 115mm × D 95mm | W 56.6mm × H 115mm × D 95mm | W 30mm × H 115mm × D 95mm |
| PC teaching software | RCM-101-USB | IA-101-X-* | RCM-101-USB |
| Teaching pendant | TB-02/TB-03 | | |

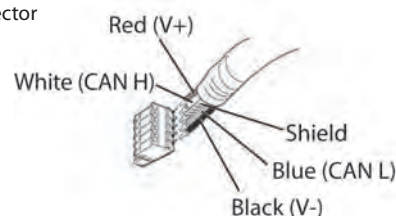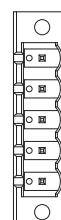# A fan unit must be attached during use in environments exceeding 40℃ (excluding REC)

| Connector area | | Cable connector model | Remarks |
|---|---|---|---|
| System IO | Cable side | (RCON) DFMC1,5/5-ST-3,5 | Standard accessories |
| | | (RSEL) DFMC1,5/8-ST-3,5 | Standard accessories |
| Drive-source cutoff | Cable side | (REC) DFMC1,5/4-ST-3,5 | Standard accessories |
| Network | Cable side | MSTB2,5/5-STF-5,08 AU<br>With 110Ω/130Ω terminal resistor | Standard accessories |
| | | TMSTBP2,5/5-STF-5,08 AU *For CC2<br>With 110Ω/130Ω terminal resistor | Standard accessories |
| | Controller side | MSTB2,5/5-GF-5,08 AU | |

## Network connection cable

| Pin No. | Signal name<br>(color scheme) | Description | Compatible<br>wire diameter |
|---|---|---|---|
| 1(6) | DA (blue) | Signal line A | |
| 2(7) | DB (white) | Signal line B | |
| 3(8) | DG (yellow) | Digital ground | CC-Link<br>dedicated<br>cable |
| 4(9) | SLD | Connects the shield of shielded cables<br>(5-pin FG and control power connector 1-pin FG<br>connected internally) | |
| 5 | FG | Frame ground<br>(4-pin SLD and control power connector 1-pin FG<br>connected internally) | |

*() indicates the bifurcated connector specification

Network connector



Shield (SLD)
Yellow (DG)
White (DB)
Blue (DA)

**54**
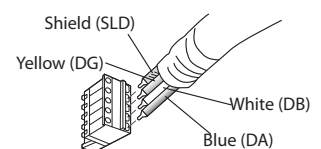
❚ Model: **RCON-GW/GWG-CIE**   ❚ Model: **RSEL-G-CIE**   ❚ Model: **REC-GW-CIE**

## ❚ Specifications

| | RCON | RSEL | REC |
|---|---|---|---|
| Operation type | Positioner Type | Program Type | Positioner Type |
| Power supply input voltage | 24VDC ± 10% | | |
| Power supply current | 0.8A (with Ethernet: 1.0A) | 1.2A | 0.8A |
| Ambient operating temperature & humidity | 0~55°C#, 5%RH to 85%RH (non-condensing or freezing) | | |
| Operating atmosphere | Avoid corrosive gas and excessive dust | | |
| Safety category compliance | GWG specification: 4 compatible | 4 compatible | - |
| Degree of protection | IP20 | | |
| Mass | 167g | 270g | 135g |
| Accessories | (GWG specification) Dummy plug DP-5 | Dummy plug DP-4S | - |
| External dimensions | W 30mm × H 115mm × D 95mm | W 56.6mm × H 115mm × D 95mm | W 30mm × H 115mm × D 95mm |
| PC teaching software | RCM-101-USB | IA-101-X-∗ | RCM-101-USB |
| Teaching pendant | TB-02/TB-03 | | |

# A fan unit must be attached during use in environments exceeding 40°C (excluding REC)
CC-link IE Basic is not supported.

| Connector area | | Cable connector model | Remarks |
|---|---|---|---|
| System IO | Cable side | (RCON) DFMC1,5/5-ST-3,5 | Standard accessories |
| | | (RSEL) DFMC1,5/8-ST-3,5 | Standard accessories |
| Drive-source cutoff | Cable side | (REC) DFMC1,5/4-ST-3,5 | Standard accessories |
| Network | Cable side | Ethernet ANSI/TIA/EIA-568-B Category 5e or higher shielded 8P8C modular plug (RJ45) | To be prepared by the customer |
| | Controller side | Ethernet ANSI/TIA/EIA-568-B Category 5e or higher shielded 8P8C modular plug (RJ45) | |

## ❚ Network connection cable

| Pin No. | Signal name | Description | Compatible wire diameter |
|---|---|---|---|
| 1 | TP0+ | Data 0+ | |
| 2 | TP0 - | Data 0- | |
| 3 | TP1 + | Data 1+ | For the Ethernet cable, use a straight STP cable of Category 5e or higher. |
| 4 | TP2 + | Data 2+ | |
| 5 | TP2- | Data 2- | |
| 6 | TP1- | Data 1- | |
| 7 | TP3 + | Data 3+ | |
| 8 | TP3 - | Data 3- | |

Network connector



L.ER
LINK
L.ER
LINK

# PROFIBUS-DP connection specification



■Model: **RCON-GW/GWG-PR**



■Model: **RSEL-G-PR**



■Model: **REC-GW-PR**

## Specifications

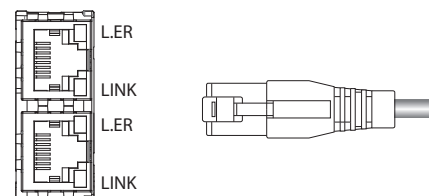|  | RCON | RSEL | REC |
|---|---|---|---|
| Operation type | Positioner Type | Program Type | Positioner Type |
| Power supply input voltage | 24VDC ± 10% | | |
| Power supply current | 0.8A (with Ethernet: 1.0A) | 1.2A | 0.8A |
| Ambient operating temperature & humidity | 0~55°C#, 5%RH to 85%RH (non-condensing or freezing) | | |
| Operating atmosphere | Avoid corrosive gas and excessive dust | | |
| Safety category compliance | GWG specification: 4 compatible | 4 compatible | - |
| Degree of protection | IP20 | | |
| Mass | 167g | 270g | 135g |
| Accessories | (GWG specification) Dummy plug DP-5 | Dummy plug DP-4S | - |
| External dimensions | W 30mm × H 115mm × D 95mm | W 56.6mm × H 115mm × D 95mm | W 30mm × H 115mm × D 95mm |
| PC teaching software | RCM-101-USB | IA-101-X-∗ | RCM-101-USB |
| Teaching pendant | TB-02/TB-03 | | |

\# A fan unit must be attached during use in environments exceeding 40°C (excluding REC)

| Connector area | | Cable connector model | Remarks |
|---|---|---|---|
| System IO | Cable side | (RCON) DFMC1,5/5-ST-3,5 | Standard accessories |
| | | (RSEL) DFMC1,5/8-ST-3,5 | Standard accessories |
| Drive-source cutoff | Cable side | (REC) DFMC1,5/4-ST-3,5 | Standard accessories |
| Network | Cable side | 9-pin D sub connector (male) | To be prepared by the customer |
| | Controller side | 9-pin D sub connector (female) | |

## Network connection cable

| Pin No. | Signal name | Description | Compatible wire diameter |
|---|---|---|---|
| 1 | NC | Not connected | PROFIBUS-DP dedicated cable (type A: EN5017) |
| 2 | NC | Not connected | |
| 3 | B-Line | Signal line B (RS-485) | |
| 4 | RTS | Transmission request | |
| 5 | GND | Signal GND (insulation) | |
| 6 | +5V | +5 V output (isolated) | |
| 7 | NC | Not connected | |
| 8 | A-Line | Signal line A (RS-485) | |
| 9 | NC | Not connected | |

Network connector



Red B line (positive side)
Green A line (negative side)
Cable
Shield

# EtherCAT/EtherCAT motion connection specification



RCON

■Model: **RCON-GW/GWG-EC/ECM**

RSEL

■Model: **RSEL-G-EC**

REC

■Model: **REC-GW-EC**

## Specifications

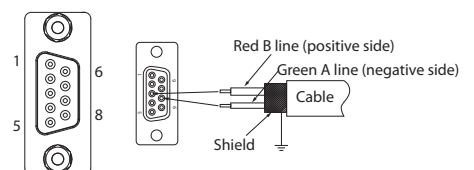|  | RCON | RSEL | REC |
|---|---|---|---|
| Operation type | Positioner Type | Program Type | Positioner Type |
| Power supply input voltage | 24VDC ± 10% | | |
| Power supply current | 0.8A (with Ethernet: 1.0A) | 1.2A | 0.8A |
| Ambient operating temperature & humidity | 0~55℃#, 5%RH to 85%RH (non-condensing or freezing) | | |
| Operating atmosphere | Avoid corrosive gas and excessive dust | | |
| Safety category compliance | GWG specification: 4 compatible | 4 compatible | - |
| Degree of protection | IP20 | | |
| Mass | 167g | 270g | 135g |
| Accessories | (GWG specification) Dummy plug DP-5 | Dummy plug DP-4S | - |
| External dimensions | W 30mm × H 115mm × D 95mm | W 56.6mm × H 115mm × D 95mm | W 30mm × H 115mm × D 95mm |
| PC teaching software | RCM-101-USB | IA-101-X-∗ | RCM-101-USB |
| Teaching pendant | TB-02/TB-03 | | |

# A fan unit must be attached during use in environments exceeding 40℃ (excluding REC)

| Connector area | | Cable connector model | Remarks |
|---|---|---|---|
| System IO | Cable side | (RCON) DFMC1,5/5-ST-3,5 | Standard accessories |
| | | (RSEL) DFMC1,5/8-ST-3,5 | Standard accessories |
| Drive-source cutoff | Cable side | (REC) DFMC1,5/4-ST-3,5 | Standard accessories |
| Network | Cable side | Ethernet ANSI/TIA/EIA-568-B Category 5 or higher shielded 8P8C modular plug (RJ45) | To be prepared by the customer |
| | Controller side | Ethernet ANSI/TIA/EIA-568-B Category 5 or higher shielded 8P8C modular jack (RJ45) | |

## Network connection cable

| Pin No. | Signal name | Description | Compatible wire diameter |
|---|---|---|---|
| 1 | TD + | Transmit data + | |
| 2 | TD - | Transmit data - | |
| 3 | RD + | Receive data + | For the Ethernet cable, use a straight STP cable of Category 5 or higher. |
| 4 | - | Not used | |
| 5 | - | Not used | |
| 6 | RD - | Receive data - | |
| 7 | - | Not used | |
| 8 | - | Not used | |

Network connector

# EtherNet/IP connection specification

**RCON**

**RSEL**

**REC**

▌Model: **RCON-GW/GWG-EP**    ▌Model: **RSEL-G-EP**    ▌Model: **REC-GW-EP**

## ▌Specifications

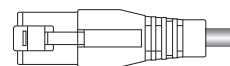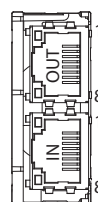|  | RCON | RSEL | REC |
|---|---|---|---|
| Operation type | Positioner Type | Program Type | Positioner Type |
| Power supply input voltage | 24VDC ± 10% | | |
| Power supply current | 0.8A (with Ethernet: 1.0A) | 1.2A | 0.8A |
| Ambient operating temperature & humidity | 0~55°C#, 5%RH to 85%RH (non-condensing or freezing) | | |
| Operating atmosphere | Avoid corrosive gas and excessive dust | | |
| Safety category compliance | GWG specification: 4 compatible | 4 compatible | - |
| Degree of protection | IP20 | | |
| Mass | 167g | 270g | 135g |
| Accessories | (GWG specification) Dummy plug DP-5 | Dummy plug DP-4S | - |
| External dimensions | W 30mm × H 115mm × D 95mm | W 56.6mm × H 115mm × D 95mm | W 30mm × H 115mm × D 95mm |
| PC teaching software | RCM-101-USB | IA-101-X-∗ | RCM-101-USB |
| Teaching pendant | TB-02/TB-03 | | |

# A fan unit must be attached during use in environments exceeding 40°C (excluding REC)
Explicit messaging is not supported. (Implicit messaging only).

| Connector area | | Cable connector model | Remarks |
|---|---|---|---|
| System IO | Cable side | (RCON) DFMC1,5/5-ST-3,5 | Standard accessories |
| | | (RSEL) DFMC1,5/8-ST-3,5 | Standard accessories |
| Drive-source cutoff | Cable side | (REC) DFMC1,5/4-ST-3,5 | Standard accessories |
| Network | Cable side | Ethernet ANSI/TIA/EIA-568-B Category 5 or higher shielded 8P8C modular plug (RJ45) | To be prepared by the customer |
| | Controller side | Ethernet ANSI/TIA/EIA-568-B Category 5 or higher shielded 8P8C modular jack (RJ45) | |

## ▌Network connection cable

| Pin No. | Signal name | Description | Compatible wire diameter |
|---|---|---|---|
| 1 | TD + | Transmit data + | |
| 2 | TD - | Transmit data - | |
| 3 | RD + | Receive data + | |
| 4 | - | Not used | For the Ethernet cable, use a straight STP cable of Category 5 or higher. |
| 5 | - | Not used | |
| 6 | RD - | Receive data - | |
| 7 | - | Not used | |
| 8 | - | Not used | |

Network connector

**58**

# PROFINET IO connection specification



▌Model: **RCON-GW/GWG-PRT**    ▌Model: **RSEL-G-PRT**    ▌Model: **REC-GW-PRT**

## ▌Specifications

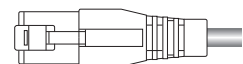| | RCON | RSEL | REC |
|---|---|---|---|
| Operation type | Positioner Type | Program Type | Positioner Type |
| Power supply input voltage | 24VDC ± 10% | | |
| Power supply current | 0.8A (with Ethernet: 1.0A) | 1.2A | 0.8A |
| Ambient operating temperature & humidity | 0~55°C#, 5%RH to 85%RH (non-condensing or freezing) | | |
| Operating atmosphere | Avoid corrosive gas and excessive dust | | |
| Safety category compliance | GWG specification: 4 compatible | 4 compatible | - |
| Degree of protection | IP20 | | |
| Mass | 167g | 270g | 135g |
| Accessories | (GWG specification) Dummy plug DP-5 | Dummy plug DP-4S | - |
| External dimensions | W 30mm × H 115mm × D 95mm | W 56.6mm × H 115mm × D 95mm | W 30mm × H 115mm × D 95mm |
| PC teaching software | RCM-101-USB | IA-101-X-∗ | RCM-101-USB |
| Teaching pendant | TB-02/TB-03 | | |

# A fan unit must be attached during use in environments exceeding 40°C (excluding REC)

| Connector area | | Cable connector model | Remarks |
|---|---|---|---|
| System IO | Cable side | (RCON) DFMC1,5/5-ST-3,5 | Standard accessories |
| | | (RSEL) DFMC1,5/8-ST-3,5 | Standard accessories |
| Drive-source cutoff | Cable side | (REC) DFMC1,5/4-ST-3,5 | Standard accessories |
| Network | Cable side | Ethernet ANSI/TIA/EIA-568-B Category 5 or higher shielded 8P8C modular plug (RJ45) | To be prepared by the customer |
| | Controller side | Ethernet ANSI/TIA/EIA-568-B Category 5 or higher shielded 8P8C modular jack (RJ45) | |

## ▌Network connection cable

| Pin No. | Signal name | Description | Compatible wire diameter |
|---|---|---|---|
| 1 | TD + | Transmit data + | |
| 2 | TD - | Transmit data - | |
| 3 | RD + | Receive data + | |
| 4 | - | Not used | For the Ethernet cable, use a straight STP cable of Category 5 or higher. |
| 5 | - | Not used | |
| 6 | RD - | Receive data - | |
| 7 | - | Not used | |
| 8 | - | Not used | |

Network connector

# No I/O connection specification

## Specifications

| | RSEL |
|---|---|
| Operation type | Program Type |
| Power supply input voltage | 24VDC ± 10% |
| Power supply current | 1.2A |
| Ambient operating temperature & humidity | 0~55℃#, 5%RH to 85%RH (non-condensing or freezing) |
| Operating atmosphere | Avoid corrosive gas and excessive dust |
| Safety category compliance | 4 compatible |
| Degree of protection | IP20 |
| Mass | 270g |
| Accessory | Dummy plug DP-4S |
| External dimensions | W 56.6mm × H 115mm × D 95mm |
| PC teaching software | IA-101-X-∗ |
| Teaching pendant | TB-02/TB-03 |

# A fan unit must be attached during use in environments exceeding 40℃ (excluding REC)

▌Model: **RSEL-G-E**

| Connector | | Cable connector model (manufacturer) | Remarks |
|---|---|---|---|
| System IO | Cable side | DFMC1,5/8-ST-3,5 (Phoenix Contact) | |

# NPN/PNP connection specification

## Specifications

| | RSEL |
|---|---|
| Operation type | Program Type |
| Power supply input voltage | 24VDC ± 10% |
| Power supply current | 1.2A |
| Ambient operating temperature & humidity | 0~55℃#, 5%RH to 85%RH (non-condensing or freezing) |
| Operating atmosphere | Avoid corrosive gas and excessive dust |
| Safety category compliance | 4 compatible |
| Degree of protection | IP20 |
| Mass | 270g |
| Accessory | Dummy plug DP-4S, PIO flat cable CB-PAC-PIO∗∗∗ ## |
| External dimensions | W 56.6mm × H 115mm × D 95mm |
| PC teaching software | IA-101-X-∗ |
| Teaching pendant | TB-02/TB-03 |

# A fan unit must be attached during use in environments exceeding 40℃ (excluding REC)
## If the cable length of the model specification is 0m, PIO cable is not supplied.

