

CC-Link

Operation Manual Twenty first Edition

**X-SEL
RCS-C
ASEL
PSEL**

**SSEL
TT
E-Con
SCON-C**

IAI America, Inc.

Please Read Before Use

Thank you for purchasing our product.

This Operation Manual explains the handling methods, structure and maintenance of this product, among others, providing the information you need to know to use the product safely.

Before using the product, be sure to read this manual and fully understand the contents explained herein to ensure safe use of the product.

The CD/DVD that comes with the product contains operation manuals for IAI products.

When using the product, refer to the necessary portions of the applicable operation manual by printing them out or displaying them on a PC.

After reading the Operation Manual, keep it in a convenient place so that whoever is handling this product can reference it quickly when necessary.

[Important]

- This Operation Manual is original.
- The product cannot be operated in any way unless expressly specified in this Operation Manual. IAI shall assume no responsibility for the outcome of any operation not specified herein.
- Information contained in this Operation Manual is subject to change without notice for the purpose of product improvement.
- If you have any question or comment regarding the content of this manual, please contact the IAI sales office near you.
- Using or copying all or part of this Operation Manual without permission is prohibited.
- The company names, names of products and trademarks of each company shown in the sentences are registered trademarks.



Caution: The following functions are described in the separate operation manual.

	Title of operation manual/Overview	Control number
1	CC-Link Operation Manual Refer to this operation manual if you are using an ACON, PCON or SCON-CA controller(s).	ME0254

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Safety Guide

“Safety Guide” has been written to use the machine safely and so prevent personal injury or property damage beforehand. Make sure to read it before the operation of this product.

Safety Precautions for Our Products

The common safety precautions for the use of any of our robots in each operation.

No.	Operation Description	Description
1	Model Selection	<ul style="list-style-type: none">• This product has not been planned and designed for the application where high level of safety is required, so the guarantee of the protection of human life is impossible. Accordingly, do not use it in any of the following applications.<ol style="list-style-type: none">1) Medical equipment used to maintain, control or otherwise affect human life or physical health.2) Mechanisms and machinery designed for the purpose of moving or transporting people (For vehicle, railway facility or air navigation facility)3) Important safety parts of machinery (Safety device, etc.)• Do not use it in any of the following environments.<ol style="list-style-type: none">1) Location where there is any inflammable gas, inflammable object or explosive2) Place with potential exposure to radiation3) Location with the ambient temperature or relative humidity exceeding the specification range4) Location where radiant heat is added from direct sunlight or other large heat source5) Location where condensation occurs due to abrupt temperature changes6) Location where there is any corrosive gas (sulfuric acid or hydrochloric acid)7) Location exposed to significant amount of dust, salt or iron powder8) Location subject to direct vibration or impact• Do not use the product outside the specifications. Failure to do so may considerably shorten

No.	Operation Description	Description
2	Transportation	<ul style="list-style-type: none"> • When the work is carried out with 2 or more persons, make it clear who is to be the leader and who to be the follower(s) and communicate well with each other to ensure the safety of the workers. • Consider well so that it is not bumped against anything or dropped during the transportation. • Transport it using an appropriate transportation measure. • Do not step or sit on the package. • Do not put any heavy thing that can deform the package, on it. • When using a crane capable of 1t or more of weight, have an operator who has qualifications for crane operation and sling work. • When using a crane or equivalent equipments, make sure not to hang a load that weighs more than the equipment's capability limit. • Use a hook that is suitable for the load. Consider the safety factor of the hook in such factors as shear strength. • Do not get on the load that is hung on a crane. • Do not leave a load hung up with a crane. • Do not stand under the load that is hung up with a crane.
3	Storage and Preservation	<ul style="list-style-type: none"> • The storage and preservation environment conforms to the installation environment. However, especially give consideration to the prevention of condensation.
4	Installation and Start	<p>(1) Installation of Robot Main Body and Controller, etc.</p> <ul style="list-style-type: none"> • Make sure to securely hold and fix the product (including the work part). A fall, drop or abnormal motion of the product may cause a damage or injury. • Do not get on or put anything on the product. Failure to do so may cause an accidental fall, injury or damage to the product due to a drop of anything, malfunction of the product, performance degradation, or shortening of its life. • When using the product in any of the places specified below, provide a sufficient shield. <ol style="list-style-type: none"> 1) Location where electric noise is generated 2) Location where high electrical or magnetic field is present 3) Location with the mains or power lines passing nearby 4) Location where the product may come in contact with water, oil or chemical droplets <p>(2) Cable Wiring</p> <ul style="list-style-type: none"> • Use our company's genuine cables for connecting between the actuator and controller, and for the teaching tool. • Do not scratch on the cable. Do not bend it forcibly. Do not pull it. Do not coil it around. Do not insert it. Do not put any heavy thing on it. Failure to do so may cause a fire, electric shock or malfunction due to leakage or continuity error. • Perform the wiring for the product, after turning OFF the power to the unit, so that there is no wiring error. • When the direct current power (+24V) is connected, take the great care of the directions of positive and negative poles. If the connection direction is not correct, it might cause a fire, product breakdown or malfunction. • Connect the cable connector securely so that there is no disconnection or looseness. Failure to do so may cause a fire, electric shock or malfunction of the product. • Never cut and/or reconnect the cables supplied with the product for the purpose of extending or shortening the cable length. Failure to do so may cause the product to malfunction or cause fire.





No.	Operation Description	Description
4	Installation and Start	<p>(3) Grounding</p> <ul style="list-style-type: none">● Make sure to perform the grounding of type D (Former Type 3) for the controller. The grounding operation should be performed to prevent an electric shock or electrostatic charge, enhance the noise-resistance ability and control the unnecessary electromagnetic radiation. <p>(4) Safety Measures</p> <ul style="list-style-type: none">● When the work is carried out with 2 or more persons, make it clear who is to be the leader and who to be the follower(s) and communicate well with each other to ensure the safety of the workers.● When the product is under operation or in the ready mode, take the safety measures (such as the installation of safety and protection fence) so that nobody can enter the area within the robot's movable range. When the robot under operation is touched, it may result in death or serious injury.● Make sure to install the emergency stop circuit so that the unit can be stopped immediately in an emergency during the unit operation.● Take the safety measure not to start up the unit only with the power turning ON. Failure to do so may start up the machine suddenly and cause an injury or damage to the product.● Take the safety measure not to start up the machine only with the emergency stop cancellation or recovery after the power failure. Failure to do so may result in an electric shock or injury due to unexpected power input.● When the installation or adjustment operation is to be performed, give clear warnings such as "Under Operation; Do not turn ON the power!" etc. Sudden power input may cause an electric shock or injury.● Take the measure so that the work part is not dropped in power failure or emergency stop.● Wear protection gloves, goggle or safety shoes, as necessary, to secure safety.● Do not insert a finger or object in the openings in the product. Failure to do so may cause an injury, electric shock, damage to the product or fire.● When releasing the brake on a vertically oriented actuator, exercise precaution not to pinch your hand or damage the work parts with the actuator dropped by gravity.

No.	Operation Description	Description
5	Teaching	<ul style="list-style-type: none"> When the work is carried out with 2 or more persons, make it clear who is to be the leader and who to be the follower(s) and communicate well with each other to ensure the safety of the workers. Perform the teaching operation from outside the safety protection fence, if possible. In the case that the operation is to be performed unavoidably inside the safety protection fence, prepare the "Stipulations for the Operation" and make sure that all the workers acknowledge and understand them well. When the operation is to be performed inside the safety protection fence, the worker should have an emergency stop switch at hand with him so that the unit can be stopped any time in an emergency. When the operation is to be performed inside the safety protection fence, in addition to the workers, arrange a watchman so that the machine can be stopped any time in an emergency. Also, keep watch on the operation so that any third person can not operate the switches carelessly. Place a sign "Under Operation" at the position easy to see. When releasing the brake on a vertically oriented actuator, exercise precaution not to pinch your hand or damage the work parts with the actuator dropped by gravity. <p>* Safety protection Fence : In the case that there is no safety protection fence, the movable range should be indicated.</p>
6	Trial Operation	<ul style="list-style-type: none"> When the work is carried out with 2 or more persons, make it clear who is to be the leader and who to be the follower(s) and communicate well with each other to ensure the safety of the workers. After the teaching or programming operation, perform the check operation one step by one step and then shift to the automatic operation. When the check operation is to be performed inside the safety protection fence, perform the check operation using the previously specified work procedure like the teaching operation. Make sure to perform the programmed operation check at the safety speed. Failure to do so may result in an accident due to unexpected motion caused by a program error, etc. Do not touch the terminal block or any of the various setting switches in the power ON mode. Failure to do so may result in an electric shock or malfunction.
7	Automatic Operation	<ul style="list-style-type: none"> Before the automatic operation is started up, make sure that there is nobody inside the safety protection fence. Before the automatic operation is started up, make sure that all the related peripheral machines are ready for the automatic operation and there is no error indication. Make sure to perform the startup operation for the automatic operation, out of the safety protection fence. In the case that there is any abnormal heating, smoke, offensive smell, or abnormal noise in the product, immediately stop the machine and turn OFF the power switch. Failure to do so may result in a fire or damage to the product. When a power failure occurs, turn OFF the power switch. Failure to do so may cause an injury or damage to the product, due to a sudden motion of the product in the recovery operation from the power failure.

No.	Operation Description	Description
8	Maintenance and Inspection	<ul style="list-style-type: none"> • When the work is carried out with 2 or more persons, make it clear who is to be the leader and who to be the follower(s) and communicate well with each other to ensure the safety of the workers. • Perform the work out of the safety protection fence, if possible. In the case that the operation is to be performed unavoidably inside the safety protection fence, prepare the "Stipulations for the Operation" and make sure that all the workers acknowledge and understand them well. • When the work is to be performed inside the safety protection fence, basically turn OFF the power switch. • When the operation is to be performed inside the safety protection fence, the worker should have an emergency stop switch at hand with him so that the unit can be stopped any time in an emergency. • When the operation is to be performed inside the safety protection fence, in addition to the workers, arrange a watchman so that the machine can be stopped any time in an emergency. Also, keep watch on the operation so that any third person can not operate the switches carelessly. • Place a sign "Under Operation" at the position easy to see. • For the grease for the guide or ball screw, use appropriate grease according to the Operation Manual for each model. • Do not perform the dielectric strength test. Failure to do so may result in a damage to the product. • When releasing the brake on a vertically oriented actuator, exercise precaution not to pinch your hand or damage the work parts with the actuator dropped by gravity. <p>* Safety protection Fence : In the case that there is no safety protection fence, the movable range should be indicated.</p>
9	Modification and Dismantle	<ul style="list-style-type: none"> • Do not modify, disassemble, assemble or use of maintenance parts not specified based at your own discretion.
10	Disposal	<ul style="list-style-type: none"> • When the product becomes no longer usable or necessary, dispose of it properly as an industrial waste. • Do not put the product in a fire when disposing of it. The product may burst or generate toxic gases.

Alert Indication

The safety precautions are divided into “Danger”, “Warning”, “Caution” and “Notice” according to the warning level, as follows, and described in the Operation Manual for each model.

Level	Degree of Danger and Damage	Symbol
Danger	This indicates an imminently hazardous situation which, if the product is not handled correctly, will result in death or serious injury.	 Danger
Warning	This indicates a potentially hazardous situation which, if the product is not handled correctly, could result in death or serious injury.	 Warning
Caution	This indicates a potentially hazardous situation which, if the product is not handled correctly, may result in minor injury or property damage.	 Caution
Notice	This indicates lower possibility for the injury, but should be kept to use this product properly.	 Notice

1. Overview

CC-Link stands for Control & Communication Link, which is a field network system.

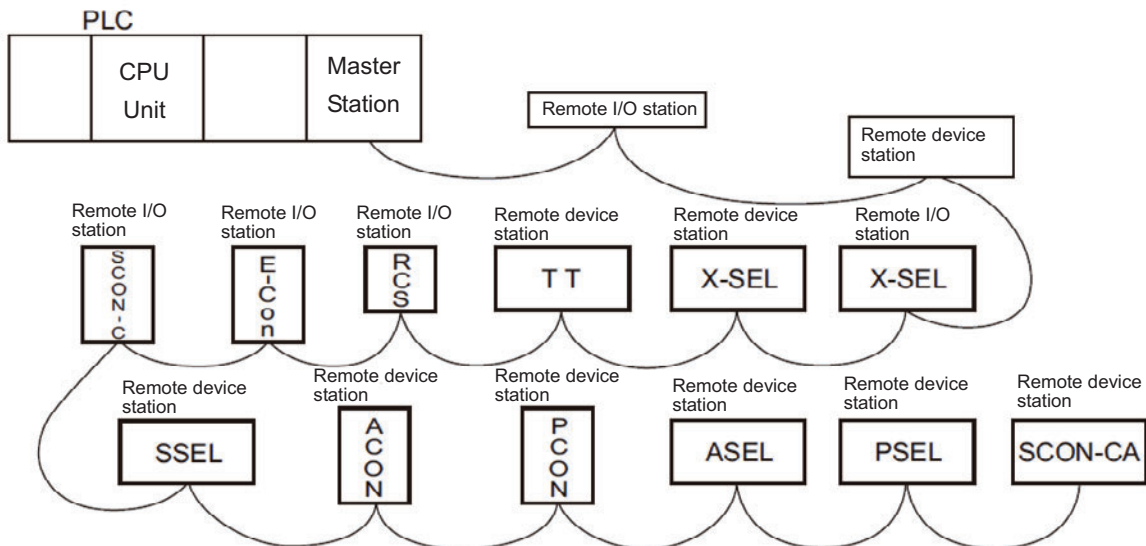
For the controller for X-SEL, TT, RCS-C, E-CON, ASEL, PSEL, SSEL, SCON-C, ACON, PCON or SCON-CA, the system configuration with reduced wiring is enabled by means of connecting it to this CC-Link.

For CC-Link, there are two station types; Remote Device Station where bit data and word data communications are available and Remote I/O Station where only bit data communication is available. The controllers and remote station types are as follows.

ACON, PCON and SCON-CA are not specified in this operation manual. Refer to the separate ME0254 CC-Link.

Model	Type	Characteristic
X-SEL-J/K/P/Q, ASEL, PSEL, SSEL	Remote device station	<ul style="list-style-type: none"> I/O data can be processed as bit data or word data. For each of input and output points, max. 256 points are available. It can be operated as the same as the control with PIO.
X-SEL-K	Remote I/O station	<ul style="list-style-type: none"> This is the remote I/O module with 16 I/O points.
TT	Remote device station	<ul style="list-style-type: none"> The TT's I/O data can be processed as bit data or word data. For each of input and output points, max. 256 points are available. It can be operated as the same as the control with PIO.
RCS-C	Remote I/O station	<ul style="list-style-type: none"> It can be operated as the same as the control with PIO.
E-CON	Remote I/O station	<ul style="list-style-type: none"> It can be operated as the same as the control with PIO.
SCON	Remote I/O station	<ul style="list-style-type: none"> It can be operated as the same as the control with PIO.
ASEL, PSEL, SSEL	Remote device station	<ul style="list-style-type: none"> It can be operated as the same as the control with PIO.
ACON, PCON SCON-CA	Remote device station	<ul style="list-style-type: none"> In addition to the processing as the same as the operation with PIO, it can be operated with the target position, speed and acceleration/deceleration speed directly setup using the values.

System Configuration Example



* For further information on CC-Link, refer to the Operation Manuals for the master unit and the programmable controller (PLC) to be mounted.

Use this Operation Manual together with the Operation Manual of each controller.

CC-Link cannot be used for any method other than those described as possible in this Operation Manual.

2. Interface Specifications

Item	Specification					
Communications standard	CC-Link Ver1.10					
Communications speed	10M/5M/2.5M/625k/156kbps					
Communications system	Broadcast polling system					
Synchronization system	Frame synchronization system					
Encoding system	NRZI					
Transmission path format	Bus format (EIA RS485 conformance)					
Transmission format	HDLC conformance					
Error control system	CRC ($X^{16} + X^{12} + X^5 + 1$)					
Number of occupied stations	X-SEL, ASEL, PSEL, SSEL, TT:Remote device station: Max. 3 stations X-SEL-K: Remote I/O station: 1 station RCS-C/E-Con/SCON-C: Remote I/O station: 1 station					
Communications cable length (*1)	Communications speed (bps)	10M	5M	2.5M	625k	156K
	Overall cable length (m)	100	160	400	900	1200
Connector (*2)	Manufactured by Phoenix Contact: MC1.5/5-G-3.81 (E-con, RCS, SCON-C) MSTBA2.5/5-G-5.08AU(X-SEL,TT, ASEL, PSEL, SSEL)					

(*1) For T branch communication, refer to the Operation Manuals for the master unit and PLC to be mounted.

(*2) The cable-side connector is a standard accessory.

Manufactured by Phoenix Contact:

MC1.55-ST-3.81 (E-Con, RCS, SCON-C)

SMSTB2.5/5-ST-5.08AU (X-SEL J/K·JX/KX, ASEL, PSEL, SSEL)

MSTB2.5/5-ST-5.08AU (X-SEL P/Q·PX/QX, TT)

3. X-SEL

The CC-Link compatible X-SEL controller has the following two types:

- a: Remote device station: Number of I/O points = Max. 256 points each
- b: Remote I/O station: Number of I/O points = 16 points each

3.1 Remote device station

3.1.1 Models

The CC-link compatible X-SEL controller is handled as a remote device station has one type each of J/K/P/Q for Cartesian and JX, KX, PX, and QX for SCARA as follows:

● CC-Link board installation position

No.	Controller type	Number of I/O points in network (Max input/output)	Board installation position				X-SEL model		I/O slot arrangement
			Standard slot (I/O 1)	Expansion slot 1 (I/O 2)	Expansion slot 2 (I/O 3)	Expansion slot 3 (I/O 4)			
1	J type	256/256	●				For single axis	X-SEL-J-1-□-CC-□-□-□	Fig. 3-1-1
2			●				For two axes	X-SEL-J-2-□-□-CC-□-□-□	
							For three axes	X-SEL-J-3-□-□-□-CC-□-□-□	
							For four axes	X-SEL-J-4-□-□-□-□-CC-□-□-□	
3	K type	256/256	●				For single axis	X-SEL-K-1-□-CC-□-□-□	Fig. 3-1-2
							For four axes	X-SEL-K-4-□-□-□-□-CC-□-□-□	
4	JX type	256/256	●					X-SEL-JX-□□□□□□□□-CC-□□□□-□-□	*1
5	KX type	256/256	●					X-SEL-KX-□□□□□□□□-CC-□□□□-□-□	*2
6	P type	256/256	Field network board installation position				For single axis	X-SEL-P-1-□-CC-□-□-□-3	Fig. 3-1-3
	Q type	256/256					For single axis	X-SEL-Q-1-□-CC-□-□-□-3	*3
							For six axes	X-SEL-Q-6-□-□-□-□-□-□-CC-□-□-□-3	
7	PX type	256/256	Field network board installation position				For four axes	X-SEL-PX4-□□□□□□□□-CC-	*3
							For five axes	X-SEL-PX5-□□□□□□□□-CC-	
							For six axes	X-SEL-PX6-□□□□□□□□-□□□□□-□□□□□-CC-	
	QX type	256/256					For four axes	X-SEL-QX4-□□□□□□□□-CC-	*3
							For five axes	X-SEL-QX5-□□□□□□□□-□□□□□-CC-	
							For six axes	X-SEL-QX6-□□□□□□□□-□□□□□-□□□□□-CC-	

(*1) The CC-Link board installation position is the same as Fig. 3-1-1 for four axes specifications.

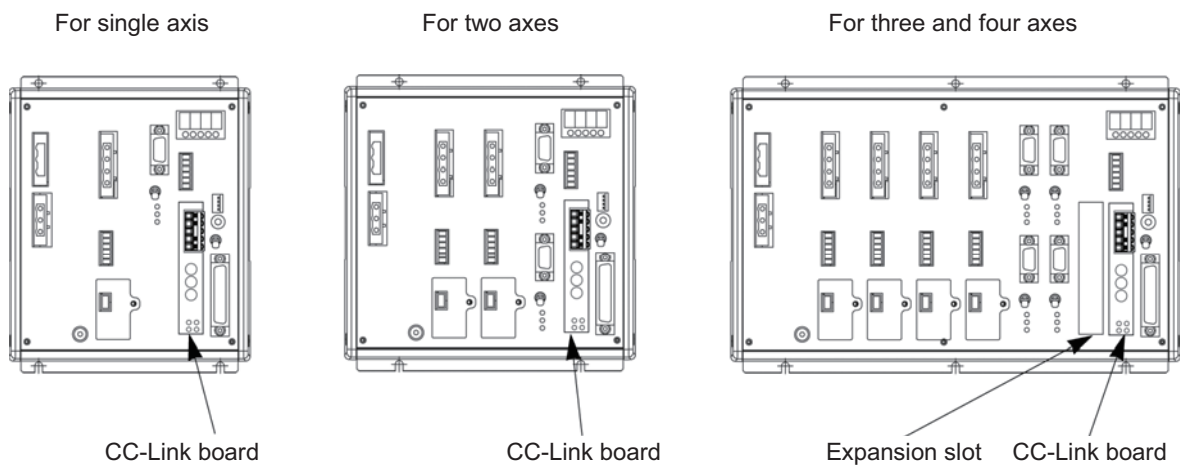
(*2) The CC-Link board installation position is the same as Fig. 3-1-2.

(*3) The CC-Link board installation position is the same as Fig. 3-1-3. The CC-Link board installation position for five axes and six axes specifications are the same as the four axes specification.

(Note): 16 points each for input and output among I/O points are in the system area of the remote device station, therefore, these points cannot be used.

For details, please refer to “3.1.7 Correspondence between X-SEL I/O port number and PLC address.”

(1) Compact type (J type)



Note: For items of single axis and two axes, a PIO board cannot be installed. For those of three and four axes, an expansion I/O board ^(*) can be inserted into the expansion slot.

Fig. 3-1-1

(2) General type (K type)

- The CC-link board is inserted into the standard slot (I/O 1: leftmost).
- Either of an expansion I/O board ^(*1) or SIO board ^(*2) can be inserted into the expansion slot.
- When an expansion I/O board ^(*1) is not used, it is not required to supply 24V DC to the I/O 24V power connector.

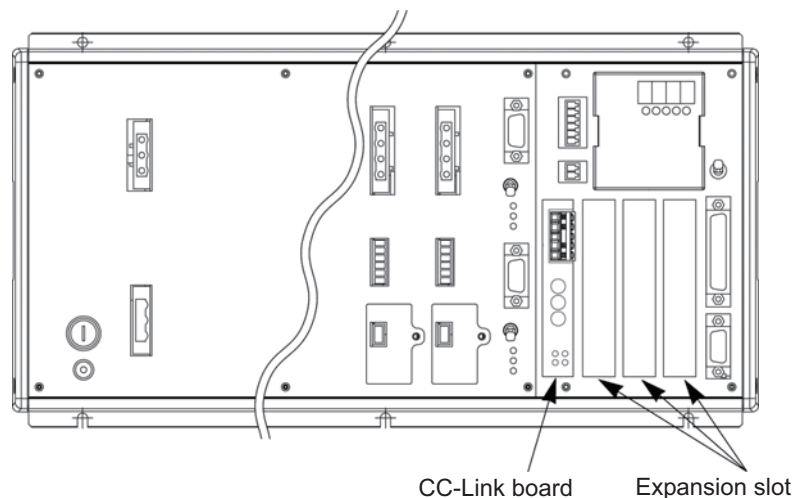


Fig. 3-1-2

(*1) Expansion I/O board

Model (1): IA-103-X-32 (Input: 32 points, Output: 16 points in NPN specification)

Model (2): IA-103-X-32-P (Input: 32 points, Output: 16 points in PNP specification)

Model (3): IA-103-X-16 (Input: 16 points, Output: 32 points in NPN specification)

Model (4): IA-103-X-16-P (Input: 16 points, Output: 32 points in PNP specification)

Model (5): IA-IO-3204-NP (Input: 48 points, Output: 48 points in NPN specification)

Model (6): IA-IO-3204-PN (Input: 48 points, Output: 48 points in PNP specification)

Model (7): IA-IO-3205-NP (Input: 48 points, Output: 48 points in NPN specification)

Model (8): IA-IO-3205-PN (Input: 48 points, Output: 48 points in PNP specification)

(Note) (5) and (6) models are dedicated for K type, and (7) and (8) models are dedicated for J type.

For further information on specifications, refer to the X-SEL Controller Operation Manual.

(*2) SIO board

Model (1): IA-105-X-MW-A (for RS232C)

Model (2): IA-105-X-MW-B (for RS422)

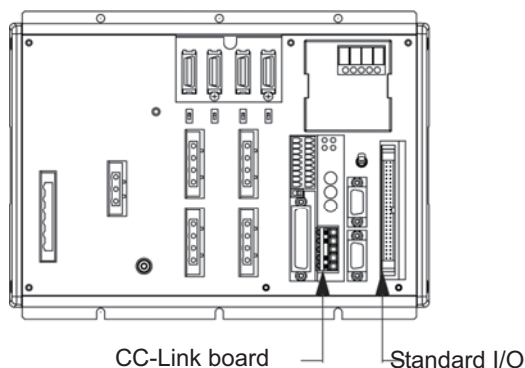
Model (3): IA-105-X-MW-C (for RS485)

Any single board above is 2-channel compatible.

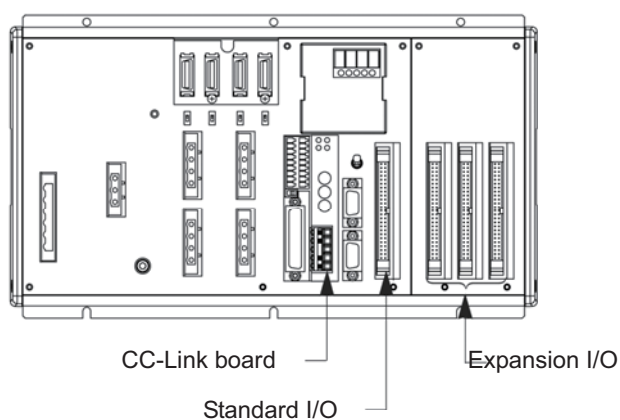
(3) P/Q type

- A CC-Link board is mounted on the field network board installation position.

Expansion I/O provided



Expansion I/O not provided



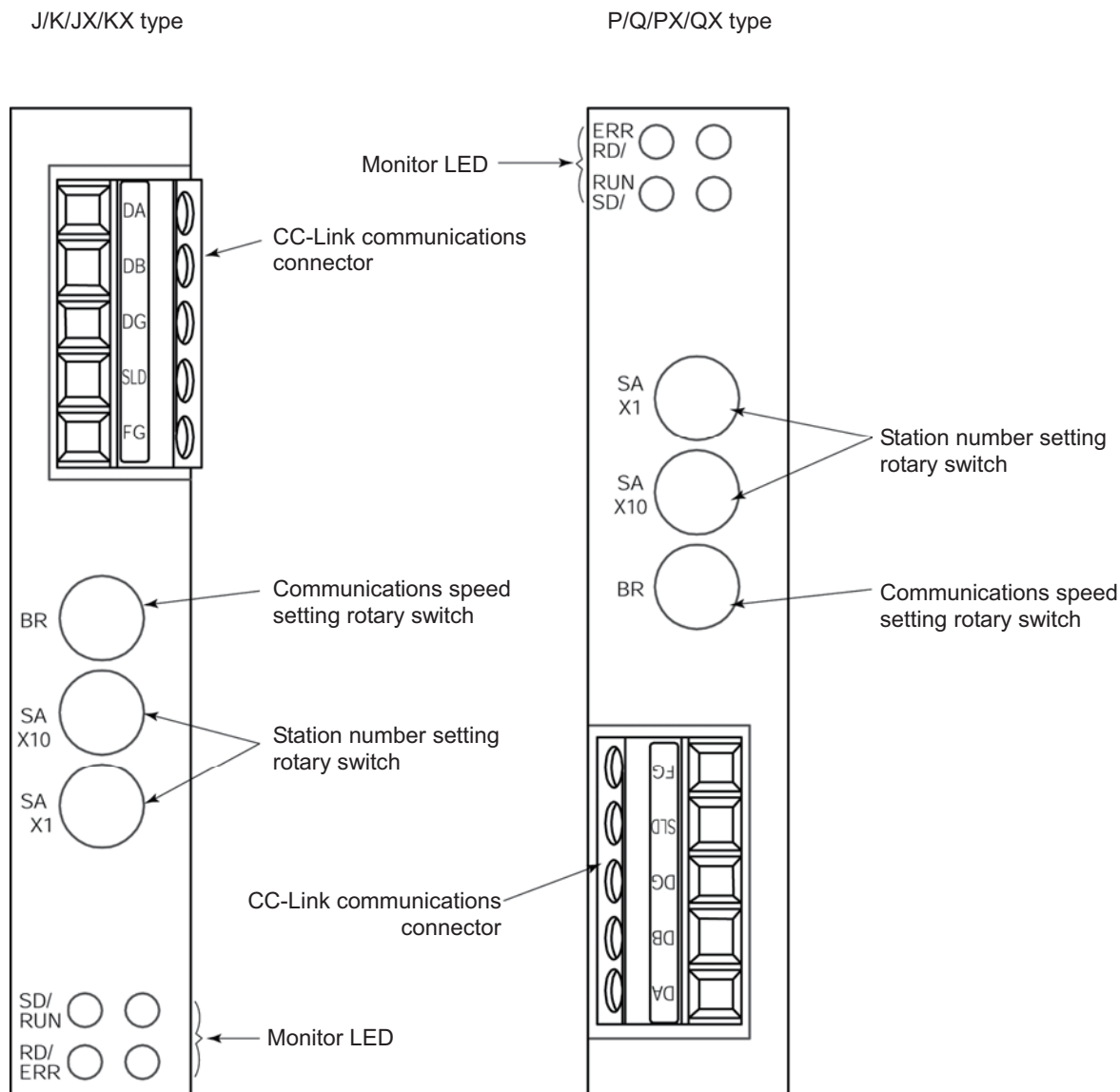
X-SEL-P-1-□-CC-□-□-□-3
 X-SEL-P-2-□-□-CC-□-□-□-3
 X-SEL-P-3-□-□-□-CC-□-□-□-3
 X-SEL-P-4-□-□-□-□-CC-□-□-□-3
 X-SEL-P-5-□-□-□-□-□-CC-□-□-□-3
 X-SEL-P-6-□-□-□-□-□-□-CC-□-□-□-3

X-SEL-Q-1-□-CC-□-□-□-3
 X-SEL-Q-2-□-□-CC-□-□-□-3
 X-SEL-Q-3-□-□-□-CC-□-□-□-3
 X-SEL-Q-4-□-□-□-□-CC-□-□-□-3
 X-SEL-Q-5-□-□-□-□-□-CC-□-□-□-3
 X-SEL-Q-6-□-□-□-□-□-□-CC-□-□-□-3

Fig. 3-1-3

3.1.2 CC-Link board

(1) Names of each part



(2) Rotary switches

The following can be carried out by rotary switches:

- a. Setting of station number
- b. Setting of communications speed

a. Setting of station number

In the CC-Link, a maximum of 64 stations can be connected.

The station number is set in the 1 to 64 range by the two rotary switches.

SA × 10: Sets the tens place.

SA × 1: Sets the ones place.

Rotary switch selection number	Station number	
	SA × 10	SA × 1
0	0	0
1	10	1
2	20	2
3	30	3
4	40	4
5	50	5
6	60	6
7	-	7
8	-	8
9	-	9

(Example) When setting the station number to 12:

Set the rotary switch SA × 10 to 1.

Set the rotary switch SA × 1 to 2.

Note: The CC-Link first I/O address in PLC is determined according to the master unit installation position and the number of I/O occupied points of the unit installed prior to that.

The I/O addresses in PLC are assigned from the first I/O address above in order of station number.

For further information regarding setting of the station number and setting of the I/O address in the PLC, refer to the Operation Manuals for the master unit and PLC to be mounted.

b. Setting of communications speed

The communications speed is set by the rotary switch BR.

