IAI Quality and Innovation

ROBO NET

RACON/RPCON/RABU

First Step Guide Fourth Edition

Thank you for purchasing our product.
Make sure to read the Safety Guide and detailed Instruction Manual (CD/DVD) included with the product in addition to this First Step Guide to ensure correct use.
This Instruction Manual is original.

⚠ Warning : Operation of this equipment requires detailed installation and operation instructions which are provided on the CD/DVD Manual included in the box this device was packaged in. It should be retained with this device at all times.
A hardcopy of the Manual can be requested by contacting your nearest IAI Sales Office listed at the back cover of the Instruction Manual or on the First Step Guide.

Product Check

The standard configuration of this product is comprised of the following parts.
If you find any fault with the product you have received, or any missing parts, contact us or our distributor.

1. Parts

(1) For RACON and RPCON Units

No.	Part Name	Model	Reference
1	Controller Main Body	Refer to “How to read the model plate”, “How to read the model”	
Accessories			
2	ROBONET Communication Connection PCB	JB-1	1 pc
3	Power Connection Board	PP-1	1 set (2 pc)
4	First Step Guide		
5	Instruction Manual (CD/DVD)		
6	Safety Guide		

(2) For Simple Absolute R Unit (RABU)

No.	Part Name	Model	Reference
1	Controller Main Body	Refer to “How to read the model plate”, “How to read the model”	
Accessories			
2	ROBONET Communication Connection PCB	JB-1	1 pc each, the same component.
3	Simple Absolute Connection PCB	JB-1	
4	Power Connection Board	PP-1	1 set (2 pc)
5	Backup battery	AB-7	1 unit
6	First Step Guide		
7	Instruction Manual (CD/DVD)		
8	Safety Guide		

2. Teaching Tool (to be purchased separately)

The PC software is required to teach positions and also to edit parameters during initial commissioning.

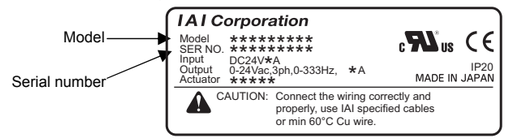
No.	Name	Model
1	PC Software (RS232C converter adapter and external equipment communication cable are included)	RCM-101-MW
2	PC Software (USB converter adapter, USB cable and external equipment communication cable are included)	RCM-101-USB
3	Touch Panel Teaching	CON-PT
4	Touch Panel Teaching (with deadman switch)	CON-PD
5	Touch Panel Teaching (deadman switch and TP Adapter RCB-LB-TG are included)	CON-PG
6	Teaching Pendant	CON-T
7	Teaching Pendant (deadman switch and TP Adapter RCB-LB-TG are included)	CON-TG
8	Simple Teaching Pendant	RCM-E
9	Data Setter	RCM-P
10	Touch Panel Display	RCM-PM-01

(Note) Other teaching tools than the PC software can be used for individual operations such as position table settings, however they cannot be used for the ROBONET startup settings.

3. Instruction Manuals related to this product, which are contained in the Instruction Manual (CD/DVD).

No.	Name	Manual No.
1	ROBONET Instruction Manual	ME0208
2	SCON Controller Instruction Manual	ME0161
3	PCON-C/CG/CF Controller Positioner Type Instruction Manual	ME0170
4	ERC2 Actuator with integrated Controller Instruction Manual (SIO type)	ME0159
5	ERC2 Actuator with integrated Controller Instruction Manual (PIO type)	ME0158
6	PC Software RCM-101-MW/ RCM-101-USB Instruction Manual	ME0155
7	Touch Panel Teaching CON-PT/PD/PG Instruction Manual	ME0227
8	Teaching Pendant CON-T/TG Instruction Manual	ME0178
9	Simple Teaching Pendant RCM-E Instruction Manual	ME0174
10	Data Setter RCM-P Instruction Manual	ME0175
11	Touch Panel Display RCM-PM-01 Instruction Manual	ME0182
12	Instruction Manual for the serial communication [for Modbus] (When RGW-SIO is used with SIO Thru Mode)	ME0162

4. How to read the model plate



5. How to read the model

(1) RACON Unit

RACON-20-HA-ABU

<Unit name>

<Motor type>
2 : 2W 20 : 20W
5 : 5W 20S : 20W
10 : 10W 30 : 30W

<Option 2>
ABU : Applicable to Simple Absolute Unit
Not Specified : Incremental (Standard)