▌Model: **RSEL-G-NP/PN**

| Connector | | Cable connector model (manufacturer) | Remarks |
|---|---|---|---|
| System IO | Cable side | DFMC1,5/8-ST-3,5 (Phoenix Contact) | |
| IO slot | Cable side | HIF6-40PA-1,27R* | Options |
| | Controller side | HIF6-40PA-1,27DS(71) | |

*Connect an IO cable (CB-PAC-PIO☐☐☐)

# Driver Unit

❚ Features A controller unit for actuator control.

## ❚ 24V driver unit for RCP series connection

A driver unit for stepper motor connection.
Can be connected to all RCP series actuators.

| Model | Type | Compatible motor capacity |
|---|---|---|
| RCON-PC-1 | 1-axis connection | 1.2A (□20/28/35/42/56) |
| RCON-PC-2 | 2-axis connection | |
| RCON-PCF-1 | 1-axis connection *For high thrust | 4A (□56/60/86) |

### ❚ Specifications

| | |
|---|---|
| Power | 24VDC ± 10% |
| Control power | (Without brake) 0.2A (With brake, 1-axis specification) 0.4A (With brake, 2-axis specification) 0.6A |
| Ambient operating temperature & humidity | (Without fan) 0~40°C (With fan) 0~55°C, 5% RH to 85% RH (non-condensing or freezing) |
| Operating atmosphere | Avoid corrosive gas and excessive dust |
| Degree of protection | IP20 |
| Mass | (1-axis specification) 175g (2-axis specification) 180g |
| External dimensions | W22.6mm × H115mm × D95mm |
| Accessories | Drive source shutoff connector (DFMC1,5/2-STF-3,5) |
| Compatible Type | RCON/RSEL |

## ❚ 24V driver unit for RCA series connection

A driver unit for AC servo motor connection.
Can be connected to all RCA series actuators.

| Model | Type | Compatible motor capacity |
|---|---|---|
| RCON-AC-1 | 1-axis connection | 2W - 30W |
| RCON-AC-2 | 2-axis connection | |

### ❚ Specifications

| | |
|---|---|
| Power | 24VDC ± 10% |
| Control power | (Without brake) 0.2A (With brake, 1-axis specification) 0.4A (With brake, 2-axis specification) 0.6A |
| Ambient operating temperature & humidity | (Without fan) 0~40°C (With fan) 0~55°C, 5% RH to 85% RH (non-condensing or freezing) |
| Operating atmosphere | Avoid corrosive gas and excessive dust |
| Degree of protection | IP20 |
| Mass | (1-axis specification) 175g (2-axis specification) 180g |
| External dimensions | W22.6mm × H115mm × D95mm |
| Accessories | Drive source shutoff connector (DFMC1,5/2-STF-3,5) |
| Compatible Type | RCON/RSEL |

## ❚ 24V driver unit for RCD series connection

A driver unit for DC brush-less motor connection.
Can be connected to all RCD series actuators.

| Model | Type | Compatible motor capacity |
|---|---|---|
| RCON-DC-1 | 1-axis connection | 3W |
| RCON-DC-2 | 2-axis connection | |

### ❚ Specifications

| | |
|---|---|
| Power | 24VDC ± 10% |
| Control power | (Without brake) 0.2A (With brake, 1-axis specification) 0.4A (With brake, 2-axis specification) 0.6A |
| Ambient operating temperature & humidity | (Without fan) 0~40°C (With fan) 0~55°C, 5% RH to 85% RH (non-condensing or freezing) |
| Operating atmosphere | Avoid corrosive gas and excessive dust |
| Degree of protection | IP20 |
| Mass | (1-axis specification) 175g (2-axis specification) 180g |
| External dimensions | W22.6mm × H115mm × D95mm |
| Accessories | Drive source shutoff connector (DFMC1,5/2-STF-3,5) |
| Compatible Type | RCON/RSEL |

## 230V driver unit — 230V AC motor-equipped actuator connection

This driver unit connects 230VAC servo actuators from 60W to 750W.

| Model | Type | Compatible motor capacity |
|---|---|---|
| RCON-SC | 1-axis connection | 60W/100W/150W/200W 300W/400W/600W/750W |

### Specifications

| | |
|---|---|
| Control power input specification | 24VDC ±10% |
| Control power | (Without brake) 0.2A<br>(With brake) 0.5A |
| Ambient operating temperature & humidity | (With fan) 0~55℃, 5% RH to 85% RH (non-condensing or freezing) |
| Operating atmosphere | Avoid corrosive gas and excessive dust |
| Degree of protection | IP20 |
| Mass | 438g |
| External dimensions | W45.2mm×H115mm×D95mm |
| Accessories | Fan unit RCON-FUH, dummy plug DP-6 |
| Compatible Type | RCON/RSEL |

Example: With 3-pharse 230VAC power supply (max 2400W), 6 axes of 400W types can be connected with 6 units of RCON-SC-1 and 1unit of RCON-PS2-3.

## 230V power supply unit

This power supply unit is for 230VAC input only. A 230V driver unit must be connected.

| Model |
|---|
| RCON-PS2-3 |

*A terminal unit is supplied (RCON-GW-TRS).

### Specifications

| | |
|---|---|
| Motor power input voltage | Single-phase/three-phase 200VAC~230VAC ±10% |
| Maximum power capacity | 1600W (1-phase 230VAC)<br>2400W (3-phase 230VAC) |
| Ambient operating temperature & humidity | (With fan) 0~55℃, 5% RH to 85% RH (non-condensing or freezing) |
| Operating atmosphere | Avoid corrosive gas and excessive dust |
| Degree of protection | IP20 |
| Mass | 393g |
| External dimensions | W45.2mm×H115mm×D95mm |
| Accessories | Fan unit RCON-FU, power supply connector SPC5/4-STF-7,62 |
| Compatible Type | RCON/RSEL |

* A noise filter is installed inside.

# Other Units

## SCON extension unit

SCON-CB/CGB can be connected to operate an actuator with 230V motor.

| Model |
|---|
| RCON-EXT |

### Specifications

| | |
|---|---|
| Power | 24VDC ± 10% |
| Control power | 0.1A |
| Ambient operating temperature & humidity | 0~55℃, 5% RH to 85% RH (non-condensing or freezing) |
| Operating atmosphere | Avoid corrosive gas and excessive dust |
| Degree of protection | IP20 |
| Mass | 99g |
| External dimensions | W22.6mm × H115mm × D95mm |
| Accessories | Terminal connector RCON-EXT-TR |
| Compatible Type | RCON/RSEL |

## PIO/SIO/SCON extension unit

This specification model allows PIO/SIO to be connected to an extension unit for connecting SCON-CB/CGB.

| Model |
|---|
| RCON-EXT-NP (NPN specification) |
| RCON-EXT-PN (PNP specification) |

### Specifications

| | |
|---|---|
| Power | 24VDC ± 10% |
| Control power | 0.1A |
| Input Output | Input 16 points, Output 16 points |
| Ambient operating temperature & humidity | 0~55℃, 5% RH to 85% RH (non-condensing or freezing) |
| Operating atmosphere | Avoid corrosive gas and excessive dust |
| Degree of protection | IP20 |
| Mass | 110g |
| External dimensions | W22.6mm × H115mm × D95mm |
| Accessories | Expansion SIO port connector FMC1,5/3-STF-3,5 Terminal connector RCON-EXT-TR PIO cable CB-PAC-PIO∗∗∗ (In case the cable length model other than "0" is specified |
| Compatible Type | RSEL |

* Refer to P. 66 for PIO signal table and internal circuit

## PIO unit

This unit is for PIO extension.

| Model |
|---|
| RCON-NP (NPN specification) |
| RCON-PN (PNP specification) |

### Specifications

| | |
|---|---|
| Power | 24VDC ± 10% |
| Control power | 0.1A |
| Input Output | Input 16 points, Output 16 points |
| Ambient operating temperature & humidity | 0~55℃, 5% RH to 85% RH (non-condensing or freezing) |
| Operating atmosphere | Avoid corrosive gas and excessive dust |
| Degree of protection | IP20 |
| Mass | 105g |
| External dimensions | W22.6mm × H115mm × D95mm |
| Accessories | PIO cable CB-PAC-PIO∗∗∗ (In case the cable length model other than "0" is specified |
| Compatible Type | RSEL |

* Refer to P. 66 for PIO signal table and internal circuit

## ■ EC connection unit

This unit allows up to 4 axes of EleCylinder with ACR option to be connected.

**RCON
RSEL
REC**



| Model |
|---|
| RCON-EC |

### ▌Specifications

| | |
|---|---|
| Power | 24VDC ± 10% |
| Control power | 0.1A |
| Ambient operating temperature & humidity | 0~55℃, 5% RH to 85% RH (non-condensing or freezing) |
| Operating atmosphere | Avoid corrosive gas and excessive dust |
| Degree of protection | IP20 |
| Mass | 123g |
| External dimensions | W22.6mm×H115mm×D95mm |
| Accessories | Drive source shutoff connector (DFMC1,5/4-ST-3,5 (REC)) |
| Compatible Type | RCON/RSEL/REC |

## ▌Simple absolute unit   *For 24V driver connection

This unit is to be connected when using an actuator with incremental specification as absolute specification.

**RCON
RSEL**



| Model | Type | Compatible motor |
|---|---|---|
| RCON-ABU-P | For RCP series connection | Pulse motor |
| RCON-ABU-A | For RCA series connection | AC servo motor |

### ▌Specifications

| | |
|---|---|
| Power | 24VDC ± 10% |
| Control power | 0.2A |
| Absolute battery model | AB-7 |
| Battery voltage | 3.6V |
| Charging time | Approx. 72 hours |
| Ambient operating temperature & humidity | 0~40℃, 5% RH to 85% RH (non-condensing or freezing) |
| Operating atmosphere | Avoid corrosive gas and excessive dust |
| Degree of protection | IP20 |
| Mass | 271g (including 173g for absolute battery) |
| External dimensions | W22.6mm×H115mm×D95mm |
| Accessories | Cable (CB-ADPC-MPA005) |
| Compatible Type | RCON/RSEL |

## Terminal unit

A terminal resistor for returning RCON/RSEL serial communication and input/output signals. (Supplied with purchase of gateway unit.)

| Model |
|---|
| RCON-GW-TR |

### Specifications

| | |
|---|---|
| Power | 24VDC ± 10% |
| Ambient operating temperature & humidity | 0~55℃, 5% RH to 85% RH (non-condensing or freezing) |
| Operating atmosphere | Avoid corrosive gas and excessive dust |
| Degree of protection | IP20 |
| Mass | 48g |
| External dimensions | W12.6mm × H115mm × D95mm |
| Compatible Type | RCON without RCON-PS2-3 RSEL without RCON-PS2-3 |

## 230V terminal unit

This terminal resistor is for connecting a 230VAC driver unit. (Supplied with purchase of power supply unit.)

| Model |
|---|
| RCON-GW-TRS |

### Specifications

| | |
|---|---|
| Power | 24VDC ± 10% |
| Ambient operating temperature & humidity | 0~55℃, 5% RH to 85% RH (non-condensing or freezing) |
| Operating atmosphere | Avoid corrosive gas and excessive dust |
| Degree of protection | IP20 |
| Mass | 40g |
| External dimensions | W12.6mm × H115mm × D95mm |
| Compatible Type | RCON with RCON-PS2-3 RSEL with RCON-PS2-3 |

## REC terminal unit

This terminal resistor is for connecting an EC module only. (Supplied with purchase of gateway unit.)

| Model |
|---|
| RCON-GW-TRE |

### Specifications

| | |
|---|---|
| Power | 24VDC ± 10% |
| Ambient operating temperature & humidity | 0~55℃, 5% RH to 85% RH (non-condensing or freezing) |
| Operating atmosphere | Avoid corrosive gas and excessive dust |
| Degree of protection | IP20 |
| Mass | 48g |
| External dimensions | W12.6mm × H115mm × D95mm |
| Compatible Type | REC |

## PIO Signal Chart

Standard PIO connector, extension PIO connector pin layout

| Pin No. | Category | Assignment | Pin No. | Category | Assignment |
|---------|----------|------------|---------|----------|------------|
| 1A | 24V | P24 | 1B | | OUT0 |
| 2A | 24V | P24 | 2B | | OUT1 |
| 3A | - | - | 3B | | OUT2 |
| 4A | - | - | 4B | | OUT3 |
| 5A | | IN0 | 5B | | OUT4 |
| 6A | | IN1 | 6B | | OUT5 |
| 7A | | IN2 | 7B | | OUT6 |
| 8A | | IN3 | 8B | Output | OUT7 |
| 9A | | IN4 | 9B | | OUT8 |
| 10A | | IN5 | 10B | | OUT9 |
| 11A | | IN6 | 11B | | OUT10 |
| 12A | | IN7 | 12B | | OUT11 |
| 13A | Input | IN8 | 13B | | OUT12 |
| 14A | | IN9 | 14B | | OUT13 |
| 15A | | IN10 | 15B | | OUT14 |
| 16A | | IN11 | 16B | | OUT15 |
| 17A | | IN12 | 17B | - | - |
| 18A | | IN13 | 18B | - | - |
| 19A | | IN14 | 19B | 0V | N |
| 20A | | IN15 | 20B | 0V | N |

\* The same assignment will be applied to each unit even for an extension unit (PIO specification).
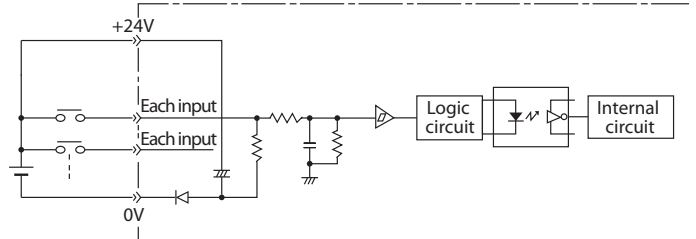
## I/O internal circuit

[Input]

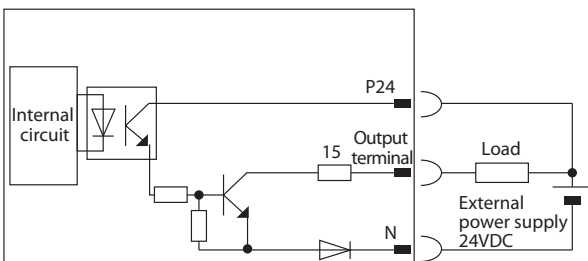| Item | Specifications |
|------|----------------|
| Number of input | 16 points |
| Input voltage | 24VDC ± 10% |
| Input current | 4mA/1 circuit |
| On/off voltage | On voltage: Min. 18VDC (3.5mA)<br>Off voltage: Max. 6VDC (1mA) |
| Isolation method | Photocoupler |
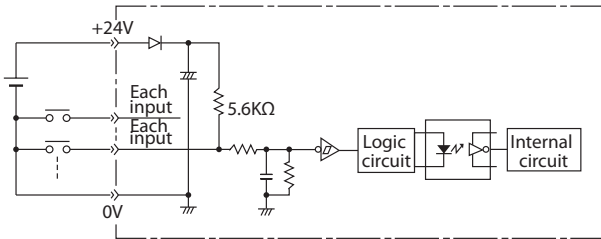
[NPN specification]



[PNP specification]



[Output]

| Item | Specifications |
|------|----------------|
| Output current | 16 points |
| Rated load voltage | 24VDC ± 10% |
| Max. current | 50mA/1 circuit |
| Isolation method | Photocoupler |

[NPN specification]



[PNP specification]



**66**
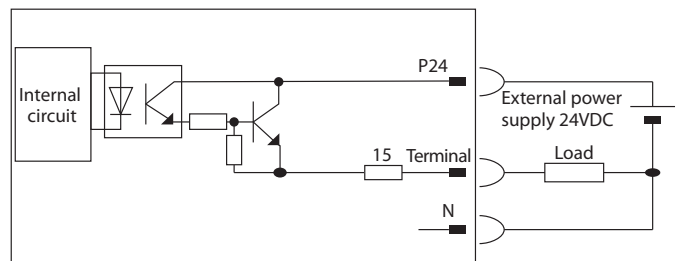
## Maximum connectable axes by RCON-GW operation mode

The max. number of connectable axes when all the axes operate in the same operation mode.
* If different operation modes exist, please ask IAI.

| Operation mode / Field network | Remote I/O | | | | | | Motion network |
|---|---|---|---|---|---|---|---|
| | Direct numerical control mode | Simple direct mode | Positioner mode 1 | Positioner mode 2 | Positioner mode 3 | Positioner mode 5 | |
| DeviceNet | 8 axes | 16 axes | 16 axes | 16 axes | 16 axes | 16 axes | - |
| CC-Link | 16 axes | 16 axes | 16 axes | 16 axes | 16 axes | 16 axes | - |
| CC-Link IE Field | 16 axes | 16 axes | 16 axes | 16 axes | 16 axes | 16 axes | - |
| PROFIBUS-DP | 8 axes | 16 axes | 16 axes | 16 axes | 16 axes | 16 axes | - |
| EtherCAT | 8 axes | 16 axes | 16 axes | 16 axes | 16 axes | 16 axes | - |
| EtherNet/IP | 8 axes | 16 axes | 16 axes | 16 axes | 16 axes | 16 axes | - |
| PROFINET IO | 8 axes | 16 axes | 16 axes | 16 axes | 16 axes | 16 axes | |
| EtherCAT motion | - | - | - | - | - | - | 8 axes |