Rotary switch selection number	Communications speed
0	156 kbps
1	625 kbps
2	2.5 Mbps
3	5 Mbps
4	10 Mbps
Setting to 5 or more prohibited	Error

(3) Display of monitor LEDs

The four LEDs mounted on the front of the board can indicate the board operating state and network condition.

LED	Color	Display condition	Display details (display indication)
RUN	Green	Lighting	Lights when communications start and turns off when communications are interrupted for a fixed time or longer.
SD	Green	Lighting	Lights during data transmission
RD	Green	Lighting	Lights during data reception
ERR	Red	Lighting	Local station address receiving data has an error.
		Flashing	Setting by the communications speed setting rotary switch was changed during communications. Setting by the station number setting rotary switch was changed during communications.

3.1.3 Setting of I/O parameters (assignment of I/O ports)

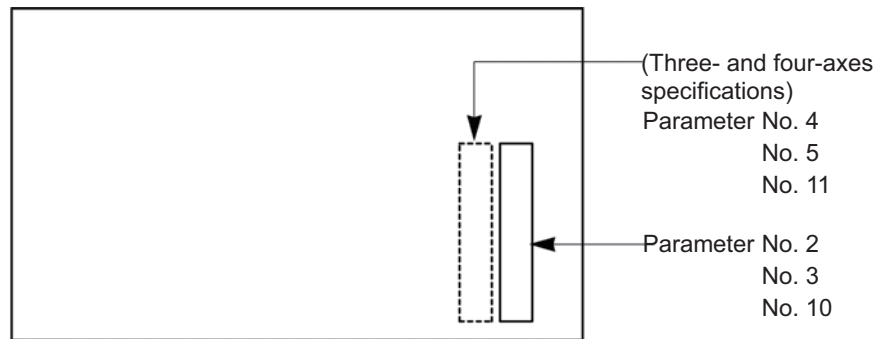
The X-SEL I/O ports used in the CC-LINK are set. X-SEL allows a variety of settings of different I/O ports with I/O parameters. (For further information, refer to the X-SEL Controller Operation Manual.)

The typical setting methods are shown below in this Manual.

Basically, the I/O parameter No. 1 sets the I/O port assignment type to fixed assignment, and sets the I/O port address for each I/O slot.

(1) Board installation positions (slots) and parameter numbers

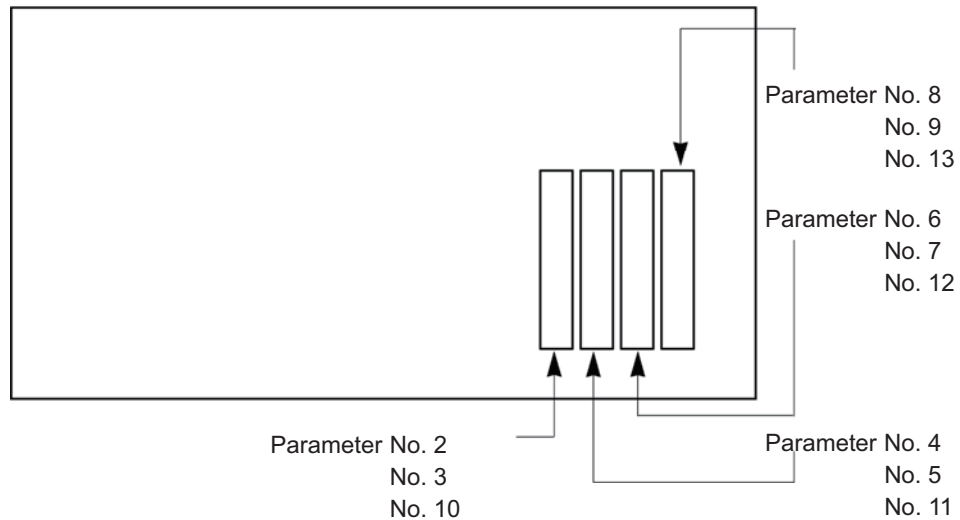
a. J type



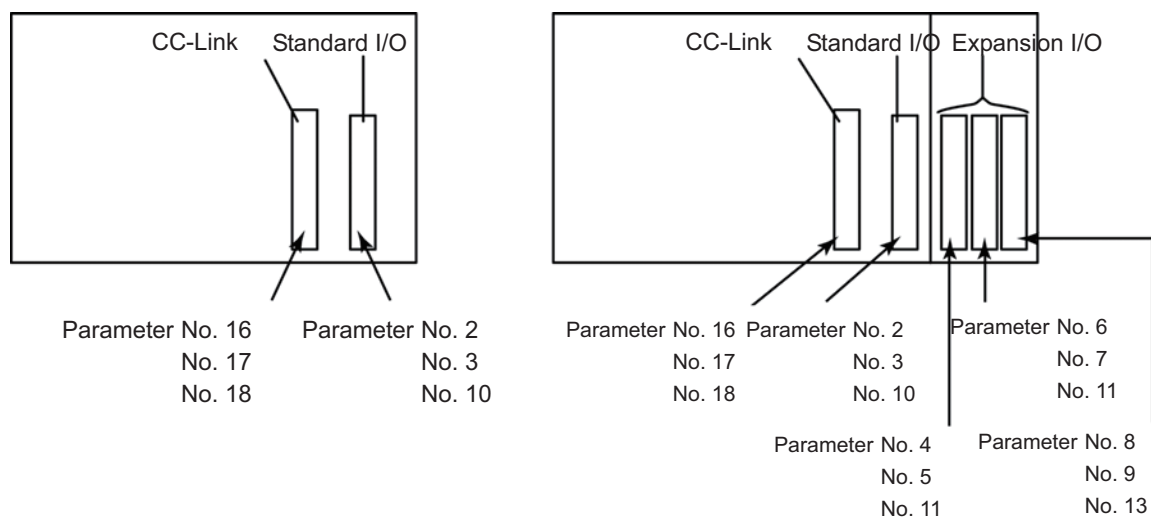
Note: With no slots, parameters No. 6 to No. 9 are all set to "-1" and parameters No. 12 and No. 13 are set to "0."

For the single-axis and two-axes specifications, parameters No. 4 and No. 5 are set to "-1" and parameter No. 11 is set to "0."

b. K type



C. P/Q type



3. X-SEL

(2) Factory-configured parameters of J/K type (standard setting)

No.	Parameter name	Input range	Set value	Remarks
1	I/O port assignment type	0 – 20	1	0: Fixed assignment 1: Automatic assignment (Priority: slot 1 –) * The ports only in the continuous installation range from slot 1 are assigned for safety.)
2	Standard I/O: Input port start No. (I/O 1)	-1 – 599	000	0 + (multiples of 8) (Invalid for negative values)
3	Standard I/O: Output port start No. (I/O 1)	-1 – 599	300	300 + (multiples of 8) (Invalid for negative values)
4	Expansion I/O 1 fixed assignment time: Input port start No. (I/O 2)	-1 – 599	-1	0 + (multiples of 8) (Invalid for negative values) (Slot next to the standard I/O)
5	Expansion I/O 1 fixed assignment time: Output port start No. (I/O 2)	-1 – 599	-1	300 + (multiples of 8) (Invalid for negative values)
6	Expansion I/O 2 fixed assignment time: Input port start No. (I/O 3)	-1 – 599	-1	0 + (multiples of 8) (Invalid for negative values)
7	Expansion I/O 2 fixed assignment time: Output port start No. (I/O 3)	-1 – 599	-1	300 + (multiples of 8) (Invalid for negative values)
8	Expansion I/O 3 fixed assignment time: Input port start No. (I/O 4)	-1 – 599	-1	0 + (multiples of 8) (Invalid for negative values)
9	Expansion I/O 3 fixed assignment time: Output port start No. (I/O 4)	-1 – 599	-1	300 + (multiples of 8) (Invalid for negative values)
10	Standard I/O error monitoring (I/O 1)	0 – 5	2	0: Non-monitoring 1: Monitoring
11	Expansion I/O 1 error monitoring (I/O 2)	0 – 5	0	2: Monitoring (Non-monitoring of 24V I/O power related errors) (Main application of Ver. 0.55 or later)
12	Expansion I/O 2 error monitoring (I/O 3)	0 – 5	0	3: Monitoring (Monitoring of 24V I/O power related errors only) (Main application of Ver. 0.55 or later)
13	Expansion I/O 3 error monitoring (I/O 4)	0 – 5	0	
14	Network I/F card remote: Number of ports used for input	0 – 256	64	Multiples of 16
15	Network I/F card remote: Number of ports used for output	0 – 256	64	Multiples of 16

(I/O 1) to (I/O 4) indicate the slot numbers.

(3) Factory-configured parameters of P/Q type

No.	Parameter name	Input range	Set value	Remarks
1	I/O port assignment type	0 – 20	1	0: Fixed assignment 1: Automatic assignment (Priority: Network I/F module → slot 1 (Standard I/O) -, * The ports only in the continuous installation range from slot 1 are assigned for safety.)
2	Standard I/O fixed assignment time: Input port start No. (I/O 1)	-1 – 599	-1	0 + (multiples of 8) (Invalid for negative values)
3	Standard I/O fixed assignment time: Output port start No. (I/O 1)	-1 – 599	-1	300 + (multiples of 8) (Invalid for negative values)
4	Expansion I/O 1 fixed assignment time: Input port start No. (I/O 2)	-1 – 599	-1	0 + (multiples of 8) (Invalid for negative values) (Slot next to the standard I/O)
5	Expansion I/O 1 fixed assignment time: Output port start No. (I/O 2)	-1 – 599	-1	300 + (multiples of 8) (Invalid for negative values)
6	Expansion I/O 2 fixed assignment time: Input port start No. (I/O 3)	-1 – 599	-1	0 + (multiples of 8) (Invalid for negative values)
7	Expansion I/O 2 fixed assignment time: Output port start No. (I/O 3)	-1 – 599	-1	300 + (multiples of 8) (Invalid for negative values)
8	Expansion I/O 3 fixed assignment time: Input port start No. (I/O 4)	-1 – 599	-1	0 + (multiples of 8) (Invalid for negative values)
9	Expansion I/O 3 fixed assignment time: Output port start No. (I/O 4)	-1 – 599	-1	300 + (multiples of 8) (Invalid for negative values)
10	Standard I/O error monitoring (I/O 1)	0 – 5	0	0: Non-monitoring 1: Monitoring 2: Monitoring (Non-monitoring of 24V I/O power related errors) (Main application of Ver. 0.55 or later) 3: Monitoring (Monitoring of 24V I/O power related errors only) (Main application of Ver. 0.55 or later)
11	Expansion I/O 1 error monitoring (I/O 2)	0 – 5	0	
12	Expansion I/O 2 error monitoring (I/O 3)	0 – 5	0	
13	Expansion I/O 3 error monitoring (I/O 4)	0 – 5	0	
14	Network I/F card remote: Number of ports used for input	0 – 256	64	Multiples of 16
15	Network I/F card remote: Number of ports used for output	0 – 256	64	Multiples of 16
16	Network I/F module fixed assignment time: Number of ports used for input	-1-599	0	0+ (multiple of 16) (Invalid for negative values)
17	Network I/F module fixed assignment time: Number of ports used for output	-1-599	300	300+ (multiple of 16) (Invalid for negative values)
18	Network I/F module error monitoring	0-5	1	0: Non-monitoring 1: Monitoring * Some exceptions included.

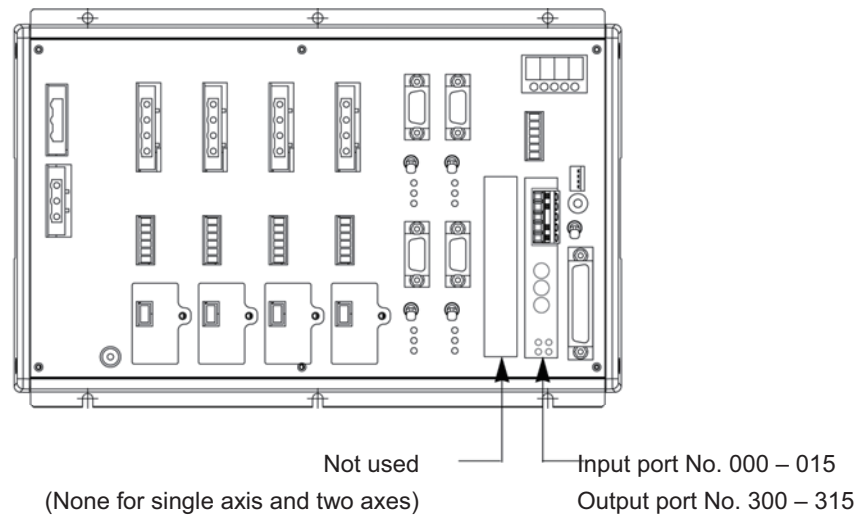
(I/O 1) to (I/O 4) indicate the slot numbers.

3.1.4 J/K type controller parameter setting examples

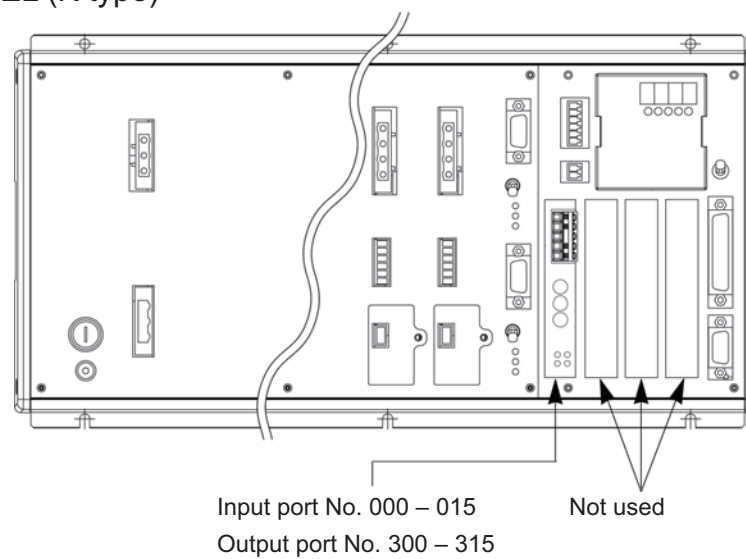
(1) CC-Link connection of standard I/O ports

This is a setting for the case where 16 points for each I/O port from the head of the X-SEL standard I/O port are used other than I/O ports.

X-SEL (J type)



X-SEL (K type)



(The above are cases where the installation conditions as shown in Fig. 3-1-1 and Fig. 3-1-2 in section 3.1.1 are applied.)

X-SEL J/K type controller I/O parameter

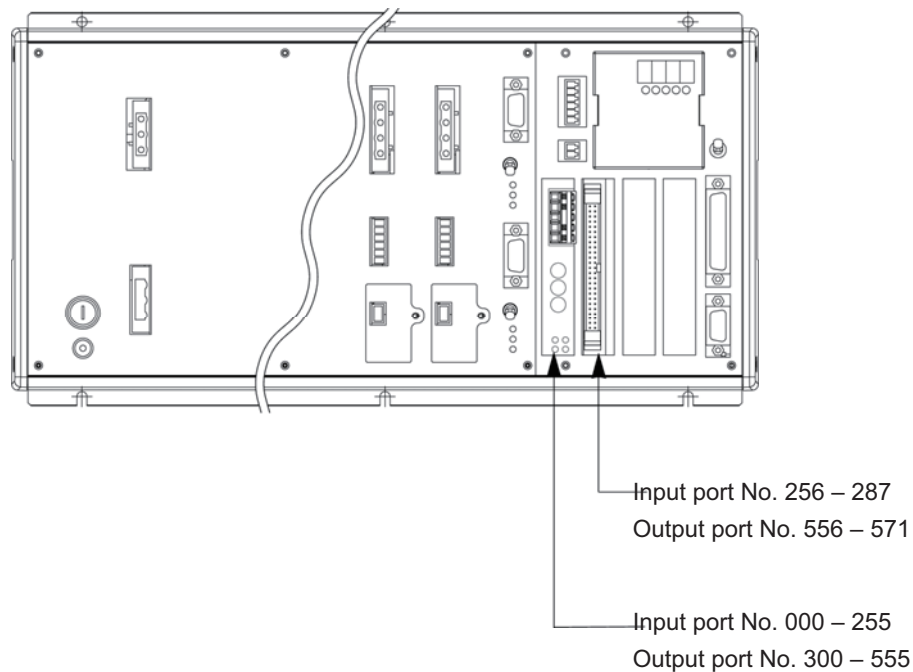
No.	Parameter name	Default (reference)	Input range	Setting	Remarks
1	I/O port assignment type	1	0 – 20	1	0: Fixed assignment 1: Automatic assignment (Priority: slot 1 –) * The ports only in the continuous installation range from slot 1 are assigned for safety.)
2	Standard I/O: Input port start No. (I/O 1)	000	-1 – 599	000	0 + (multiples of 8) (Invalid for negative values)
3	Standard I/O: Output port start No. (I/O 1)	300	-1 – 599	300	300 + (multiples of 8) (Invalid for negative values)
4	Expansion I/O 1 fixed assignment time: Input port start No. (I/O 2)	-1	-1 – 599	-1	0 + (multiples of 8) (Invalid for negative values) (Slot next to the standard I/O)
5	Expansion I/O 1 fixed assignment time: Output port start No. (I/O 2)	-1	-1 – 599	-1	300 + (multiples of 8) (Invalid for negative values)
6	Expansion I/O 2 fixed assignment time: Input port start No. (I/O 3)	-1	-1 – 599	-1	0 + (multiples of 8) (Invalid for negative values)
7	Expansion I/O 2 fixed assignment time: Output port start No. (I/O 3)	-1	-1 – 599	-1	300 + (multiples of 8) (Invalid for negative values)
8	Expansion I/O 3 fixed assignment time: Input port start No. (I/O 4)	-1	-1 – 599	-1	0 + (multiples of 8) (Invalid for negative values)
9	Expansion I/O 3 fixed assignment time: Output port start No. (I/O 4)	-1	-1 – 599	-1	300 + (multiples of 8) (Invalid for negative values)
10	Standard I/O error monitoring (I/O 1)	2	0 – 5	2	0: Non-monitoring 1: Monitoring
11	Expansion I/O 1 error monitoring (I/O 2)	0	0 – 5	0	2: Monitoring (Non-monitoring of 24V I/O power related errors) (Main application of Ver. 0.55 or later)
12	Expansion I/O 2 error monitoring (I/O 3)	0	0 – 5	0	3: Monitoring (Monitoring of 24V I/O power related errors only) (Main application of Ver. 0.55 or later)
13	Expansion I/O 3 error monitoring (I/O 4)	0	0 – 5	0	
14	Network I/F card remote: Number of ports used for input	64	0 – 256	64	Multiples of 16
15	Network I/F card remote: Number of ports used for output	64	0 – 256	64	Multiples of 16

(I/O 1) to (I/O 4) indicate the slot numbers.

(2) Combined use of CC-Link board and I/O board

- a. The following is the setting in the case where automatic assignment allocates 256 points each for input and output to the CC-Link board as the standard I/O ports as well as 32 points for input and 16 points for output to the expansion I/O board IA-103-X-32 from the subsequent I/O port numbers.

The J type has the same setting.



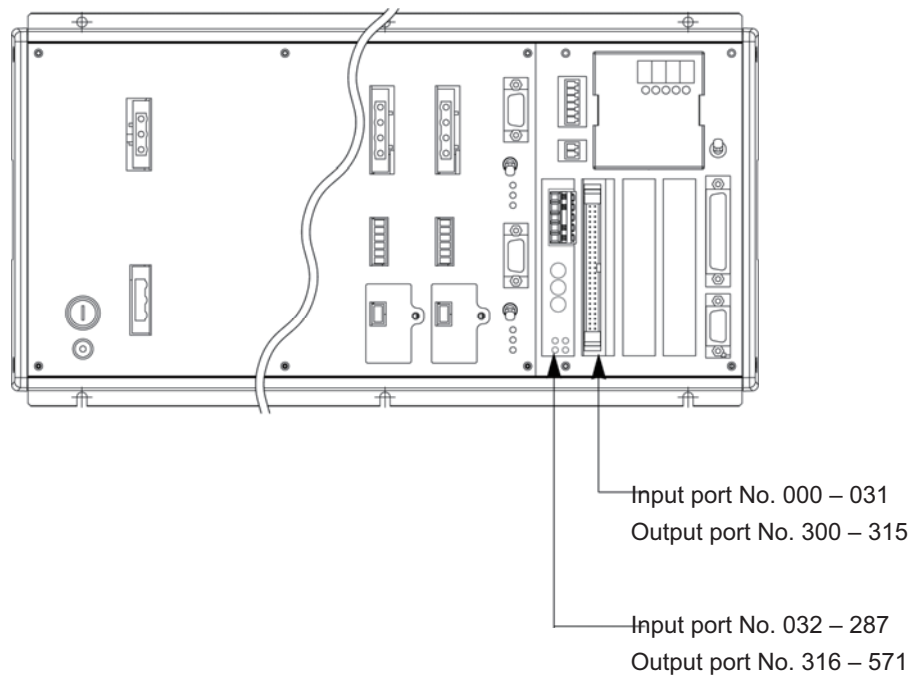
X-SEL J/K type controller I/O parameter

No.	Parameter name	Default (reference)	Input range	Setting	Remarks
1	I/O port assignment type	1	0 – 20	1	0: Fixed assignment 1: Automatic assignment (Priority: slot 1 –) * The ports only in the continuous installation range from slot 1 are assigned for safety.)
2	Standard I/O fixed assignment time: Input port start No. (I/O 1)	000	-1 – 599	000	0 + (multiples of 8) (Invalid for negative values)
3	Standard I/O fixed assignment time: Output port start No. (I/O 1)	300	-1 – 599	300	300 + (multiples of 8) (Invalid for negative values)
4	Expansion I/O 1 fixed assignment time: Input port start No. (I/O 2)	-1	-1 – 599	-1	0 + (multiples of 8) (Invalid for negative values) (Slot next to the standard I/O)
5	Expansion I/O 1 fixed assignment time: Output port start No. (I/O 2)	-1	-1 – 599	-1	300 + (multiples of 8) (Invalid for negative values)
6	Expansion I/O 2 fixed assignment time: Input port start No. (I/O 3)	-1	-1 – 599	-1	0 + (multiples of 8) (Invalid for negative values)
7	Expansion I/O 2 fixed assignment time: Output port start No. (I/O 3)	-1	-1 – 599	-1	300 + (multiples of 8) (Invalid for negative values)
8	Expansion I/O 3 fixed assignment time: Input port start No. (I/O 4)	-1	-1 – 599	-1	0 + (multiples of 8) (Invalid for negative values)
9	Expansion I/O 3 fixed assignment time: Output port start No. (I/O 4)	-1	-1 – 599	-1	300 + (multiples of 8) (Invalid for negative values)
10	Standard I/O error monitoring (I/O 1)	2	0 – 5	2	0: Non-monitoring 1: Monitoring 2: Monitoring (Non-monitoring of 24V I/O power related errors) (Main application of Ver. 0.55 or later) 3: Monitoring (Monitoring of 24V I/O power related errors only)
11	Expansion I/O 1 error monitoring (I/O 2)	1	0 – 5	1	
12	Expansion I/O 2 error monitoring (I/O 3)	0	0 – 5	0	
13	Expansion I/O 3 error monitoring (I/O 4)	0	0 – 5	0	
14	Network I/F card remote: Number of ports used for input	64	0 – 256	256	Multiples of 16
15	Network I/F card remote: Number of ports used for output	64	0 – 256	256	Multiples of 16

(I/O 1) to (I/O 4) indicate the slot numbers.

- b. The following is the setting in the case where fixed assignment makes the expansion I/O board IA-103-X-32 (input: 32 points, output: 16 points) used as the standard I/O ports and 256 points each for input and output assigned to the CC-Link board as the general I/O ports.

The J type has the same setting.



X-SEL J/K type controller I/O parameter

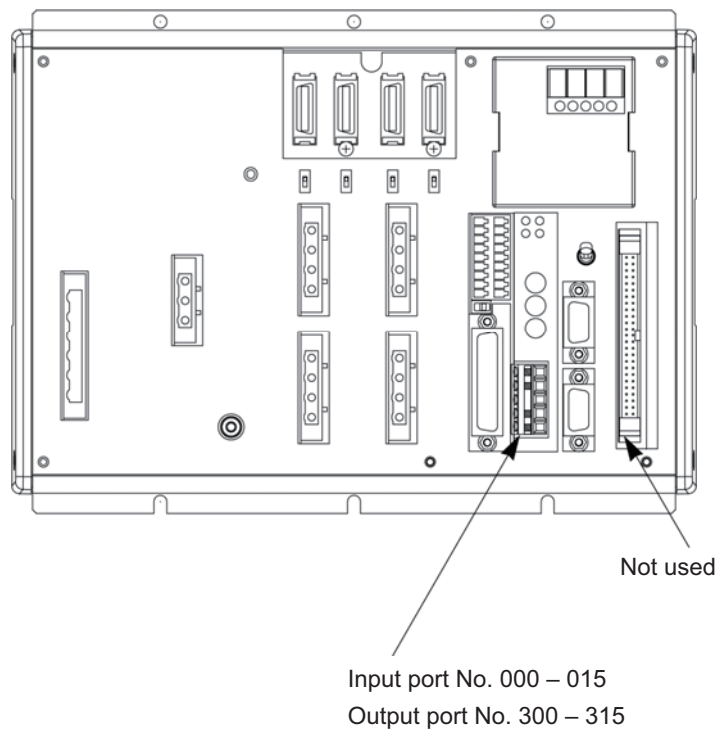
No.	Parameter name	Default (reference)	Input range	Setting	Remarks
1	I/O port assignment type	1	0 – 20	0	0: Fixed assignment 1: Automatic assignment (Priority: slot 1 –) * The ports only in the continuous installation range from slot 1 are assigned for safety.)
2	Standard I/O fixed assignment time: Input port start No. (I/O 1)	000	-1 – 599	032	0 + (multiples of 8) (Invalid for negative values)
3	Standard I/O fixed assignment time: Output port start No. (I/O 1)	300	-1 – 599	316	300 + (multiples of 8) (Invalid for negative values)
4	Expansion I/O 1 fixed assignment time: Input port start No. (I/O 2)	-1	-1 – 599	000	0 + (multiples of 8) (Invalid for negative values) (Slot next to the standard I/O)
5	Expansion I/O 1 fixed assignment time: Output port start No. (I/O 2)	-1	-1 – 599	300	300 + (multiples of 8) (Invalid for negative values)
6	Expansion I/O 2 fixed assignment time: Input port start No. (I/O 3)	-1	-1 – 599	-1	0 + (multiples of 8) (Invalid for negative values)
7	Expansion I/O 2 fixed assignment time: Output port start No. (I/O 3)	-1	-1 – 599	-1	300 + (multiples of 8) (Invalid for negative values)
8	Expansion I/O 3 fixed assignment time: Input port start No. (I/O 4)	-1	-1 – 599	-1	0 + (multiples of 8) (Invalid for negative values)
9	Expansion I/O 3 fixed assignment time: Output port start No. (I/O 4)	-1	-1 – 599	-1	300 + (multiples of 8) (Invalid for negative values)
10	Standard I/O error monitoring (I/O 1)	2	0 – 5	2	0: Non-monitoring 1: Monitoring 2: Monitoring (Non-monitoring of 24V I/O power related errors) (Main application of Ver. 0.55 or later) 3: Monitoring (Monitoring of 24V I/O power related errors only) (Main application of Ver. 0.55 or later)
11	Expansion I/O 1 error monitoring (I/O 2)	1	0 – 5	1	
12	Expansion I/O 2 error monitoring (I/O 3)	0	0 – 5	0	
13	Expansion I/O 3 error monitoring (I/O 4)	0	0 – 5	0	
14	Network I/F card remote: Number of ports used for input	64	0 – 256	256	Multiples of 16
15	Network I/F card remote: Number of ports used for output	64	0 – 256	256	Multiples of 16

(I/O 1) to (I/O 4) indicate the slot numbers.

3.1.5 P/Q type controller setting examples

(1) Setting examples when only CC-Link is used

The following is the setting in the case where only 16 ports for each input and output from the first of the I/O port are used for the CC-Link board and other input and output ports are not used as the same as the case of the X-SEL standard I/O board (50-pin connector).

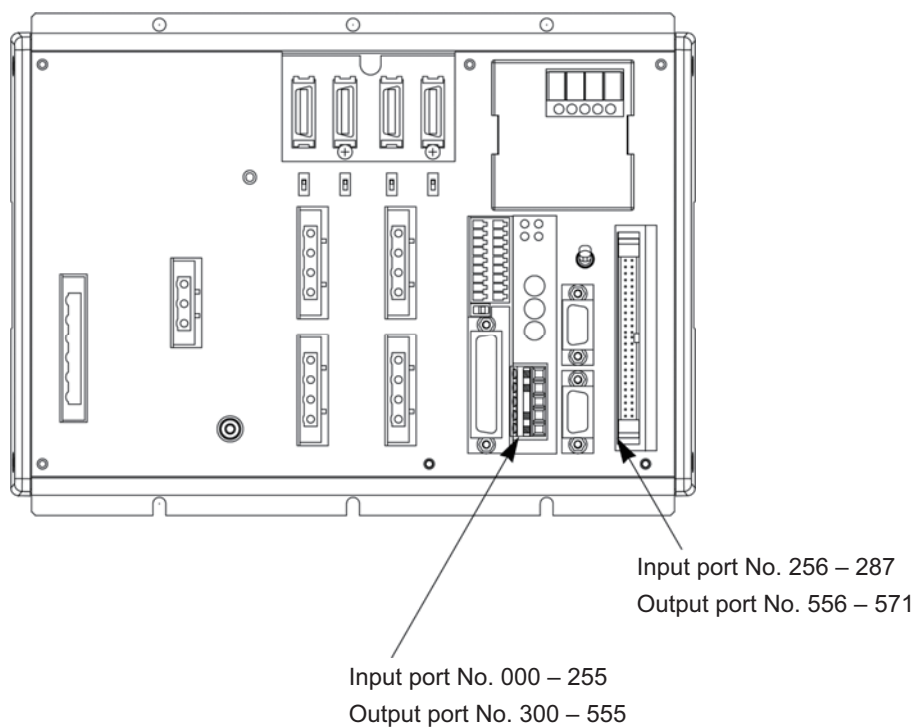


X-SEL P/Q type controller I/O parameter

No.	Parameter name	Default (reference)	Input range	Setting	Remarks
1	I/O port assignment type	0	0 – 20	0	0: Fixed assignment 1: Automatic assignment (Priority: Network I/F module → slot 1 (Standard I/O) -, * The ports only in the continuous installation range from slot 1 are assigned for safety.)
2	Standard I/O fixed assignment time: Input port start No. (I/O 1)	-1	-1 – 599	-1	0 + (multiples of 8) (Invalid for negative values)
3	Standard I/O fixed assignment time: Output port start No. (I/O 1)	-1	-1 – 599	-1	300 + (multiples of 8) (Invalid for negative values)
4	Expansion I/O 1 fixed assignment time: Input port start No. (I/O 2)	-1	-1 – 599	-1	0 + (multiples of 8) (Invalid for negative values) (Slot next to the standard I/O)
5	Expansion I/O 1 fixed assignment time: Output port start No. (I/O 2)	-1	-1 – 599	-1	300 + (multiples of 8) (Invalid for negative values)
6	Expansion I/O 2 fixed assignment time: Input port start No. (I/O 3)	-1	-1 – 599	-1	0 + (multiples of 8) (Invalid for negative values)
7	Expansion I/O 2 fixed assignment time: Output port start No. (I/O 3)	-1	-1 – 599	-1	300 + (multiples of 8) (Invalid for negative values)
8	Expansion I/O 3 fixed assignment time: Input port start No. (I/O 4)	-1	-1 – 599	-1	0 + (multiples of 8) (Invalid for negative values)
9	Expansion I/O 3 fixed assignment time: Output port start No. (I/O 4)	-1	-1 – 599	-1	300 + (multiples of 8) (Invalid for negative values)
10	Standard I/O error monitoring (I/O 1)	0	0 – 5	0	0: Non-monitoring 1: Monitoring
11	Expansion I/O 1 error monitoring (I/O 2)	0	0 – 5	0	2: Monitoring (Non-monitoring of 24V I/O power related errors) (Main application of Ver. 0.55 or later)
12	Expansion I/O 2 error monitoring (I/O 3)	0	0 – 5	0	3: Monitoring (Monitoring of 24V I/O power related errors only) (Main application of Ver. 0.55 or later)
13	Expansion I/O 3 error monitoring (I/O 4)	0	0 – 5	0	
14	Network I/F card remote: Number of ports used for input	64	0 – 256	16	Multiples of 16
15	Network I/F card remote: Number of ports used for output	64	0 – 256	16	Multiples of 16
16	Network I/F module fixed assignment time: Number of ports used for input	0	-1-599	0	0+ (multiple of 8) (Invalid for negative values)
17	Network I/F module fixed assignment time: Number of ports used for input	300	-1-599	300	300+ (multiple of 8) (Invalid for negative values)
18	Network I/F module error monitoring	1	0-5	1	0: Non-monitoring 1: Monitoring * Some exceptions included.