<Option 1>
HA : High Accel/Decel Type
LA : Less power consumption Type
Not Specified : Standard

(2) RPCON Unit

RPCON-20P-ABU-H

<Unit name>

<Motor type>
[Motor Flange Size]
20P : 20 □Size 35P : 35 □Size
28P : 28 □Size 42P : 42 □Size
28SP : 28 □Size 56P : 56 □Size

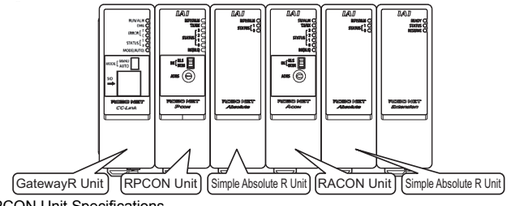
<High Acceleration Transport Type>
H : High Acceleration Transport Type
(RCP3-SA4/SA5/SA6
RCP2-SA5/SA6)
Not Specified : Standard

<Option 1>
ABU : Simple Absolute Unit Type
Not Specified : Incremental (Standard)

(3) Simple Absolute R Unit
Unit name : RABU

Basic Specifications

A typical ROBONET system is constructed not only with the RACON and RPCON that are explained in this manual, but also with GatewayR Unit, Simple Absolute R Unit, extension unit and ROBO Cylinder Controller to connect to the extension unit. Please refer to First Step Guide and Instruction Manual (CD/DVD) of each device for additional instruction related to that device.
RACON and RPCON units are controllers which are to be installed on the right side of Gateway R unit. Use Simple Absolute R units to provide absolute encoder functionality for an axis. Place the unit on the right of the corresponding RACON or RPCON unit.



1. RACON/RPCON Unit Specifications

Item		Specifications
Power Supply		24V DC±10%
Current Consumption		[Refer to 3. Current Consumption and Heat Generation]
Heat Generation		
Number of Controllable Axes		1-axis
For Communication	Communication Protocol	RS485 conformance
	Communication System	Start-Stop Synchronization System Half-Duplex Communication
	Baud Rate	230.4kbps
	Error Control System	Non parity bit, CRC*1
Motor Control System	RACON	Sinusoidal Wave PWM Vector Control
	RPCON	Weak Field-magnet Vector Control
Corresponding Encoder		Incremental Encoder (Incremental/Simple Absolute)
Motor • Encoder Cable Length		MAX. 20m
Data Retention Memory		EEPROM(Position Table/Parameter) Limitation in number of writing about 100,000 times
Number of positions		Refer to GatewayR Unit First Step Guide or ROBONET Instruction Manual (CD/DVD)
LED Display (Front Panel)		Controller status indicator LEDs [Refer to the Trouble Shooting for the details]
Electromagnetic Brake Forced Release Switch (Front Panel)		Normal Operation/Compulsory Brake Release Switchover
Environment	Surrounding air temperature	0 to 40°C
	Surrounding humidity	95%RH or less (non-condensing)
	Surrounding environment	[Refer to Installation Environment section]
	Surrounding storage temperature	-25 to 70°C
	Surrounding storage humidity	95%RH or less (non-condensing)
	Vibration durability	XYZ Each direction 10 to 57Hz Pulsating amplitude 0.035mm (continuous) 0.075mm (intermittent) 57 to 150Hz 4.9m/s² (continuous) 9.8m/s² (intermittent)
	Protection class	IP20
Cooling Method		Forced Air Cooling (Built-in fan unit)
Insulation Resistance		Between power supply terminal and FG 500V DC 10MΩ or more
Product Life		(Reference) 5 to 10 years: It varies significantly by the effects of the usage condition (especially temperature).
External Dimensions		34W × 105H × 73.3D [mm]
Weight		Approx. 200g

*1 CRC : Cyclic Redundancy Check It is a data error detection method often used for the synchronous transmission