## Field Network Operation Mode (EtherCAT motion is excluded)

The RCON-GW field network control operation mode can be selected from the following control modes.
Data required for operation (target position, speed, acceleration, push current value, etc.) are written by a connected PLC or other host controller into the specified addresses. * The EC connection unit is not supported.

| Operation mode | Description | Overview |
|---|---|---|
| Direct numerical control mode | This mode allows designating the target position, speed, acceleration/deceleration, and current limit value for pushing numerically. Also, it is capable of monitoring the present position, present speed, and the command current value with 0.01mm increments. | PLC — Communication via a field network. Target position / Positioning width / Speed, acceleration/deceleration / Pushing percentage Control signal. Current position / Motor current (command value) / Present speed (command value) / Alarm code Status signal. Actuator |
| Simple direct value mode | Can modify any of the stored target positions by numerical value. Also allows monitoring of the present position numerically with 0.01mm increments. | PLC — Communication via a field network. Target position / Target position No. / Control signal. Present position / Completed position No. / Status signal. Actuator |
| Positioner 1 mode | Can store up to 128 points of position data, and can move to the stored position. Also allows monitoring of the present position numerically with 0.01mm increments. | |
| Positioner 2 mode | Can store up to 128 points of position data, and can move to the stored position. This mode does not allow monitoring of the present position. This mode has less in/out data transfer volume than the Positioner 1 mode. | PLC — Communication via a field network. Target position No. / Control signal. Completed position No. / Status signal. Actuator |
| Positioner 3 mode | Can store up to 128 points of position data, and can move to the stored position. This mode does not allow monitoring of the present position. This mode has less in/out data transfer volume than the Positioner 2 mode, and controls travel with the minimum of signals. | PLC — Communication via a field network. Target position No. / Control signal. Completed position No. / Status signal. Actuator |
| Positioner 5 mode | Can store up to 16 points of position data, and can move to the stored position. This mode has less in/out data transfer volume and fewer positioning tables than the Positioner 2 mode, and allows monitoring of the present position numerically with 0.1mm increments. | PLC — Communication via a field network. Target position No. / Control signal. Present position / Completed position No. / Status signal. Actuator |

## List of Functions by Operation Mode (EtherCAT motion is excluded)

\* The EC connection unit is not supported.

| | Direct numerical control mode | Simple direct value mode | Positioner 1 mode | Positioner 2 mode | Positioner 3 mode | Positioner 5 mode |
|---|---|---|---|---|---|---|
| Number of positioning points | Unlimited | 128 points | 128 points | 128 points | 128 points | 16 points |
| Home return motion | ○ | ○ | ○ | ○ | ○ | ○ |
| Positioning operation | ○ | ○ | △ | △ | △ | △ |
| Speed, acceleration/deceleration settings | ○ | △ (Note 1) | △ | △ | △ | △ |
| Different acceleration and deceleration settings | — | △ | △ | △ | △ | △ |
| Pitch feed (incremental) | ○ | △ | △ | △ | — | △ |
| JOG operation | △ | △ | △ | △ | — | △ |
| Position data writing | — | — | ○ | ○ | — | — |
| Push-motion operation | ○ | △ | △ | △ | △ | △ |
| Speed changes while traveling | ○ | △ | △ | △ | △ | △ |
| Pausing | ○ | ○ | ○ | ○ | ○ | ○ |
| Zone signal output | △ (2 points) | △ (2 points) | △ (2 points) | △ (2 points) | △ (1 point) | △ (2 points) |
| Position zone signal output | — | △ | △ | △ | — | — |
| Overload warning output | ○ | ○ | ○ | ○ | — | ○ |
| Vibration control (Note 2) | — | △ | △ | △ | △ | △ |
| Collision detection function (Note 3) | — | △ | △ | △ | △ | △ |
| Current position reading (Note 4) (resolution) | ○ (0.01mm) | ○ (0.01mm) | ○ (0.01mm) | — | — | ○ (Note 5) (0.1mm) |

\* ○ : Direct setting is possible, △ : Position data or parameter input is required, — : The operation is not supported.
Note 1: Up to 128 points of position data can be set.
Note 2: This function is limited to the AC servo motor specification.
Note 3: This function is limited to the pulse motor specification.
Note 4: The resolution to control a DD motor is 0.001 degree (0.01 degree for positioner 5 mode only).
Note 5: The maximum output value in positioner 5 mode is 3276.7mm (327.67 degrees for DD motor).
　　　To control the actuator in an operation range exceeding the maximum value, select a different operation mode.

## EleCylinder I/O signal table

| Pin assignment of the power supply and I/O connector | | | |
|---|---|---|---|
| Pin No. | Connector decal | Signal abbreviation | Function description |
| B3 | Backward | ST0 | Backward command |
| B4 | Forward | ST1 | Forward command |
| B5 | Alarm cancel | RES | Alarm cancel |
| A3 | Backward complete | LS0/PE0 | Backward complete/Push complete |
| A4 | Forward complete | LS1/PE1 | Forward complete/Push complete |
| A5 | Alarm | *ALM | Alarm detection (b-contact) |
| B2 | Brake release | BKRLS | Brake forced release (in case of with brake specification) |
| B1 | 24V | 24V | 24V input |
| A1 | 0V | 0V | 0V input |
| A2 | (24V) | (24V) | 24V input |

## External dimensions

### Master unit
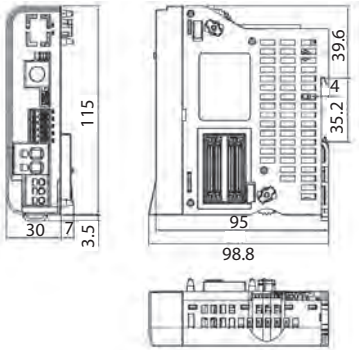
**RCON**

**RSEL**
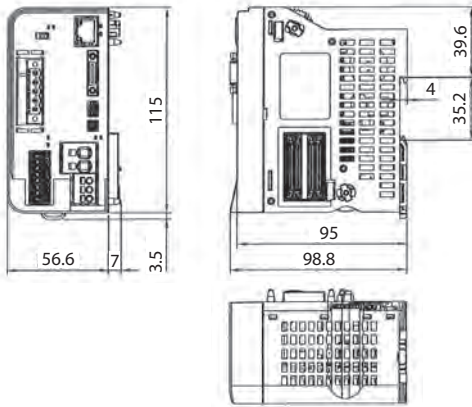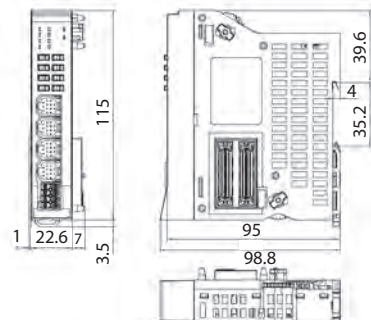
**REC**
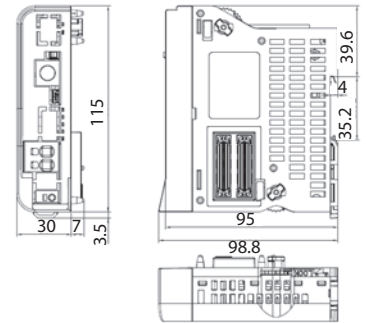
### Driver Unit

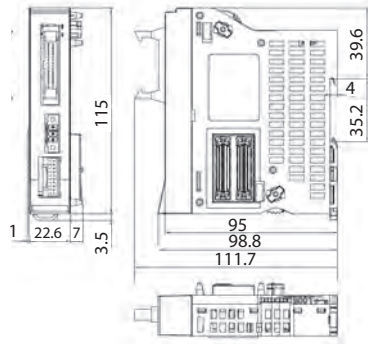**24V**
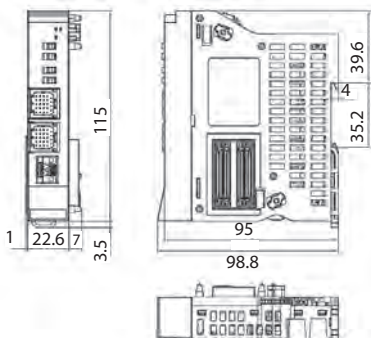
**230V**
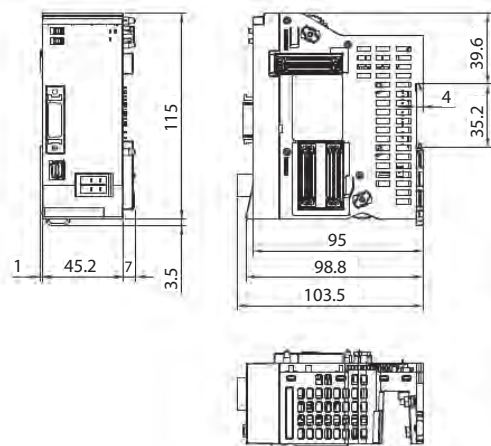
**230V power supply unit**
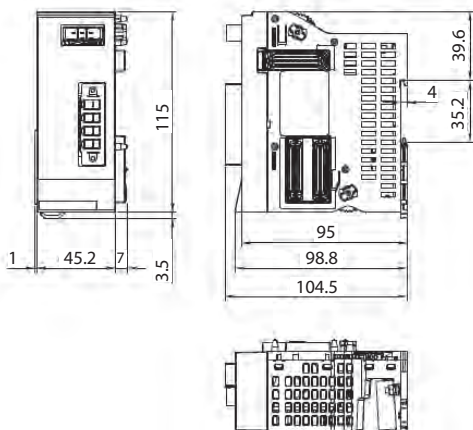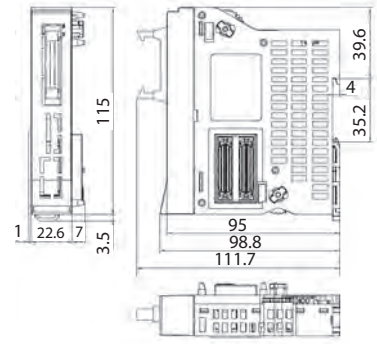
**EC connection unit**

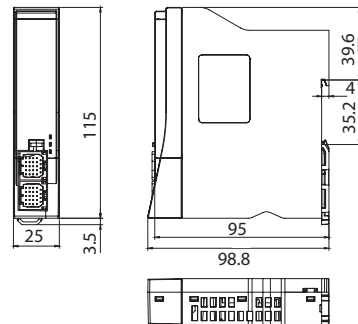## Extension unit
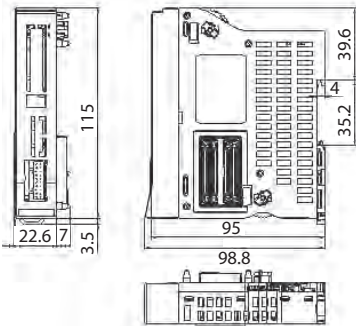
### SCON extension



### PIO/SIO/SCON extension



### PIO



## Terminal unit
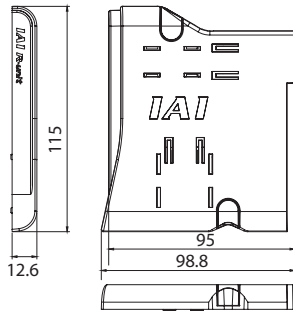


## Simple absolute unit



## Fan unit



### For 230V driver



**70**
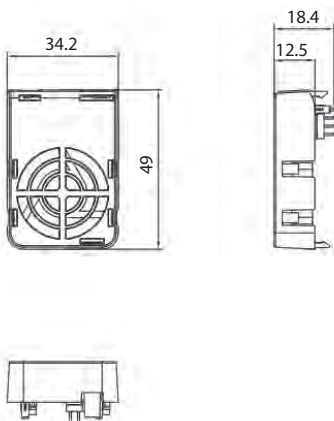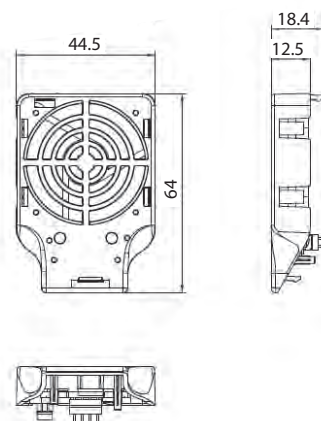
## RCON

**8 24V driver units (16 axes)**
**With fan**
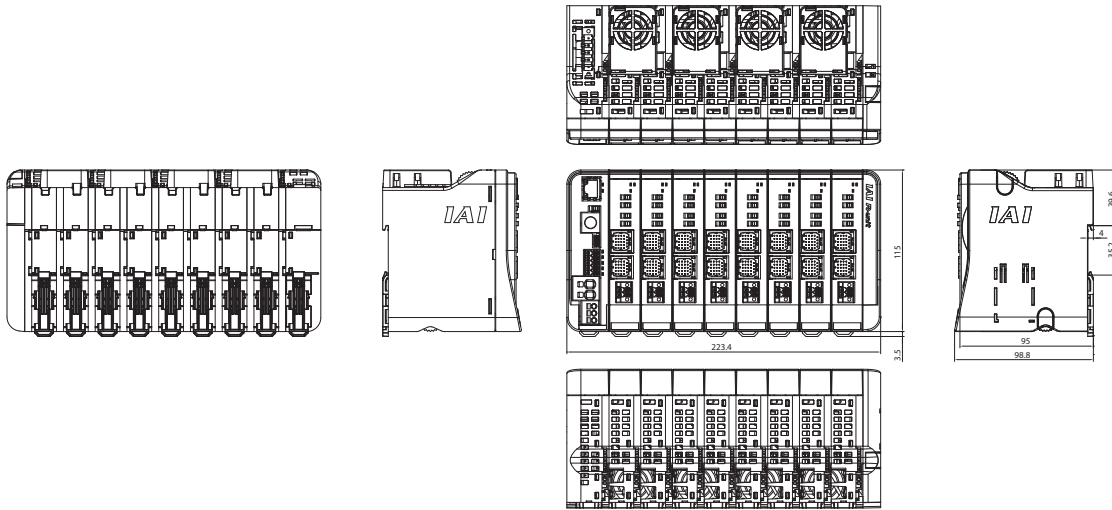
## RCON
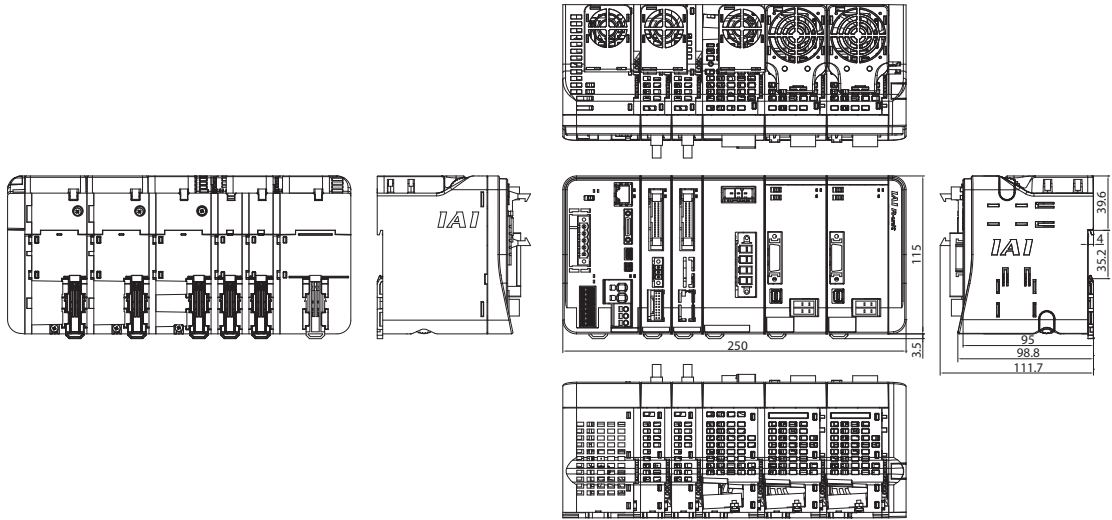
**1 230V driver unit (1 axis)**