(I/O 1) to (I/O 4) indicate the slot numbers.

- (2) Setting examples when CC-Link board and I/O board are used in combination
- a. The following is the setting in the case where automatic assignment allocates 256 points each for input and output to the CC-Link board from the first standard I/O port to the standard I/O board from the subsequent I/O port No.

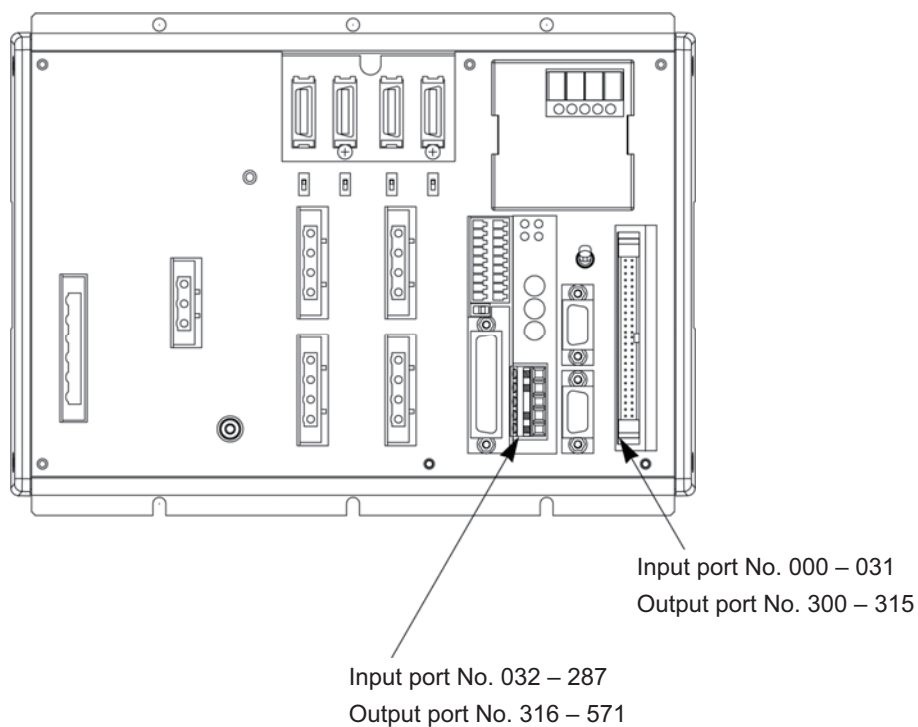


X-SEL P/Q type Controller I/O Parameter

No.	Parameter name	Default (reference)	Input range	Setting	Remarks
1	I/O port assignment type	0	0-20	0	0: Fixed assignment 1: Automatic assignment (Priority: Network I/F module → slot 1 (Standard I/O) -, * The ports only in the continuous installation range from slot 1 are assigned for safety.)
2	Standard I/O fixed assignment time: Input port start No. (I/O 1)	-1	-1-599	256	0 + (multiples of 8) (Invalid for negative values)
3	Standard I/O fixed assignment time: Output port start No. (I/O 1)	-1	-1-599	556	300 + (multiples of 8) (Invalid for negative values)
4	Expansion I/O 1 fixed assignment time: Input port start No. (I/O 2)	-1	-1-599	-1	0 + (multiples of 8) (Invalid for negative values) (Slot next to the standard I/O)
5	Expansion I/O 1 fixed assignment time: Output port start No. (I/O 2)	-1	-1-599	-1	300 + (multiples of 8) (Invalid for negative values)
6	Expansion I/O 2 fixed assignment time: Input port start No. (I/O 3)	-1	-1-599	-1	0 + (multiples of 8) (Invalid for negative values)
7	Expansion I/O 2 fixed assignment time: Output port start No. (I/O 3)	-1	-1-599	-1	300 + (multiples of 8) (Invalid for negative values)
8	Expansion I/O 3 fixed assignment time: Input port start No. (I/O 4)	-1	-1-599	-1	0 + (multiples of 8) (Invalid for negative values)
9	Expansion I/O 3 fixed assignment time: Output port start No. (I/O 4)	-1	-1-599	-1	300 + (multiples of 8) (Invalid for negative values)
10	Standard I/O error monitoring (I/O 1)	0	0-5	1	0: Non-monitoring 1: Monitoring
11	Expansion I/O 1 error monitoring (I/O 2)	0	0-5	0	2: Monitoring (Non-monitoring of 24V I/O power related errors) (Main application of Ver. 0.55 or later)
12	Expansion I/O 2 error monitoring (I/O 3)	0	0-5	0	3: Monitoring (Monitoring of 24V I/O power related errors only)
13	Expansion I/O 3 error monitoring (I/O 4)	0	0-5	0	
14	Network I/F card remote: Number of ports used for input	64	0-256	256	Multiples of 16
15	Network I/F card remote: Number of ports used for output	64	0-256	256	Multiples of 16
16	Network I/F module fixed assignment time: Number of ports used for input	0	-1-599	0	0+ (multiple of 8) (Invalid for negative values)
17	Network I/F module fixed assignment time: Number of ports used for input	300	-1-599	300	300+ (multiple of 8) (Invalid for negative values)
18	Network I/F module error monitoring	1	0-5	1	0: Non-monitoring 1: Monitoring * Some exceptions included.

(I/O 1) to (I/O 4) indicate the slot numbers.

- b. The following is the setting in the case where the standard I/O board IA-103-X32 (input: 32 points, output: 16 points) is used as the standard I/O ports and 256 points each for input and output is assigned to the CC-Link board as the general I/O ports.



X-SEL P/Q type Controller I/O Parameter

No.	Parameter name	Default (reference)	Input range	Setting	Remarks
1	I/O port assignment type	0	0-20	0	0: Fixed assignment 1: Automatic assignment (Priority: Network I/F module → slot 1 (Standard I/O) -, * The ports only in the continuous installation range from slot 1 are assigned for safety.)
2	Standard I/O fixed assignment time: Input port start No. (I/O 1)	-1	-1-599	0	0 + (multiples of 8) (Invalid for negative values)
3	Standard I/O fixed assignment time: Output port start No. (I/O 1)	-1	-1-599	300	300 + (multiples of 8) (Invalid for negative values)
4	Expansion I/O 1 fixed assignment time: Input port start No. (I/O 2)	-1	-1-599	-1	0 + (multiples of 8) (Invalid for negative values) (Slot next to the standard I/O)
5	Expansion I/O 1 fixed assignment time: Output port start No. (I/O 2)	-1	-1-599	-1	300 + (multiples of 8) (Invalid for negative values)
6	Expansion I/O 2 fixed assignment time: Input port start No. (I/O 3)	-1	-1-599	-1	0 + (multiples of 8) (Invalid for negative values)
7	Expansion I/O 2 fixed assignment time: Output port start No. (I/O 3)	-1	-1-599	-1	300 + (multiples of 8) (Invalid for negative values)
8	Expansion I/O 3 fixed assignment time: Input port start No. (I/O 4)	-1	-1-599	-1	0 + (multiples of 8) (Invalid for negative values)
9	Expansion I/O 3 fixed assignment time: Output port start No. (I/O 4)	-1	-1-599	-1	300 + (multiples of 8) (Invalid for negative values)
10	Standard I/O error monitoring (I/O 1)	0	0-5	1	0: Non-monitoring 1: Monitoring
11	Expansion I/O 1 error monitoring (I/O 2)	0	0-5	0	2: Monitoring (Non-monitoring of 24V I/O power related errors) (Main application of Ver. 0.55 or later)
12	Expansion I/O 2 error monitoring (I/O 3)	0	0-5	0	3: Monitoring (Monitoring of 24V I/O power related errors only) (Main application of Ver. 0.55 or later)
13	Expansion I/O 3 error monitoring (I/O 4)	0	0-5	0	
14	Network I/F card remote: Number of ports used for input	64	0-256	256	Multiples of 16
15	Network I/F card remote: Number of ports used for output	64	0-256	256	Multiples of 16
16	Network I/F module fixed assignment time: Number of ports used for input	0	-1-599	032	0+ (multiple of 8) (Invalid for negative values)
17	Network I/F module fixed assignment time: Number of ports used for input	300	-1-599	316	300+ (multiple of 8) (Invalid for negative values)
18	Network I/F module error monitoring	1	0-5	1	0: Non-monitoring 1: Monitoring * Some exceptions included.

(I/O 1) to (I/O 4) indicate the slot numbers.

3.1.6 X-SEL I/O port numbers

The standard I/O port numbers of X-SEL are shown below.

The X-SEL port numbers and functional assignment can be changed with I/O parameters. (For further information, refer to the X-SEL Controller Operation Manual.)

	Port No.	Function		Port No.	Function
Input	000	Program start	Output	300	Alarm output
	001	General input		301	Ready output
	002	General input		302	Emergency stop output
	003	General input		303	General output
	004	General input		304	General output
	005	General input		305	General output
	006	General input		306	General output
	007	Program designation (PRG No. 1)		307	General output
	008	Program designation (PRG No. 2)		308	General output
	009	Program designation (PRG No. 4)		309	General output
	010	Program designation (PRG No. 8)		310	General output
	011	Program designation (PRG No. 10)		311	General output
	012	Program designation (PRG No. 20)		312	General output
	013	Program designation (PRG No. 40)		313	General output
	014	General input		314	General output
	015	General input		315	General output
	⋮	⋮		⋮	⋮

Note: The number of I/O ports is as follows:

Input	000 to 299	(Max, 300 points)
Output	300 to 599	(Max, 300 points)

When the CC-Link board is used in combination with the expansion I/O board, pay attention to the number of I/O ports.

3.1.7 Correspondence between X-SEL I/O port number and PLC address

PLC sets the X-SEL CC-Link board as a remote device.

The number of occupied stations of the remote device varies according to the setting of the number of I/O points on the X-SEL side.

The table below indicates the correspondence between the I/O port number and PLC address according to the settings of I/O parameters No. 14 and No. 15. (The following is a case where the I/O parameters No. 2 and No. 3 have standard settings [defaults].)

Note: For the I/O parameters No. 14 and No. 15, set the same points according to the larger number of points.

(1) When the number of I/O points is set to 96 or less:

Configured as one remote device. (One station occupied)

I/O parameter		X-SEL side DI (Port No.)	PLC side	X-SEL side DO (Port No.)	PLC side
No. 14	No. 15				
16	16	000 – 015	RY 0 – F	300 – 315	RX 0 – F
32	32	016 – 031	RY 10 – 1F	316 – 331	RX 10 – 1F
48	48	032 – 047	RWw 0	332 – 347	RWr 0
64	64	048 – 063	RWw 1	348 – 363	RWr 1
80	80	064 – 079	RWw 2	364 – 379	RWr 2
96	96	080 – 095	RWw 3	380 – 395	RWr 3

* Since the shaded portions are the system areas for the remote device station on the PLC side, they cannot be used as I/O.

(2) When the number of I/O points is set to 112 or more and 192 or less:

Configured as two remote devices. (Two stations occupied)

I/O parameter		X-SEL side DI (Port No.)	PLC side	X-SEL side DO (Port No.)	PLC side
No. 14	No. 15				
(16)	(16)	000 – 015	RY 0 – F	300 – 315	RX 0 – F
(32)	(32)	016 – 031	RY 10 – 1F	316 – 331	RX 10 – 1F
(48)	(48)	032 – 047	RY 20 – 2F	332 – 347	RX 20 – 2F
(64)	(64)	048 – 063	RY 30 – 3F	348 – 363	RX 30 – 3F
(80)	(80)	064 – 079	RWw 0	364 – 379	RWr 0
(96)	(96)	080 – 095	RWw 1	380 – 395	RWr 1
112	112	096 – 111	RWw 2	396 – 411	RWr 2
128	128	112 – 127	RWw 3	412 – 427	RWr 3
144	144	128 – 143	RWw 4	428 – 443	RWr 4
160	160	144 – 159	RWw 5	444 – 459	RWr 5
176	176	160 – 175	RWw 6	460 – 475	RWr 6
192	192	176 – 191	RWw 7	476 – 491	RWr 7

* Since the shaded portions are the system areas for the remote device station on the PLC side, they cannot be used as I/O.

- (3) When the number of I/O points is set to 208 or more and 256 or less:

Configured as three remote devices. (Three stations occupied)

I/O parameter		X-SEL side DI (Port No.)	PLC side	X-SEL side DO (Port No.)	PLC side
No. 14	No. 15				
(16)	(16)	000 – 015	RY 0 – F	300 – 315	RX 0 – F
(32)	(32)	016 – 031	RY 10 – 1F	316 – 331	RX 10 – 1F
(48)	(48)	032 – 047	RY 20 – 2F	332 – 347	RX 20 – 2F
(64)	(64)	048 – 063	RY 30 – 3F	348 – 363	RX 30 – 3F
(80)	(80)	064 – 079	RY 40 – 4F	364 – 379	RX 40 – 4F
(96)	(96)	080 – 095	RY 50 – 5F	380 – 395	RX 50 – 5F
(112)	(112)	096 – 111	RWw 0	396 – 411	RWr 0
(128)	(128)	112 – 127	RWw 1	412 – 427	RWr 1
(144)	(144)	128 – 143	RWw 2	428 – 443	RWr 2
(160)	(160)	144 – 159	RWw 3	444 – 459	RWr 3
(176)	(176)	160 – 175	RWw 4	460 – 475	RWr 4
(192)	(192)	176 – 191	RWw 5	476 – 491	RWr 5
208	208	192 – 207	RWw 6	492 – 507	RWr 6
224	224	208 – 223	RWw 7	508 – 523	RWr 7
240	240	224 – 239	RWw 8	524 – 539	RWr 8
256	256	240 – 255	RWw 9	540 – 555	RWr 9
Not be set		-	RWw A	-	RWr A
Not be set		-	RWw B	-	RWr B

* Since the shaded portions are the system areas for the remote device station on the PLC side, they cannot be used as I/O.

* In the case of three stations being occupied, twelve words (ten words for X-SEL) are assigned for each input and output in the data register on the PLC side. Be careful about overlapping of data register on the PLC side.

3.1.8 Data in remote registers

Addresses in PLC are assigned to the remote I/O addresses and remote register areas that correspond to the station number set on the CC-Link board and the number of occupied stations set by the PLC parameter, in steps of 16 points (one word) in order of X-SEL port number.

Setting the I/O parameter No. 120 to "0" allows the data in one word to be transmitted by reversing the order of the higher-order byte (higher-order 8 bits) and the lower-order byte (lower-order 8 bits) in the communications area with the PLC remote register. (Remote I/O areas are not changed.)

I/O parameters

No.	Parameter name	Default (reference)	Input range	Remarks
120	Network attribute 1	1	0H – FFFFFFFFH	CC-Link remote register area H/L byte SWAP selection 0: X-SEL side: H byte ↔ PLC side: L byte X-SEL side: L byte ↔ PLC side: H byte 1: X-SEL side: H byte ↔ PLC side: H byte X-SEL side: L byte ↔ PLC side: L byte (Main application of Ver. 0.55 or later)

The relationships between I/O signals are shown below by taking a case where the number of I/O points of X-SEL is set to 112 or more and 192 or less (two stations occupied) for example.

(1) X-SEL remote I/O areas and remote register areas

Remote input: Port No. 0 to No. 63

Remote output: Port No. 300 to No. 363

Remote address (input): Port No. 64 to No. 191

Remote address (output): Port No. 364 to No. 491

Note: Since ports No. 48 to No. 63 and No. 348 to No. 363 are the system areas for the remote device stations on the PLC side, they cannot be used.

(2) Transmission and receipt of signals in remote I/O areas

The transmission and receipt of signals in remote I/O areas are irrelevant to the setting of the I/O parameter No. 120.

●: On, ○: OFF

X-SEL port No. (Input)	015	014	013	012	011	010	009	008	007	006	005	004	003	002	001	000
ON/OFF	●	●	●	●	○	○	○	○	●	○	○	○	○	○	○	●
Hexadecimal data	F				0				8				1			

PLC: RYnn (Output)	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
ON/OFF	●	●	●	●	○	○	○	○	●	○	○	○	○	○	○	●
Hexadecimal data	F				0				8				1			

X-SEL port No. (Output)	315	314	313	312	311	310	309	308	307	306	305	304	303	302	301	300
ON/OFF	●	●	●	●	○	○	○	○	●	○	○	○	○	○	○	●
Hexadecimal data	F				0				8				1			

PLC: RXnn (Input)	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
ON/OFF	●	●	●	●	○	○	○	○	●	○	○	○	○	○	○	●
Hexadecimal data	F				0				8				1			

(3) Transmission and receipt of signals in remote register areas

The I/O parameter No. 120 allows the data in one word (16 bits) to be transmitted by reversing the order of the higher-order byte (higher-order 8 bits) and the lower-order byte (lower-order 8 bits).

(a) When the I/O parameter No. 120 is set to "1"

●: On, ○: OFF

X-SEL port No. (Input)	079	078	077	076	075	074	073	072	071	070	069	068	067	066	065	064
ON/OFF	●	●	●	●	○	○	○	○	●	○	○	○	○	○	○	●
Hexadecimal data	F				0				8				1			

↑

PLC: RWwn (Output)	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
ON/OFF	●	●	●	●	○	○	○	○	●	○	○	○	○	○	○	●
Hexadecimal data	F				0				8				1			

X-SEL port No. (Output)	379	378	377	376	375	374	373	372	371	370	369	368	367	366	365	364
ON/OFF	●	●	●	●	○	○	○	○	●	○	○	○	○	○	○	●
Hexadecimal data	F				0				8				1			

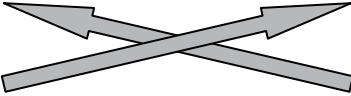
↓

PLC: RWrn (Input)	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
ON/OFF	●	●	●	●	○	○	○	○	●	○	○	○	○	○	○	●
Hexadecimal data	F				0				8				1			

(b) When the I/O parameter No. 120 is set to "0"

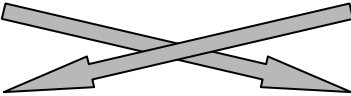
●: On, ○: OFF

X-SEL port No. (Input)	079	078	077	076	075	074	073	072	071	070	069	068	067	066	065	064
ON/OFF	●	○	○	○	○	○	○	●	●	●	●	○	○	○	○	○
Hexadecimal data	8				1				F				0			



PLC: RWwn (Output)	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
ON/OFF	●	●	●	●	○	○	○	○	●	○	○	○	○	○	○	●
Hexadecimal data	F				0				8				1			

X-SEL port No. (Output)	379	378	377	376	375	374	373	372	371	370	369	368	367	366	365	364
ON/OFF	●	●	●	●	○	○	○	○	●	○	○	○	○	○	○	●
Hexadecimal data	F				0				8				1			



PLC: RWrn (Input)	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
ON/OFF	●	○	○	○	○	○	○	●	●	●	●	○	○	○	○	○
Hexadecimal data	8				1				F				0			

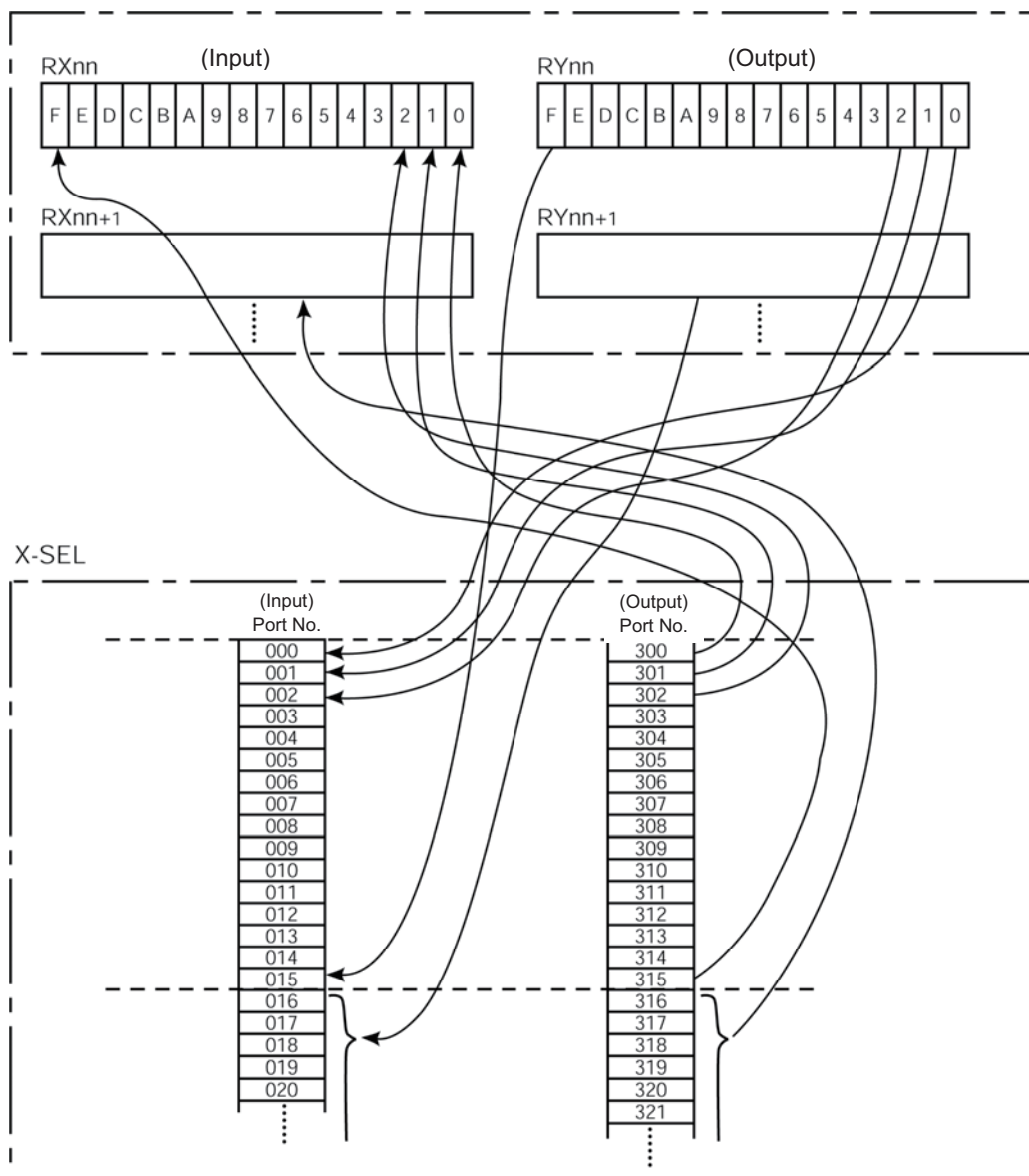
Reference

■ When the number of I/O points is set to 112 or more and 192 or less: two stations are occupied

Addresses in PLC are assigned to the remote I/O addresses and remote register areas that correspond to the station number set by the rotary switch and the number of occupied stations set by the PLC parameter, in order of port number.

(1) Remote I/O

PLC



Xnn and Ynn are the remote I/O addresses in PLC that correspond to the station number.

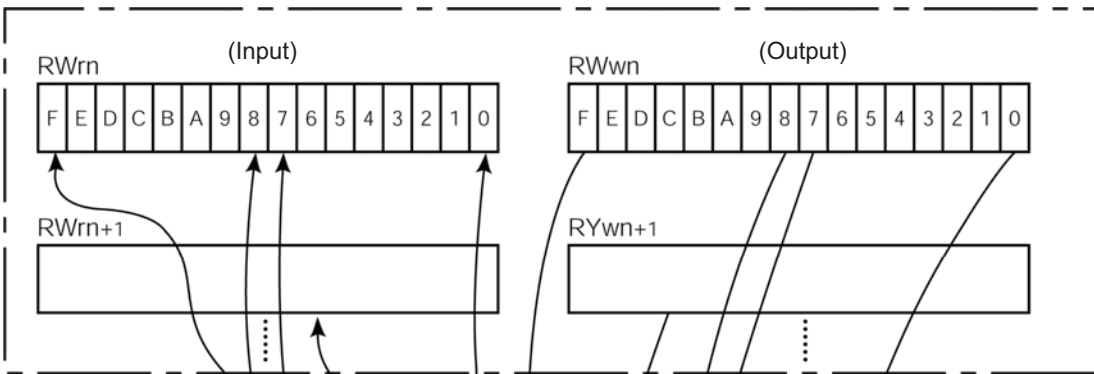
The addresses of the remote I/O in PLC (RX and RY) are set to Xnn and Ynn. (Refer to "Section 9. Communication with Master Station.")

Reference

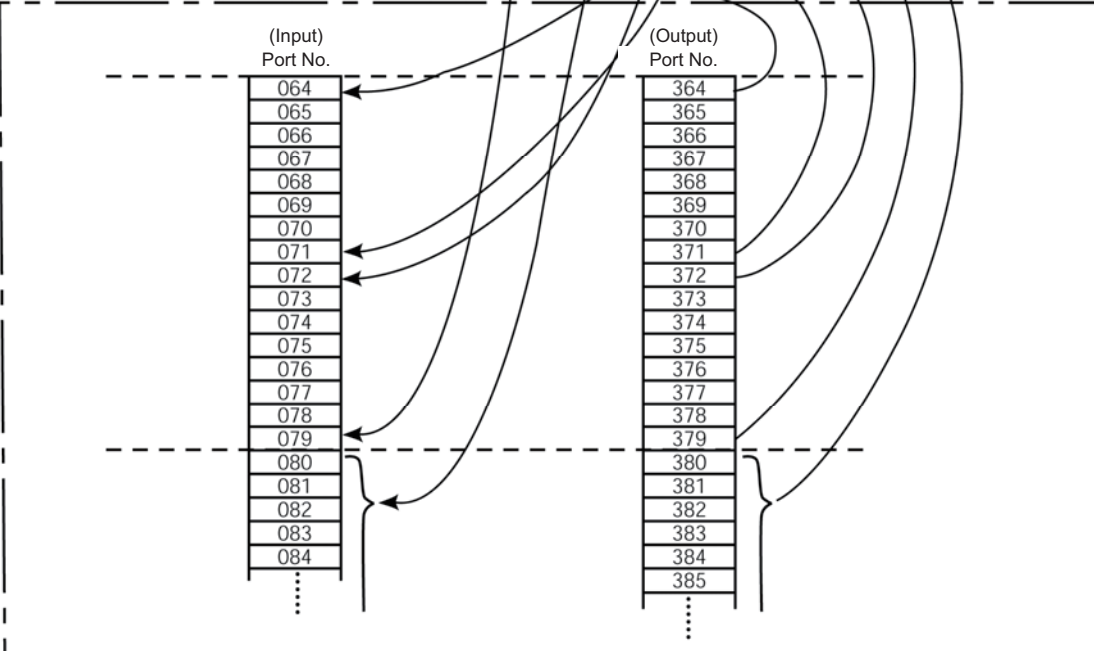
(2) Remote register

a. When the I/O parameter No. 120 is set to "1"

PLC



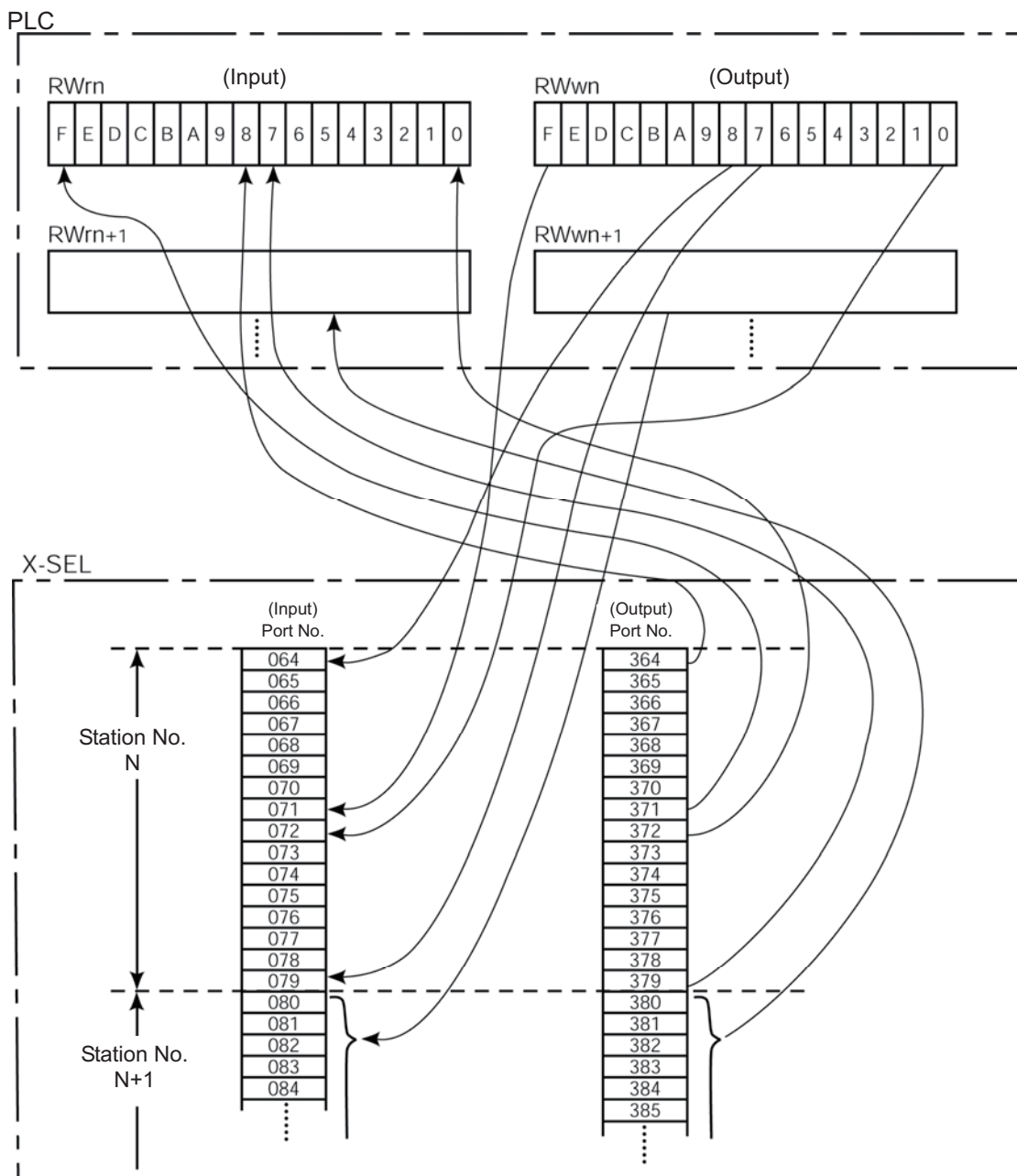
X-SEL



RW_n and RW_n are the remote register addresses in PLC that correspond to the station number N.