2. Simple Absolute R Unit Specifications

Item		Specifications
Power Supply		24V DC±10%
Current Consumption		[Refer to 3. Current Consumption and Heat Generation]
Heat Generation		
Number of Controllable Axes		1-axis
Backup Battery (Absolute Battery)	Name	Ni-MH battery
	Model	AB-7
	Supplier	SANYO
	Rated	3.6V 3300mAh
	Product Life	About 3 years (reference)
	Charging Time	About 72 hours
Environment	Surrounding air temperature	0 to 40°C
	Surrounding humidity	95%RH or less (non-condensing)
	Surrounding environment	[Refer to Installation Environment section]
	Surrounding storage temperature	-25 to 70°C
	Surrounding storage humidity	95%RH or less (non-condensing)
	Vibration durability	XYZ Each direction 10 to 57Hz Pulsating amplitude 0.035mm (continuous) 0.075mm (intermittent) 57 to 150Hz 4.9m/s² (continuous) 9.8m/s² (intermittent)
	Protection class	IP20
Cooling Method		Natural air-cooling
Insulation Resistance		Between power supply terminal and FG 500V DC 10MΩ or more
Product Life		(Reference) 5 to 10 years: It varies significantly by the effects of the usage condition (especially temperature).
External Dimensions		34W × 105H × 73.3D [mm]
Weight		Approx. 330g (including backup battery)

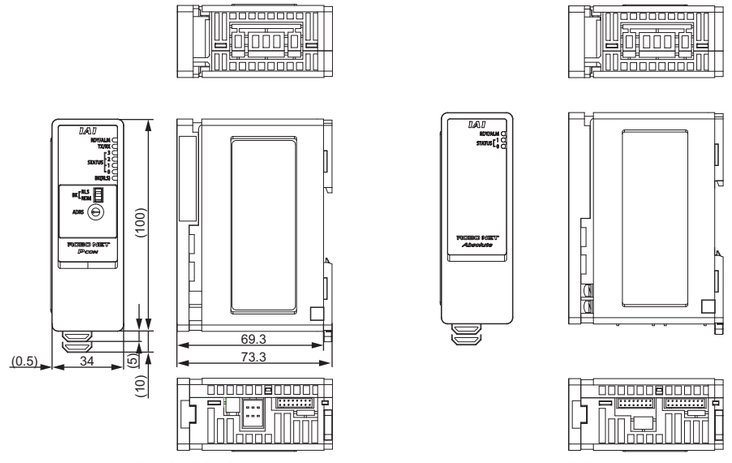
⚠ Note : Please have the battery charged for more than 72 hours before using for the first time or after replacing with a new one. (Keep the ROBONET power ON. Operating the actuator during the battery charge will not cause any problem.)
Also charge the battery when the ROBONET power is OFF for more than the battery retention time.
[Refer to Absolute Battery Retention Time Condition Setting section for the details of the battery retention time.]

3. Current Consumption and Heat Generation

Unit		Current Consumption				Heat Generation
	Motor Type	Standard Type / High Accel/Decel Type		Low Power Consumption Type		
		Rated	MAX.(Note 1)	Rated	MAX.(Note 1)	
RACON Unit	10	1.3A	4.4A	1.3A	2.5A	8.4W
	20	1.3A	4.4A	1.3A	2.5A	
	30	1.3A	4.0A	1.3A	2.2A	
	20S (RCA-RA3□/RGS3□/RGD3□, RCA2-SA4□/TA5□)	1.7A	5.1A	1.7A	3.4A	
	2 (RCL)	0.8A	4.6A	—	—	
	5 (RCL)	1.0A	6.4A	—	—	
	10 (RCL)	1.3A	6.4A	—	—	
RPCON Unit	Motor Type	Rated		MAX.(Note 2)		9.6W
	20P, 28P, 28SP	0.4A		2.0A		
	35P, 42P, 56P	1.2A		2.0A		
Simple Absolute R Unit	—	MAX. 300mA				7.2W

Note 1 The current becomes maximum when the excitation phase of the servo-motor is detected, which is performed during the initial servo-motor ON processing after the power is injected (Normal: Approx. 1 to 2sec, Max.: 10sec).
Note 2 The current is maximized at the excitation phase detection conducted in the first servo ON process after the power is supplied (ordinary 100ms). However, approximately 6A current flows at the recovery (when the drive power is supplied) from an emergency stop (approx. 1 to 2ms).

External Dimensions



RACON/RPCON RABU

(Note) The dimensions are the same for RACON, RPCON and RABU.

Installation Environment

This product is capable for use in the environment of pollution degree 2*1 or equivalent.
*1 Pollution Degree 2 : Environment that may cause non-conductive pollution or transient conductive pollution by frost. (IEC60664-1)

1. Installation Environment

Do not use this product in the following environment.