**71**
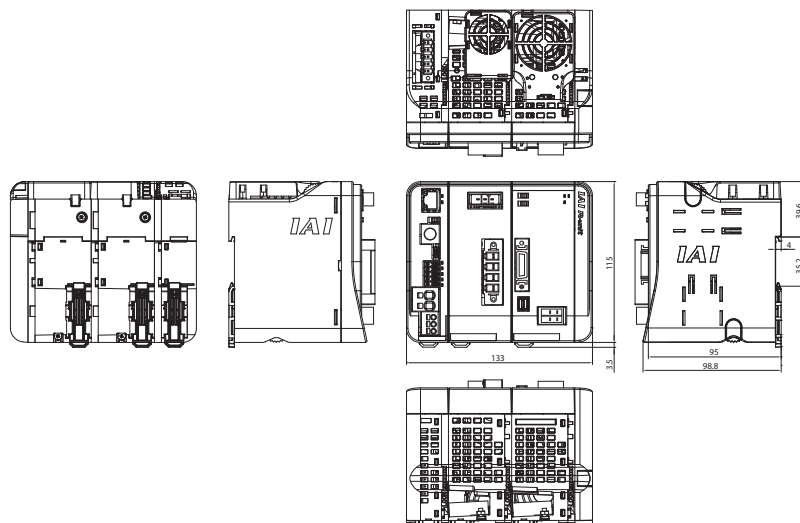
## RSEL

**Extension unit (SCON connection, PIO unit)**
**2 230V drivers (2 axes)**
**With fan**

## REC

**For 4 EC connection units (16 axes)**
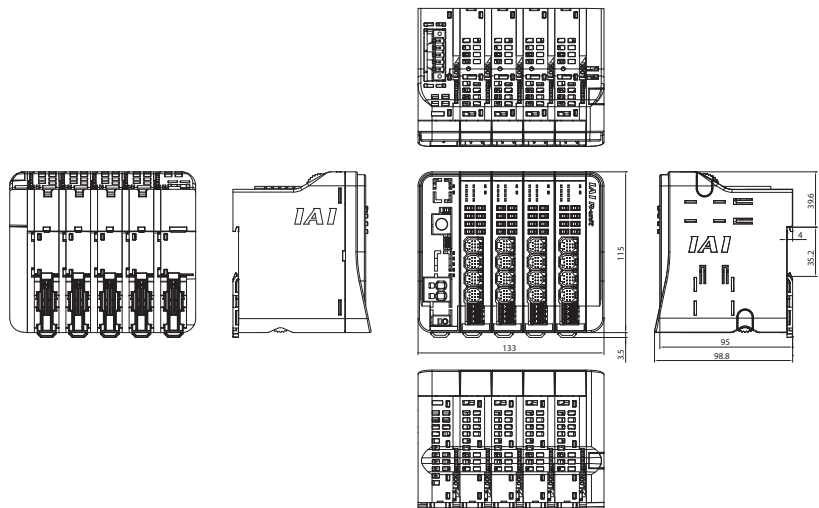
# ■ Name of Each Component

## Master unit

### RCON-GW/GWG



(Front)　　(Top)

### RSEL-G



(Front)

### REC-GW



(Top)　　(Front)　　(Top)

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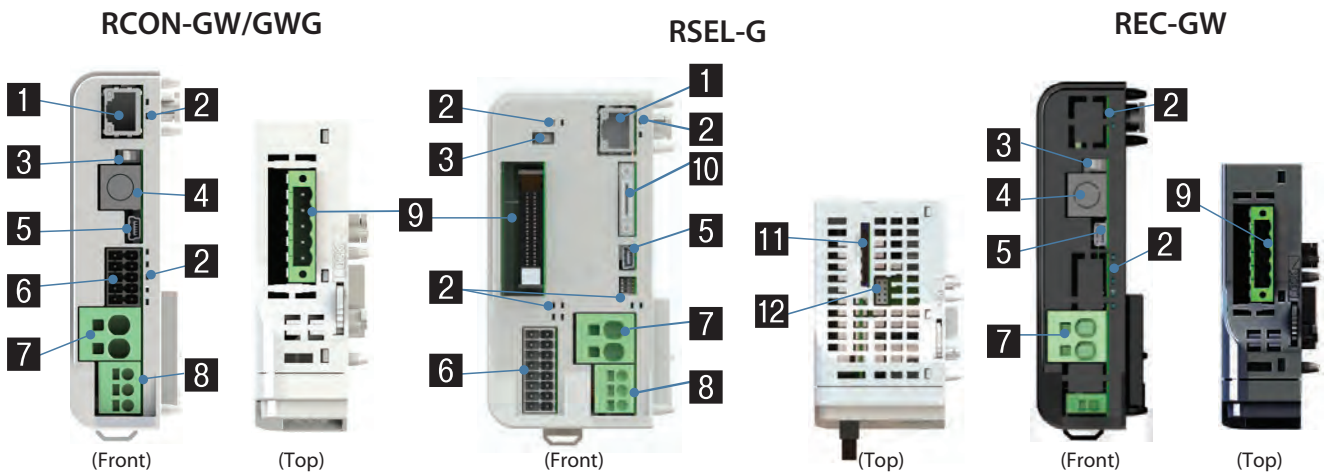
**1** **EtherNet connector**
A connector for connecting to EtherNet.
(Selected as option for RCON.)

**2** **Status LED**
Represents the state of the controller.

**3** **AUTO/MANU switch**
A switch for automatic/manual operation.

**4** **SIO connector**
A connector for connecting the teaching pendant
and PC teaching software cable.

**5** **USB connector**
A connector for connecting the PC teaching software cable.

**6** **System I/O connector**
A connector with a serial communication line for STOP
input and PSA-24.
Allows for external AUTO/MANU switching input for RCON.

**7** **Motor power connector**
Motor power +24V supply connector.

**8** **Control power connector**
A connector for connecting control power +24V and FG.

**9** **Fieldbus connector/IO connector**
A connector for connecting the fieldbus connector selected
in I/O type.

**10** **Teaching connector**
A connector for connecting the teaching pendant and PC
dedicated software via RS232.

**11** **Memory card slot**
Insert an SD/SDHC card to perform updates.

**12** **Fan connector**
A connector to attach the fan unit.

---

## Driver Unit

### 24V series　　230V series



(Front)　(Top)　(Front)　(Top)
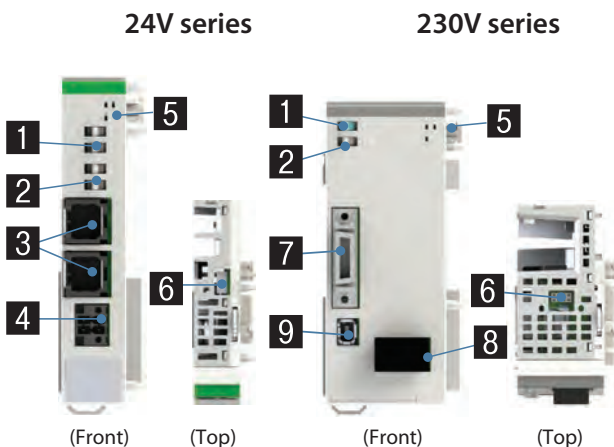
**1** **Jog switch**
A switch used for jog operations.

**2** **Brake release switch**
The forced brake release switch.
(On NOM side during normal operation.)

**3** **MPG connector**
A connector to connect the motor
encoder cable for actuators equipped
with a 24V pulse motor, AC servo
motor, or DC brush-less motor.

**4** **Drive source shutoff
connector**
A connector that allows for drive power
shutoff input for each actuator.

**5** **Status LED**
Represents the state of the controller.

**6** **Fan connector**
A connector to attach
the fan unit.

**7** **Encoder connector**
Connects the
230V actuator
encoder cable.

**8** **Motor connector**
Connects the
230V actuator motor cable.

**9** **Driver stop connector**
Shuts off power supply to the
motor in the internal circuit.

# EC connection unit
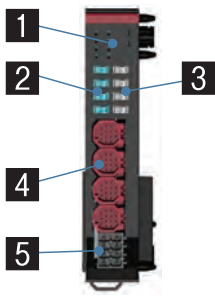
**1 Status LED**
Represents the state of the controller.

**2 Jog switch**
A switch used for jog operations.

**3 Brake release switch**
The forced brake release switch. (On NOM side during normal operation.)

**4 EC connector**
A connector to connect to EleCylinder. (with ACR option only.)

**5 Drive source shutoff connector**
A connector that allows for drive power shutoff input for each actuator.

# Power supply unit
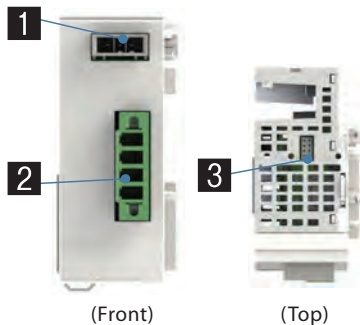
(Front)          (Top)

**1 External regenerative resistance connector**
A connector to connect to an external regenerative resistance unit.

**2 230VAC input connector**
A connector for three-phase/single-phase 230VAC.

**3 Fan connector**
A connector to connect the fan unit.

# Expansion unit
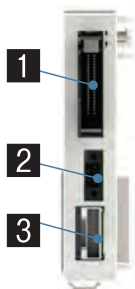
**RCON-EXT-NP/PN**     **RCON-NP/PN**     **RCON-EXT**

**1 PIO cable connector**
A connector for expansion PIO.

**2 SIO cable connector**
A connector for expansion communication.

**3 SCON cable connector**
A connector to connect an interface cable to connect to SCON.

# Simple absolute unit
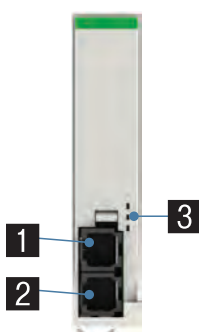
**1 Actuator cable connector**
A connector to connect to the actuator.

**2 Driver cable connector**
A connector to connect to the driver unit.

**3 Status LED**
Represents the state of the battery.

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## Touch panel teaching pendant

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

▌Model **TB-03-**□   [ Please contact IAI for the current supported versions. ]
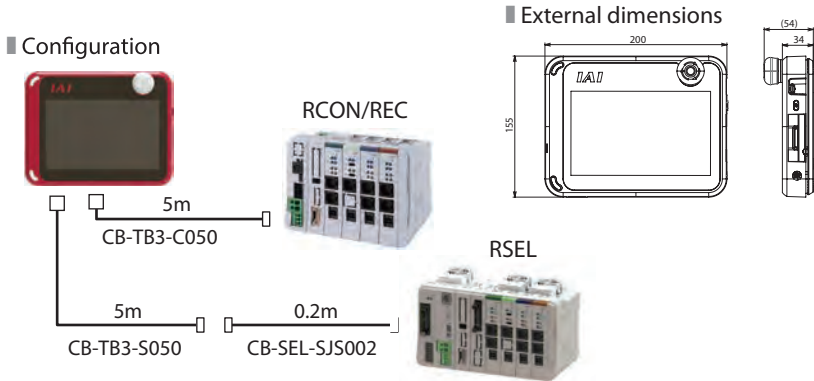
▌Configuration

RCON/REC

5m
CB-TB3-C050

RSEL

5m
CB-TB3-S050

0.2m
CB-SEL-SJS002

▌External dimensions

(54)
34
200
155

▌Specifications

| Rated voltage | 24VDC |
|---|---|
| Power consumption | 3.6W or less (150mA or less) |
| Ambient operating temperature | 0~40℃ |
| Ambient operating humidity | 20~85% RH (non-condensing) |
| Environmental resistance | IPX0 |
| Mass | 670g (TB-03 unit only) |
| Charging method | Wired connection with dedicated AC adapter/ controller |
| Wireless connection | Bluetooth4.2 class2 |

▌Model **TB-02(D)-**□   [ Please contact IAI for the current supported versions. ]
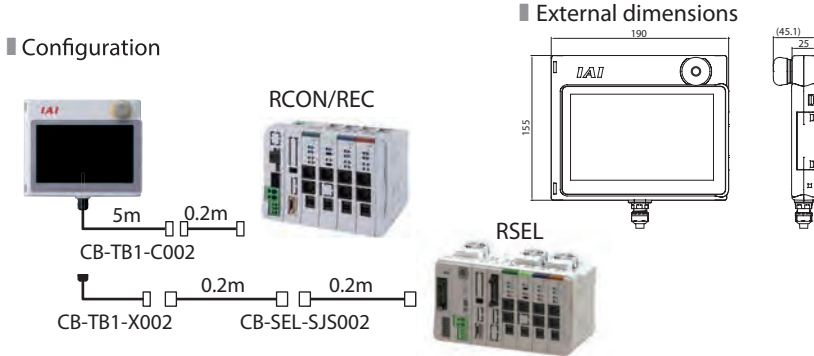
▌Configuration

RCON/REC

5m
CB-TB1-C002

0.2m

RSEL

0.2m
CB-TB1-X002

0.2m
CB-SEL-SJS002

▌External dimensions

(45.1)
25
190
155

▌Specifications

| Rated voltage | 24VDC |
|---|---|
| Power consumption | 3.6W or less (150mA or less) |
| Ambient operating temperature | 0~40℃ |
| Ambient operating humidity | 20~85% RH (non-condensing) |
| Environmental resistance | IP20 |
| Mass | 470g (TB-02 unit only) |

## PC Teaching Software (Windows only)

▌Features   Start-up support software which comes equipped with functions such as position/program teaching, trial operation, and monitoring.

**For RCON/REC**

▌**RC/EC PC Software**   [ Please contact IAI for the current supported versions. ]

[ Supported Windows versions: 7/8/8.1/10 ]

▌Configuration

PC teaching software (CD)

USB mini-B cable (to be prepared by the user)
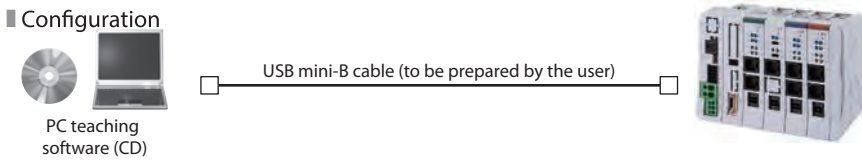
▌Model **RCM-101-USB**   [ Please contact IAI for the current supported versions. ]

(with an external device communication cable + USB conversion adapter + USB cable)

[ Supported Windows versions: 7/8/8.1/10 ]

▌Configuration

PC teaching software (CD)

USB conversion adapter
RCB-CV-USB

3m
USB cable:
CB-SEL-USB030

5m
External device communication
cable: CB-RCA-SIO050
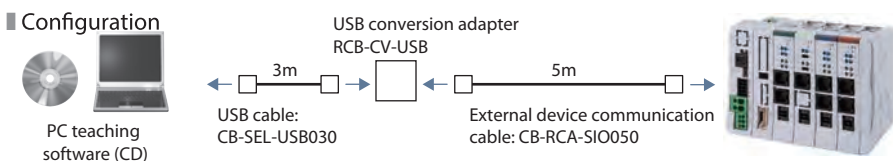
## ▌IA PC Software

▌Features   PC teaching software only.
If you want to connect both the controller and PC side with a USB cable or
Ethernet cable, only the software needs to be purchased. A cable that meet
the following specifications is to be prepared by the customer.

Notes
When operating the actuator by USB connection,
be sure to connect the stop switch
to the system I/O connector.

▌Configuration   Please contact IAI for the current supported versions.

| | Controller side connector | Maximum cable length |
|---|---|---|
| USB cable specification | USB Mini-B | 5m |
| Ethernet cable specification* | 10/100/1000BASE-T (RJ-45) | 5m |

Supported Windows versions:
7/8/8.1/10

**USB cable (to be prepared by the user)**

**\*Ethernet cable (to be prepared by the user)**

PC teaching software (CD)
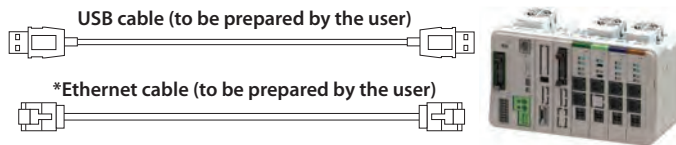
* In order to use EtherNet cable, parameters need to be set
by other cables of IA-101-X-MW-JS or USB mini-B.

▌Model   **IA-101-X-MW-JS** (With RS232C cable + connector conversion cable)

▌Configuration   Please contact IAI for the current supported versions.

Supported Windows versions:
7/8/8.1/10

5m

0.2m

RS232C cable
CB-ST-E1MW050-EB

Connector conversion
cable
CB-SEL-SJS002

PC teaching software (CD)
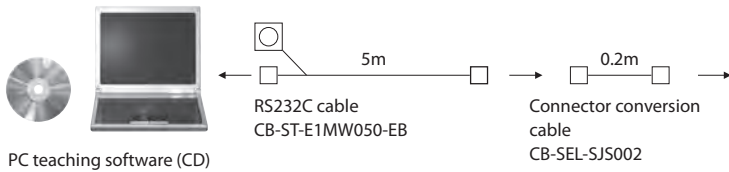
CB-ST-E1MW050-EB cannot be used "when building an enable system using an external power supply using the system I/O connector" or
"when building a duplex safety circuit". (The use of CB-ST-A2MW050-EB is required.)

▌Model   **IA-101-XA-MW** (With RS232C cable) * Compliant with safety category 4

▌Configuration   Please contact IAI for the current supported versions.

Supported Windows versions:
7/8/8.1/10

5m

0.2m

RS232C cable
CB-ST-A2MW050-EB

Connector conversion
cable
CB-SEL-SJS002
* Please order this
model separately.

PC teaching software (CD)

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## 24 VDC power supply    ⬭ Coming soon

❚ Overview  The recommended power supply for connection to R-units.
The power supply is the same height as RCON and can be easily installed on control panels.
It can also be connected to R-units to monitor power status.