Reference

- b. When the I/O parameter No. 120 is set to "0"



RWrm and RWwm are the remote register addresses in PLC that correspond to the station number.

The remote register is comprised of one word (16 bits), but the data order of the higher-order 8 bits (higher-order byte) and the lower-order 8 bits (lower-order byte) is reversed under this setting. Take caution.

Example
PLC → X-SEL

PLC	Register D100	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Data	●	●	●	●	○	○	○	○	●	○	○	○	○	○	○	●
		F				0				8				1			
X-SEL	Ports No. 064 to No. 079	079	078	077	076	075	074	073	072	071	070	069	068	067	066	065	064
		●	○	○	○	○	○	○	○	●	●	●	●	○	○	○	○
	Data	8				1				F				0			

3.1.9 CSP file

When using the GX Configurator-CC (manufactured by Mitsubishi Electric Corporation), download the CSP file from our Web site shown below if required.

Web site: <http://www.iai-robot.co.jp>

The CSP file to be used is different according to the number of ports used (number of I/O ports) set by the I/O parameters No. 14 and No. 15 of X-SEL.

File name	Description	Number of ports used in X-SEL (Number of I/O points)
HMS-ABS-CCL_1.csp	For one remote device (one station)	96 points or less each
HMS-ABS-CCL_2.csp	For two remote devices (two stations)	112 points or more and 192 points or less each
HMS-ABS-CCL_3.csp	For two remote devices (three stations)	208 points or more and 256 points or less each

For the setting method of the remote station (X-SEL) information to the master station, refer to the Operation Manuals for the master station, PLC to be mounted, and peripherals.

3.2 Remote I/O station

3.2.1 Models

The CC-Link compatible X-SEL controller handled as the remote I/O station has three types as shown below.

The single CC-Link board allows communications through 16 points each for input and output.

The model of X-SEL varies according to the installation positions and number of boards.

● CC-Link board, ○ Standard I/O board

No.	Controller type	Number of I/O points in network (Max input/output)	Board installation position				X-SEL model	I/O slot arrangement
			Standard slot (I/O 1)	Expansion slot 1 (I/O 2)	Expansion slot 2 (I/O 3)	Expansion slot 3 (I/O 4)		
1	K type	16/16	○			●	XSEL-K-□-□ ~ □-NI-EEC-□-□	Fig. 3-2-1
2		32/32 (16/16 × 2)	○		●	●	XSEL-K-□-□ ~ □-NI-ECC-□-□	Fig. 3-2-2
3		48/48 (16/16 × 3)	○	●	●	●	XSEL-K-□-□ ~ □-NI-CCC-□-□	Fig. 3-2-3

- For the standard slot (I/O 1, leftmost), a standard I/O board is required.
- For expansion slots, either of an expansion I/O board ^{(*)2} or SIO board ^{(*)3} is installable in addition to the CC-Link board ^{(*)1}.

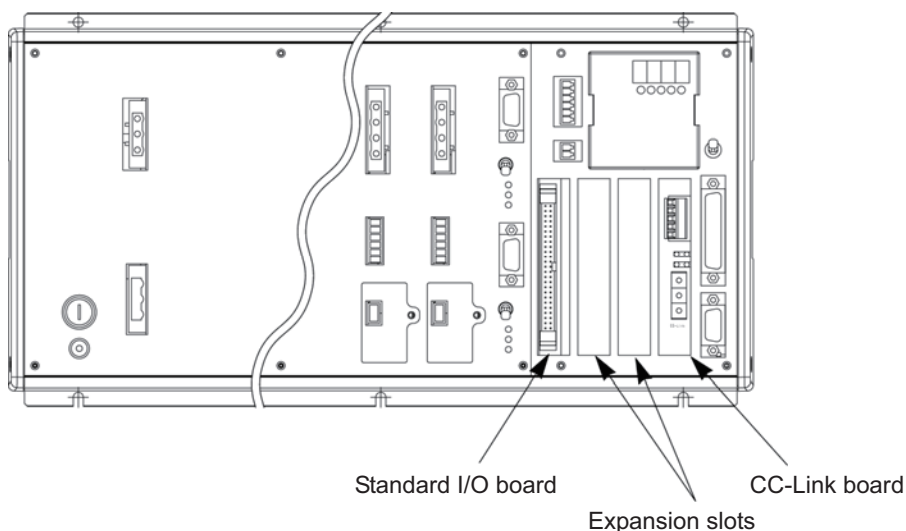


Fig. 3-2-1

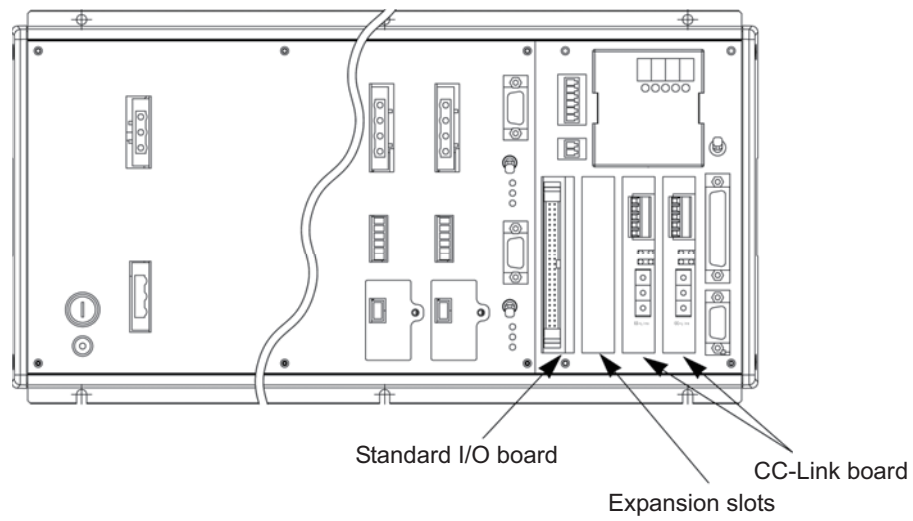


Fig. 3-2-2

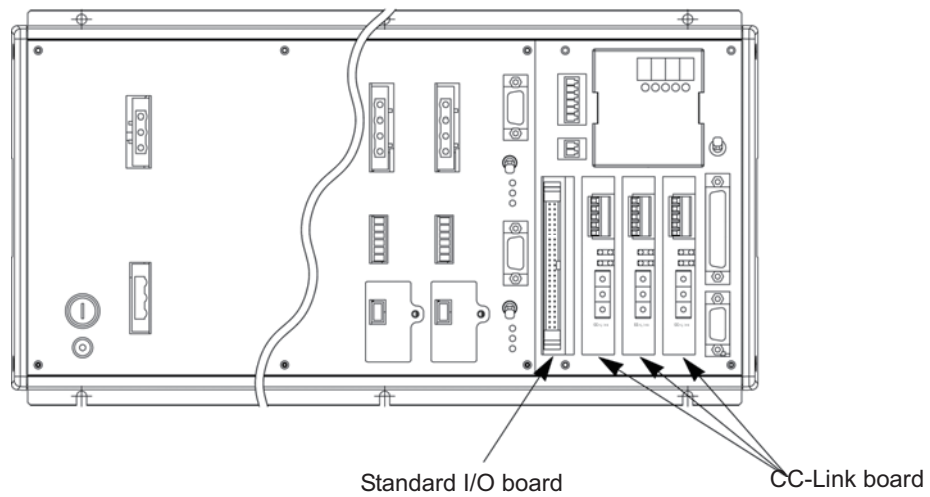


Fig. 3-2-3

(*1) CC-Link board

Model: IANT-3204-CC16

(*2) Expansion I/O board

Model (1): IA-103-X-32 (Input: 32 points, Output: 16 points, NPN specification)

Model (2): IA-103-X-32-P (Input: 32 points, Output: 16 points, PNP specification)

Model (3): IA-103-X-16 (Input: 16 points, Output: 32 points, NPN specification)

Model (4): IA-103-X-32-P (Input: 16 points, Output: 32 points, PNP specification)

Model (5): IA-IO-3204-NP (Input: 48 points, Output: 48 points, NPN specification)

Model (6): IA-IO-3204-PN (Input: 48 points, Output: 48 points, PNP specification)

Model (7): IA-IO-3205-NP (Input: 48 points, Output: 48 points, NPN specification)

Model (8): IA-IO-3205-PN (Input: 48 points, Output: 48 points, PNP specification)

(Note) (5) and (6) models are dedicated for K type, and (7) and (8) models are dedicated for J type.

For further information on specifications, refer to the X-SEL Controller Operation Manual.

(*3) SIO board

Model (1) IA-105-X-MW-A (for RS232C)

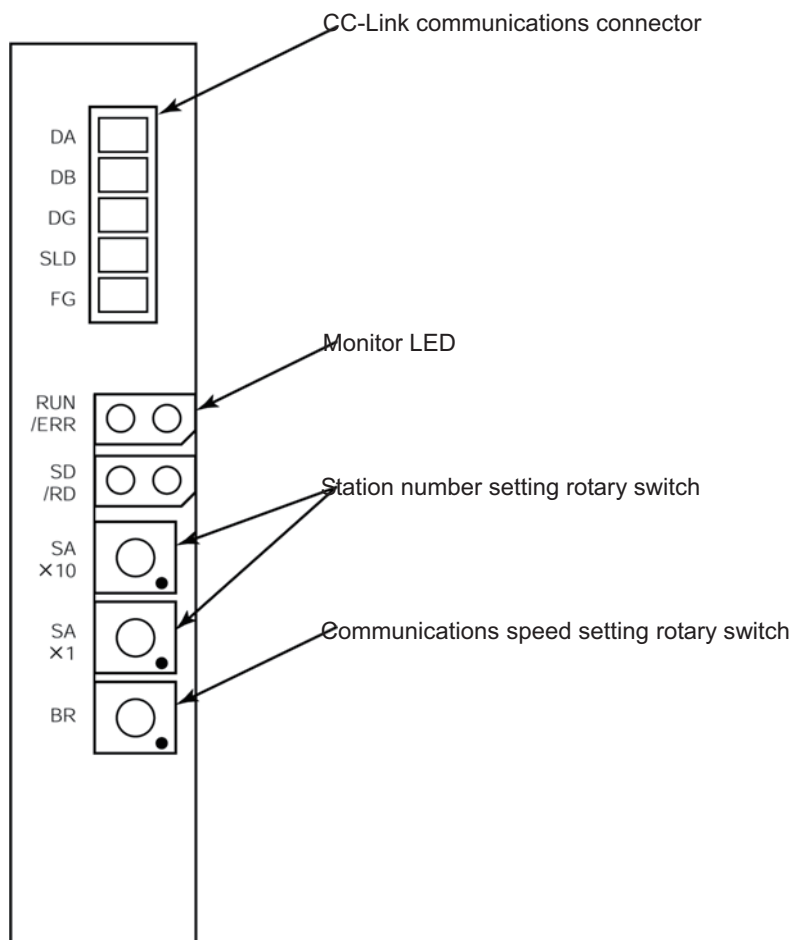
Model (2) IA-105-X-MW-B (for RS422)

Model (3) IA-105-X-MW-C (for RS485)

Any single board above is 2-channel compatible.

3.2.2 CC-Link board

(1) Names of each part



(2) Rotary switches

The following can be carried out by rotary switches:

- a. Setting of station number
- b. Setting of communications speed

a. Setting of station number

In the CC-Link only with remote I/O stations, up to 64 units can be connected.

The station number is set in the 1 to 64 range by the two rotary switches.

SA × 10: Sets the tens place.

SA × 1: Sets the ones place.

Rotary switch selection number	Station number	
	SA × 10	SA × 1
0	0	0
1	10	1
2	20	2
3	30	3
4	40	4
5	50	5
6	60	6
7	—	7
8	—	8
9	—	9

(Example) When setting the station number to 12:

Set the rotary switch SA × 10 to 1.

Set the rotary switch SA × 1 to 2.

Note: The CC-Link first I/O address in PLC is determined according to the master unit installation position and the number of I/O occupied points of the unit installed prior to that.

The I/O addresses in PLC are assigned from the first I/O address above in order of station number.

When two or more CC-Link boards are used in X-SEL, it is recommended to set station numbers in order of installation position so that measures can be taken smoothly in the event of trouble.

For further information regarding setting of the station number and setting of the I/O address in the PLC, refer to the Operation Manuals for the master unit and PLC to be mounted.

b. Setting of communications speed

The communications speed is set by the rotary switch BR.

Rotary switch selection number	Communications speed
0	156 kbps
1	625 kbps
2	2.5 Mbps
3	5 Mbps
4	10 Mbps
Setting to 5 or more prohibited	Error

(3) Display of monitor LEDs

The four LEDs mounted on the front of the board can indicate the board operating state and network condition.

LED	Color	Display condition	Display details (display indication)
RUN	Green	Lighting	Lights when communications start and turns off when communications are interrupted for a fixed time or longer.
SD	Green	Lighting	Lights during data transmission
RD	Green	Lighting	Lights during data reception
ERR	Red	Lighting	Local station address receiving data has an error.
		Flashing	Setting by the communications speed setting rotary switch was changed during communications. Setting by the station number setting rotary switch was changed during communications.

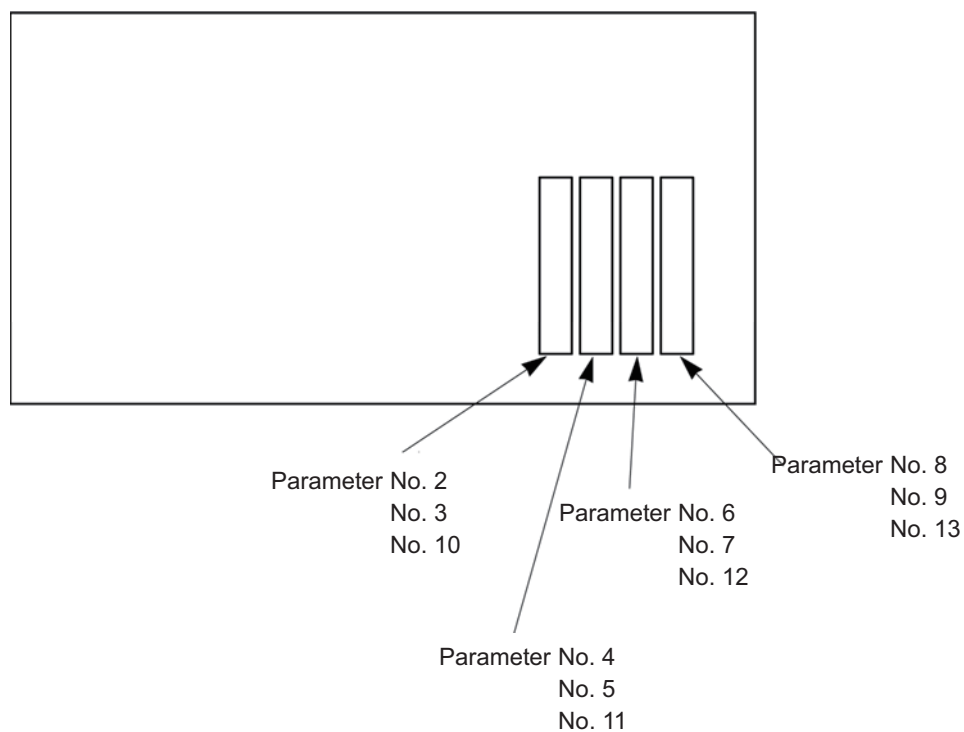
3.2.3 Setting of I/O parameters (assignment of I/O ports)

The X-SEL I/O ports used in the CC-Link are set. X-SEL allows a variety of settings of different I/O ports with I/O parameters. (For further information, refer to the X-SEL Controller Operation Manual.)

The typical setting methods are shown below in this Manual.

Basically, the I/O parameter No. 1 sets the I/O port assignment type to fixed assignment by setting the I/O port address for each I/O slot.

(1) Board installation positions (slots) and parameter numbers



(2) Factory-configured parameters

A: X-SEL-K□-□-CC1-□

B: X-SEL-K□-□-CC2-□

C: X-SEL-K□-□-CC3-□

No.	Parameter name	Input range	Set value			Remarks
			A	B	C	
1	I/O port assignment type	0 – 20	0	0	0	0: Fixed assignment 1: Automatic assignment (Priority: slot 1 →) * The ports only in the continuous installation range from slot 1 are assigned for safety.)
2	Standard I/O fixed assignment time: Input port start No. (I/O 1)	-1 – 599	-1	-1	-1	0 + (multiples of 8) (Invalid for negative values)
3	Standard I/O fixed assignment time: Output port start No. (I/O 1)	-1 – 599	-1	-1	-1	300 + (multiples of 8) (Invalid for negative values)
4	Expansion I/O 1 fixed assignment time: Input port start No. (I/O 2)	-1 – 599	-1	-1	032	0 + (multiples of 8) (Invalid for negative values) (Slot next to the standard I/O)
5	Expansion I/O 1 fixed assignment time: Output port start No. (I/O 2)	-1 – 599	-1	-1	332	300 + (multiples of 8) (Invalid for negative values)
6	Expansion I/O 2 fixed assignment time: Input port start No. (I/O 3)	-1 – 599	-1	016	016	0 + (multiples of 8) (Invalid for negative values)
7	Expansion I/O 2 fixed assignment time: Output port start No. (I/O 3)	-1 – 599	-1	316	316	300 + (multiples of 8) (Invalid for negative values)
8	Expansion I/O 3 fixed assignment time: Input port start No. (I/O 4)	-1 – 599	0	0	0	0 + (multiples of 8) (Invalid for negative values)
9	Expansion I/O 3 fixed assignment time: Output port start No. (I/O 4)	-1 – 599	300	300	300	300 + (multiples of 8) (Invalid for negative values)
10	Standard I/O error monitoring (I/O 1)	0 – 5	0	0	0	0: Non-monitoring 1: Monitoring
11	Expansion I/O 1 error monitoring (I/O 2)	0 – 5	0	0	2	2: Monitoring (Non-monitoring of 24V I/O power related errors) (Main application of Ver. 0.55 or later)
12	Expansion I/O 2 error monitoring (I/O 3)	0 – 5	0	2	2	3: Monitoring (Monitoring of 24V I/O power related errors only) (Main application of Ver. 0.55 or later)
13	Expansion I/O 3 error monitoring (I/O 4)	0 – 5	2	2	2	
14	Network I/F card remote: Number of ports used for input	0 – 256	0	0	0	Multiples of 8
15	Network I/F card remote: Number of ports used for output	0 – 256	0	0	0	Multiples of 8

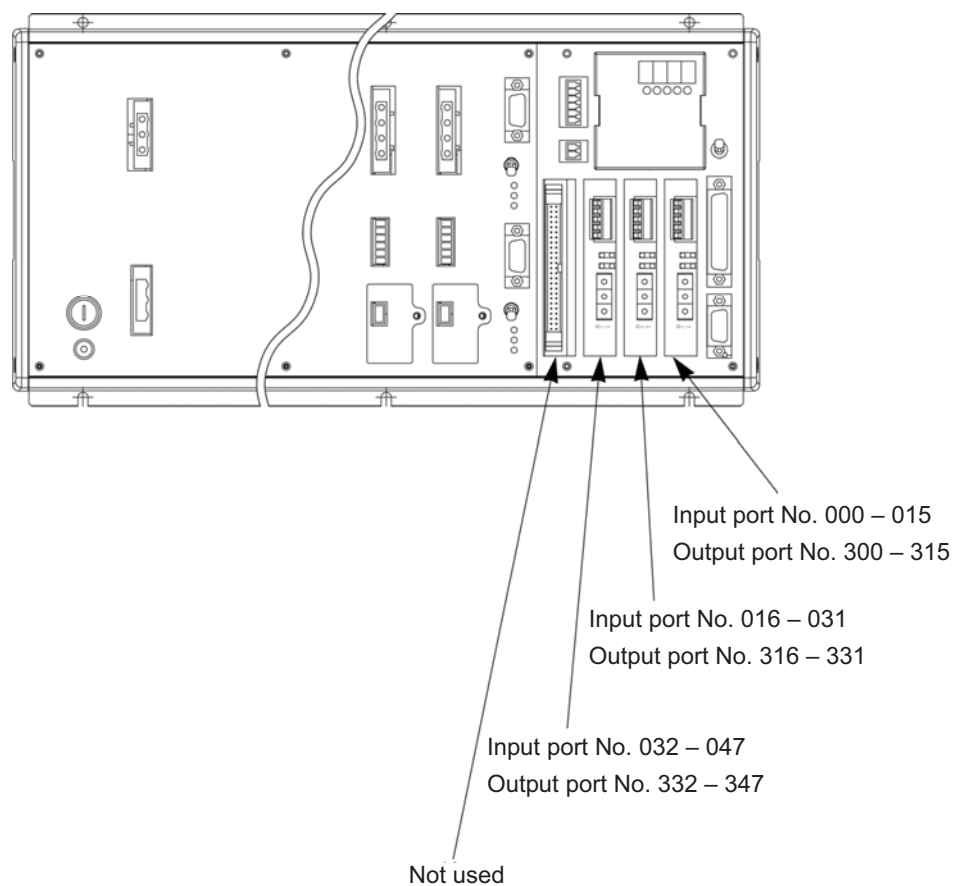
(I/O 1) to (I/O 4) indicate the slot numbers.

(Note) When a standard I/O board is not used, it is not required to supply 24V DC to the I/O 24V power connector. In this case, set the parameter No. 10 to "0."

(3) CC-Link connection with standard I/O ports

a. When only three CC-link boards are used

The following is the setting of a case where standard I/O ports are assigned to the CC-Link boards from the first port without using a standard I/O board.



(The above is a case where the installation condition as shown in Fig. 3-2-3 in section 3.2.1 is applied.)

X-SEL I/O parameter

No.	Parameter name	Default (reference)	Input range	Setting	Remarks
1	I/O port assignment type	1	0 – 20	01	0: Fixed assignment 1: Automatic assignment (Priority: slot 1 →) * The ports only in the continuous installation range from slot 1 are assigned for safety.)
2	Standard I/O fixed assignment time: Input port start No. (I/O 1)	-1	-1 – 599	-1	0 + (multiples of 8) (Invalid for negative values)
3	Standard I/O fixed assignment time: Output port start No. (I/O 1)	-1	-1 – 599	-1	300 + (multiples of 8) (Invalid for negative values)
4	Expansion I/O 1 fixed assignment time: Input port start No. (I/O 2)	032	-1 – 599	032	0 + (multiples of 8) (Invalid for negative values) (Slot next to the standard I/O)
5	Expansion I/O 1 fixed assignment time: Output port start No. (I/O 2)	332	-1 – 599	332	300 + (multiples of 8) (Invalid for negative values)
6	Expansion I/O 2 fixed assignment time: Input port start No. (I/O 3)	016	-1 – 599	016	0 + (multiples of 8) (Invalid for negative values)
7	Expansion I/O 2 fixed assignment time: Output port start No. (I/O 3)	316	-1 – 599	316	300 + (multiples of 8) (Invalid for negative values)
8	Expansion I/O 3 fixed assignment time: Input port start No. (I/O 4)	000	-1 – 599	000	0 + (multiples of 8) (Invalid for negative values)
9	Expansion I/O 3 fixed assignment time: Output port start No. (I/O 4)	300	-1 – 599	300	300 + (multiples of 8) (Invalid for negative values)
10	Standard I/O error monitoring (I/O 1)	0	0 – 5	0	0: Non-monitoring 1: Monitoring
11	Expansion I/O 1 error monitoring (I/O 2)	2	0 – 5	2	2: Monitoring (Non-monitoring of 24V I/O power related errors) (Main application of Ver. 0.55 or later) 3: Monitoring (Monitoring of 24V I/O power related errors only) (Main application of Ver. 0.55 or later)
12	Expansion I/O 2 error monitoring (I/O 3)	2	0 – 5	2	
13	Expansion I/O 3 error monitoring (I/O 4)	2	0 – 5	2	
14	Network I/F card remote: Number of ports used for input	0	0 – 256	0	Multiples of 8
15	Network I/F card remote: Number of ports used for output	0	0 – 256	0	Multiples of 8

(I/O 1) to (I/O 4) indicate the slot numbers.

b. When only two CC-Link boards are used

The I/O 2 (expansion I/O 1) slot becomes empty. Accordingly, both the default and set value become “-1” for the I/O parameter No. 4 and No. 5 and “0” for No. 11 in the table above.

(The above is a case where the installation condition as shown in Fig. 3-2-2 in section 3.2.1 is applied.)

c. When only one CC-Link board is used

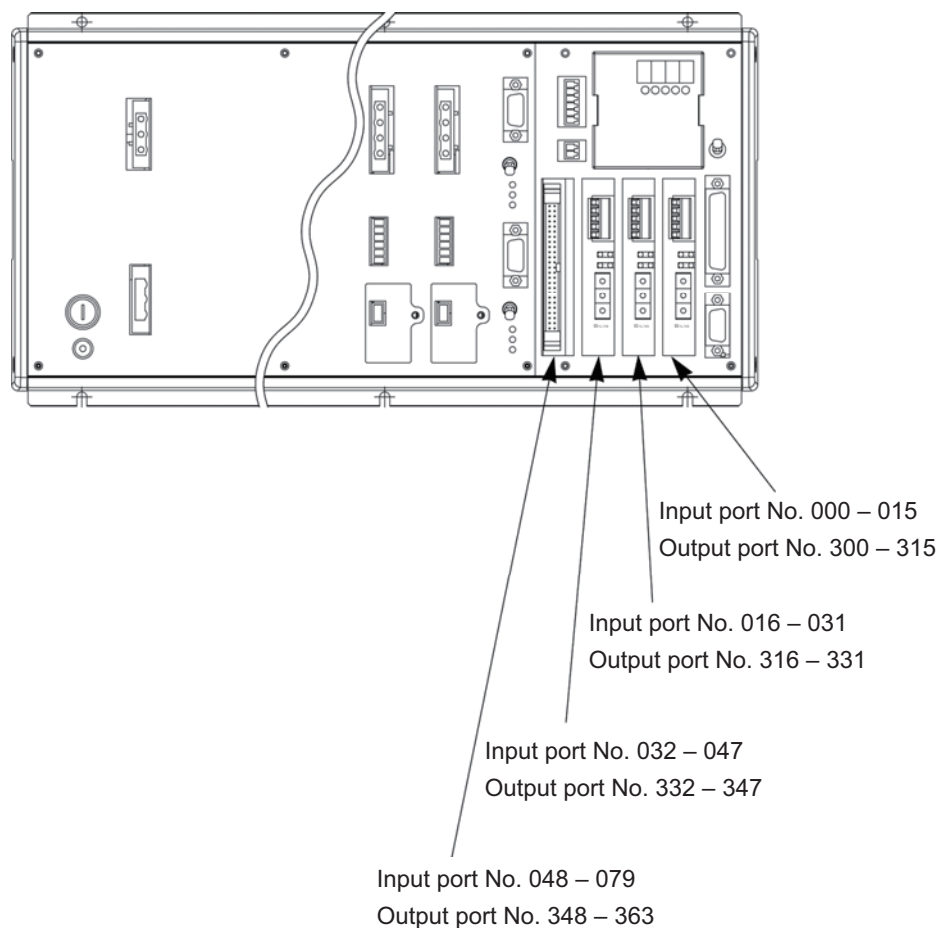
The I/O 2 (expansion I/O 1) and I/O 3 (expansion I/O 2) slots become empty. Accordingly, both the default and set value become “-1” for the I/O parameters No. 4 to No. 7 and “0” for No. 11 and No. 12 in the table above.

(The above is a case where the installation condition as shown in Fig. 3-2-1 in section 3.2.1 is applied.)

(Note) When no I/O board is used, it is not required to supply 24V DC to the I/O 24V power connector. In any case of a, b, and c above, set the I/O parameter No. 10 to “0.”

d. When a standard I/O board is used as general I/O

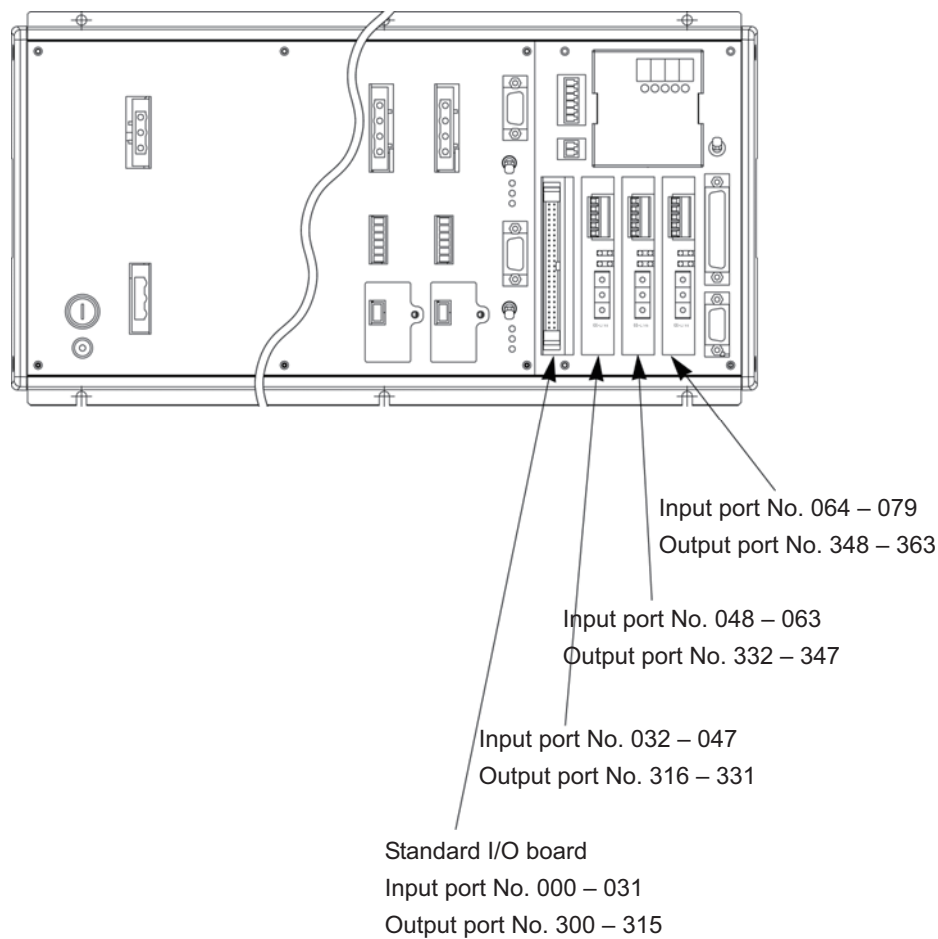
When a standard I/O board is used as general I/O (input: 32 points, output: 16 points) with the setting of a, the number becomes 048 for the I/O parameter No. 2, 348 for No. 3, and 1 for No. 10 in the table on the previous page for the following assignments:



(The above is a case where the installation condition as shown in Fig. 3-2-3 in section 3.2.1 is applied.)

(4) General I/O connection of CC-Link boards

The following is a case where a standard I/O board is used as standard I/O ports and 48 points each for input and output are assigned to three CC-link boards as general I/O ports:



(The above is a case where the installation condition as shown in Fig. 3-2-3 in section 3.2.1 is applied.)