- Location where the surrounding air temperature exceeds the range of 0 to 40°C
- Location where condensation occurs due to abrupt temperature changes
- Location where relative humidity exceeds 85%RH
- Location exposed to corrosive gases or combustible gases
- Location exposed to significant amount of dust, salt or iron powder
- Location subject to direct vibration or impact
- Location exposed to direct sunlight
- Location where the product may come in contact with water, oil or chemical droplets
- Environment that blocks the air vent [Refer to Installation and Noise Elimination Section]

When using the product in any of the locations specified below, provide a sufficient shield.

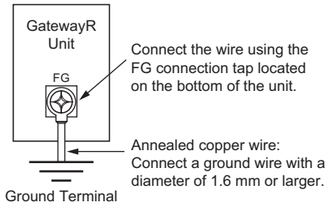
- Location subject to electrostatic noise
- Location where high electrical or magnetic field is present
- Location with the mains or power lines passing nearby

2. Storage and Preservation Environment

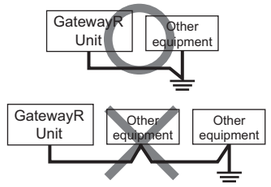
The storage and preservation environment should comply with the same standards as those for the installation environment. In particular, when the machine is to be stored for a long time, pay close attention to environmental conditions so that no condensation forms. Unless specially specified, moisture absorbency protection is not included in the package when the machine is delivered. In the case that the machine is to be stored and preserved in an environment where condensation is anticipated, take the condensation preventive measures from outside of the entire package, or directly after opening the package.

Installation and Noise Elimination

1. Noise Elimination Grounding (Frame Ground)



Class D grounding
(Grounding resistance at 100Ω or less)



Do not share the ground wire with or connect to other equipment. Ground each controller.

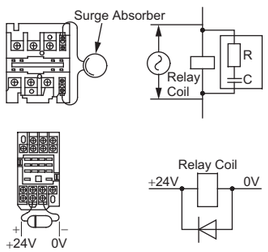
2. Precautions regarding wiring method

1) Twist the wires for the 24V DC power unit.
2) Separate the communication line from the power line.

3. Noise Sources and Elimination

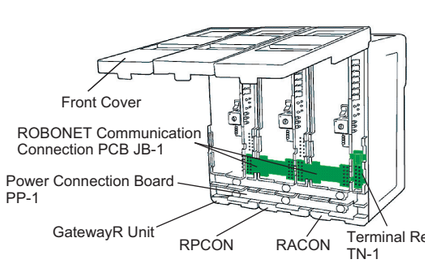
Carry out noise elimination measures for power devices on the same power path and in the same equipment.
The following are examples of measures to eliminate noise sources.

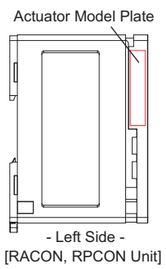
1) AC solenoid valves, magnet switches and relays
   [Measure] Install a Surge absorber parallel with the coil.
2) DC solenoid valves, magnet switches and relays
   [Measure] Install a diode parallel with the coil. Use a DC relay with a built-in diode.

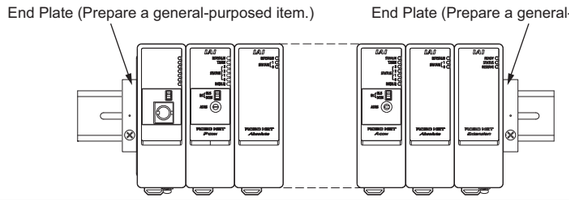


4. RACON and RPCON Units Installation

RACON and RPCON units are to be connected on the right side of Gateway R unit, for the number of units that corresponds to the number of necessary axes, using the ROBONET communication PCB (JB-1) and Power Connection Board (PP-1). Also, equip the terminal resistance PCB to the unit at the end. There is no limitation to the number of installed RACON and RPCON units. There is corresponding actuator models indicated on the left side of the front cover of RACON and RPCON units. Confirm the corresponding model before installation.
FG line on each unit can be joined by fitting the units closely. Install the units tightly and securely together using (generally purposed) DIN rail end plates at each side of the installation.