❚ Model  **PSA-24 (without fan)**

❚ Model  **PSA-24L (with fan)**

❚ External dimensions

PSA-24
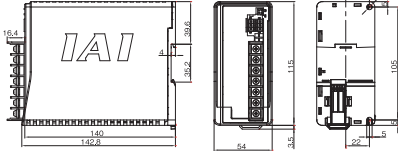
PSA-24L
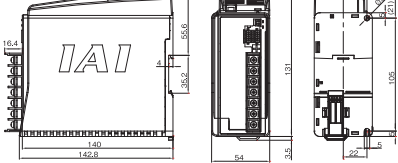
❚ Specifications Table

| Item | Specification | |
|---|---|---|
| | 115VAC input | 230VAC input |
| Power input voltage range | 100VAC~230VAC ±10% | |
| Input power supply current | 3.9A or less | 1.9A or less |
| Power capacity | Without fan: 250VA<br>With fan: 390VA | Without fan: 280VA<br>With fan: 380VA |
| Inrush current*¹ | Without fan: 17A (typ)<br>With fan: 27.4A (typ) | Without fan: 34A (typ)<br>With fan: 54.8A (typ) |
| Generated heat | 28.6W | 20.4W |
| Output voltage range*² | 24V ±10% | |
| Continuous rated output | Without fan: 8.5A (204W), with fan: 13.8A (330W) | |
| Peak output | 17A(408W) | |
| Efficiency | 86% or more | 90% or more |
| Parallel connection*³ | Max.: 5 units | |

*1  The pulse width of flowing inrush current is less than 5ms.
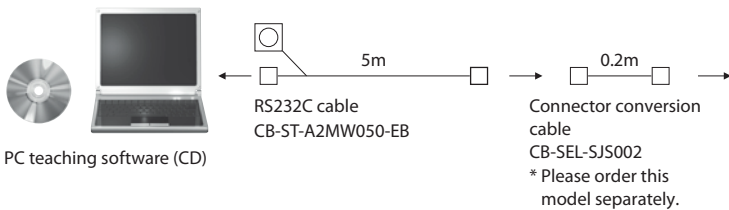*2  In order to enable parallel operation, this power supply can vary the output voltage according to the load. Therefore, the power supply unit is dedicated for IAI controllers.
*3  Parallel connection cannot be used under the following conditions.
 · Parallel connection of PSA-24 (specification without fan) and PSA-24L (specification with fan)
 · Parallel connection with a power supply unit other than this power supply

## DC power supply for driving motors

❚ Features  This unit supplies DC power for driving the 230V specification EleCylinder. One unit can supply power for up to 6 axes. (Within the max. connectable wattage)

❚ Model  **PSA-200-2**

(Input voltage: Single phase AC230V, Max. 1600W connectable)

❚ External dimensions
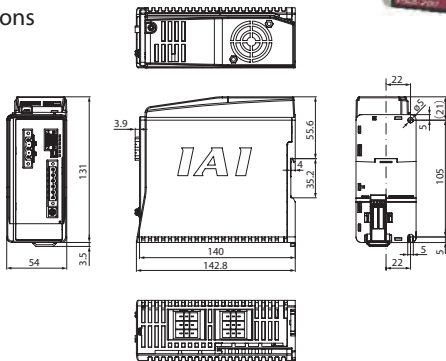
❚ Specifications

| | |
|---|---|
| Power input voltage range | Single phase AC230V specification:<br>AC200 - 230V ±10% |
| Input frequency range | 50Hz ±5% |
| Rush current (Note 1)  55℃ | Control power: 60A<br>Motor power: 70A |
| Output voltage | DC280V typ |
| Max. motor connectable wattage | Input voltage:<br>Single phase AC230V, Max. 1600W |
| Max. number of drivable axes | 6 axes |
| Momentary power failure resistance | 50Hz: 20ms, 60Hz: 16ms |
| Withstand voltage | AC1500V between primary and FG, for 1 minute |
| Insulation resistance | DC500V between secondary and FG, 10Ω or higher |
| Leak current | Total 3.1 mA<br>(when a recommended noise filter is used and 6 axes are connected) |
| Electric shock protection mechanism | Class 1　Basic insulation |

(Note 1) Rush current flows for approx. 20ms after turning on the power.
Be aware that the rush current varies according to the power line impedance and internal element temperature (thermistor).

## Maintenance Parts

### Fan unit

❚ Overview  This is an option to forcibly cool down the driver unit.

❚ Model  **RCON-FU**

For 230V driver
❚ Model  **RCON-FUH**

### Connector conversion cable

❚ Features  Converts a touch panel teaching pendant or RS232C cable D-sub 25-pin connector to an RSEL teaching connector. (TB-02/TB-03-S, IA-101-X-MW-JS accessory.)

❚ Model  **CB-SEL-SJS002**

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## Dummy plug

For RCON-GWG
▐ Model **DP-5**

For 230V driver
▐ Model **DP-6**

For RSEL
▐ Model **DP-4S**

## System I/O connector

▐ Overview   A connector for emergency stop input,
              operation mode switching input from exterior, etc.

For RCON-GW(G)
▐ Model **DFMC1,5/5-ST-3,5**
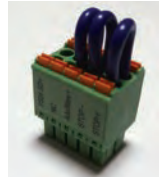
For RSEL
▐ Model **DFMC1,5/8-ST-3,5 (RSEL)**
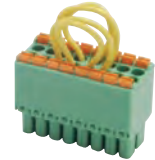
## Drive source shutoff connector

▐ Overview   A drive source shutoff input connector.

For 24V driver
▐ Model **DFMC1,5/2-STF-3,5**

For EC connection unit
▐ Model **DFMC1,5/4-ST-3,5 (REC)**

## 230V power supply connector

For 230V power supply
▐ Model **SPC5/4-STF-7,62**

## Terminal connector

▐ Overview   Required as a terminal resistor
              when connecting SCON.

▐ Model **RCON-EXT-TR**

## Expansion SIO port connector

For PIO/SIO/SCON connection

▐ Model **FMC1,5/3-STF-3,5**

## Replacement battery

▐ Overview   A replacement battery for the simple absolute unit.

▐ Model **AB-7**

## Regenerative resistance unit

▐ Overview   A unit that converts to heat the regenerative current generated when the motor decelerates.
              The 230V driver unit and 230V power supply unit are equipped with regenerative resistance inside.
              However, when energy generates at the same time, external regenerative resistance units are necessary.

▐ Model **RESU-2** (standard specification)/
         **RESUD-2** (DIN rail mounting specification)

▐ External dimensions
  <RESU-2>                          <RESUD-2>
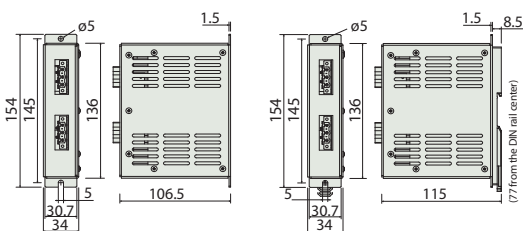
▐ **Specifications**

| Model | RESU-2 | RESUD-2 |
|---|---|---|
| Mass | approx. 0.4kg | |
| Internal regenerative resistance value | 235Ω 80W | |
| Mounting method | Screw mount | DIN rail mount |
| Supplied cable | CB-SC-REU010 | |

*When two regenerative
 units are required, please
 use one RESU-2 and one
 RESU-1 (please contact IAI
 for the details).

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When placing an order for a replacement cable, please use the model name shown below.

## Table of compatible cables

Motor encoder cable for 24V driver connection

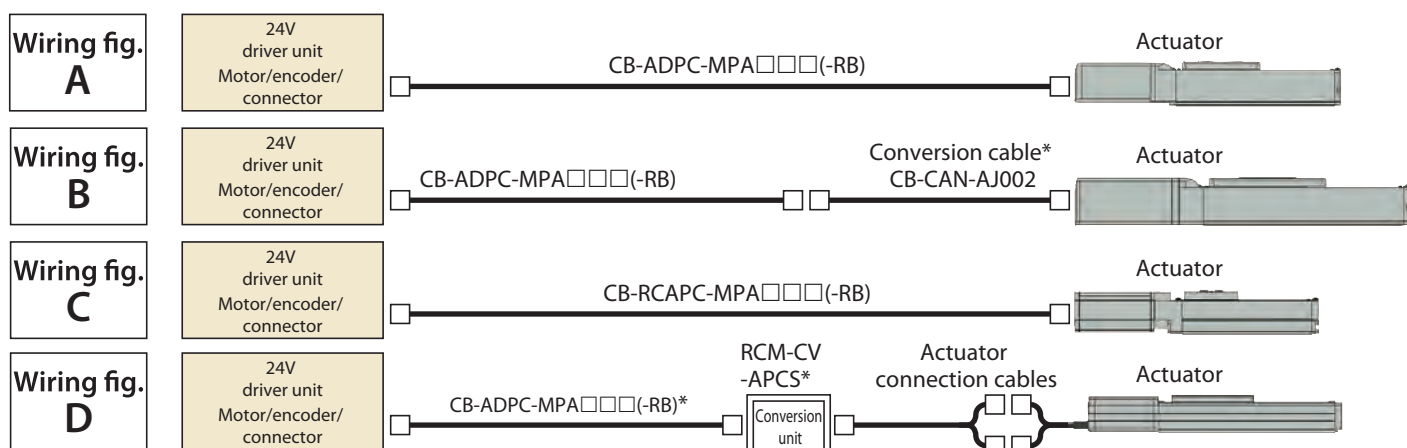| No. | Actuator | | Applicable controller symbol | Connection cable (Note 2) | Conversion unit | Wiring fig. |
|---|---|---|---|---|---|---|
| | Series | Type | | Integrated motor-encoder cable (-RB: Robot cable) [Actuator connection cables] | | |
| (1) | RCP6 RCP6CR RCP6W RCP5 RCP5CR RCP5W | Other than high thrust type (Note 1) | P5 | CB-ADPC-MPA□□□(-RB) | - | A |
| (2) | | High thrust type (Note 1) | P6 | CB-ADPC-MPA□□□(-RB) CB-CAN-AJ002 (conversion cable) | - | B |
| (3) | RCP4 RCP4CR RCP4W | Gripper (GRS/GRL), ST4525E, SA3/RA3 | P5 | CB-ADPC-MPA□□□(-RB) | - | A |
| (4) | | High thrust type (Note 1) | P6 | CB-ADPC-MPA□□□(-RB) CB-CAN-AJ002 (conversion cable) | - | B |
| (5) | | Other than (3), (4) | P5 | CB-ADPC-MPA□□□(-RB) CB-CAN-AJ002 (conversion cable) | - | B |
| (6) | RCP3 | | P5 | CB-RCAPC-MPA□□□(-RB) | - | C |
| (7) | RCP2 RCP2CR RCP2W | RCP2 (standard type) rotary compact type RCP2-RTBS/RTBSL/RTCS/RTCSL | P5 | CB-ADPC-MPA□□□(-RB) [CB-RPSEP-MPA□□□] | Required | D |
| (8) | | RCP2CR (clean room type), RCP2W (dust-proof/splash-proof type) Rotary (RT*) of above types GRS/GRM/GR3SS/GR3SM of above types | P5 | CB-ADPC-MPA□□□(-RB) | - | A |
| (9) | | GRSS/GRLS/GRST/GRHM/GRHB of all types (standard / clean room / dust-proof/splash-proof) Short type (RCP2 only) RCP2-SRA4R/SRGS4R/SRGD4R | P5 | CB-RCAPC-MPA□□□(-RB) | - | C |
| (10) | | High thrust type (Note 1) | P6 | CB-ADPC-MPA□□□(-RB) [CB-CFA-MPA□□□(-RB)] | Required | D |
| (11) | | Other than (7)~(10) | P5 | CB-ADPC-MPA□□□(-RB) [CB-PSEP-MPA□□□] | Required | D |
| (12) | RCA2/RCA2CR/RCA2W | | A6 | CB-RCAPC-MPA□□□(-RB) | - | C |
| (13) | RCA2/RCA2CR/RCA2W (CNS option) | | A6 | CB-ADPC-MPA□□□(-RB) | - | A |
| (14) | RCA RCACR RCAW | Short type (RCA only) RCA-SRA4R/SRGS4R/SRGD4R | A6 | CB-RCAPC-MPA□□□(-RB) | - | C |
| (15) | | Other than (14) | A6 | CB-ADPC-MPA□□□(-RB) [CB-ASEP2-MPA□□□] | Required | D |
| (16) | RCD | RCD-RA1DA, RCD-GRSNA | D6 | CB-ADPC-MPA□□□(-RB) | - | A |
| (17) | WU | | PM2 | CB-ADPC-MPA□□□(-RB) | - | A |

Note 1: An actuator that uses a high thrust pulse motor (56SP, 60P, 86P)
Note 2: Up to 20m from each driver unit to the actuator, with or without the conversion unit.
　　　　Note that the maximum length from the driver unit to the RCD actuator will be 10m.



**Wiring fig. A**
24V driver unit Motor/encoder/connector
CB-ADPC-MPA□□□(-RB)
Actuator

**Wiring fig. B**
24V driver unit Motor/encoder/connector
CB-ADPC-MPA□□□(-RB)
Conversion cable* CB-CAN-AJ002
Actuator

**Wiring fig. C**
24V driver unit Motor/encoder/connector
CB-RCAPC-MPA□□□(-RB)
Actuator

**Wiring fig. D**
24V driver unit Motor/encoder/connector
CB-ADPC-MPA□□□(-RB)*
RCM-CV-APCS* Conversion unit
Actuator connection cables
Actuator

* Not supplied even if the cable length is specified in the actuator model name.
　Must be prepared even if the model name is specified separately.

Motor encoder cable for 230V driver connection

| No. | Actuator | | Applicable controller code | Connection cable (Note 3) | | | |
|---|---|---|---|---|---|---|---|
| | Series | Type | | Motor cable | Motor robot cable / EU motor robot cable | Encoder cable | Encoder robot cable / EU encoder robot cable |
| (1) | RCS4 RCS4CR | | T4 | CB-RCC1-MA□□□ | CB-X2-MA□□□ / CB-XEU1-MA□□□ | - | CB-X1-PA□□□ / CB-XEU1-PA□□□ |
| (2) | RCS3(P) RCS3(P)CR | CTZ5C CT8C | T4 | CB-RCC1-MA□□□ | CB-X2-MA□□□ / CB-XEU1-MA□□□ | - | CB-X1-PA□□□ / CB-XEU1-PA□□□ |
| (3) | | Other than (2) | T4 | CB-RCC1-MA□□□ | CB-X2-MA□□□ / (*1) | CB-RCS2-PA□□□ | CB-X3-PA□□□ / (*2) |
| (4) | RCS2 RCS2CR RCS2W | RTC□L RT6 | T4 | CB-RCC1-MA□□□ | CB-X2-MA□□□ / CB-XEU1-MA□□□ | CB-RCS2-PLA□□□ | CB-X2-PLA□□□ / CB-XEU2-PLA□□□ |
| (5) | | Other than (4) | T4 | CB-RCC1-MA□□□ | CB-X2-MA□□□ / (*1) | CB-RCS2-PA□□□ | CB-X3-PA□□□ / (*2) |
| (6) | RCS2 | No load cell | RA13R | T4 | CB-RCC1-MA□□□ | CB-X2-MA□□□ / CB-XEU1-MA□□□ | CB-RCS2-PLA□□□ | CB-X2-PLA□□□ / (*3) |
| (7) | | | RA13R with brake (with brake box) | T4 | CB-RCC1-MA□□□ | CB-X2-MA□□□ / CB-XEU1-MA□□□ | [Actuator to brake box] CB-RCS2-PLA□□□ [Brake box to controller] CB-RCS2-PLA□□□ | [Actuator to brake box] CB-X2-PLA□□□ / CB-XEU2-PLA□□□ [Brake box to controller] CB-X2-PLA□□□ / CB-XEU2-PLA□□□ |
| (8) | | | RA13R with brake (without brake box) | | | | [Actuator to brake box] CB-RCS2-PLA□□□ | [Actuator to brake box] CB-X2-PLA□□□ / CB-XEU2-PLA□□□ |
| (9) | IS(P)B IS(P)DB IS(P)DBCR | Other than (10) | T4 | - | CB-X2-MA□□□ / CB-XEU1-MA□□□ | - | CB-X1-PA□□□ / (*4) *Use the following cable for a cable length of 21m or greater CB-X1-PA□□□-AWG24 / (*5) |
| (10) | | (Option: When limit switch was selected) | T4 | - | CB-X2-MA□□□ / CB-XEU1-MA□□□ | - | CB-X1-PLA□□□ / (*6) *Use the following cable for a cable length of 21m or greater CB-X1-PLA□□□-AWG24 / (*7) |
| (11) | IS(P)A IS(P)DA IS(P)DACR SSPA | Other than (12) | T4 | - | CB-X2-MA□□□ / CB-XEU1-MA□□□ | - | CB-X1-PA□□□ / CB-XEU1-PA□□□ |
| (12) | SSPDACR IF FS RS | (Option: When limit switch was selected) | T4 | - | CB-X2-MA□□□ / CB-XEU1-MA□□□ | - | CB-X1-PLA□□□ / CB-XEU1-PLA□□□ |
| (13) | NSA | | T4 | - | CB-X2-MA□□□ / (*1) | - | CB-X1-PA□□□ / (*4) |
| (14) | NS | Other than (15) | T4 | - | CB-X2-MA□□□ / (*1) | - | CB-X3-PA□□□ / (*2) |
| (15) | | (Option: When limit switch was selected) | T4 | - | CB-X2-MA□□□ / CB-XEU1-MA□□□ | - | CB-X2-PLA□□□ / CB-XEU2-PLA□□□ |
| (16) | DD DDCR DDW DDA DDACR | T18□ LT18□ | T4 | - | CB-X2-MA□□□ / CB-XEU1-MA□□□ | - | CB-X3-PLA□□□ / CB-XEU3-PLA□□□ |
| (17) | | H18□ LH18□ | T4 | - | CB-XMC1-MA□□□ / CB-XEUMC1-MA□□□ | - | CB-X3-PLA□□□ / CB-XEU3-PLA□□□ |
| (18) | ISWA ISPWA | | T4 | - | CB-XEU1-MA□□□ | - | CB-X1-PA□□□-WC |

Note 3: The max. cable length between each driver and actuator differs depending on the series.
Refer to the cable length table in respective actuator pages for details.