X-SEL I/O parameter

No.	Parameter name	Default (reference)	Input range	Setting	Remarks
1	I/O port assignment type	0	0 – 20	0	0: Fixed assignment 1: Automatic assignment (Priority: slot 1 –) * The ports only in the continuous installation range from slot 1 are assigned for safety.)
2	Standard I/O fixed assignment time: Input port start No. (I/O 1)	-1	-1 – 599	000	0 + (multiples of 8) (Invalid for negative values)
3	Standard I/O fixed assignment time: Output port start No. (I/O 1)	-1	-1 – 599	300	300 + (multiples of 8) (Invalid for negative values)
4	Expansion I/O 1 fixed assignment time: Input port start No. (I/O 2)	032	-1 – 599	032	0 + (multiples of 8) (Invalid for negative values) (Slot next to the standard I/O)
5	Expansion I/O 1 fixed assignment time: Output port start No. (I/O 2)	332	-1 – 599	316	300 + (multiples of 8) (Invalid for negative values)
6	Expansion I/O 2 fixed assignment time: Input port start No. (I/O 3)	016	-1 – 599	048	0 + (multiples of 8) (Invalid for negative values)
7	Expansion I/O 2 fixed assignment time: Output port start No. (I/O 3)	316	-1 – 599	332	300 + (multiples of 8) (Invalid for negative values)
8	Expansion I/O 3 fixed assignment time: Input port start No. (I/O 4)	000	-1 – 599	064	0 + (multiples of 8) (Invalid for negative values)
9	Expansion I/O 3 fixed assignment time: Output port start No. (I/O 4)	300	-1 – 599	348	300 + (multiples of 8) (Invalid for negative values)
10	Standard I/O error monitoring (I/O 1)	0	0 – 5	1	0: Non-monitoring 1: Monitoring 2: Monitoring (Non-monitoring of 24V I/O power related errors) (Main application of Ver. 0.55 or later) 3: Monitoring (Monitoring of 24V I/O power related errors only) (Main application of Ver. 0.55 or later)
11	Expansion I/O 1 error monitoring (I/O 2)	2	0 – 5	2	
12	Expansion I/O 2 error monitoring (I/O 3)	2	0 – 5	2	
13	Expansion I/O 3 error monitoring (I/O 4)	2	0 – 5	2	
14	Network I/F card remote: Number of ports used for input	0	0 – 256	0	Multiples of 8
15	Network I/F card remote: Number of ports used for output	0	0 – 256	0	Multiples of 8

(I/O 1) to (I/O 4) indicate the slot numbers.

(5) X-SEL I/O port numbers

The standard I/O port numbers of X-SEL are shown below.

The X-SEL port numbers and functional assignment can be changed with I/O parameters. (For further information, refer to the X-SEL Controller Operation Manual.)

	Port No.	Function		Port No.	Function
Input	000	Program start	Output	300	Alarm output
	001	General input		301	Ready output
	002	General input		302	Emergency stop output
	003	General input		303	General output
	004	General input		304	General output
	005	General input		305	General output
	006	General input		306	General output
	007	Program designation (PRG No. 1)		307	General output
	008	Program designation (PRG No. 2)		308	General output
	009	Program designation (PRG No. 4)		309	General output
	010	Program designation (PRG No. 8)		310	General output
	011	Program designation (PRG No. 10)		311	General output
	012	Program designation (PRG No. 20)		312	General output
	013	Program designation (PRG No. 40)		313	General output
	014	General input		314	General output
	015	General input		315	General output
	⋮	⋮		⋮	⋮

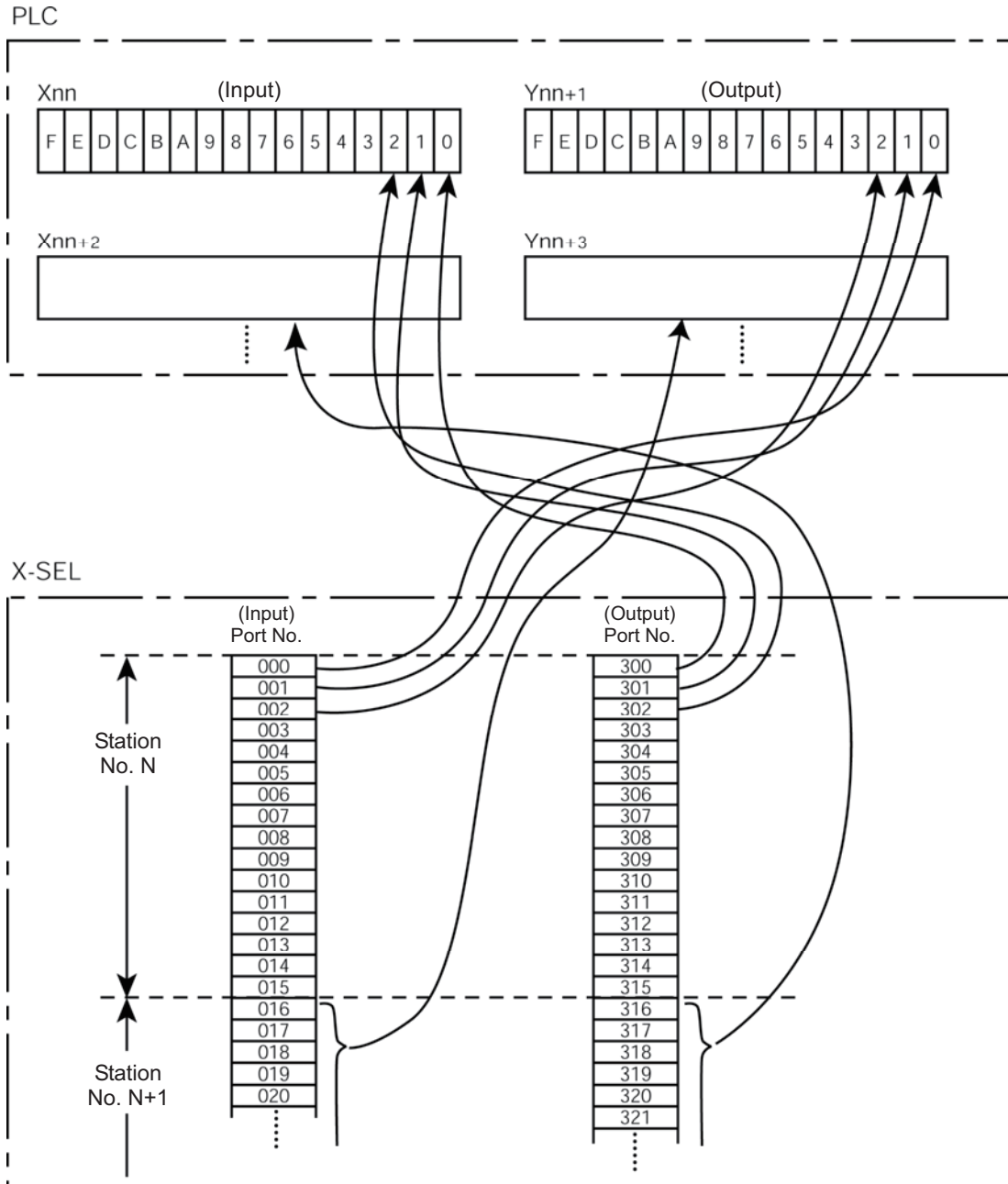
Note: The number of I/O ports is as follows:

Input	000 to 299	(Max, 300 points)
Output	300 to 599	(Max, 300 points)

When the CC-Link board is used in combination with the expansion I/O board, pay attention to the number of I/O ports.

Reference

Addresses in PLC are assigned to the remote I/O addresses that correspond to the station number set by the rotary switch and the station number set by the PLC parameter, in steps of 16 points in order of port number.



Xnn and Ynn+1 are the addresses in PLC that correspond to the station number N.

Since 2-word (32-point) processing is made per station in PLC, the PLC remote I/O (RX/RX) addresses are set to Xnn/Ynn+1. Refer to "Section 9. Communications with Master Station."

3.3 Troubleshooting

When a problem occurs in the CC-Link, check the operating condition with the table below.

When the ERR LED lights or flashes, or when the green LED turns off abnormally during communications, check (or reset) connections of the power and communications cables, setting of rotary switches, and setting of parameters before turning on the power to the controller main unit again.

○: ON, ●: OFF, ◎: Flashing

RUN (Green)	ERR (Red)	SD (Green)	RD (Green)	Operating condition
○	◎	◎	○	There is normal communications, but a CRC* error sometimes occurs with noise.
○	0.4s◎	◎	○	Resetting of the baud rate or station number has changed the rate or number.
○	◎	◎	●	(Impossible condition)
○	◎	●	○	With the received data having a CRC* error, there can be no response.
○	◎	●	●	(Impossible condition)
○	●	◎	○	Normal communications
○	●	◎	●	(Impossible condition)
○	●	●	○	Local station address receiving data has not arrived.
○	●	●	●	(Impossible condition)
●	◎	◎	○	There is the polling response, but refresh receiving has a CRC* error.
●	◎	◎	●	(Impossible condition)
●	◎	●	○	Local station address receiving data has a CRC* error.
●	◎	●	●	(Impossible condition)
●	●	◎	○	There is no link start-up.
●	●	◎	●	(Impossible condition)
●	●	●	○	There is no local station address receiving data or it is impossible to receive such data with noise.
●	●	●	●	It is impossible to receive data as a result of disconnection, etc. There is power interruption or H/W setting is being made.
●	○	●	○	The baud rate or station number is invalid.
●	○	●	●	The baud rate or station number is invalid.

*CRC: Cyclic Redundancy Check

Data error detection method frequently used in the case of synchronous transmission is adopted.

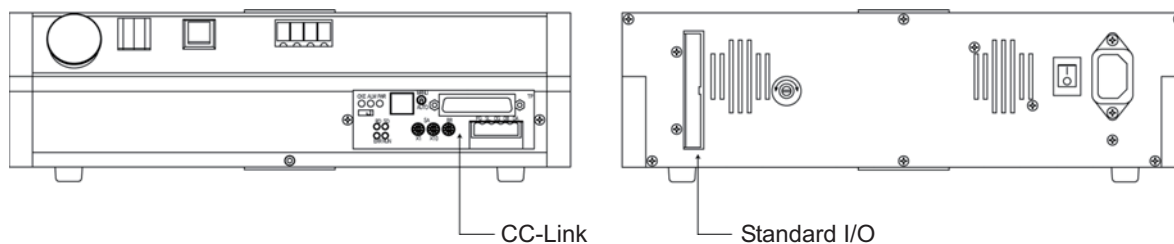
4. Tabletop Robot TT

TT is handled as a remote device station.

4.1 Models

Model: TT-□-I-□-CC

Number of Network I/O points MAX: 240/240

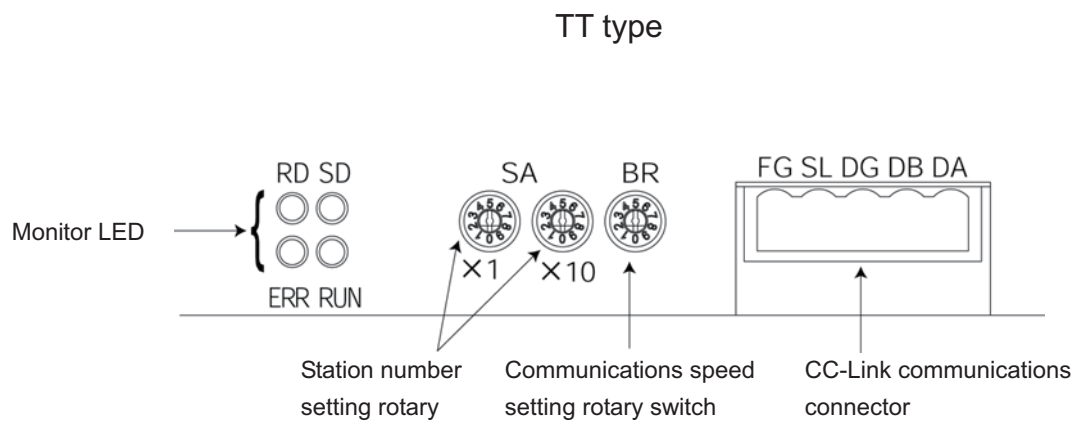


CC-Link board is installed on the field network board installation position.

(Note) 16 points each for input and output among I/O points are in the system area, therefore, these points cannot be used.
For further information, please refer to "Section 4.5 Correspondence between the TT I/O port No. and PLC addresses."

4.2 CC-Link board

(1) Names of each part



(2) Rotary switches

The following can be carried out by rotary switches:

- a. Setting of station number
- b. Setting of communications speed

a. Setting of station number

In the CC-Link only with remote I/O stations, up to 64 units can be connected.

The station number is set in the 1 to 64 range by the two rotary switches.

SA × 10: Sets the tens place.

SA × 1: Sets the ones place.

Rotary switch selection number	Station number	
	SA × 10	SA × 1
0	0	0
1	10	1
2	20	2
3	30	3
4	40	4
5	50	5
6	60	6
7	—	7
8	—	8
9	—	9

(Example) When setting the station number to 12:

Set the rotary switch SA × 10 to 1.

Set the rotary switch SA × 1 to 2.

(Note) The CC-Link first I/O address in PLC is determined according to the master unit installation position and the number of I/O occupied points of the unit installed prior to that.

The I/O addresses in PLC are assigned from the first I/O address above in order of station number.

For further information regarding setting of the station number and setting of the I/O address in the PLC, refer to the Operation Manuals for the master unit and PLC to be mounted.

b. Setting of communications speed

The communications speed is set by the rotary switch BR.

Rotary switch selection number	Communications speed
0	156 kbps
1	625 kbps
2	2.5 Mbps
3	5 Mbps
4	10 Mbps
Setting to 5 or more prohibited	Error

(3) Display of monitor LEDs

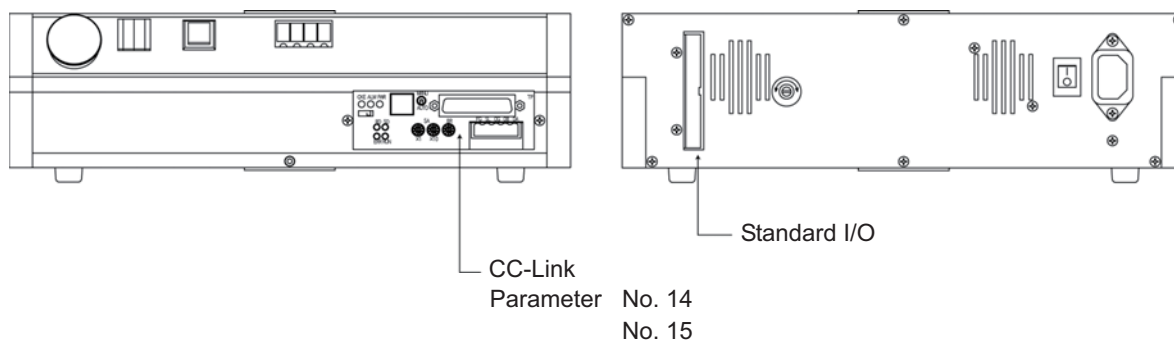
The four LEDs mounted on the front of the board can indicate the board operating state and network condition.

LED	Color	Display condition	Display details (display indication)
RUN	Green	Lighting	Lights when communications start and turns off when communications are interrupted for a certain time or longer.
SD	Green	Lighting	Lights during data transmission
RD	Green	Lighting	Lights during data reception
ERR	Red	Lighting	Local station address receiving data has an error.
		Flashing	Setting by the communications speed setting rotary switch was changed during communications. Setting by the station number setting rotary switch was changed during communications.

4.3 Setting of I.O parameters (assignment of I/O ports)

The TT I/O ports used in the CC-Link are set.

(1) Board installation positions (slots) and parameter numbers



The factory-configured number for each input port and output port used in the CC-Link is set to 64 points.

(2) Factory-configured parameters of TT type

No.	Parameter name	Default (reference)	Input range	Remarks
1	I/O port assignment type	0	Reference only	0: Fixed assignment
2	Standard I/O fixed assignment time: Input port start No.	000	Reference only	0+(multiples of 8)(Invalid for negative values)
3	Standard I/O 1 fixed assignment time: Output port start No.	300	Reference only	300+(multiples of 8)(Invalid for negative values)
4	Standard I/O 2 fixed assignment time: Input port start No.	32	Reference only	0+(multiples of 8)(Invalid for negative values)
5	Standard I/O 2 fixed assignment time: Output port start No.	316	-1	300+(multiples of 8)(Invalid for negative values)
6	Expansion I/O 1 fixed assignment time: Input port start No. (Network I/F module)	48	-1-599	0+(multiples of 8) (Invalid for negative values)
7	Expansion I/O 1 fixed assignment time: Output port start No. (Network I/F module)	348	-1	300+(multiples of 8)(Invalid for negative values)
8	System reservation	-1	-1 - 599	
9	System reservation	-1	-1 - 599	
10	Standard I/O 1 error monitoring	0	0 - 5	0: Non-monitoring 1: Monitoring 2: Monitoring (Non-monitoring of 24V I/O power related errors) 3: Monitoring (Monitoring of 24V I/O power related errors only) * Some exceptions included.
11	Expansion I/O 2 error monitoring	0	0 - 5	0: Non-monitoring 1: Monitoring 2: Monitoring (Non-monitoring of 24V I/O power related errors) 3: Monitoring (Monitoring of 24V I/O power related errors only) * Some exceptions included.
12	Expansion I/O 1 error monitoring (Network I/F module)	1	0 - 5	0: Non-monitoring 1: Monitoring * Some exceptions included.
13	System reservation	1	0 - 5	
14	Network I/F card remote: Number of ports used for input	64	0 - 240	Multiples of 16
15	Network I/F card remote: Number of ports used for output	64	0 - 240	Multiples of 16

In the case of TT, the number of ports used in the CC-Link can be changed by parameter setting.

The I/O port start No. of the CC-Link is fixed.

CC-Link input port start No. 48

CC-Link output port start No. 348

The I/O port No. of the standard I/O (rear panel I/O connector) is fixed.

Standard input port No. 16 to 31.

Standard output port No. 316 to 331.

(3) Parameter setting examples of tabletop robot TT

This is the setting in a case where 240 points for each input and output is assigned to the CC-Link board as the general I/O port.

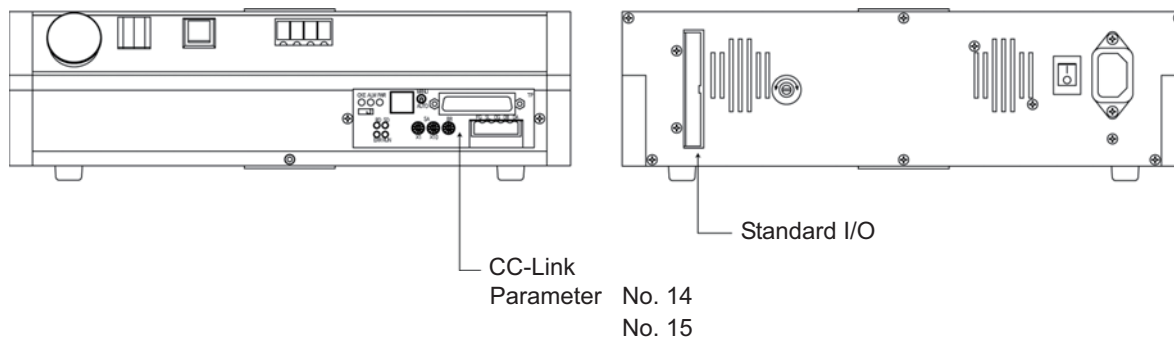
The I/O port start No. of the TT is fixed.

Input port start No. 48

Output port start No. 348

The number of ports used is set every 16 points. In addition, the port start No. is predetermined, therefore, the maximum number of ports for each input and output is 240 points.

240 is set to the I/O parameter No. 14 and No. 15.



TT type I/O parameters

No.	Parameter name	Default (reference)	Input range	Setting	Remarks
1	I/O port assignment type	0	Reference only	0	0: Fixed assignment
2	Standard I/O fixed assignment time: Input port start No.	000	Reference only	000	0+(multiples of 8)(Invalid for negative values)
3	Standard I/O 1 fixed assignment time: Output port start No.	300	Reference only	300	300+(multiples of 8)(Invalid for negative values)
4	Standard I/O 2 fixed assignment time: Input port start No.	32	Reference only	32	0+(multiples of 8)(Invalid for negative values)
5	Standard I/O 2 fixed assignment time: Output port start No.	316	-1	316	300+(multiples of 8)(Invalid for negative values)
6	Expansion I/O 1 fixed assignment time: Input port start No. (Network I/F module)	48	-1-599	48	0+(multiples of 8) (Invalid for negative values)
7	Expansion I/O 1 fixed assignment time: Output port start No. (Network I/F module)	348	-1	348	300+(multiples of 8)(Invalid for negative values)
8	System reservation	-1	-1 - 599	-1	
9	System reservation	-1	-1 - 599	-1	
10	Standard I/O 1 error monitoring	0	0 - 5	0	0: Non-monitoring 1: Monitoring 2: Monitoring (Non-monitoring of 24V I/O power related errors) 3: Monitoring (Monitoring of 24V I/O power related errors only) * Some exceptions included.
11	Expansion I/O 2 error monitoring	0	0 - 5	0	0: Non-monitoring 1: Monitoring 2: Monitoring (Non-monitoring of 24V I/O power related errors) 3: Monitoring (Monitoring of 24V I/O power related errors only) * Some exceptions included.
12	Expansion I/O 1 error monitoring (Network I/F module)	1	0 - 5	1	0: Non-monitoring 1: Monitoring * Some exceptions included.
13	System reservation	1	0 - 5	1	
14	Network I/F card remote: Number of ports used for input	64	0 - 240	240	Multiples of 16
15	Network I/F card remote: Number of ports used for output	64	0 - 240	240	Multiples of 16

4.4 I/O port numbers of TT

The following table shows I/O port numbers of TT.

(For further information, please refer to the "Operation Manual of Tabletop Robot TT.")

	Port No.	Function		Port No.	Function
Internal DI	000	Start	Internal DO	300	ALM (Front panel LED)
	001	(Soft reset)		301	RDY (Front panel LED)
	002	(Servo ON)		302	EMG (Front panel LED)
	003	(Auto start activation)		303	Under automatic operation
	004	(Soft interlock)		304	HPS (Front panel LED)
	005	(Suspend release)		305	System reservation
	006	(Suspend)		306	System reservation
	007	Designation of program No. for ones-place digital switch		307	System reservation
	008			308	Internal DI-No. 001 for ON/OFF
	009			309	Internal DI-No. 002 for ON/OFF
	010	Designation of program No. for tens-place digital switch		310	Internal DI-No. 003 for ON/OFF
	011			311	Internal DI-No. 004 for ON/OFF
	012			312	Internal DI-No. 005 for ON/OFF
	013	(Drive power release input)		313	Internal DI-No. 006 for ON/OFF
	014			314	Internal DI-No. 014 for ON/OFF
015	315		Internal DI-No. 015 for ON/OFF		
External DI	016 - 031	General input (Rear panel I/O connector)	External DO	316 - 331	General output (Rear panel I/O connector)
Internal DI	032	System reservation	Internal DO	332	7 seg user display digit designation
	033			333	7 seg user display digit designation
	034			334	System reservation
	035			335	System reservation
	036			336	System reservation
	037			337	7 seg refresh
	038			338	7 seg user system alternating display
	039			339	7 seg user display designation
	040			340	DT0 (7 seg user display bit)
	041			341	DT1 (7 seg user display bit)
	042			342	DT2 (7 seg user display bit)
	043			343	DT3 (7 seg user display bit)
	044			344	DT4 (7 seg user display bit)
	045			345	DT5 (7 seg user display bit)
	046			346	DT6 (7 seg user display bit)
047	347	System reservation			
External DI	048 - 287	For CC-Link	External DO	348 - 587	For CC-Link

4.5 Correspondence between I/O port numbers and PLC addresses of TT

In the PLC, the CC-Link board of TT is set as a remote device.

The number of occupied stations of the remote device according to the setting of the I/O points on the TT side changes.

The following table shows the relationships between I/O port numbers and addresses of the PLC according to the setting of the I/O parameter No. 14 and No. 15.

Note: For I/O parameter No. 14 and No. 15, set the same point for whichever the number is larger.

(1) When the number of I/O points is set to 96 or less:

Configured as one remote device. (One station occupied)

I/O parameter		TT side DI (Port No.)	PLC side	TT side DO (Port No.)	PLC side
No. 14	No. 15				
16	16	048 - 063	RY 0 – F	348 - 363	RX 0 – F
32	32	064 - 079	RY 10 – 1F	364 - 379	RX 10 – 1F
48	48	080 - 095	RWw 0	380 - 395	RWr 0
64	64	096 - 111	RWw 1	396 - 411	RWr 1
80	80	112 - 127	RWw 2	412 - 427	RWr 2
96	96	128 - 143	RWw 3	428 - 443	RWr 3

* Since the shaded portions are the system areas for the remote device station on the PLC side, they cannot be used as I/O.

(2) When the number of I/O points is set to 112 or more and 192 or less:

Configured as two remote devices. (Two stations occupied)

I/O parameter		TT side DI (Port No.)	PLC side	TT side DO (Port No.)	PLC side
No. 14	No. 15				
(16)	(16)	048 - 063	RY 0 – F	348 - 363	RX 0 – F
(32)	(32)	064 - 079	RY 10 – 1F	364 - 379	RX 10 – 1F
(48)	(48)	080 - 095	RY 20 – 2F	380 - 395	RX 20 – 2F
(64)	(64)	096 - 111	RY 30 – 3F	396 - 411	RX 30 – 3F
(80)	(80)	112 - 127	RWw 0	412 - 427	RWr 0
(96)	(96)	128 - 143	RWw 1	428 - 443	RWr 1
112	112	144 - 159	RWw 2	444 - 459	RWr 2
128	128	160 - 175	RWw 3	460 - 475	RWr 3
144	144	176 - 191	RWw 4	476 - 491	RWr 4
160	160	192 - 207	RWw 5	492 - 507	RWr 5
176	176	208 - 223	RWw 6	508 - 523	RWr 6
192	192	224 - 239	RWw 7	524 - 539	RWr 7

* Since the shaded portions are the system areas for the remote device station on the PLC side, they cannot be used as I/O.

- (3) When the number of I/O points is set to 208 or more and 256 or less:

Configured as three remote devices. (Three stations occupied)

I/O parameter		TT side DI (Port No.)	PLC side	TT side DO (Port No.)	PLC side
No. 14	No. 15				
(16)	(16)	048-063	RY 0 – F	348 - 363	RX 0 – F
(32)	(32)	064-079	RY 10 – 1F	364 - 379	RX 10 – 1F
(48)	(48)	080-095	RY 20 – 2F	380 - 395	RX 20 – 2F
(64)	(64)	096-111	RY 30 – 3F	396 - 411	RX 30 – 3F
(80)	(80)	112-127	RY 40 – 4F	412 - 427	RX 40 – 4F
(96)	(96)	128-143	RY 50 – 5F	428 - 443	RX 50 – 5F
(112)	(112)	144-159	RWw 0	444 - 459	RWr 0
(128)	(128)	160-175	RWw 1	460 - 475	RWr 1
(144)	(144)	176-191	RWw 2	476 - 491	RWr 2
(160)	(160)	192-207	RWw 3	492 - 507	RWr 3
(176)	(176)	208-223	RWw 4	508 - 523	RWr 4
(192)	(192)	224-239	RWw 5	524 - 539	RWr 5
208	208	240-255	RWw 6	540 - 555	RWr 6
224	224	256-271	RWw 7	556 - 571	RWr 7
240	240	272-287	RWw 8	572 - 587	RWr 8
Not be set		-	RWw 9	-	RWr 9
Not be set		-	RWw A	-	RWr A
Not be set		-	RWw B	-	RWr B

* Since the shaded portions are the system areas for the remote device station on the PLC side, they cannot be used as I/O.

* In the case of three stations being occupied, twelve words (nine words for TT) are assigned for each input and output in the data register on the PLC side. Be careful about overlapping of data register on the PLC side.

4.6 Data in remote registers

Addresses in PLC are assigned to the remote I/O addresses and remote register areas that correspond to the station number set on the CC-Link board and the number of occupied stations set by the PLC parameter, in steps of 16 points (one word) in order of TT port number.

Setting the I/O parameter No. 120 to "0" allows the data in one word to be transmitted by reversing the order of the higher-order byte (higher-order 8 bits) and the lower-order byte (lower-order 8 bits) in the communications area with the PLC remote register. (Remote I/O areas are not changed.)

I/O parameters

No.	Parameter name	Default (reference)	Input range	Remarks
120	Network attribute 1	1	0H – FFFFFFFFH	Bit 0-3: CC-Link remote register area H/L byte SWAP selection (0: No SWAP, 1: SWAP)

* There should not be inconsistencies between the port numbers of I/O parameters No. 14 and No. 15 and the number of occupied stations.

The relationships between I/O signals are shown below by taking a case where the number of I/O points of TT is set to 112 or more and 192 or less (two stations occupied) for example.

(1) TT remote I/O areas and remote register areas

Remote input: Port No. 48 to No. 111

Remote output: Port No. 348 to No. 411

Remote address (input): Port No. 112 to No. 239

Remote address (output): Port No. 412 to No. 539

(Note) Since ports No. 128 to No. 143 and No. 428 to No. 443 are the system areas for the remote device stations on the PLC side, they cannot be used.

(2) Transmission and receipt of signals in remote I/O areas

The transmission and receipt of signals in remote I/O areas are irrelevant to the setting of the I/O parameter No. 120.

●: On, ○: OFF

TT port No. (Input)	063	062	061	060	059	058	057	056	055	054	053	052	051	050	049	048
ON/OFF	●	●	●	●	○	○	○	○	●	○	○	○	○	○	○	●
Hexadecimal data	F				0				8				1			

↑

PLC: RYnn (Output)	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
ON/OFF	●	●	●	●	○	○	○	○	●	○	○	○	○	○	○	●
Hexadecimal data	F				0				8				1			

TT port No. (Output)	363	362	361	360	359	358	357	356	355	354	353	352	351	350	349	348
ON/OFF	●	●	●	●	○	○	○	○	●	○	○	○	○	○	○	●
Hexadecimal data	F				0				8				1			

↓

PLC: RXnn (Input)	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
ON/OFF	●	●	●	●	○	○	○	○	●	○	○	○	○	○	○	●
Hexadecimal data	F				0				8				1			

(3) Transmission and receipt of signals in remote register areas

The I/O parameter No. 120 allows the data in one word (16 bits) to be transmitted by reversing the order of the higher-order byte (higher-order 8 bits) and the lower-order byte (lower-order 8 bits).