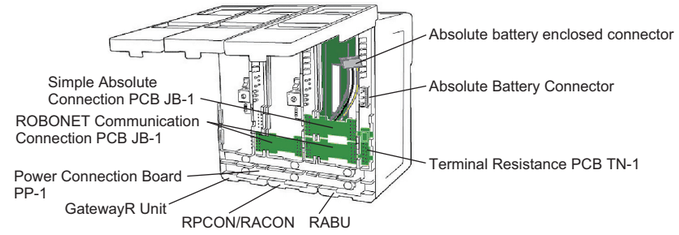




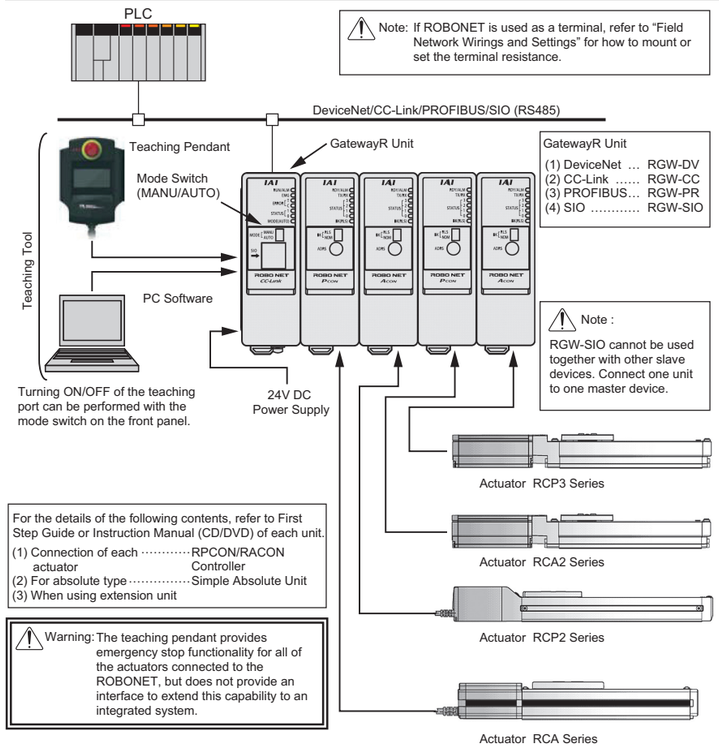
Note : There may be a communication error occurred on the unit side in the following cases:
1) FG line contact is not appropriate (the joint of each unit is not close enough)
2) ROBONET communication connection PCB (JB-1) or terminal resistance PCB (TN-1) is not equipped or contacted improperly
Also, if the connection of the power connection board (PP-1) is improper, it may cause an abnormal current or noise generation on the power supply. Make sure to certainly install the unit.

5. Simple Absolute R Units Installation

Install the unit on the right side of the corresponding controller. It is necessary to equip the simple absolute connection PCB (JB-1). If the unit is at the end of the installation, equip it with the terminal resistance PCB (TN1). The absolute battery connector is not plugged when the product is delivered to prevent an electric discharge. Connect to the absolute battery connector on the main unit of Simple Absolute R Unit (RABU) before start using.



System Configuration (Example)



For the details of the following contents, refer to First Step Guide or Instruction Manual (CD/DVD) of each unit.
(1) Connection of each actuator ····· RPCON/RACON Controller
(2) For absolute type ····· Simple Absolute Unit
(3) When using extension unit

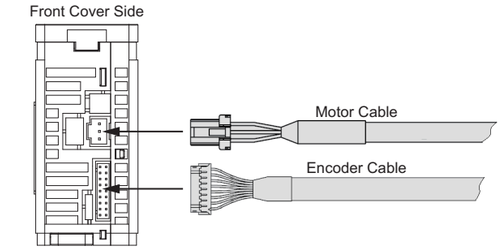
Warning: The teaching pendant provides emergency stop functionality for all of the actuators connected to the ROBONET, but does not provide an interface to extend this capability to an integrated system.

Wiring of Motor and Encoder Cables

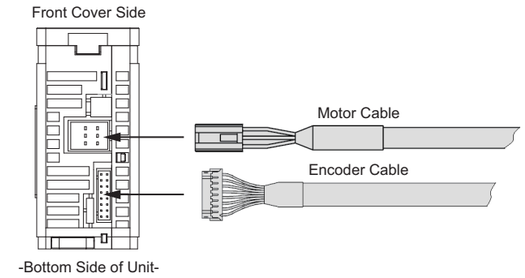
There are the corresponding actuator models indicated on the left side of the front cover for both RACON and RPCON units. Check the corresponding models before connecting cables.