(*1) CB-XEU1-MA□□□ (EU version with plastic round connector)
(*2) CB-XEU3-PA□□□ (EU version with metal round connector)
(*3) CB-XEU2-PLA□□□ (EU version with metal round connector)
(*4) CB-XEU1-PA□□□ (EU version with metal round connector)
(*5) CB-XEU1-PA□□□-AWG24 (EU version with metal round connector)
(*6) CB-XEU1-PLA□□□ (EU version with metal round connector)
(*7) CB-XEU1-PLA□□□-AWG24 (EU version with metal round connector)

## Communication cable

| Name | Model |
|---|---|
| SCON connection cable (for RCON-EXT connection) | CB-RE-CTL□□□ |
| PIO flat cable (for RSEL, expansion PIO connection) | CB-PAC-PIO□□□ |
| Power/communication cables for RCON-EC | CB-REC-PWBIO□□□-RB |
| Power/communication cables for RCON-EC (4-way connector) | CB-REC2-PWBIO□□□-RB |

## Motor power cable for 230V specification EleCylinder

| Name | Model |
|---|---|
| Motor power cable for EC-S10(X)/S13(X)/S15(X) etc. | CB-EC-PW□□□-RB |

## ■ Model  CB-ADPC-MPA□□□/CB-ADPC-MPA□□□-RB

*Please indicate the cable length (L) in □□□,
e.g.) 030 = 3m, maximum 20m



Actuator side

Controller side
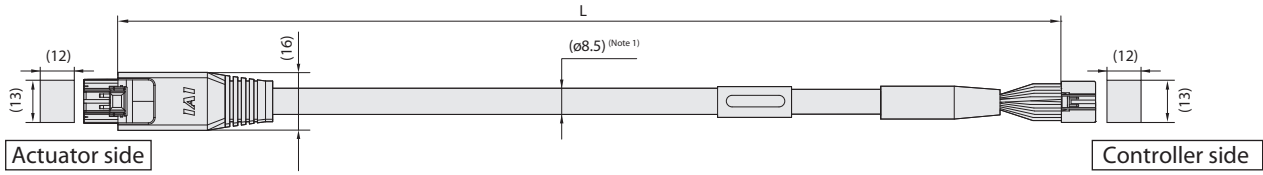
**Minimum bending radius R**  5m or less  **r= 68mm or more (Dynamic bending condition)**
More than 5m  **r= 73mm or more (Dynamic bending condition)**

* The robot cable is designed for flex-resistance: Please use the robot cable if the cable needs to be installed through the cable track.

(Note 1) If the cable length is over 5m, ø9.1 cable diameter applies.

DF62DL-24S-2.2C (HIROSE ELECTRIC CO., LTD.)

| Color (Standard cable) * | Signal name | | | Pin No. |
| --- | --- | --- | --- | --- |
| | DC | AC | PC | |
| Blue (AWG22/19) | U | U | øA | 3 |
| Orange (AWG22/19) | V | V | VMM | 5 |
| Brown (AWG22/19) | - | - | øB | 10 |
| Gray (AWG22/19) | - | - | VMM | 9 |
| Green (AWG22/19) | W | W | ø_A | 4 |
| Red (AWG22/19) | - | - | ø_B | 15 |
| Light blue (AWG26) | A+ | A+ | SA[mABS] | 12 |
| Orange (AWG26) | A- | A- | SB[mABS] | 17 |
| Green (AWG26) | B+ | B+ | A+ | 1 |
| Brown (AWG26) | B- | B- | A- | 6 |
| Gray (AWG26) | HS1_IN | Z+/SA[mABS] | B+ | 11 |
| Red (AWG26) | HS2_IN | Z-/SB[mABS] | B- | 16 |
| Black (AWG26) | - | VPS/BAT- | VPS | 18 |
| Yellow (AWG26) | - | BK+ | LS+ | 8 |
| Light blue (AWG26) | - | LS+ | BK+ | 20 |
| Orange (AWG26) | - | LS- | BK- | 2 |
| Gray (AWG26) | VCC | VCC | VCC | 21 |
| Red (AWG26) | GND | GND | GND | 7 |
| Brown (AWG26) | - | BK- | LS- | 14 |
| Green (AWG26) | HS3_IN | LS_GND | LS_GND | 13 |
| - | - | - | - | 19 |
| Pink (AWG26) | - | BAT+ | CF_VCC | 22 |
| - | - | - | - | 23 |
| Black (AWG26) | FG | FG | FG | 24 |

* For color of robot cable please refer to the manual.

Purple (AWG26)

DF62DL-24S-2.2C (HIROSE ELECTRIC CO., LTD.)

| Pin No. | Signal name | | | Color (Standard cable) * |
| --- | --- | --- | --- | --- |
| | PC | AC | DC | |
| 3 | øA | U | U | Blue (AWG22/19) |
| 5 | VMM | V | V | Orange (AWG22/19) |
| 10 | øB | - | - | Brown (AWG22/19) |
| 9 | VMM | - | - | Gray (AWG22/19) |
| 4 | ø_A | W | W | Green (AWG22/19) |
| 15 | ø_B | - | - | Red (AWG22/19) |
| 12 | SA[mABS] | A+ | A+ | Light blue (AWG26) |
| 17 | SB[mABS] | A- | A- | Orange (AWG26) |
| 1 | A+ | B+ | B+ | Green (AWG26) |
| 6 | A- | B- | B- | Brown (AWG26) |
| 11 | B+ | Z+/SA[mABS] | HS1_IN | Gray (AWG26) |
| 16 | B- | Z-/SB[mABS] | HS2_IN | Red (AWG26) |
| 18 | VPS | VPS/BAT- | - | Black (AWG26) |
| 8 | LS+ | BK+ | - | Yellow (AWG26) |
| 20 | BK+ | LS+ | - | Light blue (AWG26) |
| 2 | BK- | LS- | - | Orange (AWG26) |
| 21 | VCC | VCC | VCC | Gray (AWG26) |
| 7 | GND | GND | GND | Red (AWG26) |
| 14 | LS- | BK- | - | Brown (AWG26) |
| 13 | LS_GND | LS_GND | HS3_IN | Green (AWG26) |
| 19 | - | - | - | - |
| 22 | CF_VCC | BAT+ | - | Pink (AWG26) |
| 23 | - | - | - | - |
| 24 | FG | FG | FG | Black (AWG26) |

## ■ Model  CB-RCAPC-MPA□□□/CB-RCAPC-MPA□□□-RB

*Please indicate the cable length (L) in □□□,
e.g.) 030 = 3m, maximum 20m



Actuator side

Controller side

**Minimum bending radius R**  3m or less  **r= 68mm or more (Dynamic bending condition)**
More than 3m  **r= 73mm or more (Dynamic bending condition)**

* The robot cable is designed for flex-resistance: Please use the robot cable if the cable needs to be installed through the cable track.
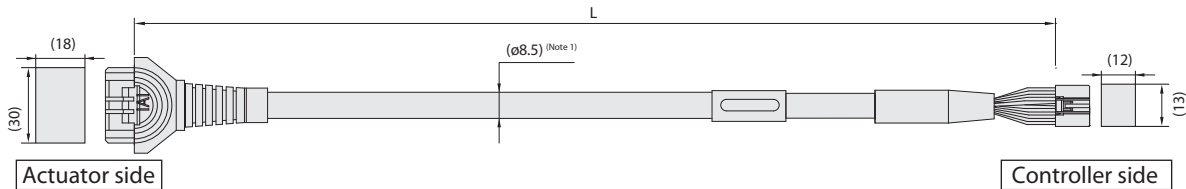
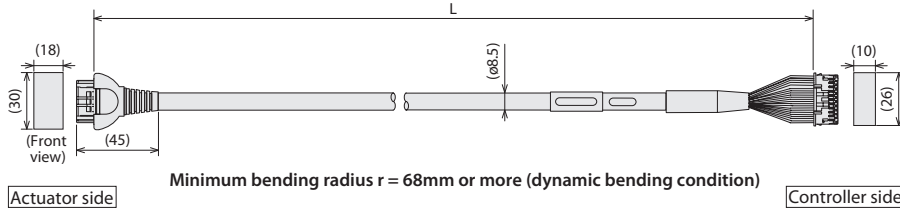(Note 1) If the cable length is over 3m, ø9.1 cable diameter applies.

1-1827863-1(AMP)

| Color (Standard cable) * | Signal name | | | Pin No. |
| --- | --- | --- | --- | --- |
| | DC | AC | PC | |
| Blue (AWG22/19) | U | U | øA | A1 |
| Orange (AWG22/19) | V | V | VMM | B1 |
| Brown (AWG22/19) | - | - | øB | B2 |
| Gray (AWG22/19) | - | - | VMM | A3 |
| Green (AWG22/19) | W | W | ø_A | A2 |
| Red (AWG22/19) | - | - | ø_B | B3 |
| Light blue (AWG26) | A+ | A+ | SA[mABS] | A6 |
| Orange (AWG26) | A- | A- | SB[mABS] | B6 |
| Green (AWG26) | B+ | B+ | A+ | A7 |
| Brown (AWG26) | B- | B- | A- | B7 |
| Gray (AWG26) | HS1_IN | Z+/SA[mABS] | B+ | A8 |
| Red (AWG26) | HS2_IN | Z-/SB[mABS] | B- | B8 |
| Black (AWG26) | - | VPS/BAT- | VPS | B9 |
| Yellow (AWG26) | - | BK+ | LS+ | A4 |
| Light blue (AWG26) | - | LS+ | BK+ | A5 |
| Orange (AWG26) | - | LS- | BK- | B5 |
| Gray (AWG26) | VCC | VCC | VCC | A10 |
| Red (AWG26) | GND | GND | GND | B10 |
| Brown (AWG26) | - | BK- | LS- | B4 |
| Green (AWG26) | HS3_IN | LS_GND | LS_GND | A9 |
| - | - | - | - | A11 |
| - | - | - | - | - |
| Black (AWG26) | FG | FG | FG | B11 |

* For color of robot cable please refer to the manual.

Purple (AWG26)
Pink (AWG26)

DF62DL-24S-2.2C (HIROSE ELECTRIC CO., LTD.)

| Pin No. | Signal name | | | Color (Standard cable) * |
| --- | --- | --- | --- | --- |
| | PC | AC | DC | |
| 3 | øA | U | U | Blue (AWG22/19) |
| 5 | VMM | V | V | Orange (AWG22/19) |
| 10 | øB | - | - | Brown (AWG22/19) |
| 9 | VMM | - | - | Gray (AWG22/19) |
| 4 | ø_A | W | W | Green (AWG22/19) |
| 15 | ø_B | - | - | Red (AWG22/19) |
| 12 | SA[mABS] | A+ | A+ | Light blue (AWG26) |
| 17 | SB[mABS] | A- | A- | Orange (AWG26) |
| 1 | A+ | B+ | B+ | Green (AWG26) |
| 6 | A- | B- | B- | Brown (AWG26) |
| 11 | B+ | Z+/SA[mABS] | HS1_IN | Gray (AWG26) |
| 16 | B- | Z-/SB[mABS] | HS2_IN | Red (AWG26) |
| 18 | VPS | VPS/BAT- | - | Black (AWG26) |
| 8 | LS+ | BK+ | - | Yellow (AWG26) |
| 20 | BK+ | LS+ | - | Light blue (AWG26) |
| 2 | BK- | LS- | - | Orange (AWG26) |
| 21 | VCC | VCC | VCC | Gray (AWG26) |
| 7 | GND | GND | GND | Red (AWG26) |
| 14 | LS- | BK- | - | Brown (AWG26) |
| 13 | LS-GND | LS-GND | HS3_IN | Green (AWG26) |
| 19 | - | - | - | - |
| 22 | CF_VCC | BAT+ | - | Gray (AWG26) |
| 23 | - | - | - | - |
| 24 | FG | FG | FG | Black (AWG26) |

## ■Model  CB-RPSEP-MPA□□□   * Only the robot cable is available for this model.

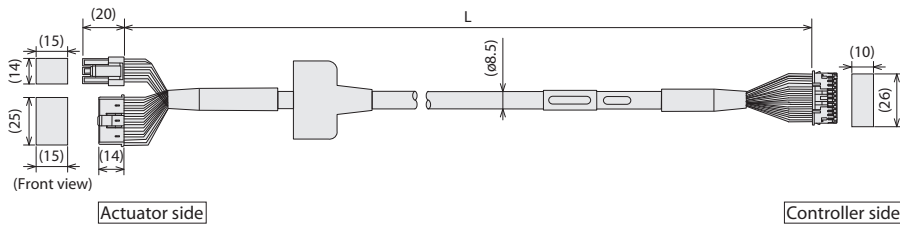Minimum bending radius r = 68mm or more (dynamic bending condition)

Actuator side
D-1100D 1-1827863-1
(AMP)

Controller side
PADP-24V-1-S
(J.S.T. Mfg. Co.,Ltd.)

| Terminal number | Signal | Terminal number |
|---|---|---|
| A1 | Black [øA] | 1 |
| B1 | White [VMM] | 2 |
| A2 | Brown [ø/A] | 5 |
| B2 | Green [øB] | 3 |
| A3 | Yellow [VMM] | 4 |
| B3 | Red [ø/B] | 6 |
| A6 | Orange [LS+] | 7 |
| B6 | Gray [LS-] | 8 |
| A7 | Red [A+] | 13 |
| B7 | Green [A-] | 14 |
| A8 | Black [B+] | 15 |
| B8 | Brown [B-] | 16 |
| A4 | NC | - |
| B4 | NC | - |
| A5 | Black (identification tape) [BK+] | 9 |
| B5 | Brown (identification tape) [BK-] | 10 |
| A9 | Green (identification tape) [GNDLS] | 20 |
| B9 | Red (identification tape) [VPS] | 18 |
| A10 | White (identification tape) [VCC] | 17 |
| B10 | Yellow (identification tape) [GND] | 19 |
| A11 | NC | 21 |
| B11 | Shield [FG] (FG) | 24 |
| | NC | 22 |
| | NC | 23 |

## ■Model  CB-CFA-MPA□□□/CB-CFA-MPA□□□-RB

If the cable length is over 3m, ø9.1 cable diameter applies for a non-robot cable and ø10 for a robot cable.



Minimum bending radius r = 80mm or more (dynamic bending condition)

* The robot cable is designed for flex-resistance:
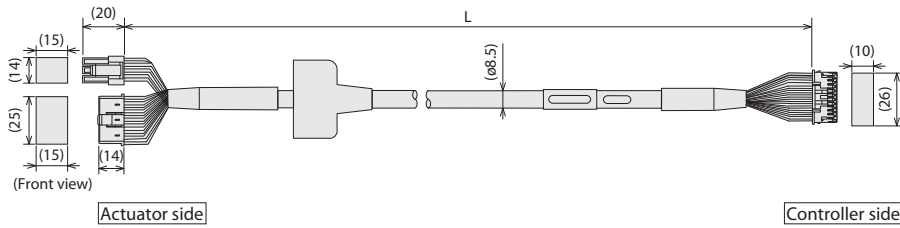Please use the robot cable if the cable needs to be installed through the cable track.

Actuator side
SLP-06V (J.S.T. Mfg. Co.,Ltd.)
XMP-18V (J.S.T. Mfg. Co.,Ltd.)

Controller side
PADP-24V-1-S
(J.S.T. Mfg. Co.,Ltd.)

| Pin No. | Signal name | Pin No. | Signal name |
|---|---|---|---|
| 1 | øA | 1 | øA |
| 2 | VMM | 2 | VMM |
| 4 | øB | 3 | øB |
| 5 | VMM | 4 | VMM |
| 3 | ø/A | 5 | ø/A |
| 6 | ø/B | 6 | ø/B |
| 5 | NC | 11 | NC |
| 6 | NC | 12 | NC |
| 13 | LS+ | 7 | LS+ |
| 14 | LS- | 8 | LS- |
| 1 | A+ | 13 | A+ |
| 2 | A- | 14 | A- |
| 3 | B+ | 15 | B+ |
| 4 | B- | 16 | B- |
| 16 | BK+ | 9 | BK+ |
| 17 | BK- | 10 | BK- |
| 12 | VCC | 21 | VCC |
| 9 | GND | 19 | GND |
| 11 | VPS | 18 | VPS |
| 10 | NC | 20 | NC |
| 18 | FG | 24 | FG |
| 15 | NC | 17 | NC |
| 7 | NC | 22 | NC |
| 8 | NC | 23 | NC |

## ■Model  CB-PSEP-MPA□□□   * Only the robot cable is available for this model.

Minimum bending radius r = 68mm or more (dynamic bending condition)

Actuator side
SLP-06V (J.S.T. Mfg. Co.,Ltd.)
XMP-18V (J.S.T. Mfg. Co.,Ltd.)