(a) When the I/O parameter No. 120 is set to "1"

●: On, ○: OFF

TT port No. (Input)	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113	112
ON/OFF	●	●	●	●	○	○	○	○	●	○	○	○	○	○	○	●
Hexadecimal data	F				0				8				1			

PLC: RWwn (Output)	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
ON/OFF	●	●	●	●	○	○	○	○	●	○	○	○	○	○	○	●
Hexadecimal data	F				0				8				1			

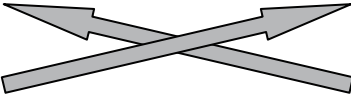
TT port No. (Output)	427	426	425	424	423	422	421	420	419	418	417	416	415	414	413	412
ON/OFF	●	●	●	●	○	○	○	○	●	○	○	○	○	○	○	●
Hexadecimal data	F				0				8				1			

PLC: RWrn (Input)	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
ON/OFF	●	●	●	●	○	○	○	○	●	○	○	○	○	○	○	●
Hexadecimal data	F				0				8				1			

(b) When the I/O parameter No. 120 is set to "0"

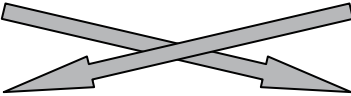
●: On, ○: OFF

TT port No. (Input)	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113	112
ON/OFF	●	○	○	○	○	○	○	●	●	●	●	○	○	○	○	○
Hexadecimal data	8				1				F				0			



PLC: RWwn (Output)	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
ON/OFF	●	●	●	●	○	○	○	○	●	○	○	○	○	○	○	●
Hexadecimal data	F				0				8				1			

TT port No. (Output)	427	426	425	424	423	422	421	420	419	418	417	416	415	414	413	412
ON/OFF	●	●	●	●	○	○	○	○	●	○	○	○	○	○	○	●
Hexadecimal data	F				0				8				1			



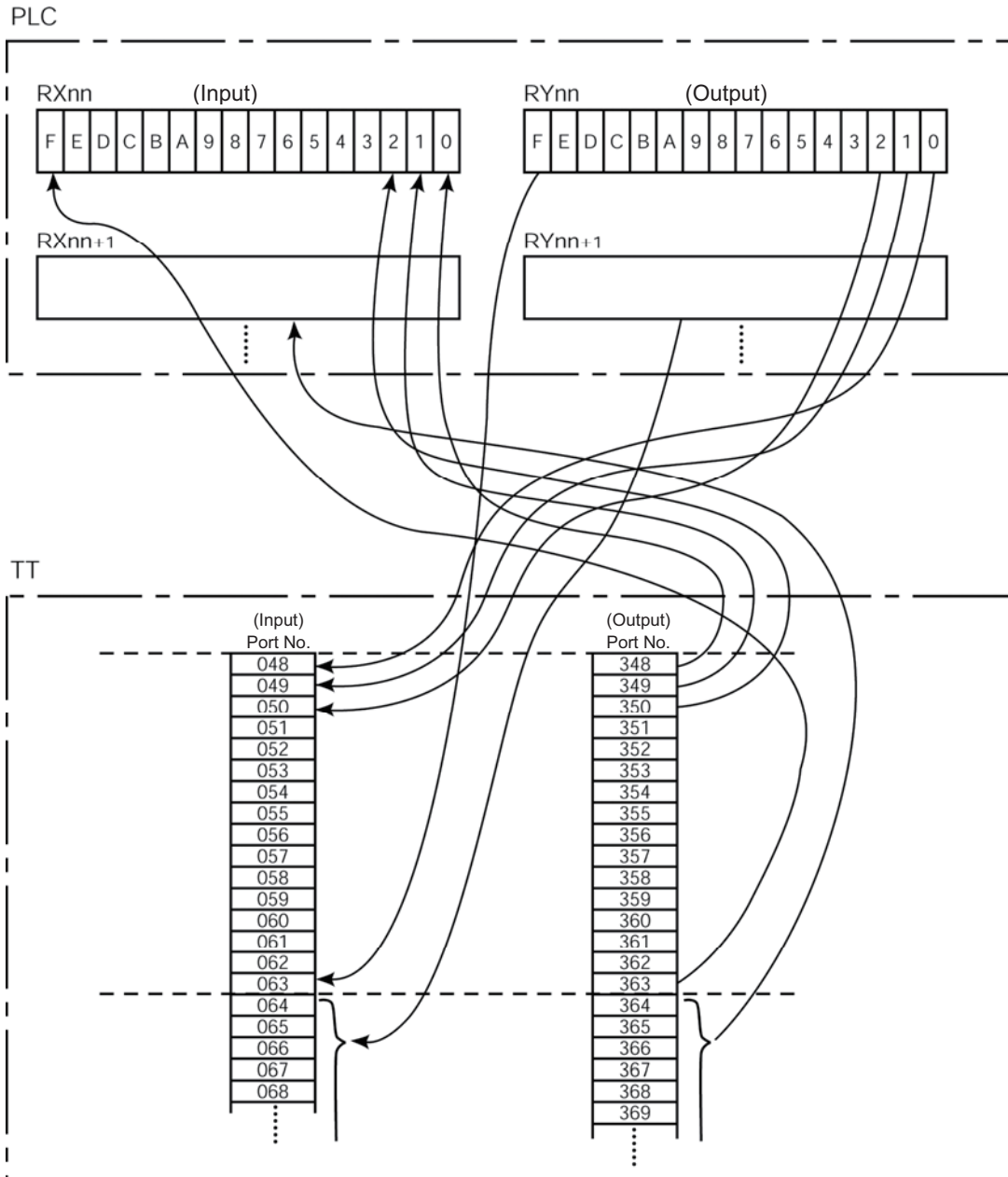
PLC: RWrn (Input)	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
ON/OFF	●	○	○	○	○	○	○	●	●	●	●	○	○	○	○	○
Hexadecimal data	8				1				F				0			

Reference

■ When the number of I/O points is set to 112 or more and 192 or less: two stations are occupied

Addresses in PLC are assigned to the remote I/O addresses and remote register areas that correspond to the station number set by the rotary switch and the number of occupied stations set by the PLC parameter, in order of port number.

(1) Remote I/O



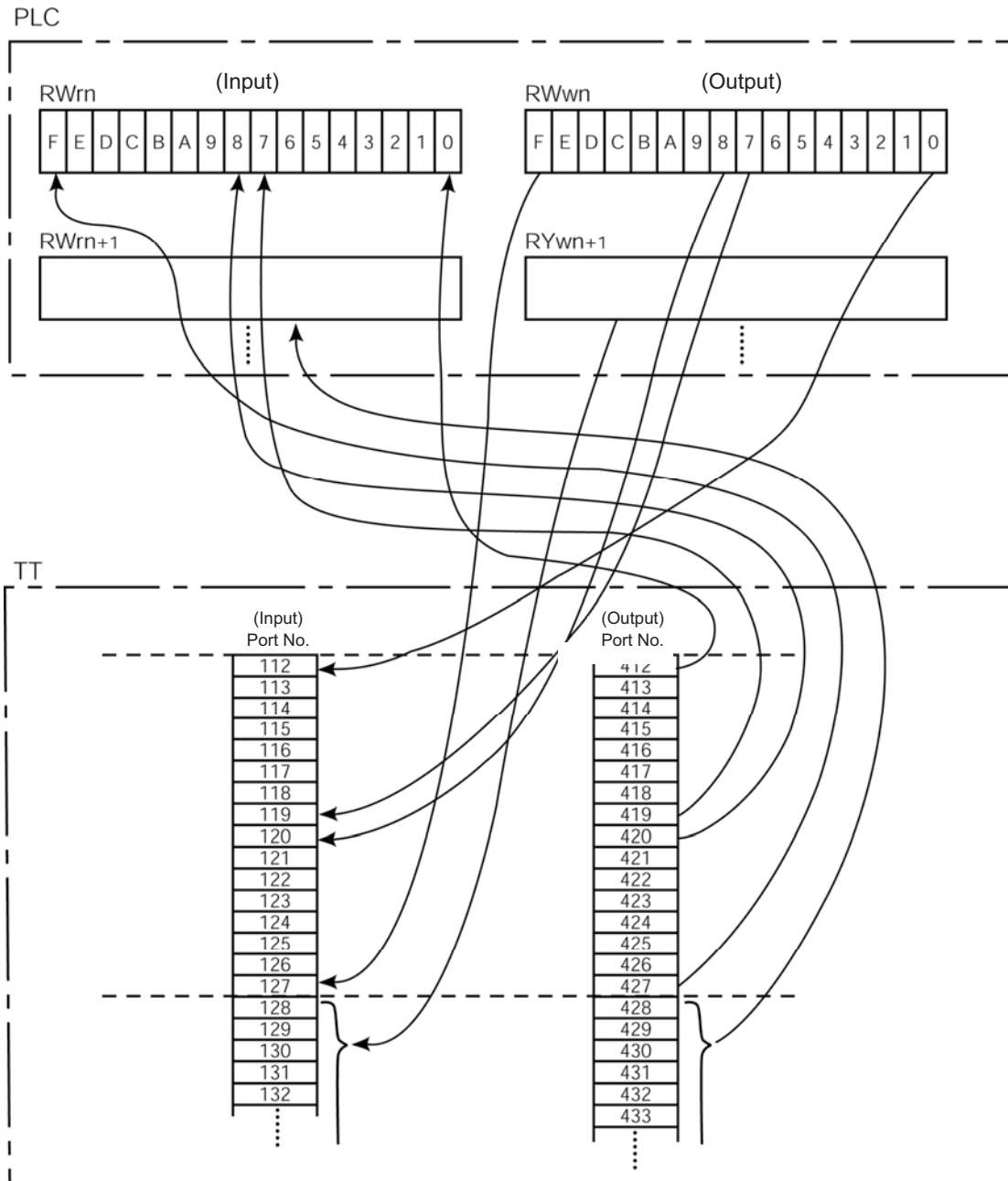
Xnn and Ynn are the remote I/O addresses in PLC that correspond to the station number.

The addresses of the remote I/O in PLC (RX and RY) are set to Xnn and Ynn. (Refer to "Section 9. Communication with Master Station.")

Reference

(2) Remote register

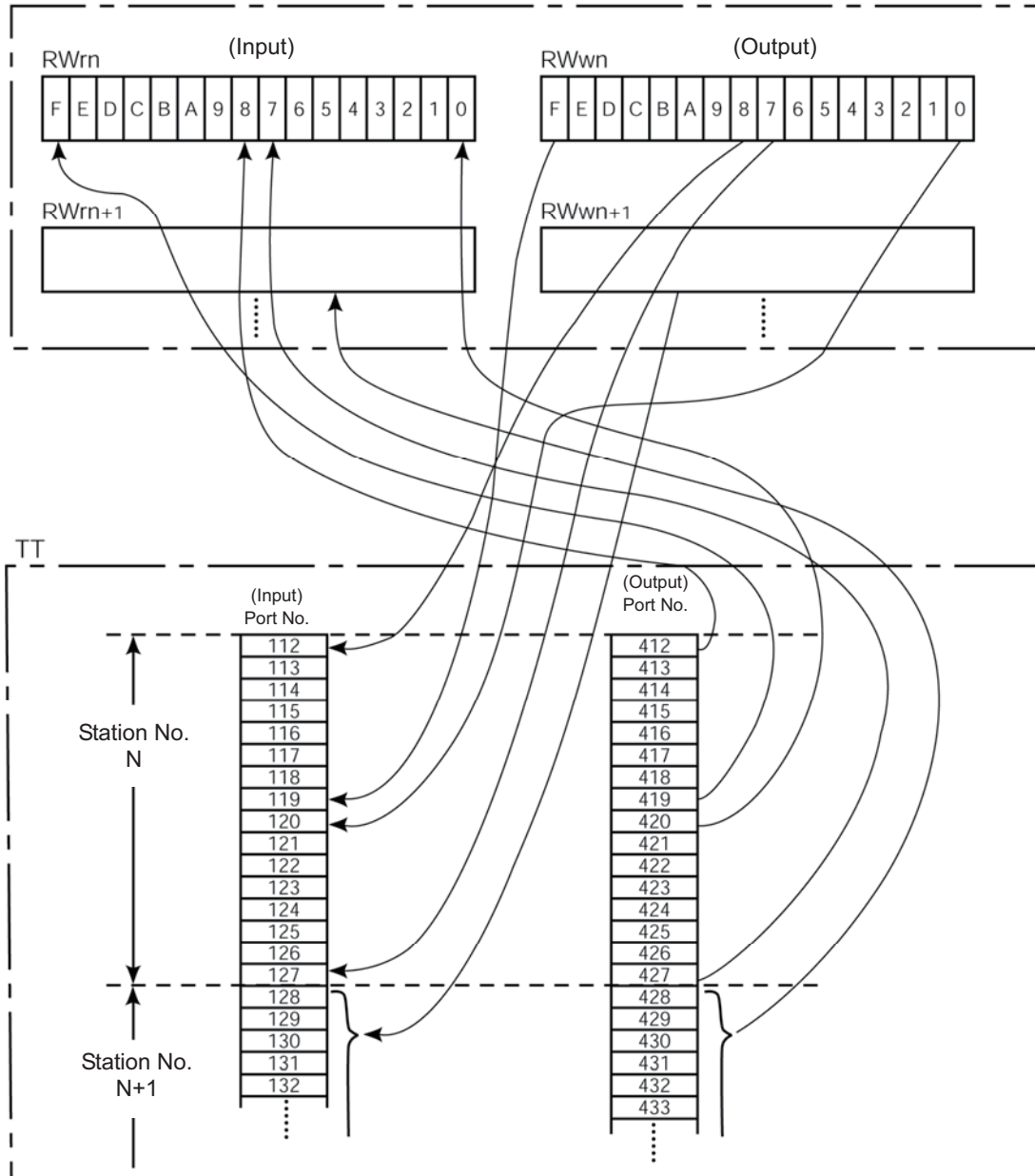
- a. When the I/O parameter No. 120 is set to "1"



RW_{rn} and RW_{wn} are the remote register addresses in PLC that correspond to the station number N.

Reference

- b. When the I/O parameter No. 120 is set to "0"
PLC



RWrm and RWwm are the remote register addresses in PLC that correspond to the station number.

The remote register is comprised of one word (16 bits), but the data order of the higher-order 8 bits (higher-order byte) and the lower-order 8 bits (lower-order byte) is reversed under this setting. Take caution.

Example
PLC → TT

PLC	Register D100	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
		●	●	●	●	○	○	○	○	●	○	○	○	○	○	○	●
	Data	F				0				8				1			
TT	Ports No. 112 to No. 127	127	126	125	124	123	122	121	120	119	118	117	116	115	114	113	112
		●	○	○	○	○	○	○	○	●	●	●	●	○	○	○	○
	Data	8				1				F				0			

4.7 CSP file

When using the GX Configurator-CC (manufactured by Mitsubishi Electric Corporation), download the CSP file from our Web site shown below if required.

Web site: <http://www.iai-robot.co.jp>

The CSP file to be used is different according to the number of ports used (number of I/O ports) set by the I/O parameters No. 14 and No. 15 of TT.

File name	Description	Number of ports used in TT (Number of I/O points)
HMS-ABS-CCL_1.csp	For one remote device (one station)	96 points or less each
HMS-ABS-CCL_2.csp	For one remote device (two stations)	112 points or more and 192 points or less each
HMS-ABS-CCL_3.csp	For one remote device (three stations)	208 points or more and 256 points or less each

For the setting method of the remote station (TT) information to the master station, refer to the Operation Manuals for the master station, PLC to be mounted, and peripherals.

4.8 Troubleshooting

When a problem occurs in the CC-Link, check the operating condition with the table below and remove the cause. When the ERR LED lights or flashes, or when the green LED turns off abnormally during communications, check (or reset) connections of the power and communications cable, and setting of rotary switches before turning on the power to the controller main unit again.

○: ON, ●: OFF, ◎: Flashing

RUN (Green)	ERR (Red)	SD (Green)	RD (Green)	Operating condition
○	◎	◎	○	There is normal communications, but a CRC* error sometimes occurs with noise.
○	0.4S◎	◎	○	Band rate or station number was changed from the band rate/station number setting for reset cancellation.
○	◎	◎	●	(Impossible condition)
○	◎	●	○	With the received data having a CRC* error, there can be no response.
○	◎	●	●	(Impossible condition)
○	●	◎	○	Normal communications
○	●	◎	●	(Impossible condition)
○	●	●	○	Local station address receiving data has not arrived.
○	●	●	●	(Impossible condition)
●	◎	◎	○	There is the polling response, but refresh receiving has a CRC* error.
●	◎	◎	●	(Impossible condition)
●	◎	●	○	Local station address receiving data has a CRC* error.
●	◎	●	●	(Impossible condition)
●	●	◎	○	There is no link start-up.
●	●	◎	●	(Impossible condition)
●	●	●	○	There is no local station address receiving data or it is impossible to receive such data with noise.
●	●	●	●	It is impossible to receive data as a result of disconnection, etc. The power is being shut off or H/W is being set.
●	○	●	○	The power is being shut off or H/W is being set.
●	○	●	●	The power is being shut off or H/W is being set.

*CRC: Cyclic Redundancy Check

Data error detection method frequently used in the case of synchronous transmission is adopted.

5. RCS-C and E-Con

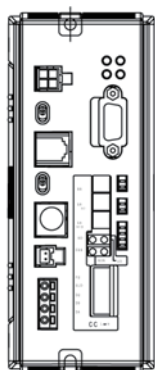
5.1 Models

The following shows the CC-Link compatible RCS-C and E-Con,

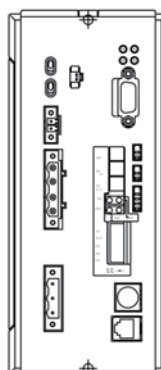
(1) RCS-C

Model: RCS-C-□-□□-CC-□-□-□

I/O numbers: Input only: 8 points, Output only: 10 points



24V type

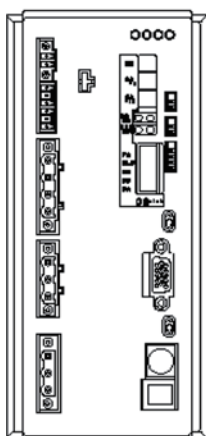


100V and 200V type

(2) E-Con

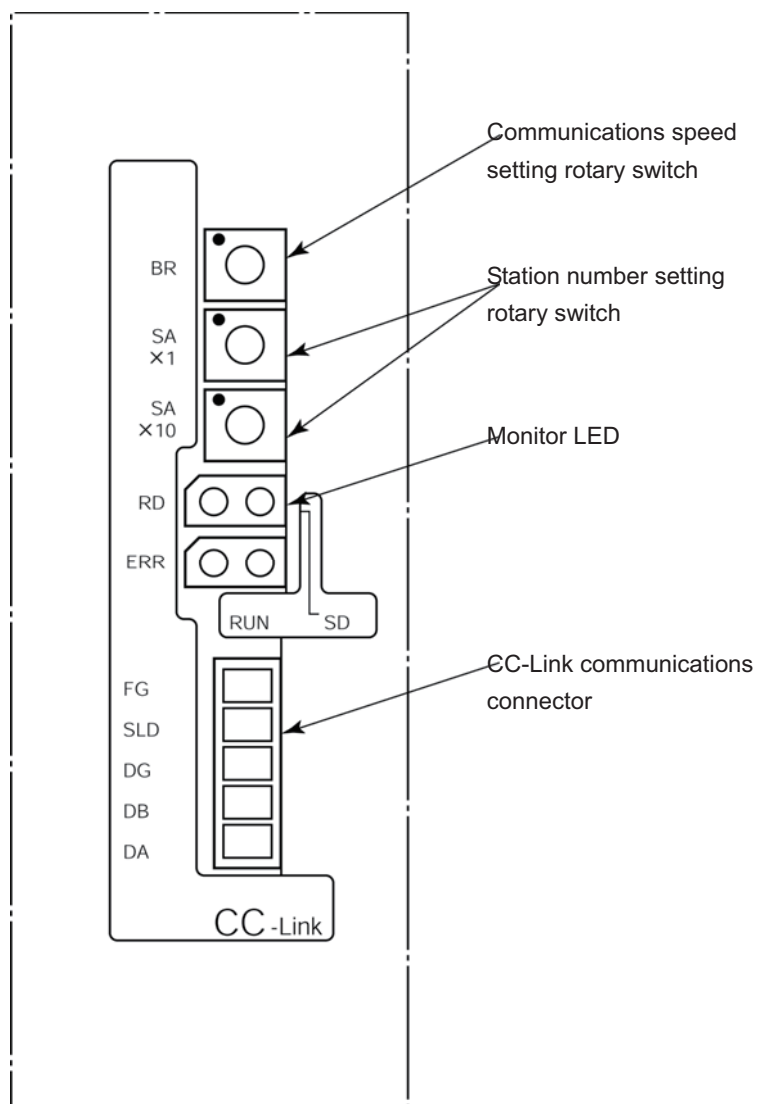
Model: Econ-□-□-CC-□-□-□

I/O numbers: Input only: 10 points, Output only: 12 points



5.2 CC-Link interface

(1) Names of each part



(2) Rotary switches

The following can be carried out by rotary switches:

- a. Setting of station number
- b. Setting of communications speed

a. Setting of station number

In the CC-Link only with remote I/O stations, up to 64 units can be connected.

The station number is set in the 1 to 64 range by the two rotary switches.

SA × 10: Sets the tens place.

SA × 1: Sets the ones place.

Rotary switch selection number	Station number	
	SA × 10	SA × 1
0	0	0
1	10	1
2	20	2
3	30	3
4	40	4
5	50	5
6	60	6
7	—	7
8	—	8
9	—	9

(Example) When setting the station number to 12:

Set the rotary switch SA × 10 to 1.

Set the rotary switch SA × 1 to 2.

(Note) The CC-Link first I/O address in PLC is determined according to the master unit installation position and the number of I/O occupied points of the unit installed prior to that.

The I/O addresses in PLC are assigned from the first I/O address above in order of station number.

When two or more CC-Link boards are used in X-SEL, it is recommended to set station numbers in order of installation position so that measures can be taken smoothly in the event of trouble.

For further information regarding setting of the station number and setting of the I/O address in the PLC, refer to the Operation Manuals for the master unit and PLC to be mounted.

b. Setting of communications speed

The communications speed is set by the rotary switch BR.

Rotary switch selection number	Communications speed
0	156 kbps
1	625 kbps
2	2.5 Mbps
3	5 Mbps
4	10 Mbps
Setting to 5 or more prohibited	Error

(3) Display of monitor LEDs

The four LEDs mounted on the front of the board can indicate the board operating state and network condition.

LED	Color	Display condition	Display details (display indication)
RUN	Green	Lighting	Lights when communications start and turns off when communications are interrupted for a fixed time or longer.
SD	Green	Lighting	Lights during data transmission
RD	Green	Lighting	Lights during data reception
ERR	Red	Lighting	Local station address receiving data has an error.
		Flashing	Setting by the communications speed setting rotary switch was changed during communications. Setting by the station number setting rotary switch was changed during communications.

5.3 Input and Output (I/O)

Input and output points for each RCS-C and E-Con are

(1) RCS-C Input only: 8 points, output only: 11 points

(2) E-Con Input only: 10 points, output only 13 points

For further information of each signal, please refer to the "Operation Manual of the RCS Series ROBO Cylinder Controller RCS-C type" and "Operation Manual of E-Con Controller."

(1) RCS-C signal assignment

Input port No.	Signal name	Output port No.	Signal name
0	Command position 1	0	Completion position 1
1	Command position 2	1	Completion position 2
2	Command position 4	2	Completion position 4
3	Command position 8	3	Completion position 8
4	Start	4	Positioning completion
5	Reset	5	Return to origin completion
6	Servo No.	6	*Zone
7	* Suspend	7	*Alarm
8	Unused	8	*Emergency stop
9	Unused	9	Traveling
10	Unused	10	*Battery alarm (Note 1)
11	Unused	11	Unused (Note 2)
12	Unused	12	Unused (Note 2)
13	Unused	13	Unused (Note 2)
14	Unused	14	Unused (Note 2)
15	Unused	15	Unused (Note 2)

* The asterisk indicates an always on signal.

(Note 1) These signals correspond to only controllers of the main power sources 100V and 200V.

In the case of 24V specification, ON/OFF is not determined.

(Note 2) In the unused areas, ON/OFF is not determined.

(2) E-Con signal assignment

Input port No.	Signal name	Output port No.	Signal name
0	Command position 1	0	Completion position 1
1	Command position 2	1	Completion position 2
2	Command position 4	2	Completion position 4
3	Command position 8	3	Completion position 8
4	Command position 16	4	Completion position 16
5	Command position 32	5	Completion position 32
6	Unused	6	Unused (Note 2)
7	Unused	7	Unused (Note 2)
8	Start	8	Positioning completed
9	Reset	9	Return to origin completed
10	Servo ON	10	Zone
11	Suspend	11	*Alarm
12	Unused	12	*Emergency stop
13	Unused	13	Traveling
14	Unused	14	*Battery alarm (Note 1)
15	Unused	15	Unused (Note 2)

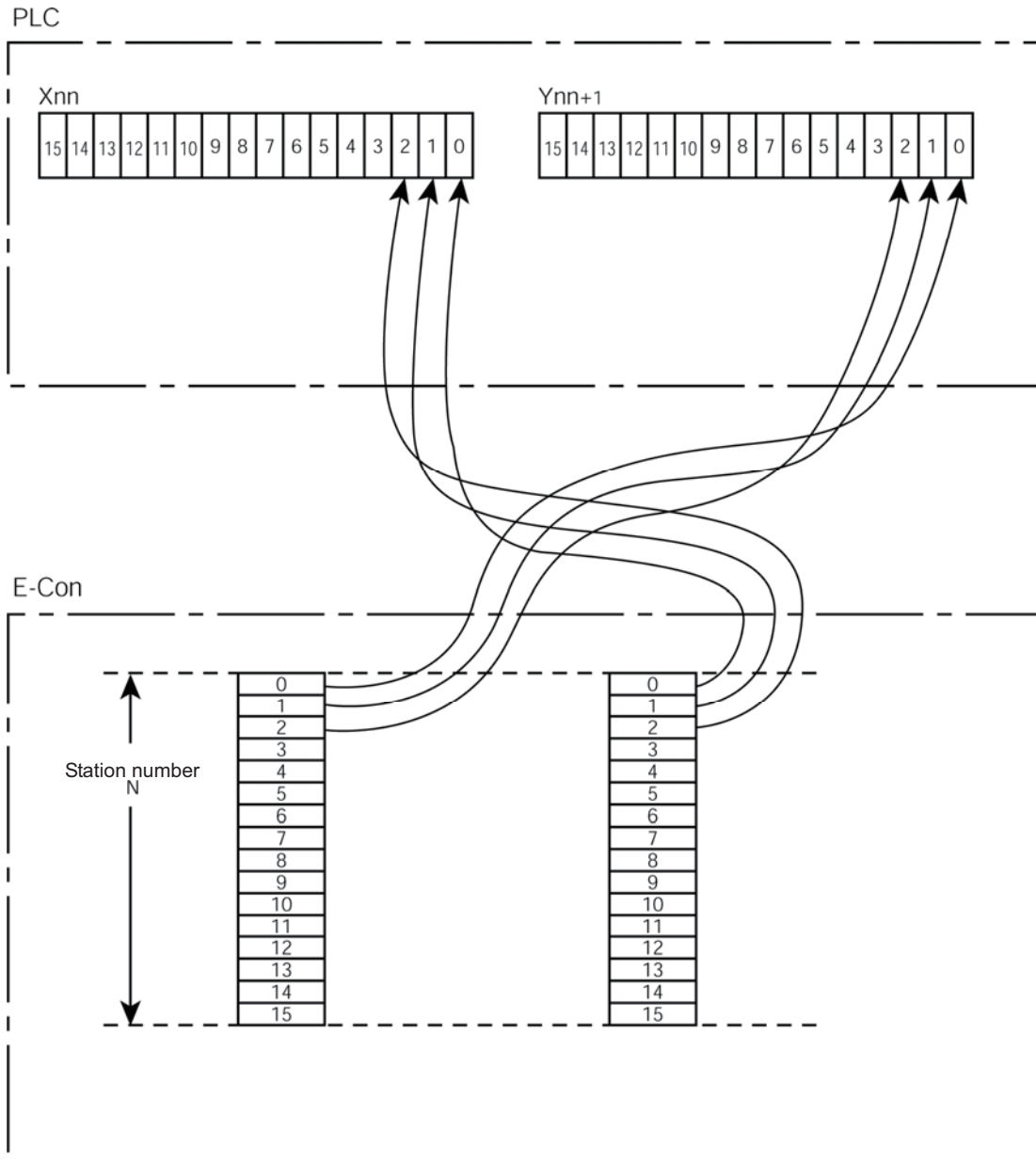
* The asterisk indicates an always on signal.

(Note 1) In the case of an incremental encoder, ON/OFF is not determined.

(Note 2) In the unused areas, ON/OFF is not determined.

Reference

For both RCS-C and E-Con, bit addresses in the PLC are assigned to the remote I/O addresses that correspond to the station number set by the rotary switch and the number of stations set by the PLC parameter, in order of port number.



Xnn and Ynn+1 are addresses in the PLC that correspond to the station number N.

Since 2-word (32-point) processing is made per station in the PLC, the PLC remote I/O (RX/RX) addresses are set to Xnn/Ynn+1.

(Refer to "Section 9. Communication with Master Station.")

5.4 Troubleshooting

When a problem occurs in the CC-Link, check the operating condition with the table below to remove the cause. When the ERR LED lights or flashes, or when the green LED turns off abnormally during communications, check (or reset) connections of the power and communications cables, setting of rotary switches, and setting of parameters before turning on the power to the controller main unit again.

○: ON, ●: OFF, ◎: Flashing

RUN (Green)	ERR (Red)	SD (Green)	RD (Green)	Operating condition
○	◎	◎	○	There is normal communications, but a CRC* error sometimes occurs with noise.
○	0.5s◎	◎	○	There are normal communications, but the baud rate or station setting switch malfunctions.
○	◎	◎	●	(Impossible condition)
○	◎	●	○	With the received data having a CRC* error, there can be no response.
○	◎	●	●	(Impossible condition)
○	●	◎	○	Normal communications
○	●	◎	●	(Impossible condition)
○	●	●	○	Local station address receiving data has not arrived.
○	●	●	●	(Impossible condition)
●	◎	◎	○	There is the polling response, but refresh receiving has a CRC* error.
●	◎	◎	●	(Impossible condition)
●	◎	●	○	Local station address receiving data has a CRC* error.
●	◎	●	●	(Impossible condition)
●	●	◎	○	There is no link start-up.
●	●	◎	●	(Impossible condition)
●	●	●	○	There is no local station address receiving data or it is impossible to receive such data with noise. (Data volume is insufficient transmitted from the master station.)
●	●	●	●	It is impossible to receive data as a result of disconnection, etc.
●	○	●	○, ●	The baud rate or station number is invalid.
●	●	●	●	There is a power interruption or there is a breakdown with the remote station power supply part.

*CRC: Cyclic Redundancy Check

Data error detection method frequently used in the case of synchronous transmission is adopted.

6. SCON-C



Caution: The SCON-CA is a remote device station and not interchangeable with the SCON-C (remote I/O station).

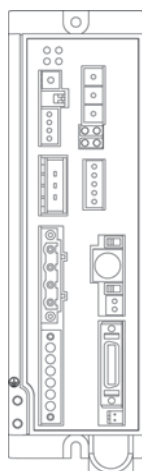
6.1 Models

The following figure shows a CC-Link compatible SCON-C.

SCON

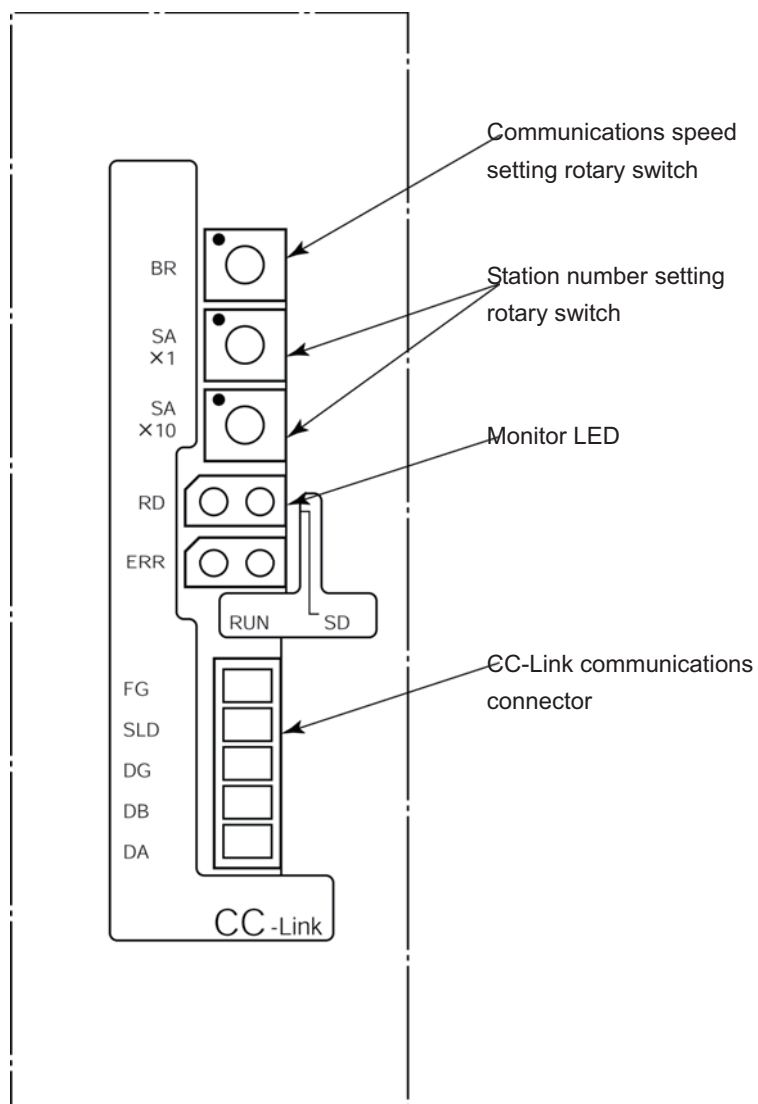
Model: SCON-C-□□-CC-□-□

Number of I/O points: Input only: 16 points/Output only: 16 points



6.2 CC-Link interface

(1) Names of each part



(2) Rotary switches

The following can be carried out by rotary switches:

- a. Setting of station number
- b. Setting of communications speed

a. Setting of station number

In the CC-Link only with remote I/O stations, up to 64 units can be connected.