1. Incremental (Standard)

[1] RACON



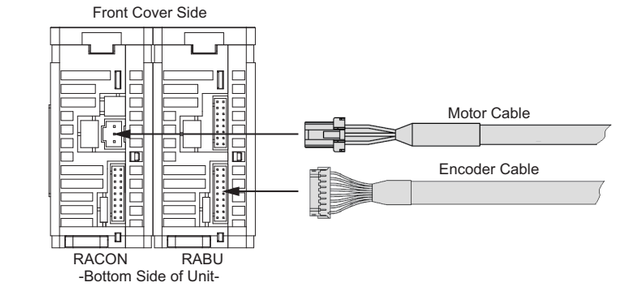
[2] RPCON



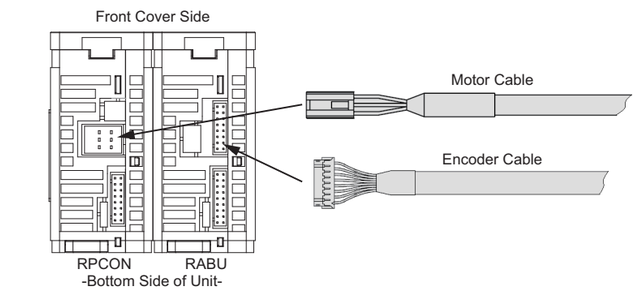
2. Absolute Type (When using Simple Absolute R Unit)

Simple Absolute R Unit (RABU) is to be used in common for both RACON and RPCON units. However, the positions to plug the connectors are different for the cases of RACON and RPCON. Pay a special attention when connecting the connectors.

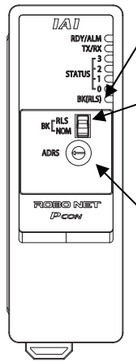
[1] RACON + RABU



[2] RPCON + RABU



Axis Number Settings/Brake Compulsory Release



Slide Cover

Push the slide cover up to adjust the axis number setting and operate the brake compulsory release switch. Push down the slide cover after the operation is complete to protect the axis setting from being accidentally disturbed and to prevent dust intrusion.

Brake Compulsory Release Switch

RLS : The brake can be compulsorily released (excitation release) no matter what the operation mode is.

> ⚠ Warning: Releasing the brake may cause the load to drop, especially when the power is cut off, during an emergency stop, or if a servo OFF is performed. Place the switch to the NOM position expect when performing startup adjustments or direct teaching.

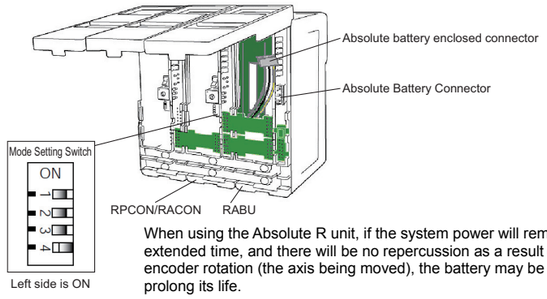
Axis Number Setting Switch

The axis numbers start with 1. Set the switch following the table below. Be careful not to duplicate the number.

Axis No.	Switch	Axis No.	Switch	Axis No.	Switch	Axis No.	Switch
1	0	5	4	9	8	13	C
2	1	6	5	10	9	14	D
3	2	7	6	11	A	15	E
4	3	8	7	12	B	16	F

The location of the switch is the same for RACON and RPCON.

Absolute Battery Retention Time Condition Setting



Left side is ON

When using the Absolute R unit, if the system power will remain off for an extended time, and there will be no repercussion as a result of transient encoder rotation (the axis being moved), the battery may be disconnected to prolong its life.

Mode Setting Switch

Switch	Function	Set in delivery
1	For the encoder rotation speed setting secured by the absolute while the power is OFF	OFF
2	For the encoder rotation speed setting secured by the absolute while the power is OFF	ON
3	For updating (Keep it OFF while in use.)	OFF
4	Not for use (Keep it ON while in use.)	ON

Encoder allowable max. rotation speed setting possibly be occurred while the power is OFF

Setting Switch		Encoder Max. Rotation Speed [rpm]		Battery Retaining Time (Reference)
1	2	When the connected actuator is a model other than RCA2-***N;	When the connected actuator is RCA2-***N;	
OFF	OFF	100	75	20 days
ON	OFF	200	150	15 days
OFF	ON	400	300	10 days (Set in delivery)
ON	ON	800	600	5 days

The retention times described above are the reference assuming that the absolute battery is used for the first time under the room temperature (20°C) and there is no encoder rotation while the power is OFF or the operation is transient of a single encoder.