Controller side
PADP-24V-1-S
(J.S.T. Mfg. Co.,Ltd.)

| Terminal number | Signal | Terminal number |
|---|---|---|
| 1 | Black [øA] | 1 |
| 2 | White [VMM] | 2 |
| 4 | Red [øB] | 3 |
| 5 | Green [VMM] | 4 |
| 3 | Brown [ø/A] | 5 |
| 6 | Yellow [ø/B] | 6 |
| 16 | Orange [BK+] | 9 |
| 17 | Gray [BK-] | 10 |
| 5 | NC | 11 |
| 6 | NC | 12 |
| 13 | Black [LS+] | 7 |
| 14 | Brown [LS-] | 8 |
| 1 | White [A+] | 13 |
| 2 | Yellow [A-] | 14 |
| 3 | Red [B+] | 15 |
| 4 | Green [B-] | 16 |
| 10 | White (identification tape) [VCC] | 17 |
| 11 | Yellow (identification tape) [VPS] | 18 |
| 9 | Red (identification tape) [GND] | 19 |
| 12 | Green (identification tape) [reserve] | 20 |
| 15 | NC | 21 |
| 7 | NC | 22 |
| 8 | NC | 23 |
| 18 | Shield [FG] | 24 |

## ■Model  CB-ASEP2-MPA□□□   * Only the robot cable is available for this model.

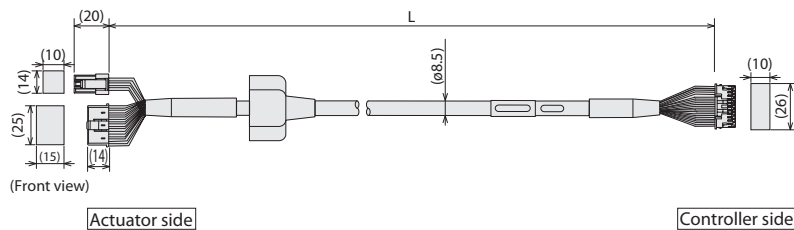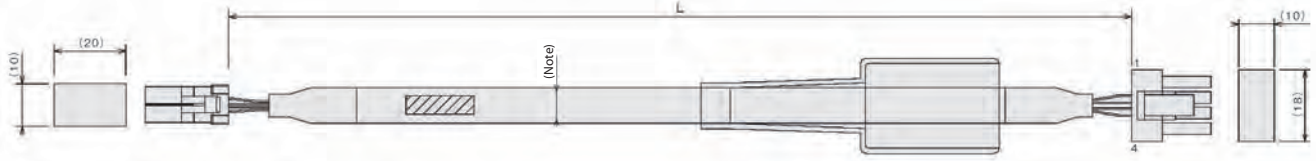Minimum bending radius r = 68mm or more (dynamic bending condition)

Actuator side
SLP-06V (J.S.T. Mfg. Co.,Ltd.)
XMP-18V (J.S.T. Mfg. Co.,Ltd.)

Controller side
PADP-24V-1-S
(J.S.T. Mfg. Co.,Ltd.)

| Terminal number | Signal | Terminal number |
|---|---|---|
| 1 | Red [U] | 1 |
| 2 | Yellow [V] | 2 |
| | NC | 3 |
| | NC | 4 |
| 3 | Black [W] | 5 |
| | NC | 6 |
| 18 | Orange [BK+] | 7 |
| 17 | Gray [BK-] | 8 |
| 7 | Black [LS+] | 9 |
| 16 | Brown [LS-] | 10 |
| 1 | White [A+] | 11 |
| 2 | Yellow [A-] | 12 |
| 3 | Red [B+] | 13 |
| 4 | Green [B-] | 14 |
| 10 | Black (identification tape) [Z+] | 15 |
| 11 | Brown (identification tape) [Z-] | 16 |
| 14 | White (identification tape) [VCC] | 17 |
| 15 | Yellow (identification tape) [GND] | 19 |
| 13 | Red (identification tape) [VPS/BAT-] | 18 |
| 6 | Green (identification tape) [[reserve]] | 20 |
| 12 | White [BAT+] | 21 |
| 5 | NC | 22 |
| 8 | NC | 23 |
| 9 | Shield [FG] | 24 |

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## Model **CB-RCC1-MA□□□ / CB-X2-MA□□□**

Fig.: Non-EU motor standard cable CB-RCC1-MA□□□ / robot cable CB-X2-MA□□□ with flat actuator connector



| Controller side | | Actuator side |

**Minimum bending radius  r = 51mm or more (Dynamic bending condition)**

**\* Please use the robot cable if the cable needs to be installed through the cable track.**

F35FDC-04V-K (J.S.T. Mfg. Co., Ltd.)

| Wiring | Color | Signal | No. |
|---|---|---|---|
| 0.75sq (crimped) | Red | U | B1 |
| | White | V | B2 |
| | Black | W | A1 |
| | Green | PE | A2 |

SLP-04V (J.S.T. Mfg. Co., Ltd.)

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

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## Model **CB-XMC1-MA□□□ / CB-XEUMC1-MA□□□**

Fig.: DD(A) high-torque type non-EU motor cable CB-XMC1-MA□□□ with flat actuator connector
(for figure and pin assignment of EU cable CB-XEUMC1-MA□□□ with M18 round actuator connector please see P18 of DDA brochure)
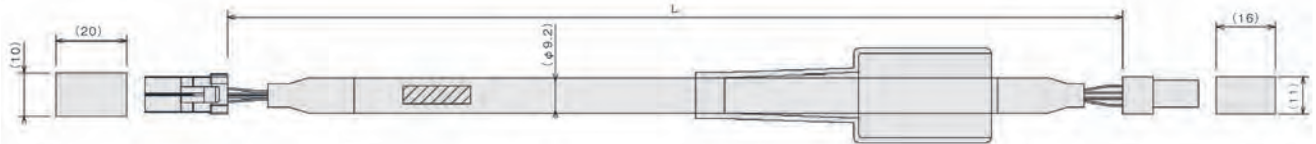


| Controller side | | Actuator side |

**Minimum bending radius  r = 55mm or more (Dynamic bending condition)**

\* Only the robot cable is available for this model.

F35FDC-04V-K (J.S.T. Mfg. Co., Ltd.)

| Wiring | Color | Signal | No. |
|---|---|---|---|
| 1.25sq (crimped) | Red | U | B1 |
| | White | V | B2 |
| | Black | W | A1 |
| | Green | PE | A2 |

SLP-04V

| No. | Signal | Color | Wiring |
|---|---|---|---|
| 1 | U | Red | 1.25sq (crimped) |
| 2 | V | White | |
| 3 | W | Black | |
| 4 | PE | Green | |

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## Model **CB-XEU1-MA□□□**

Fig.: EU motor robot cable with M18 round actuator connector
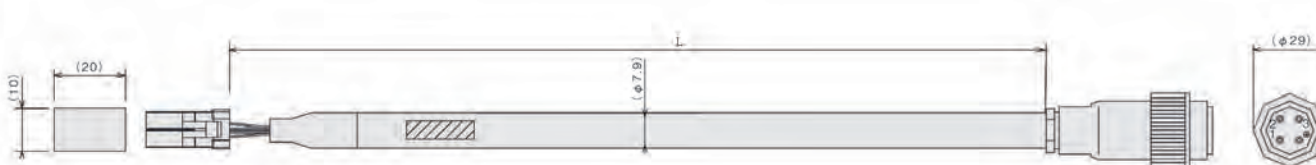


| Controller side | | Actuator side |

**Minimum bending radius  r = 48mm or more (Dynamic bending condition)**

\* Only the robot cable is available for this model.

F35FDC-04V-K (J.S.T. Mfg. Co., Ltd.)

| Wiring | Color | Signal | No. |
|---|---|---|---|
| 0.75sq (crimped) | 1 with white character in black | U | B1 |
| | 2 with white character in black | V | B2 |
| | 3 with white character in black | W | A1 |
| | Green/yellow | PE | A2 |

99-4222-00-04(binder)

| No. | Signal | Color | Wiring |
|---|---|---|---|
| 1 | U | 1 with white character in black | 0.75sq (crimped) |
| 2 | V | 2 with white character in black | |
| 3 | W | 3 with white character in black | |
| ⊕ | PE | Green/yellow | |

## Model CB-RCS2-PA□□□ / CB-X3-PA□□□ / CB-XEU3-PA□□□

*Please indicate the cable length (L) in □□□, e.g.) 080 = 8m, maximum 30m

Fig.: Non-EU encoder standard cable CB-RCS2-PA□□□ / robot cable CB-X3-PA□□□ with flat actuator connector (for figure and pin assignment of EU cable CB-XEU3-PA□□□ with metal connector please see P162 of RCS4 catalogue)
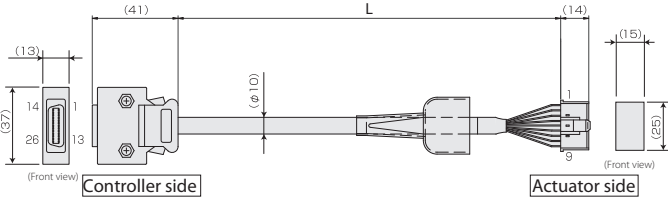
Controller side

Actuator side

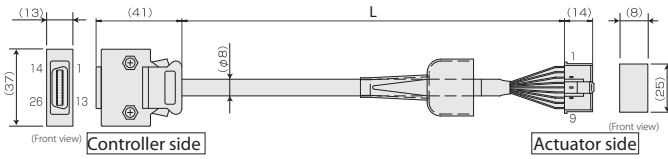**Minimum bending radius  r = 58mm or more (Dynamic bending condition)**

* Please use the robot cable if the cable needs to be installed through the cable track.



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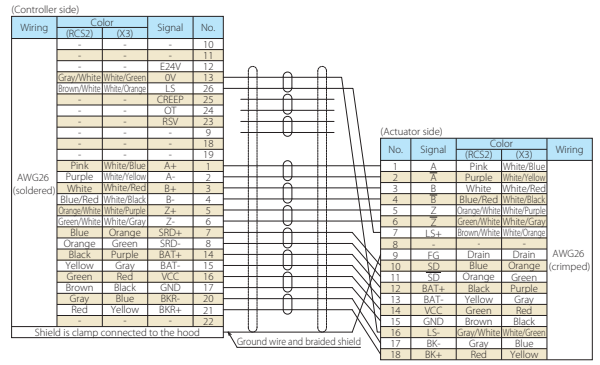
## Model CB-X1-PA□□□ / CB-XEU1-PA□□□

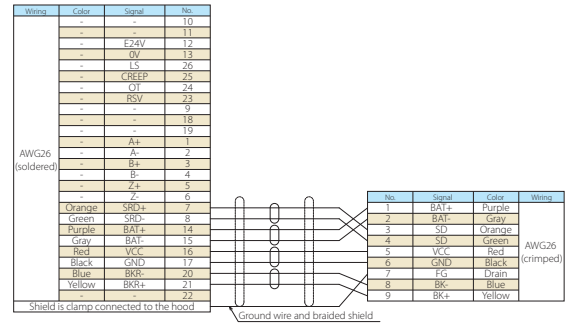*Please indicate the cable length (L) in □□□, e.g.) 080 = 8m, maximum 20m

Fig.: Non-EU encoder robot cable CB-X1-PA□□□ with flat actuator connector (for figure and pin assignment of EU cable CB-XEU1-PA□□□ with metal connector please see P163 of RCS4 catalogue)

Controller side

Actuator side

**Minimum bending radius  r = 44mm or more (Dynamic bending condition)**
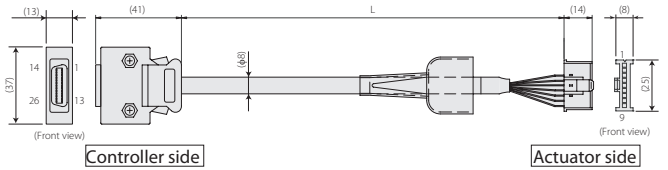* Only the robot cable is available for this model.
*If you require a cable 21m or longer for ISB/ISDB/ISDBCR/NSA (encoder type is battery-less absolute), select CB-X(EU)1-PA□□□-AWG24.



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## Model CB-X1-PA□□□-AWG24 / CB-XEU1-PA□□□-AWG24

*Please indicate the cable length (L) in □□□, e.g.) 210 = 21m, maximum 30m

Fig.: Non-EU encoder robot cable CB-X1-PA□□□-AWG24 with flat actuator connector (for figure and pin assignment of EU cable CB-XEU1-PA□□□-AWG24 with metal connector please see P163 of RCS4 catalogue)

Controller side

Actuator side

**Minimum bending radius  r = 44mm or more (Dynamic bending condition)**
* Only the robot cable is available for this model.



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## Model CB-X1-PLA□□□ / CB-XEU1-PLA□□□

*Please indicate the cable length (L) in □□□, e.g.) 080 = 8m, maximum 30m

Fig.: Non-EU limit switch encoder robot cable CB-X1-PLA□□□ with flat actuator connector (for figure and pin assignment of EU cable CB-XEU1-PLA□□□ with metal connector please see P164 of RCS4 catalogue)
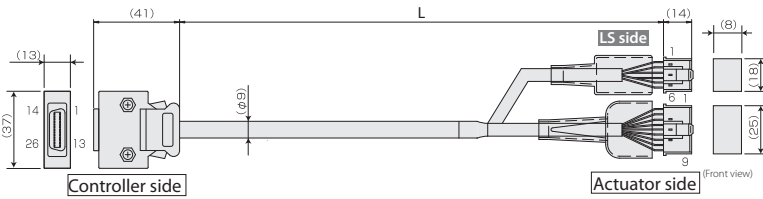
LS side

Controller side

Actuator side

**Minimum bending radius  r = 54mm or more (Dynamic bending condition)**
* Only the robot cable is available for this model.

*If you require ISB/ISDB/ISDBCR (encoder type is battery-less absolute) with the cable of 21m or more, select the CB-X(EU)1-PLA□□□-AWG24.



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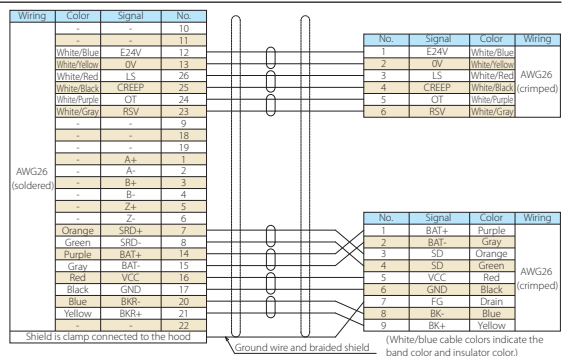
## Model CB-X1-PLA□□□-AWG24 / CB-XEU1-PLA□□□-AWG24

*Please indicate the cable length (L) in □□□, e.g.) 210 = 21m, maximum 30m

Fig.: Non-EU limit switch encoder robot cable CB-X1-PLA□□□-AWG24 with flat actuator connector (for figure and pin assignment of EU cable CB-XEU1-PLA□□□-AWG24 with metal connector please see P165 of RCS4 catalogue)

LS side

Controller side

Actuator side

**Minimum bending radius  r = 54mm or more (Dynamic bending condition)**
* Only the robot cable is available for this model.

## Model CB-X2-PLA□□□ / CB-XEU2-PLA□□□

Fig.: Non-EU limit switch encoder robot cable CB-X2-PLA□□□ with flat actuator connector
(for figure and pin assignment of EU cable CB-XEU2-PLA□□□ with metal connector please see P164 of RCS4 catalogue)



**Minimum bending radius  r = 50mm or more (Dynamic bending condition)**
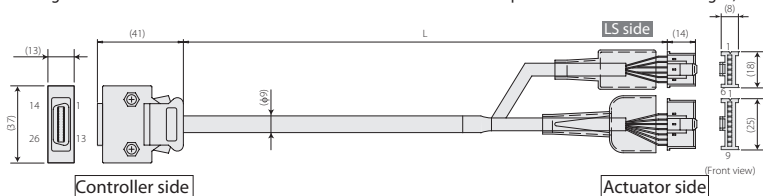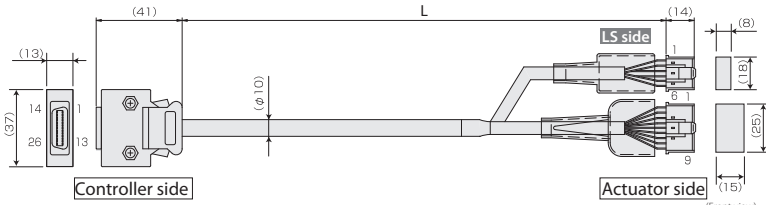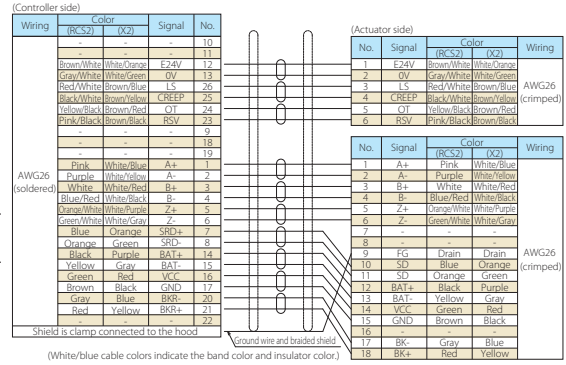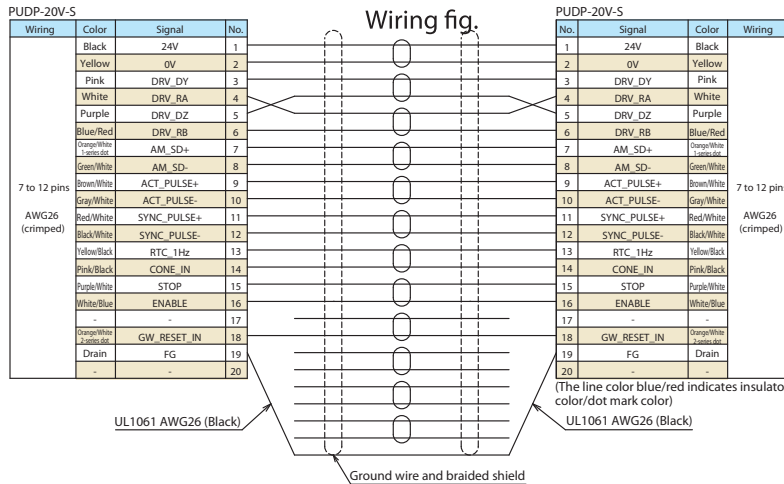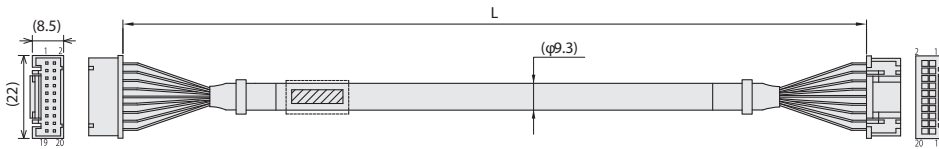*Please use the robot cable if the cable needs to be installed through the cable track.