The station number is set in the 1 to 64 range by the two rotary switches.

SA × 10: Sets the tens place.

SA × 1: Sets the ones place.

Rotary switch selection number	Station number	
	SA × 10	SA × 1
0	0	0
1	10	1
2	20	2
3	30	3
4	40	4
5	50	5
6	60	6
7	—	7
8	—	8
9	—	9

(Example) When setting the station number to 12:

Set the rotary switch SA × 10 to 1.

Set the rotary switch SA × 1 to 2.

(Note) The CC-Link first I/O address in PLC is determined according to the master unit installation position and the number of I/O occupied points of the unit installed prior to that.

The I/O addresses in PLC are assigned from the first I/O address above in order of station number.

For further information regarding setting of the station number and setting of the I/O address in the PLC, refer to the Operation Manuals for the master unit and PLC to be mounted.

b. Setting of communications speed

The communications speed is set by the rotary switch BR.

Rotary switch selection number	Communications speed
0	156 kbps
1	625 kbps
2	2.5 Mbps
3	5 Mbps
4	10 Mbps
Setting to 5 or more prohibited	Error

(3) Display of monitor LEDs

The four LEDs mounted on the front of the board can indicate the board operating state and network condition.

LED	Color	Display condition	Display details (display indication)
RUN	Green	Lighting	Lights when communications start and turns off when communications are interrupted for a fixed time or longer.
SD	Green	Lighting	Lights during data transmission
RD	Green	Lighting	Lights during data reception
ERR	Red	Lighting	Local station address receiving data has an error.
		Flashing	Setting by the communications speed setting rotary switch was changed during communications. Setting by the station number setting rotary switch was changed during communications.

6.3 I/O signal assignment

Number of I/O points for SCON:

Input only: 16 points, Output only: 16 points

The following table shows the detailed contents.

There are 6 patterns according to the setting of parameter No. 25 (PIO Pattern selection) of SCON.

For additional, for further information on each signal, refer to the "Operation Manual for SCON Controller."

		Parameter No. 25 setting					
		Positioning mode (Standard)		Teaching mode (Teaching type)		256 point mode (256 point type)	
		0		1		2	
Classification	Port No.	Signal Names	Symbol	Signal Names	Symbol	Signal Names	Symbol
Input	0	Command position No.	PC1	Command position No.	PC1	Command position No.	PC1
	1		PC2		PC2		PC2
	2		PC4		PC4		PC4
	3		PC8		PC8		PC8
	4		PC16		PC16		PC16
	5		PC32		PC32		PC32
	6	Unavailable	—	Teaching Mode Command (Operation Mode)	MODE	Unavailable	PC64
	7		—	Jog/Inching selection	JISL		PC128
	8		—	+Jog	JOG+		—
	9	Forced brake release	BKRL	-Jog	JOG-	Forced brake release	BKRL
	10	Operation mode	RMOD	Operation mode	RMOD	Operation mode	RMOD
	11	Return to origin	HOME	Return to origin	HOME	Return to origin	HOME
	12	*Suspend	*STP	Suspend	*STP	Suspend	*STP
	13	Positioning Start	CSTR	Positioning Start Position Data Import Command	CSTR/P WRT	Positioning Start	CSTR
	14	Reset	RES	Reset	RES	Reset	RES
	15	Servo ON Command	SON	Servo ON Command	SON	Servo ON Command	SON
Output	0	Completion position No.	PM1	Command position No.	PM1	Command position No.	PM1
	1		PM2		PM2		PM2
	2		PM4		PM4		PM4
	3		PM8		PM8		PM8
	4		PM16		PM16		PM16
	5		PM32		PM32		PM32
	6	Moving Signal	MOVE	Moving Signal	MOVE	Unavailable	PM64
	7	Zone 1	ZONE 1	Teaching mode Signal	MODES		PM128
	8	Position zone status	RMDS	Position zone status	RZONE		RZONE
	9	Operation Mode Status	RMOD	Operation Mode Status	RMDS	Operation Mode Status	RMDS
	10	Return to origin end	HEND	Return to origin end	HEND	Return to origin end	HEND
	11	Positioning end Signal	PEND	Positioning end Signal / Position Data Import Command	PEND/ WEND	Positioning end Signal	PEND
	12	Operation preparation end	SV	Operation preparation end	SV	Operation preparation end	SV
	13	Emergency stop	*EMGS	Emergency stop	*EMGS	Emergency stop	*EMGS
	14	Alarm	*ALM	Alarm	*ALM	Alarm	*ALM
	15	Battery alarm	*BALM	Battery alarm	*BALM	Battery alarm	*BALM

The symbol with a * mark shows the ON signal in normal condition.

The signal described as "Unavailable" is not controlled (ON/OFF is undefined).

In the case of the incremental encoder, the battery alarm is turned ON (fixed).

		Parameter No. 25 setting					
		512 point mode		Electromagnetic valve mode 1		Electromagnetic valve mode 2	
		3		4		5	
Classification	Port No.	Signal Names	Symbol	Signal Names	Symbol	Signal Names	Symbol
Input	0	Command position No.	PC1	Start position 0	ST0	Start position 0	ST0
	1		PC2	Start position 1	ST1	Start position 1	ST1
	2		PC4	Start position 2	ST2	Start position 2	ST0
	3		PC8	Start position 3	ST3	Unavailable	—
	4		PC16	Start position 4	ST4		—
	5		PC32	Start position 5	ST5		—
	6		PC64	Start position 6	ST6		—
	7		PC128	Unavailable	—		—
	8		PC256		—		—
	9	Forced brake release	BKRL	Forced brake release	BKRL	Forced brake release	BKRL
	10	Operation mode	RMOD	Operation mode	RMOD	Operation mode	RMOD
	11	Return to origin	HOME	Return to origin	HOME	Unavailable	—
	12	Suspend	*STP	Suspend	*STP		—
	13	Positioning Start	CSTR	Unavailable	—		—
	14	Reset	RES	Reset	RES	Reset	RES
	15	Servo ON Command	SON	Servo ON Command	SON	Servo ON Command	SON
Output	0	Completion position	PM1	Command position 0	PE0	Retracting end movement command 0	LS0
	1		PM2	Completion position 1	PE1	Retracting end movement command 1	LS1
	2		PM4	Completion position 2	PE2	Retracting end movement command 2	LS0
	3		PM8	Completion position 3	PE3	Unavailable	—
	4		PM16	Completion position 4	PE4		—
	5		PM32	Completion position 5	PE5		—
	6		PM64	Completion position 6	PE6		—
	7		PM128	Zone 1	ZONE1	Zone 1	ZONE1
	8		PM256	Position zone	PZONE	Position zone	PZONE
	9	Operation Mode Status	RMDS	Operation Mode Status	RMDS	Operation Mode Status	RMDS
	10	Return to origin end	HOME	Return to origin end	HEND	Return to origin end	HEND
	11	Positioning end Signal	PEND	Positioning end Signal	PEND	Unavailable	—
	12	Operation preparation end	SV	Operation preparation end	SV	Operation preparation end	SV
	13	Emergency stop	*EMGS	Emergency stop	*EMGS	Emergency stop	*EMGS
	14	Alarm	*ALM	Alarm	*ALM	Alarm	*ALM
	15	Battery alarm	*BALM	Battery alarm	*BALM	Battery alarm	*BALM

The symbol with a * mark shows the ON signal in normal condition.

The signal described as "Unavailable" is not controlled (ON/OFF is undefined).

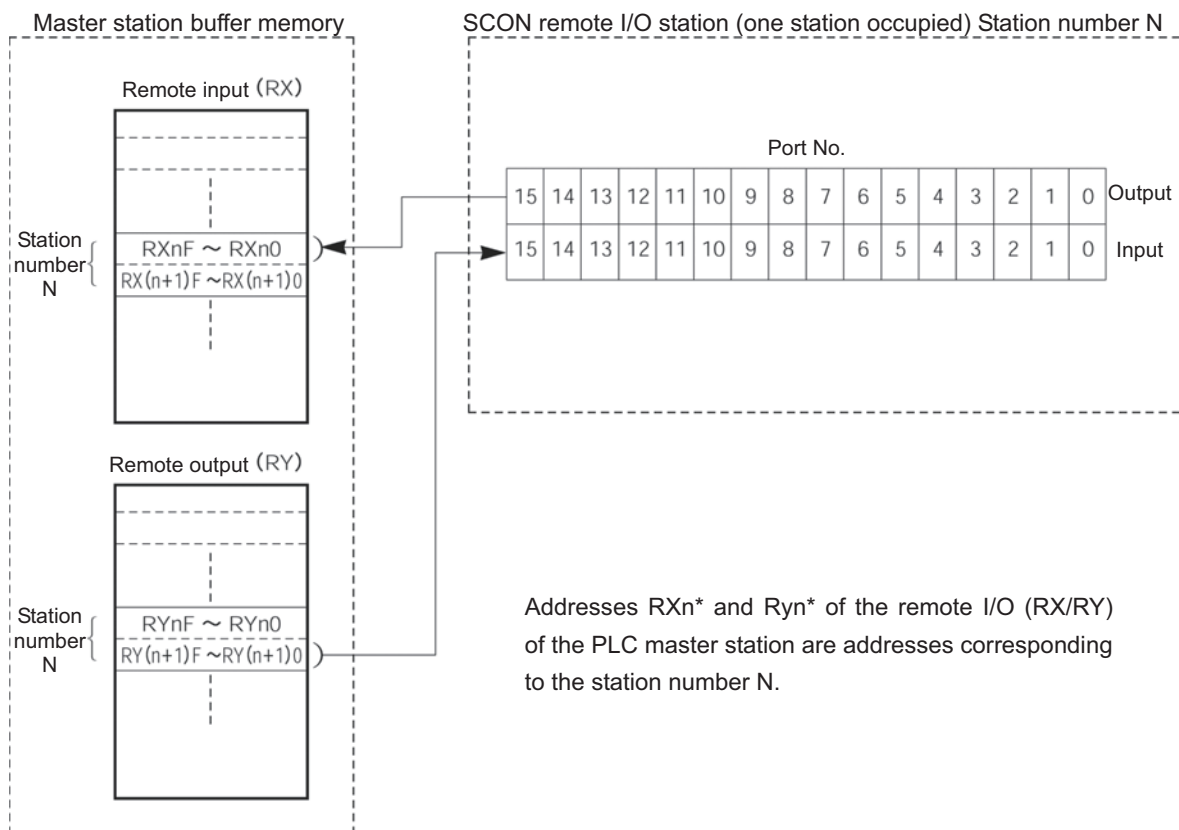
In the case of the incremental encoder, the battery alarm is turned ON (fixed).

6.4 CC-Link address assignment

SCON is a one remote I/O station (one station occupied) (two words for each input and output).

To which master station number the I/O ports of SCON is assigned is set by the rotary switch for setting the station number of SCON. Additionally, to which internal devices or addresses of PLC-CPU the buffer memory of the master station is assigned is set by the PLC network parameter. (Device name and first address)

I/O ports of SCON are assigned to the master station buffer memory of the set station number. These port numbers are assigned to the bit address of the master station buffer memory, respectively, in the order of the smallest first.



6. SCON-C



6.5 Troubleshooting

When a problem occurs in the CC-Link, check the operating condition with the table below to remove the cause. When the ERR LED lights or flashes, or when the green LED turns off abnormally during communications, check (or reset) connections of the power and communications cables, setting of rotary switches, and setting of parameters before turning on the power to the controller main unit again.

○: ON, ●: OFF, ◎: Flashing

RUN (Green)	ERR (Red)	SD (Green)	RD (Green)	Operating condition
○	◎	◎	○	There is normal communications, but a CRC* error sometimes occurs with noise.
○	0.5s◎	◎	○	There are normal communications, but the baud rate or station setting switch malfunctions.
○	◎	◎	●	(Impossible condition)
○	◎	●	○	With the received data having a CRC* error, there can be no response.
○	◎	●	●	(Impossible condition)
○	●	◎	○	Normal communications
○	●	◎	●	(Impossible condition)
○	●	●	○	Local station address receiving data has not arrived.
○	●	●	●	(Impossible condition)
●	◎	◎	○	There is the polling response, but refresh receiving has a CRC* error.
●	◎	◎	●	(Impossible condition)
●	◎	●	○	Local station address receiving data has a CRC* error.
●	◎	●	●	(Impossible condition)
●	●	◎	○	There is no link start-up.
●	●	◎	●	(Impossible condition)
●	●	●	○	There is no local station address receiving data or it is impossible to receive such data with noise. (Data volume is insufficient transmitted from the master station.)
●	●	●	●	It is impossible to receive data as a result of disconnection, etc.
●	○	●	○, ●	The baud rate or station number is invalid.
●	●	●	●	There is a power interruption or there is a breakdown with the remote station power supply part.

*CRC: Cyclic Redundancy Check

Data error detection method frequently used in the case of synchronous transmission is adopted.

7. ASEL, PSEL, SSEL

There are the following types of ASEL, PSEL, SSEL applicable to CC-Link.

Remote Device Station: No. of I/O points = Max. 256 points for each

7.1 Model No.

7.1.1 ASEL, PSEL

Each model No. of ASEL or PSEL applicable to the CC-Link is described as follows.

For 1-axis

ASEL-C-1-□-CC-□

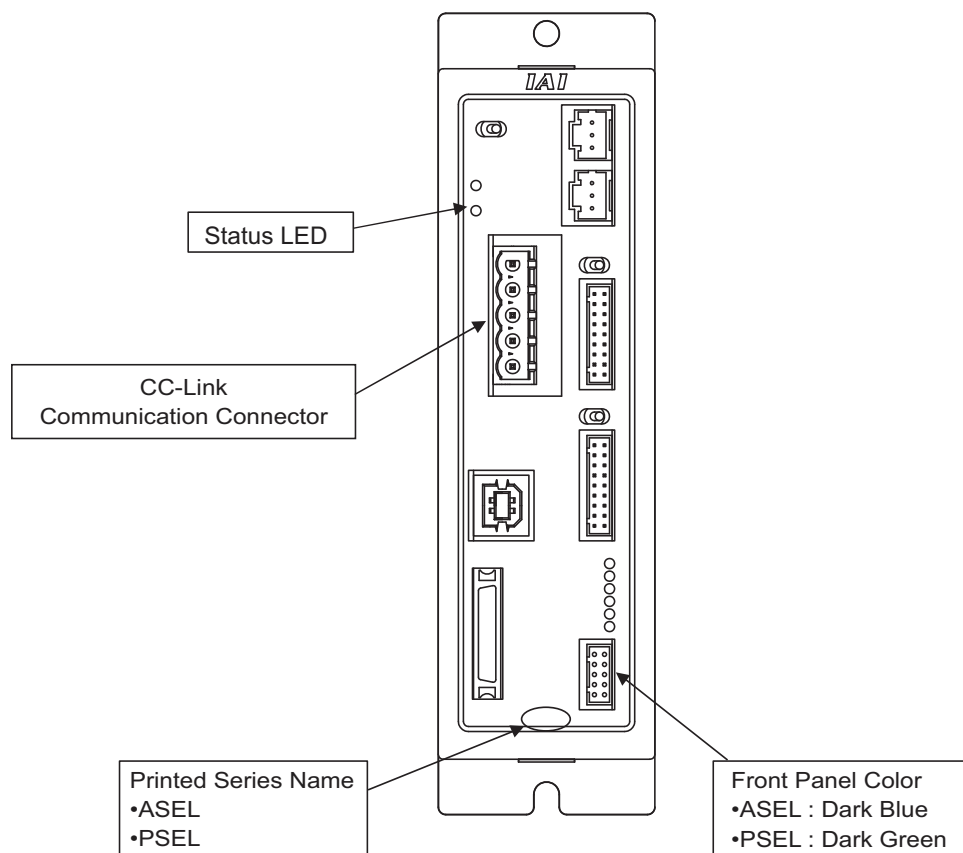
PSEL-C-1-□-CC-□

For 2-axis

ASEL-C-2-□-CC-□

PSEL-C-2-□-CC-□

External Dimensions



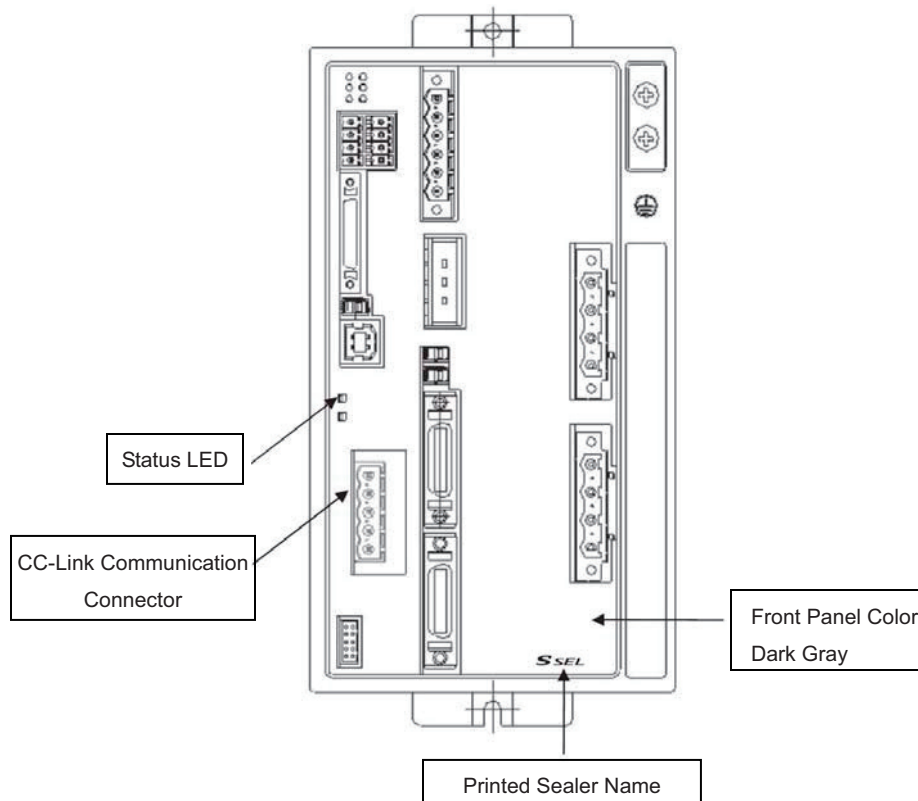
7.1.2 SSEL

There are the following types of SSEL applicable to CC-Link.

For 1-axis
SSEL-C-1-□-CC-□

For 2-axis
SSEL-C-2-□-CC-□

External Dimensions

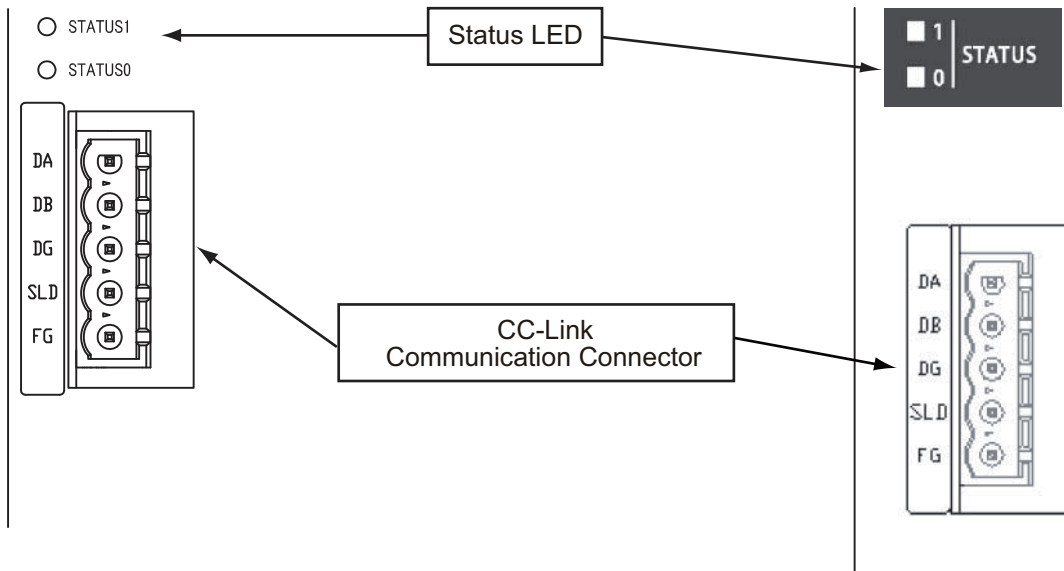


7.2 CC-Link Interface

(1) Names of the Parts

● ASEL, PSEL

● SSEL



(2) Status LED Indication

The CC-Link board operation status and network status can be obtained using the two LEDs located on the front surface of the controller.

STATUS 0 LED: CC-Link Communication Status Indication

STATUS 1 LED: CC-Link Communication Setting Error/Communication Error Indication

LED	Color	Indication Status	Indication Description (Meaning)
STATUS1	OR	Illuminating	An error occurs. CRC Error/Station No. Setting Error/Baud Rate Setting Error
		OFF	Normal Communication or Under Reset Operation
		Flashing	The station No. and baud rate set values are changed from ones set at the time of reset cancellation (0.4 sec flashing)
STATUS0	GN	Illuminating	Normal Refresh & Polling Signal Receipt or Normal Refresh Signal Receipt, after the Network Subscription.
		OFF	Before Network Subscription, Channel Carrier Detection Error Timer Over or Under Reset Operation
		Flashing	—

Note: When the power is injected, the STATUS 1 LED illuminates, which does not mean abnormal.

When the CC-Link communication setting has been performed correctly, the STATUS 1 LED is turned OFF.

7.3 I/O Parameter Setting

Using the I/O parameters, set the Station No., Communication Speed, and I/O port, etc., for ASEL, PSEL or SSEL used in the CC-Link.

(1) Network Type Setting

The I/O Parameter No. 225 "Network I/F Module Control" has been set to "1H" (CC-Link) when the unit is delivered. (The setting is not necessary)

(2) Station No. Setting

Using the I/O parameter No.226 "Network I/F Module Communication Attribute 1", set the station No. The setting range is from 1 to 64. (Already set in system delivery: 1)

Note: When any of the already occupied stations is set to "No. 0" or "No. 65 or larger", the "D75: Field Bus Parameter Error" occurs.

(3) Communication Speed Setting

By selecting one of "Bit 0" through "Bit 3" for the parameter No.227 "Network I/F Module Communication Attribute 2", set the Communication Speed. The setting range is from 0H to 4H.

I/O Parameter No.227 Setting value	Communication Speed [bps]
0	156 K
1	625 K
2	2.5 M
3	5 M
4	10 M
(Already set in system delivery)	

(Note) Set the Communication Speed based on that set for the Master Station.

(4) I/O Port Allocation

Using the following I/O parameters, set the physical I/O port quantity and port allocation for ASEL, PSEL or SSEL, used on the CC-Link system.

No. 1: I/O Port Allocation Type	} Refere to "7.4" Item.
No. 14: No. of Network I/F Module Remote Input Ports	
No. 15: No. of Network I/F Module Remove Output Ports	
No. 16: Network I/F Module Fix-Allocated Input Port Start No.	
No. 17: Network I/F Module Fix-Allocated Output Port Start No.	

Refer to "ASEL, PSEL and SSEL Network Related I/O Parameter List" in the next page for more information.

(Note) In the ASEL, PSEL and SSLE controller, the following I/O parameters are disabled during the use of the CC-Link module. Even the setting is performed for such parameters, there is no influence on the No. of ports to be used in the CC-Link or allocated Port No.

- No. 2: Standard I/O Fix-Allocated Input Port Start No. (1/O1)
- No. 3: Standard I/O Fix-Allocated Output Port Start No. (1/O1)
- No. 10: Standard I/O Error Monitoring

(5) Network Error Monitoring

"Monitoring/Non monitoring" is set using the I/O parameter No. 18 "Network I/F Module Error Monitoring". The error confirmation time is set using the "Bit 4" through "Bit 11" for the I/O parameter No. 120 "Network Attribute 1". When the network link error is continued more than the time set for parameter No. 120, it is regarded as a system error.

Refer to "ASEL, PSEL and SSEL Network Related I/O Parameter List" in the next page for more information.

ASEL, PSEL and SSEL Network Related I/O Parameter List

No.	Parameter Name	Set Value in Unit Delivery	Input Range	Remarks
1	I/O Port Allocation Type	0	0 – 20	0: Fixed Allocation 1: Automatic Allocation
14	No. of Network I/F Module Remote Input Ports	128	0 – 256	Multiples of 8
15	No. of Network I/F Module Remote Output Ports	128	0 – 256	Multiples of 8
16	Input Port Start No. in Network I/F Module Fix-Allocation	0	-1 – 599	0 + (Multiples of 8) (Unavailable when it is negative figure)
17	Output Port Start No. in Network I/F Module Fix-Allocation	300	-1 – 599	300 + (Multiples of 8) (Unavailable when it is negative figure)
18	Network I/F Module Error Monitoring	1	0 – 5	0: Non Monitoring 1: Monitoring * When a network link error continues for more than the network link error confirmation timer set value, it is regarded as a system error. (Refer to I/O parameter No. 120). * There are some exceptions
120	Network Attribute 1	1H	0H – FFFFFFFFH	Bit 0 to 3: System Reservation Bit 4 to 11: Network Link Error Confirmation Timer Value (Setting Units of 10 msec) Only when I/O Parameter No. 18 is set to "1H", it is available. (Example) When the set value (Bit 4 to 11) is "05H", the timer time value becomes "10 ms x 5 = 5ms". Also, when the set value is "0H", the network link error occurs and it is regarded as a system error.
225	Network I/F Module Control	1H	For reference only	Bit 0 to 3: Network I/F Module Type (0: Not Mounted, 1: CC-Link Module, 2: DeviceNet Module)
226	Network I/F Module Communication Attribute 1	1	0 – 999	Network I/F Module Node Address * In the case of CC-Link Module: 1 to 64
227	Network I/F Module Communication Attribute 2	4H	0H – FFFFFFFFH	Bit 0 to 3: Network I/F Module Baud Rate Type In the case of CC-Link Module: (0: 156Kbps, 1: 625Kbps, 2: 2.5Mbps, 3: 5Mbps, 4: 10Mbps)

7.4 I/O Port Nos. and Corresponding PLC Addresses

In PLC, ASEL, PSEL or SSEL CC-Link board is set as the remote device station. The number of occupied remote device stations varies, depending on the I/O point setting on the ASEL, PSEL and SSEL side.


The following table shows the example when I/O parameter No. 1 is set to "0", No. 16 to "0" and No. 17 to "300" in the program mode. This shows the relationship between the I/O port Nos. decided by means of the setting of I/O parameter No. 14 and No. 15, and the PLC addresses. The last one word for the occupied remote I/O shows the system domain for the remote device station, so the corresponding ports can not be used as the I/O ports.

Note: Take whichever is the larger of the point values for I/O Parameter No. 14 and No. 15 and set that same value for both for No. 14 and No. 15.

(1) In the case that the I/O Point Setting is up to 96 points:

They are configured as a single remote device (No. of Occupied Stations: One Station)


I/O Parameter		DI on the ASEL, PSEL and SSEL Side (Port Nos.)	PLC Side		DO on the ASEL, PSEL and SSEL Side (Port No.)	PLC Side	
No.14	No.15						
16	16	000 – 015	RY	0 – F	300 – 315	RX	0 – F
32	32	016 – 031	RY	10 – 1F	316 – 331	RX	10 – 1F
48	48	032 – 047	RWw0		332 – 347	RWr0	
64	64	048 – 063	RWw1		348 – 363	RWr1	
80	80	064 – 079	RWw2		364 – 379	RWr2	
96	96	080 – 095	RWw3		380 – 395	RWr3	

*  The ports in gray column show the system domain for the remote device station on the PLC side, so any of them can not be used as an I/O port.

(2) In the case that I/O Points setting is larger than 112 and smaller than 192 points:

They are configured as two remote devices (No. of Occupied Stations: Two Stations)


I/O Parameter		DI on the ASEL, PSEL and SSEL Side (Port Nos.)	PLC Side		DO on the ASEL, PSEL and SSEL Side (Port No.)	PLC Side	
No.14	No.15						
(16)	(16)	000 – 015	RY	0 – F	300 – 315	RX	0 – F
(32)	(32)	016 – 031	RY	10 – 1F	316 – 331	RX	10 – 1F
(48)	(48)	032 – 047	RY	20 – 2F	332 – 347	RX	20 – 2F
(64)	(64)	048 – 063	RY	30 – 3F	348 – 363	RX	30 – 3F
(80)	(80)	064 – 079	RWw0		364 – 379	RWr0	
(96)	(96)	080 – 095	RWw1		380 – 395	RWr1	
112	112	096 – 111	RWw2		396 – 411	RWr2	
128	128	112 – 127	RWw3		412 – 427	RWr3	
144	144	128 – 143	RWw4		428 – 443	RWr4	
160	160	144 – 159	RWw5		444 – 459	RWr5	
176	176	160 – 175	RWw6		460 – 475	RWr6	
192	192	176 – 191	RWw7		476 – 491	RWr7	

*  The ports in gray column show the system domain for the remote device station on the PLC side, so any of them can not be used as an I/O port.

(3) In the case that I/O Points setting is larger than 208 and smaller than 256 points:

They are configured as three remote devices (No. of Occupied Stations: Three Stations)

I/O Parameter		DI on the ASEL, PSEL and SSEL Side	PLC Side		DO on the ASEL, PSEL and SSEL Side	PLC Side	
No.14	No.15						
(16)	(16)	000 – 015	RY	0 – F	300 – 315	RX	0 – F
(32)	(32)	016 – 031	RY	10 – 1F	316 – 331	RX	10 – 1F
(48)	(48)	032 – 047	RY	20 – 2F	332 – 347	RX	20 – 2F
(64)	(64)	048 – 063	RY	30 – 3F	348 – 363	RX	30 – 3F
(80)	(80)	064 – 079	RY	40 – 4F	364 – 379	RY	40 – 4F
(96)	(96)	080 – 095	RY	50 – 5F	380 – 395	RY	50 – 5F
(112)	(112)	096 – 111	RWw0		396 – 411	RWr0	
(128)	(128)	112 – 127	RWw1		412 – 427	RWr1	
(144)	(144)	128 – 143	RWw2		428 – 443	RWr2	
(160)	(160)	144 – 159	RWw3		444 – 459	RWr3	
(176)	(176)	160 – 175	RWw4		460 – 475	RWr4	
(192)	(192)	176 – 191	RWw5		476 – 491	RWr5	
208	208	192 – 207	RWw6		492 – 507	RWw6	
224	224	208 – 223	RWw7		508 – 523	RWw7	
240	240	224 – 239	RWw8		524 – 539	RWw8	
256	256	240 – 255	RWw9		540 – 555	RWw9	
Impossible setting		—	RWwA		—	RWrA	
Impossible setting		—	RWwB		—	RWwB	

*  The ports in gray column show the system domain for the remote device station on the PLC side, so any of them can not be used as an I/O port.

* In the case of three occupied stations, 12 words for each input and output are allocated for the data register on the PLC side (10 words for ASEL, PSEL and SSEL). Take care of the duplicated use of the data registers on the PLC side.

(4) In the case of using it in the SSEL Positioner Mode:

Regardless of the settings for the I/O parameter No. 1, No. 16 and No. 17, the Nos. starting from “0” are allocated to the physical input ports and Nos. starting from “300” to the physical output ports.