> ⚠ Note : In the following cases, the absolute data (current position data) cannot be guaranteed. Be careful.
> 1) When the number of encoder rotation exceeded the set value while the power is OFF.
> 2) When the operation is continued through even though the number of encoder rotation is within the set value.
> This function is purposed to guarantee the absolute data (current position data) in a case the encoder is rotated unexpectedly on the assumption that the actuator would not move while the power is OFF.
> 3) When the absolute battery is already exhausted.

About Battery Charge and Discharge

Please have the battery charged for more than 72 hours before using for the first time or after replacing with a new one.
The battery gets charged while the controller is supplied with 24V power.
It is possible to retain the encoder data for the duration shown below (Note) for each hour of battery charge.
Leaving the controller power OFF for more than the data holding time will lead to a loss of the data. Have the battery charged as early as possible.
There is life to the battery and the duration for data holding will decrease. Replace the battery if you confirm an extreme drop in data holding time even with enough charge time.
(Note) Data holding time per hour of battery charge time
*Followings are the reference values of time assuming the battery is new.

Encoder Max. Rotation Speed Setting	100 (75)	200 (150)	400 (300)	800 (600)
Data Retaining Time (Reference)	6.6H	5.0H	3.3H	1.6H

Absolute Reset

Refer to Instruction Manual (CD/DVD) for the details of how to perform an absolute reset.

1. When using a teaching tool
   It is a way to perform an absolute reset using a teaching tool such as the PC software and teaching pendant.
   (1) Parameter Check and Settings
   Set Parameter No.83 ABS Unit [0: Not to Use, 1: Use] to “1”. If you purchased Simple Absolute R Unit together with RACON or RPCON (“-ABU” is shown at the end of the model name of RACON or RPCON if it is purchased with Absolute R Unit), the parameter should already be set to “1” at the delivery. Please confirm it is set to “1” in case.
   (2) Alarm Reset
   When the teaching tool gets connected, a message “0EE: Absolute Encoder Error” will appear. Reset the alarm.
   (3) Home Return (Absolute Reset)
   Turn the servo ON and execute a home-return operation. The absolute reset is finished once the home-return operation is complete in normal condition.

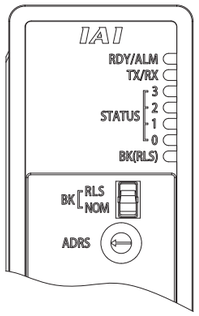
2. When using the host controller (PLC)
   It is a way to perform an absolute reset using the control signal on ROBONET.
   (1) Parameter Check and Settings
   Set Parameter No.83 ABS Unit [0: Not to Use, 1: Use] to “1” in advance on the teaching tool. If you purchased Simple Absolute R Unit together with RACON or RPCON (“-ABU” is shown at the end of the model name of RACON or RPCON if it is purchased with Absolute R Unit), the parameter should already be set to “1” at the delivery. Please confirm it is set to “1” in case.
   (2) Alarm Reset
   When the controller gets turned ON, an alarm “0EE: Absolute Encoder Error” will appear. Turn RES signal (reset) ON to reset the alarm.
   (3) Servo ON
   Turn ON SON signal (servo ON). Turn OFF STP signal (pause) if it is ON.
   (4) Home Return (Absolute Reset)
   Turn HOME signal (home return) ON to execute a home-return operation. The absolute reset is finished if the home-return operation completes in normal condition and HEND signal (home return complete) turns ON.

Starting Procedures

When using this product for the first time, refer carefully to Starting Procedures section in Gateway R Unit First Step Guide or ROBONET Instruction Manual (CD/DVD) and make sure not to make any omission in check items or wiring layout.

Troubleshooting

1. RACON, RPCON Unit
   There are monitor LEDs provided on RACON and RPCON units for status monitoring. On these LEDs, it is possible to check the controller and communication status at the startup or when there is any trouble.