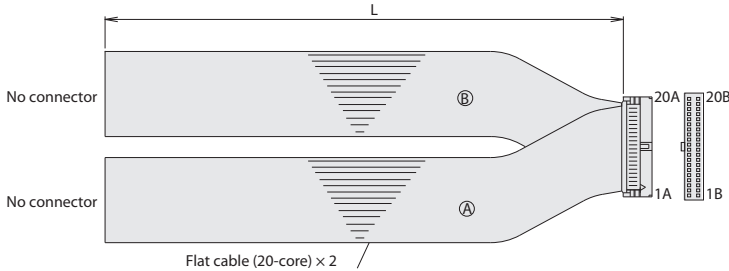(Controller side)

| Wiring | Color (RCS2) | Color (X2) | Signal | No. |
|---|---|---|---|---|
| | - | - | - | 10 |
| | - | - | - | 11 |
| | Brown/White | White/Orange | E24V | 12 |
| | Gray/White | White/Green | 0V | 13 |
| | Red/White | Brown/Blue | LS | 26 |
| | Black/White | Brown/Yellow | CREEP | 25 |
| | Yellow/Black | Brown/Red | OT | 24 |
| | Pink/Black | Brown/Black | RSV | 23 |
| | | | - | 9 |
| | | | - | 18 |
| | | | - | 19 |
| | Pink | White/Blue | A+ | 1 |
| | Purple | White/Yellow | A- | 2 |
| | White | White/Red | B+ | 3 |
| AWG26 (soldered) | Blue/Red | White/Black | B- | 4 |
| | Orange/White | White/Purple | Z+ | 5 |
| | Green/White | White/Gray | Z- | 6 |
| | Blue | Orange | SRD+ | 7 |
| | Orange | Green | SRD- | 8 |
| | Black | Purple | BAT+ | 14 |
| | Yellow | Gray | BAT- | 15 |
| | Green | Red | VCC | 16 |
| | Brown | Black | GND | 17 |
| | Gray | Blue | BKR- | 20 |
| | Red | Yellow | BKR+ | 21 |
| | | | - | 22 |

Shield is clamp connected to the hood

(Actuator side)

| No. | Signal | Color (RCS2) | Color (X2) | Wiring |
|---|---|---|---|---|
| 1 | E24V | Brown/White | White/Orange | |
| 2 | 0V | Gray/White | White/Green | AWG26 (crimped) |
| 3 | LS | Red/White | Brown/Blue | |
| 4 | CREEP | Black/White | Brown/Yellow | |
| 5 | OT | Yellow/Black | Brown/Red | |
| 6 | RSV | Pink/Black | Brown/Black | |

| No. | Signal | Color (RCS2) | Color (X2) | Wiring |
|---|---|---|---|---|
| 1 | A+ | Pink | White/Blue | |
| 2 | A- | Purple | White/Red | |
| 3 | B+ | White | White/Red | |
| 4 | B- | Blue/Red | White/Black | |
| 5 | Z+ | Orange/White | White/Purple | |
| 6 | Z- | Green/White | White/Gray | |
| 7 | - | - | - | |
| 8 | - | - | - | |
| 9 | FG | Drain | Drain | |
| 10 | SD | Blue | Orange | |
| 11 | SD | Orange | Green | |
| 12 | BAT+ | Black | Purple | AWG26 (crimped) |
| 13 | BAT- | Yellow | Gray | |
| 14 | VCC | Green | Red | |
| 15 | GND | Brown | Black | |
| 16 | - | - | - | |
| 17 | BK- | Gray | Blue | |
| 18 | BK+ | Red | Yellow | |

Ground wire and braided shield
(White/blue cable colors indicate the band color and insulator color.)

## Model CB-RE-CTL□□□

Wiring fig.

PUDP-20V-S

| Wiring | Color | Signal | No. |
|---|---|---|---|
| | Black | 24V | 1 |
| | Yellow | 0V | 2 |
| | Pink | DRV_DY | 3 |
| | White | DRV_RA | 4 |
| | Purple | DRV_DZ | 5 |
| | Blue/Red | DRV_RB | 6 |
| | Orange/White 1-series dot | AM_SD+ | 7 |
| | Green/White | AM_SD- | 8 |
| 7 to 12 pins | Brown/White | ACT_PULSE+ | 9 |
| | Gray/White | ACT_PULSE- | 10 |
| AWG26 (crimped) | Red/White | SYNC_PULSE+ | 11 |
| | Black/White | SYNC_PULSE- | 12 |
| | Yellow/Black | RTC_1Hz | 13 |
| | Pink/Black | CONE_IN | 14 |
| | Purple/White | STOP | 15 |
| | White/Blue | ENABLE | 16 |
| | - | - | 17 |
| | Orange/White 3-series dot | GW_RESET_IN | 18 |
| | Drain | FG | 19 |
| | - | - | 20 |

PUDP-20V-S

| No. | Signal | Color | Wiring |
|---|---|---|---|
| 1 | 24V | Black | |
| 2 | 0V | Yellow | |
| 3 | DRV_DY | Pink | |
| 4 | DRV_RA | White | |
| 5 | DRV_DZ | Purple | |
| 6 | DRV_RB | Blue/Red | |
| 7 | AM_SD+ | Orange/White 1-series dot | |
| 8 | AM_SD- | Green/White | |
| 9 | ACT_PULSE+ | Brown/White | 7 to 12 pins |
| 10 | ACT_PULSE- | Gray/White | |
| 11 | SYNC_PULSE+ | Red/White | AWG26 (crimped) |
| 12 | SYNC_PULSE- | Black/White | |
| 13 | RTC_1Hz | Yellow/Black | |
| 14 | CONE_IN | Pink/Black | |
| 15 | STOP | Purple/White | |
| 16 | ENABLE | White/Blue | |
| 17 | - | - | |
| 18 | GW_RESET_IN | Orange/White 3-series dot | |
| 19 | FG | Drain | |
| 20 | - | - | |

(The line color blue/red indicates insulator color/dot mark color)

UL1061 AWG26 (Black)    UL1061 AWG26 (Black)

Ground wire and braided shield

## Model CB-PAC-PIO□□□

No connector
No connector

Ⓑ
Ⓐ

Flat cable (20-core) × 2

**HIF6-40D-1.27R**

| No. | Signal name | Cable color | Wiring | No. | Signal name | Cable color | Wiring |
|---|---|---|---|---|---|---|---|
| 1A | 24V | Brown-1 | | 1B | OUT0 | Brown-3 | |
| 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 | Gray-1 | | 8B | OUT7 | Gray-3 | |
| 9A | IN4 | White-1 | Flat cable Ⓐ (pressure-welded) | 9B | OUT8 | White-3 | Flat cable Ⓑ (pressure-welded) AWG28 |
| 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 | Gray-2 | | 18B | - | Gray-4 | |
| 19A | IN14 | White-2 | | 19B | 0V | White-4 | |
| 20A | IN15 | Black-2 | | 20B | 0V | Black-4 | |

## Model **CB-REC-PWBIO□□□-RB**
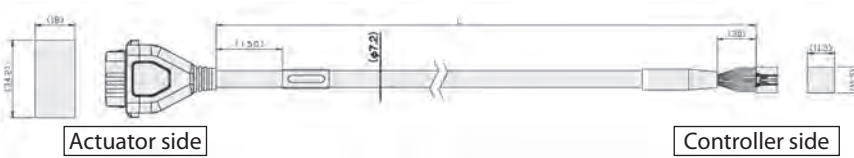
**Actuator side** **Controller side**

Minimum bending radius  r = 58mm or more (Dynamic bending condition)
* Only the robot cable is available for this model.

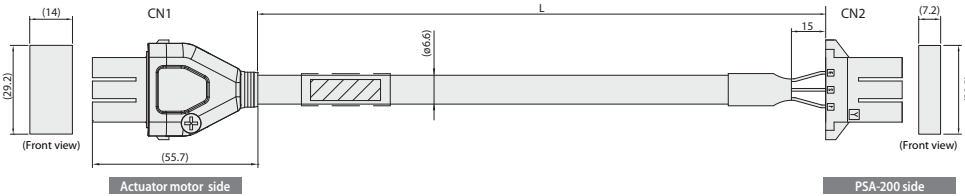| Color | Signal name | Pin No. | | Pin No. | Signal name | Color |
|---|---|---|---|---|---|---|
| Black (AWG18) | 0V | A1 | | 2 | 0V | Black (AWG18) |
| Red (AWG18) | 24V(MP) | B1 | | 1 | 24V(MP) | Red (AWG18) |
| Light blue (AWG22) | 24V(CP) | A2 | | 12 | 24V(CP) | Light blue (AWG22) |
| Orange (AWG26) | IN0 | B3 | | 7 | OUT0 | Orange (AWG26) |
| Yellow (AWG26) | IN1 | B4 | | 8 | OUT1 | Yellow (AWG26) |
| Green (AWG26) | IN2 | B5 | | 9 | OUT2 | Green (AWG26) |
| Pink (AWG26) | SD+ | B6 | | 6 | SD+ | Pink (AWG26) |
| White (AWG26) | SD- | A6 | | 10 | SD- | White (AWG26) |
| Blue (AWG26) | OUT0 | A3 | | 3 | INO | Blue (AWG26) |
| Purple (AWG26) | OUT1 | A4 | | 4 | IN1 | Purple (AWG26) |
| Gray (AWG26) | OUT2 | A5 | | 5 | IN2 | Gray (AWG26) |
| Brown (AWG26) | BKRLS | B2 | | 11 | BKRLS | Brown (AWG26) |
| | | | | 13 | FG | Green (AWG26) |

## Model **CB-REC2-PWBIO□□□-RB**

Minimum bending radius  r = 58mm or more (Dynamic bending condition)
* Only the robot cable is available for this model.

**Actuator side** **Controller side**
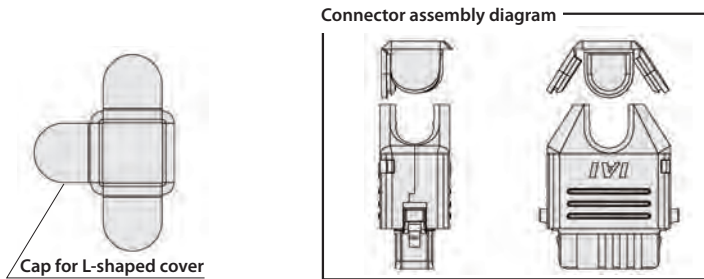
**Connector assembly diagram**



**Cap for L-shaped cover**

1-1871946-6

| Color | Signal name | Pin No. |
|---|---|---|
| Black (AWG18) | 0V | A1 |
| Red (AWG18) | 24V(MP) | B1 |
| Light blue (AWG22) | 24V(CP) | A2 |
| Orange (AWG26) | IN0 | B3 |
| Yellow (AWG26) | IN1 | B4 |
| Green (AWG26) | IN2 | B5 |
| Yellow-Green (AWG26) | SD+ | B6 |
| Light gray (AWG26) | SD- | A6 |
| Blue (AWG26) | OUT0 | A3 |
| Purple (AWG26) | OUT1 | A4 |
| Gray (AWG26) | OUT2 | A5 |
| Brown (AWG26) | BKRLS | B2 |

DF62C-13S-2C(18)

| Pin No. | Signal name | Color |
|---|---|---|
| 2 | 0V | Black (AWG22) |
| 1 | 24V(MP) | Red (AWG22) |
| 12 | 24V(CP) | Light blue (AWG22) |
| 7 | OUT0 | Orange (AWG26) |
| 8 | OUT1 | Yellow (AWG26) |
| 9 | OUT2 | Green (AWG26) |
| 6 | SD+ | Yellow-Green (AWG26) |
| 10 | SD- | Light gray (AWG26) |
| 3 | INO | Blue (AWG26) |
| 4 | IN1 | Purple (AWG26) |
| 5 | IN2 | Gray (AWG26) |
| 11 | BKRLS | Brown (AWG26) |
| 13 | FG | Green (AWG26) |

## Model **CB-EC-PW□□□-RB**

CN1 CN2
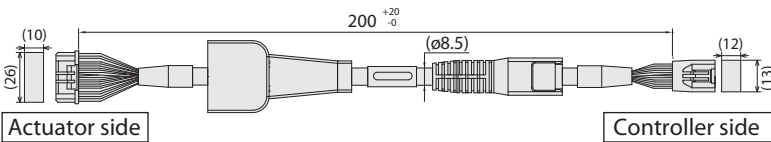
(Front view) (Front view)

**Actuator motor  side** **PSA-200 side**

Minimum bending radius  r = 40mm or more (Dynamic bending condition)
* Only the robot cable is available for this model.

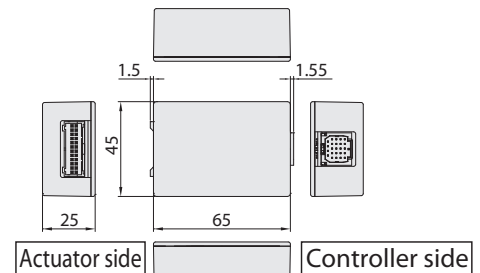| Color | Signal name | Pin No. | | Pin No. | Signal name | Color |
|---|---|---|---|---|---|---|
| Red (AWG18) | MP | 1 | | 1 | MP | Red (AWG18) |
| Black (AWG18) | MN | 2 | | 2 | MN | Black (AWG18) |
| Green/Yellow (AWG18) | PE | 3 | | 3 | PE | Green/Yellow (AWG18) |

## Model **CB-CAN-AJ002**



**Actuator side** **Controller side**

Minimum bending radius R 3m or less r= 68mm or more (Dynamic bending condition)

1-1827863-1 (AMP)

| Pin No. | Signal name | | | Color |
|---|---|---|---|---|
| | PC | AC | DC | |
| A1 | øA | U | U | Blue (AWG22) |
| B1 | VMM | V | V | Orange (AWG22) |
| B2 | øB | - | - | Brown (AWG22) |
| A3 | VMM | - | - | Gray (AWG22) |
| A2 | ø _A | W | W | Green (AWG22) |
| B3 | ø _B | - | - | Red (AWG22) |
| A6 | SA[mABS] | A+ | A+ | Light blue (AWG26) |
| B6 | SB[mABS] | A- | A- | Orange (AWG26) |
| A7 | A+ | B+ | B+ | Green (AWG26) |
| B7 | A- | B- | B- | Brown (AWG26) |
| A8 | B+ | Z+/SA[mABS] | HS1_IN | Gray (AWG26) |
| B8 | B- | Z-/SB[mABS] | HS2_IN | Red (AWG26) |
| B9 | VPS | VPS/BAT- | | Black (AWG26) |
| A4 | LS+ | BK+ | - | Yellow (AWG26) |
| A5 | BK+ | LS+ | - | Light blue (AWG26) |
| B5 | BK- | LS- | - | Orange (AWG26) |
| A10 | VCC | VCC | VCC | Gray (AWG26) |
| B10 | GND | GND | GND | Red (AWG26) |
| B4 | LS- | BK | - | Brown (AWG26) |
| A9 | LS_GND | LS_GND | HS3_IN | Green (AWG26) |
| A11 | - | - | - | |
| B11 | FG | FG | FG | Black (AWG26) |

DF62B-24EP-2.2C (HIROSE ELECTRIC CO., LTD.)

| Pin No. | Signal name | | | Color |
|---|---|---|---|---|
| | PC | AC | DC | |
| 3 | øA | U | U | Blue (AWG22) |
| 5 | VMM | V | V | Orange (AWG22) |
| 10 | øB | - | - | Brown (AWG22) |
| 9 | VMM | - | - | Gray (AWG22) |
| 4 | ø _A | W | W | Green (AWG22) |
| 15 | ø _B | - | - | Red (AWG22) |
| 12 | SA[mABS] | A+ | A+ | Light blue (AWG26) |
| 17 | SB[mABS] | A- | A- | Green (AWG26) |
| 1 | A+ | B+ | B+ | Green (AWG26) |
| 6 | A- | B- | B- | Brown (AWG26) |
| 11 | B+ | Z+/SA[mABS] | HS1_IN | Gray (AWG26) |
| 16 | B- | Z-/SB[mABS] | HS2_IN | Red (AWG26) |
| 18 | VPS | VPS/BAT- | | Black (AWG26) |
| 8 | LS+ | BK+ | - | Yellow (AWG26) |
| 20 | BK+ | LS+ | - | Light blue (AWG26) |
| 2 | BK- | LS- | - | Orange (AWG26) |
| 21 | VCC | VCC | VCC | Gray (AWG26) |
| 7 | GND | GND | GND | Red (AWG26) |
| 14 | LS- | BK | - | Brown (AWG26) |
| 13 | LS_GND | LS_GND | HS3_IN | Green (AWG26) |
| 19 | - | - | - | |
| 22 | CF_VCC | BAT+ | | Gray (AWG26) |
| 23 | - | - | - | |
| 24 | FG | FG | FG | Black (AWG26) |

## Model **RCM-CV-APCS**



**Actuator side** **Controller side**

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