Then, the Input Port No. 0 to No. 23 and Output Port No. 300 to No. 30 are used as in the I/O Port Table for Each Controller described from the next page.

At that time, make sure to set the values for the I/O parameter No. 14 and No. 15 to “104” or larger.

- * When the values for the I/O parameter No. 14 and No. 15 are set to “96” or smaller, because the Input Port No. 16 to No. 31 and Output Port No. 316 to No. 331 are within the remote device station system domain as shown in Item (1), the positioner mode is not available.
- * When the values for the I/O parameter No. 14 and No. 15 are set to “104” or larger, because the Input Port No. 16 to No. 23 are not within the remote device station system domain as shown in Items (2) and (3), the positioner mode is available.

ASEL Positioner Mode I/O Port Table

Classification	Port No.	Positioner Mode				
		Standard mode	Type Change Mode	2-axis Independent Mode	Teaching Mode	DC-S-C1 Compatible Mode
Input	16	Position Input 10	Input 10	Position Input 7	First Axis Jog -	Position No.1000 Input
	17	Position Input 11	Input 11	Position Input 8	Second Axis Jog +	—
	18	Position Input 12	Input 12	Position Input 9	Second Axis Jog -	—
	19	Position Input 13	Input 13	Position Input 10	Inching (0.01mm)	—
	20	—	Input 14	Position Input 11	Inching (0.1mm)	—
	21	—	Input 15	Position Input 12	Inching (0.5mm)	—
	22	—	Input 16	Position Input 13	Inching (1mm)	—
	23	Error Reset	Error Reset	Error Reset	Error Reset	CPU Reset
	0	Start	Start	First Axis Start	Start	Start
	1	Return to origin	Return to origin	Return to origin	Servo ON	Suspend
	2	Servo ON	Servo ON	First Axis Servo ON	* Suspend	Cancel
	3	Pressing	Pressing	* First Axis Suspend	Position Input 1	Interpolation Setting
	4	* Suspend	* Suspend	* First Axis Cancel	Position Input 2	Position No.1 Input
	5	* Cancel	* Cancel	Second Axis Start	Position Input 3	Position No.2 Input
	6	Interpolation	Interpolation	Second Axis return to origin	Position Input 4	Position No.4 Input
	7	Position Input 1	Input 1	Second Axis Servo ON	Position Input 5	Position No.8 Input
	8	Position Input 2	Input 2	* Second Axis Suspend	Position Input 6	Position No.10 Input
	9	Position Input 3	Input 3	* Second Axis Cancel	Position Input 7	Position No.20 Input
	10	Position Input 4	Input 4	Position Input 1	Position Input 8	Position No.40 Input
	11	Position Input 5	Input 5	Position Input 2	Position Input 9	Position No.80 Input
	12	Position Input 6	Input 6	Position Input 3	Position Input 10	Position No.100 Input
	13	Position Input 7	Input 7	Position Input 4	Position Input 11	Position No.200 Input
	14	Position Input 8	Input 8	Position Input 5	Teaching Mode setup	Position No.400 Input
	15	Position Input 9	Input 9	Position Input 6	First Axis Jog +	Position No.800 Input
Output	300	* Alarm	* Alarm	* Alarm	* Alarm	Alarm
	301	Ready	Ready	Ready	Ready	Ready
	302	Positioning end	Positioning end	First Axis Positioning end	Positioning end	Positioning end
	303	Return to origin end	Return to origin end	First Axis Return to origin end	Return to origin end	—
	304	Servo ON Output	Servo ON Output	First Axis Servo ON	Servo ON Output	—
	305	Pressing end	Pressing end	Second Axis Positioning end		—
	306	System Battery Error	System Battery Error	Second Axis Return to origin end	System Battery Error	System Battery Error
	307	Absolute Battery Error	Absolute Battery Error	Second Axis Servo ON	Absolute Battery Error	Absolute Battery Error

* B Contact

PSEL Positioner Mode I/O Port Table

Classification	Port No.	Positioner Mode				
		Standard mode	Type Change Mode	2-axis Independent Mode	Teaching Mode	DC-S-C1 Compatible Mode
Input	16	Position Input 10	Input 10	Position Input 7	First Axis Jog -	Position No.1000 Input
	17	Position Input 11	Input 11	Position Input 8	Second Axis Jog +	—
	18	Position Input 12	Input 12	Position Input 9	Second Axis Jog -	—
	19	Position Input 13	Input 13	Position Input 10	Inching (0.01mm)	—
	20	—	Input 14	Position Input 11	Inching (0.1mm)	—
	21	—	Input 15	Position Input 12	Inching (0.5mm)	—
	22	—	Input 16	Position Input 13	Inching (1mm)	—
	23	Error Reset	Error Reset	Error Reset	Error Reset	CPU Reset
	0	Start	Start	First Axis Start	Start	Start
	1	Return to origin	Return to origin	Return to origin	Servo ON	Suspend
	2	Servo ON	Servo ON	First Axis Servo ON	* Suspend	Cancel
	3	Pressing	Pressing	* First Axis Suspend	Position Input 1	Interpolation Setting
	4	* Suspend	* Suspend	* First Axis Cancel	Position Input 2	Position No.1 Input
	5	* Cancel	* Cancel	Second Axis Start	Position Input 3	Position No.2 Input
	6	Interpolation	Interpolation	Second Axis return to origin	Position Input 4	Position No.4 Input
	7	Position Input 1	Input 1	Second Axis Servo ON	Position Input 5	Position No.8 Input
	8	Position Input 2	Input 2	* Second Axis Suspend	Position Input 6	Position No.10 Input
	9	Position Input 3	Input 3	* Second Axis Cancel	Position Input 7	Position No.20 Input
	10	Position Input 4	Input 4	Position Input 1	Position Input 8	Position No.40 Input
	11	Position Input 5	Input 5	Position Input 2	Position Input 9	Position No.80 Input
	12	Position Input 6	Input 6	Position Input 3	Position Input 10	Position No.100 Input
	13	Position Input 7	Input 7	Position Input 4	Position Input 11	Position No.200 Input
	14	Position Input 8	Input 8	Position Input 5	Teaching Mode setup	Position No.400 Input
	15	Position Input 9	Input 9	Position Input 6	First Axis Jog +	Position No.800 Input
Output	300	* Alarm	* Alarm	* Alarm	* Alarm	Alarm
	301	Ready	Ready	Ready	Ready	Ready
	302	Positioning end	Positioning end	First Axis Positioning end	Positioning end	Positioning end
	303	Return to origin end	Return to origin end	First Axis Return to origin end	Return to origin end	—
	304	Servo ON Output	Servo ON Output	First Axis Servo ON	Servo ON Output	—
	305	Pressing end	Pressing end	Second Axis Positioning end		—
	306	System Battery Error	System Battery Error	Second Axis Return to origin end	System Battery Error	System Battery Error
	307	—	—	Second Axis Servo ON	—	—

* B Contact

SSEL Positioner Mode I/O Port Table

Classification	Port No.	Positioner Mode				
		Standard mode	Type Change Mode	2-axis Independent Mode	Teaching Mode	DC-S-C1 Compatible Mode
Input	16	Position Input 10	Input 10	Position Input 7	First Axis Jog -	Position No.1000 Input
	17	Position Input 11	Input 11	Position Input 8	Second Axis Jog +	Position No.2000 Input
	18	Position Input 12	Input 12	Position Input 9	Second Axis Jog -	Position No.4000 Input
	19	Position Input 13	Input 13	Position Input 10	Inching (0.01mm)	Position No.8000 Input
	20	Position Input 14	Input 14	Position Input 11	Inching (0.1mm)	Position No.10000 Input
	21	Position Input 15	Input 15	Position Input 12	Inching (0.5mm)	Position No.20000 Input
	22	Position Input 16	Input 16	Position Input 13	Inching (1mm)	Position No.40000 Input
	23	Error Reset	Error Reset	Error Reset	Error Reset	CPU Reset
	0	Start	Start	First Axis Start	Start	Start
	1	Return to origin	Return to origin	Return to origin	Servo ON	Suspend
	2	Servo ON	Servo ON	First Axis Servo ON	* Suspend	Cancel
	3	Pressing	Pressing	* First Axis Suspend	Position Input 1	Interpolation Setting
	4	* Suspend	* Suspend	* First Axis Cancel	Position Input 2	Position No.1 Input
	5	* Cancel	* Cancel	Second Axis Start	Position Input 3	Position No.2 Input
	6	Interpolation	Interpolation	Second Axis return to origin	Position Input 4	Position No.4 Input
	7	Position Input 1	Input 1	Second Axis Servo ON	Position Input 5	Position No.8 Input
	8	Position Input 2	Input 2	* Second Axis Suspend	Position Input 6	Position No.10 Input
	9	Position Input 3	Input 3	* Second Axis Cancel	Position Input 7	Position No.20 Input
	10	Position Input 4	Input 4	Position Input 1	Position Input 8	Position No.40 Input
	11	Position Input 5	Input 5	Position Input 2	Position Input 9	Position No.80 Input
	12	Position Input 6	Input 6	Position Input 3	Position Input 10	Position No.100 Input
	13	Position Input 7	Input 7	Position Input 4	Position Input 11	Position No.200 Input
	14	Position Input 8	Input 8	Position Input 5	Teaching Mode setup	Position No.400 Input
	15	Position Input 9	Input 9	Position Input 6	First Axis Jog +	Position No.800 Input
Output	300	* Alarm	* Alarm	* Alarm	* Alarm	Alarm
	301	Ready	Ready	Ready	Ready	Ready
	302	Positioning end	Positioning end	First Axis Positioning end	Positioning end	Positioning end
	303	Return to origin end	Return to origin end	First Axis Return to origin end	Return to origin end	—
	304	Servo ON Output	Servo ON Output	First Axis Servo ON	Servo ON Output	—
	305	Pressing end	Pressing end	Second Axis Positioning end		—
	306	System Battery Error	System Battery Error	Second Axis Return to origin end	System Battery Error	System Battery Error
	307	Absolute Battery Error	Absolute Battery Error	Second Axis Servo ON	Absolute Battery Error	Absolute Battery Error

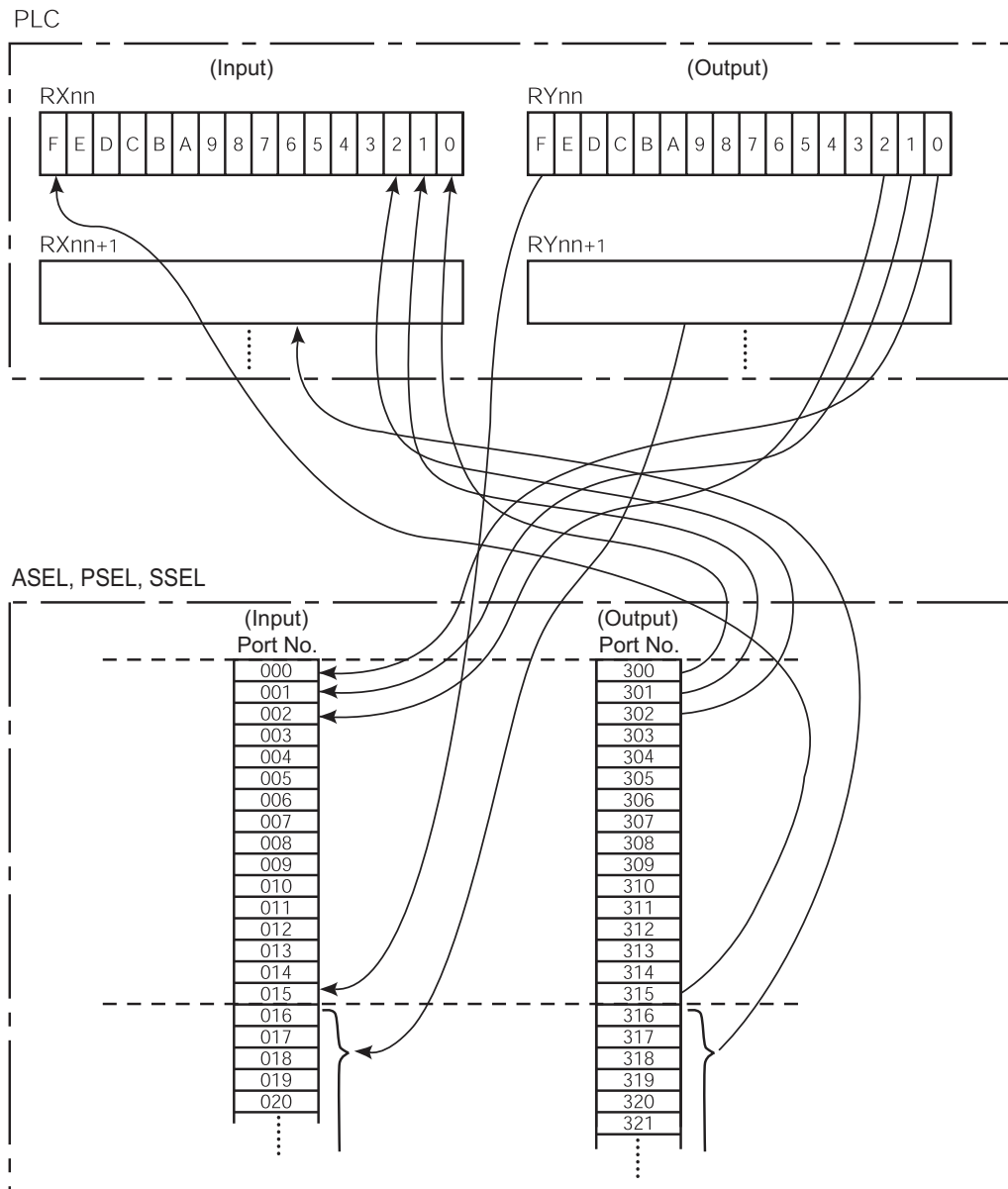
* B Contact

Reference

■ In the case that the setting for the I/O Point is 112 points or larger and 192 points or smaller:

The addresses in the PLC, are allocated in the order of port No., to the remote I/O addresses and remote register corresponding to the set station No. and the No. of occupied stations set using the PLC parameters.

(1) Remote I/O



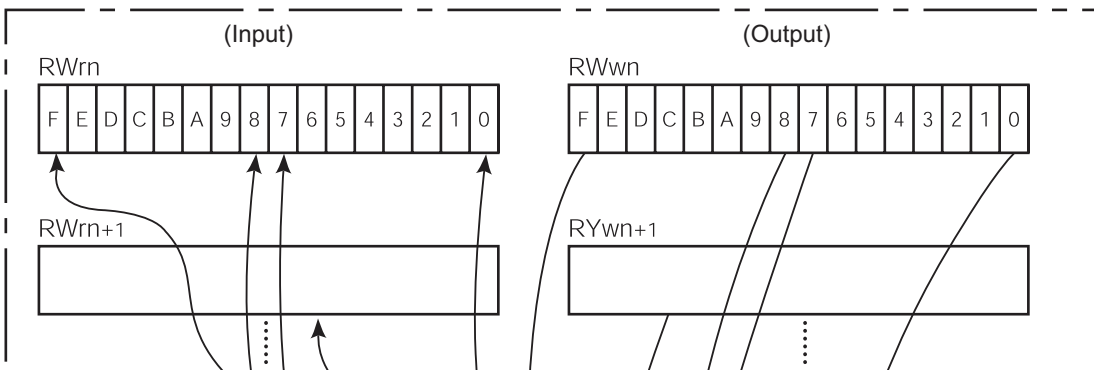
Xnn/Ynn shows the remote I/O address in the PLC corresponding to the station No.

The addresses for the PLC remote I/O (RX/RX) are set as Xnn/Ynn. (Refer to "9. Communication with the Master Station").

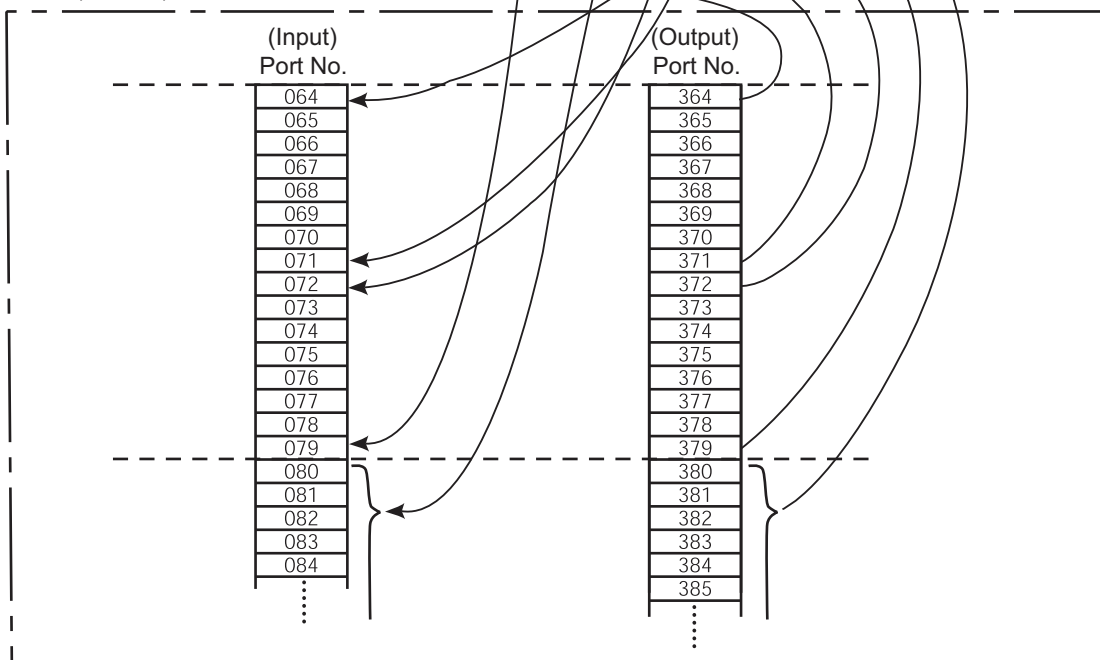
Reference

(2) Remote register

PLC



ASEL, PSEL, SSEL



RW_{rn}/RW_{wn} shows the Remote register address in the PLC corresponding to the station No. N

7.5 Trouble Shooting

With the Status LED (STATUS 0/1) on the front surface of the board, the CC-Link board operation status and network status can be obtained. When any CC-Link trouble occurs, confirm the operation status based on the Table in Item 7.2 (2) and remove the cause.

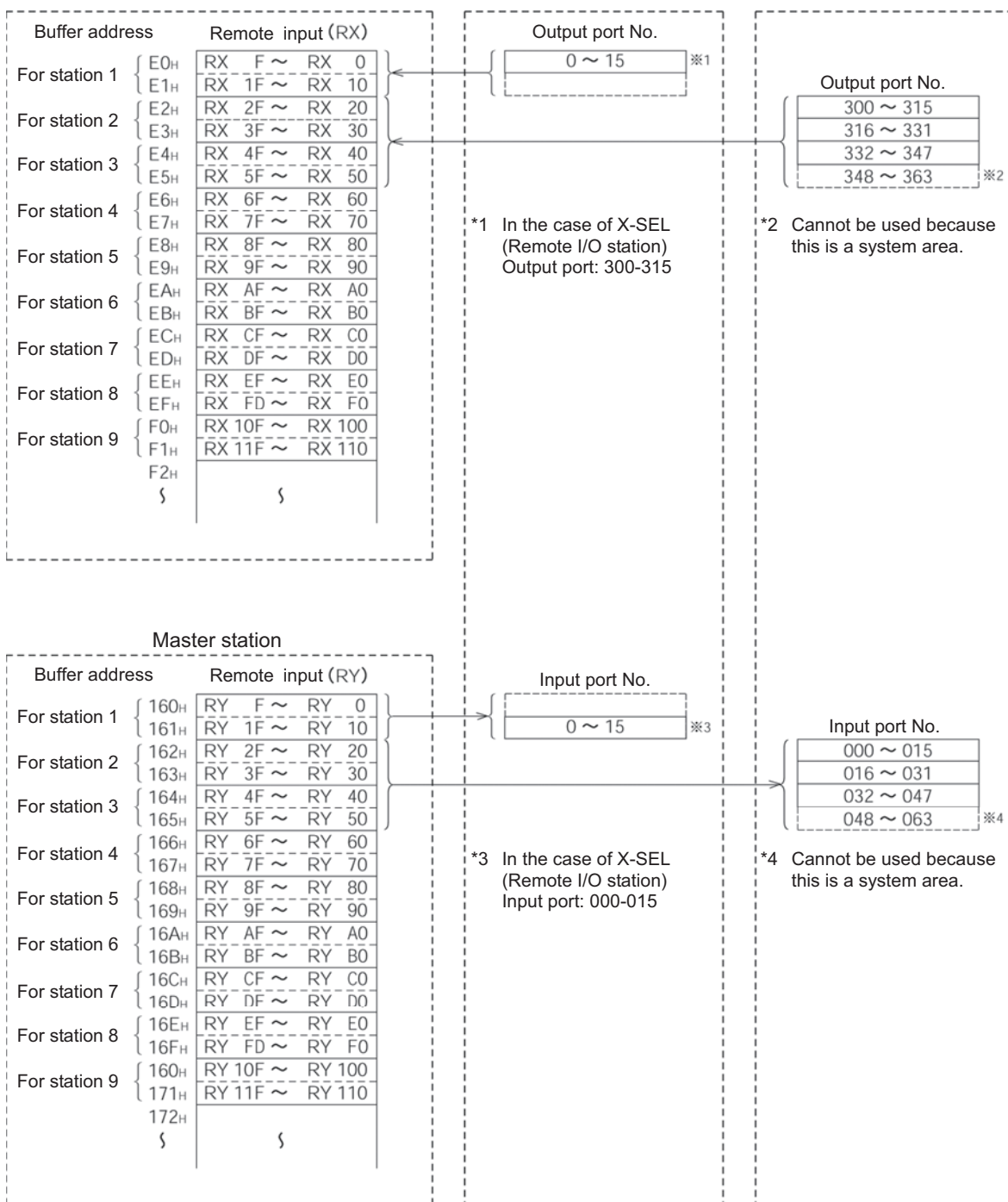
8. Communications with Master station

The following is a case where X-SEL I/O port addresses are assigned from the first one of each port. This is an example in which the two remote device stations occupied (X-SEL) are used.

8.1 Remote I/O

Two words are used for one station on the PLC side.

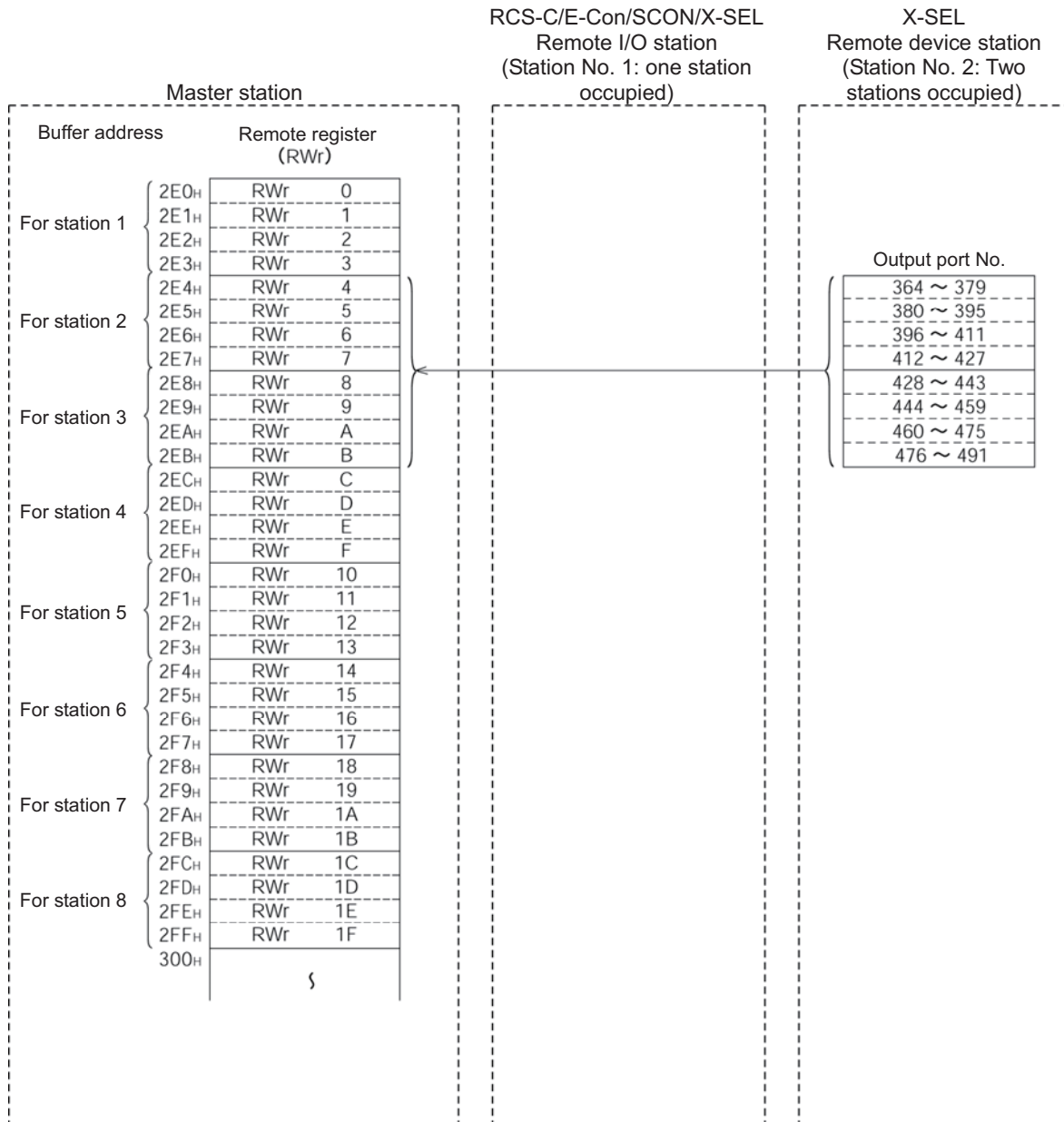
	RCS-C/E-Con/SCON/X-SEL	X-SEL
	Remote I/O station	Remote device station
Master station	(Station No. 1: one station occupied)	(Station No. 2: Two stations occupied)



8.2 Remote register

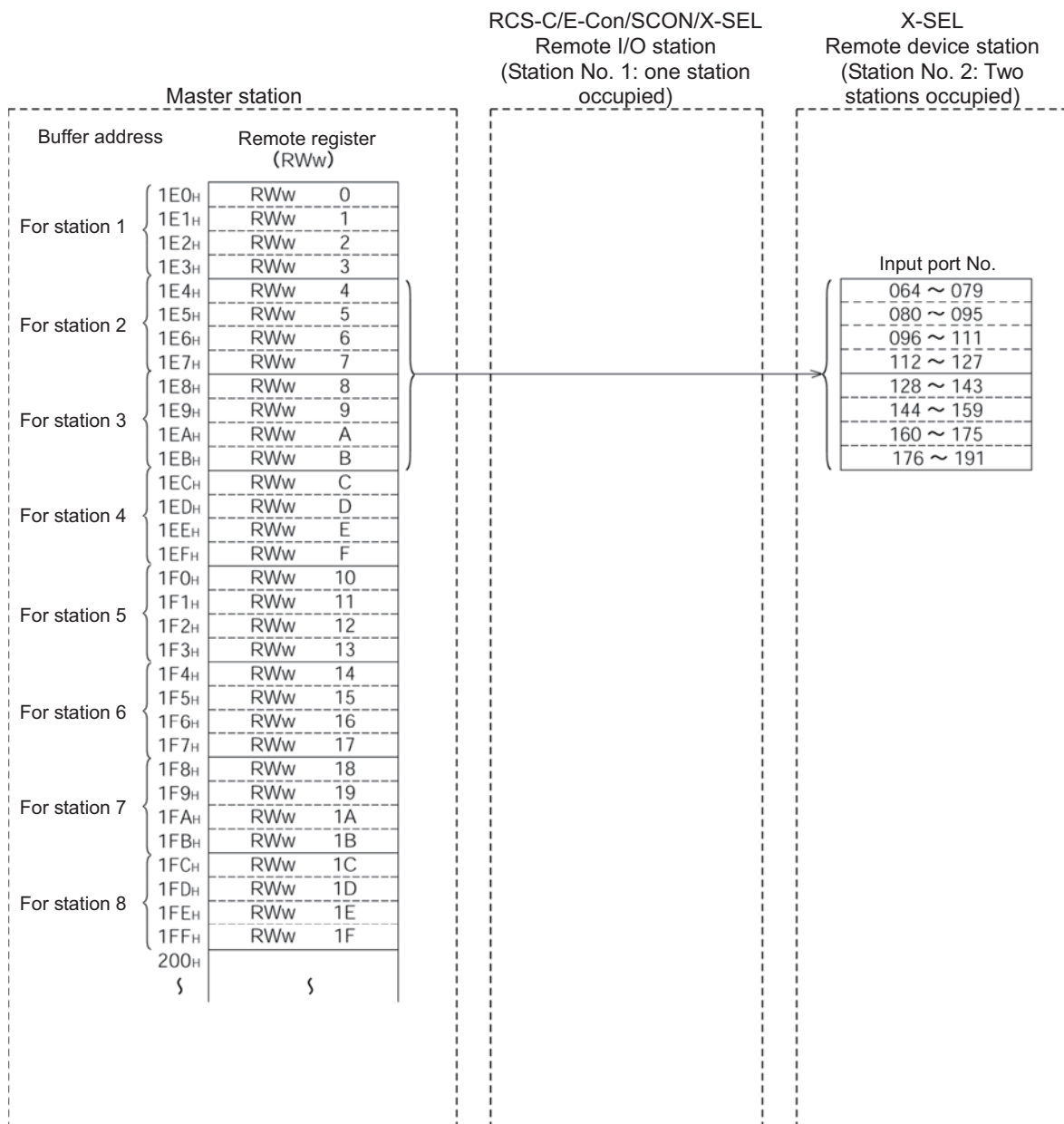
(1) Master station ← X-SEL (Remote device station)

Four words are used for one station.



(2) Master station → X-SEL (Remote device station)

Four words are used for one station.



9. Common Items and Others

9.1 Communications cable

For CC-Link communications cable,
CC-Link Ver.1.10 compatible dedicated cable
(FANC-SBH, FANC-SB, etc.,) is used.

9.2 Connection of communications cable connector

Connect the communications cable according to the following connector table:

Pin No.	Signal name	Application
1	DA	Communications line
2	DB	Communications line
3	DG	Ground
4	SLD	Shield
5	FG	Ground

SLD and FG are internally connected.

The communications cable is connected to pin No. 1 to No. 4.

9.3 Terminators

It is required to connect a terminator to the units at each end of the CC-Link system.

Connect it between DA and DB of the connector.

Terminators are attached to each controller of X-SEL, ASEL, PSEL, SSEL, RCS-C, E-Con, ACON, PCON, and SCON.

The terminator varies according to the model name of the CC-Link compatible cable as follows:

Cable FANC-SBH: 130 Ω 1/2W (CC-Link dedicated high performance cable)

Cable FANC-SB: 110 Ω 1/2W (CC-Link dedicated cable)

(Note) For further information, refer to the Operation Manual for the master unit.

9.4 Useful functions for X-SEL controller adjustment

- (1) When a standard or expansion I/O board is installed onto the K-type controller, X-SEL can individually be started up without connection of the 24V DC power for I/O.
- (2) When a CC-Link board is installed, X-SEL can individually be started up without establishment of the network.

In either case, set the relevant I/O parameters of No. 10 to No. 13 to "0: Non-monitoring."

(Note) After completing the required operation or adjustment, be sure to restore the parameters. Without doing so, an error check of the relevant slots of the boards will not be carried out.

Change History

Revision Date	Description of Revision
November 2011	<p>Twenty first Edition</p> <ul style="list-style-type: none">• Contents changed in Safety Guide Caution notes added for when working with two or more persons• Deleted ACON and PCON.



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