LED	Color	Description
RDY/ALM	GN	Servo ON Status
	RD	Alarm generated
TX/RX	GN	SIO signal being sent
	YW	SIO signal being receive
STATUS 3	GN	It monitors the motor current while the servo is ON and displays the details of the alarm in binary data when an alarm is generated.
STATUS 2	GN	
STATUS 1	GN	
STATUS 0	GN	
BK (RLS)	YW	In brake compulsory release

[Status Signal Display]
(1) Motor Current Display
This shows the command current to the monitor roughly in % to the ratings while the servo is ON. It is the command current of the servo controlled by the feedback. Utilize this as the display of an approximate load.
○ : Illuminating × : OFF

STATUS				Command Current (%)	
3	2	1	0	RACON	RPCON
×	×	×	×	0 to 19	0 to 6
×	×	×	○	19 to 75	6 to 25
×	×	○	○	75 to 131	25 to 50
×	○	○	○	131 to 188	50 to 75
○	○	○	○	188 to 300	75 to 100

(2) Alarm Display
While an alarm is generated, the alarm detail is displayed in binary with four LEDs. It tells you roughly the detail of the alarm. This is not an alarm code. The table below provides a list of the alarms, however, check the alarm details on the teaching tool when an alarm is generated to have an appropriate treatment. Also, refer to Instruction manual (CD/DVD) for the narrowed details of the alarms.
○ : Illuminating × : OFF

STATUS 3	STATUS 2	STATUS 1	STATUS 0	Binary Value	Alarm Code	Alarm Name	Detection Yes/No RPCON	Detection Yes/No RACON
×	×	○	×	2	90	Software reset command during servo ON status	○	○
					91	Position number error during teaching	○	○
					92	PWRT signal detected during a movement	○	○
					93	PWRT signal detected with home return incomplete	○	○
×	×	○	○	3	80	Movement command during servo OFF status	○	○
					82	Position Command in Incomplete Home Return	○	○
					83	Movement command to absolute position with home return incomplete	○	○
					84	Movement Command during Home Return Operation	○	○
					85	Position No. error during movement	○	○
					A7	Command Deceleration Error	○	○
×	○	×	×	4	F4	PCB Mismatching Error	○	○
×	○	○	×	6	A1	Parameter Data Error	○	○
					A2	Position Data Error	○	○
					A3	Position Command Data Error	○	○
×	○	○	○	7	B6	Z-Phase Detection Time Out	×	○
					B7	Magnetic Pole Indeterminacy	×	○
					B8	Excitement Detection Error	○	×
					BA	Home Position Sensor Indetectable	○	○
					BE	Home Return Time Out	○	○
○	×	×	×	8	C0	Actual Speed Excessive	○	○
○	×	×	○	9	C8	Overcurrent	×	○
					C9	Overvoltage	○	○
					CA	Overheat	○	○
					CB	Current Sensor Offset Adjustment Error	×	○
					CC	Control Power Source Voltage Error	○	○
					CE	Drop in Control Supply Voltage	○	○
○	×	○	○	B	D8	Deviation Overflow	○	○
					D9	Software Stroke Limit-Over Error	○	○
					DC	Pressing Motion Range Over Error	○	○
					A4	Command counter overflow	○	○
○	○	×	×	C	C1	Servo-Motor Error	○	×
					D2	Motor Power Source Voltage Excessive	×	○
					E0	Overload	×	○
					F0	Driver Logic Error	×	○
○	○	×	○	D	E5	Encoder Receive Error	○	○
					E8	A- and B-Phases Breakage Error	○	○
					E9	A-Phases Breakage Error	○	×
					EA	B-Phases Breakage Error	○	×
					ED	Absolute Encoder Error Detection 1	○	○
					EE	Absolute Encoder Error Detection 2	○	○
					EF	Absolute Encoder Error Detection 3	○	○
○	○	○	×	E	FA	CPU Error	○	○
					FC	Logic Error	○	○
○	○	○	○	F	F5	Nonvolatile Memory Data Write Verify Error	○	○
					F6	Nonvolatile Memory Data Write Timeout	○	○
					F8	Nonvolatile Memory Data Breakdown	○	○

2. Simple Absolute R Unit
   There are monitor LEDs provided on Simple Absolute R Unit for status monitoring. On these LEDs, it is possible to check the condition of the unit at the startup or when there is any trouble.

LED	Color	LED	Color	Description
RDY/ALM	GN	STATUS 1	GN	Absolute reset complete
			RD	Absolute Unit Reset Incomplete
	RD	STATUS 1	RD	Circuit error, Please contact us if the error does not recover even after a reboot.
STATUS 0	GN	-	-	Absolute battery is 4.2V or more (fully charged)
	OR	-	-	Absolute battery less than 3.2V to 4.2V
	RD	-	-	Absolute battery is 3.2V or less (not connected or voltage is dropped)

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