

## CC-Link Adapter

**NA-9131****User Manual**

Version 1.06

**2013 CREVIS Co.,Ltd**

DOCUMENT CHANGE SUMMARY				
REV	PAGE	REMARKS	DATE	EDITOR
1.0	New Document		2011/10/25	JE Kang
1.01	26	Update for IO Area setting	2011/12/15	JE Kang
1.02	5	Add your experience	2012/1/13	JE Kang
1.03	27	Add the Special module	2012/3/15	JE Kang
1.03	32	Modify the trouble shooting	2012/3/15	JE Kang
1.04	27	Add the SYSTEM AREA	2013/2/28	JE Kang
1.05		Environment Spec. 50℃→55℃ (UL Temp)	2013/7/3	JE Kang
1.06		Modify the Pin Description	2014/05/08	YMKIM

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## 1. Important Notes

Solid state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls describes some important differences between solid state equipment and hard-wired electromechanical devices.

Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will CREVIS be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, CREVIS cannot assume responsibility or liability for actual use based on the examples and diagrams.

### Warning!



- ✓ **If you don't follow the directions, it could cause a personal injury, damage to the equipment or explosion**
- Do not assemble the products and wire with power applied to the system. Else it may cause an electric arc, which can result into unexpected and potentially dangerous action by field devices. Arching is explosion risk in hazardous locations. Be sure that the area is non-hazardous or remove system power appropriately before assembling or wiring the modules.
- Do not touch any terminal blocks or IO modules when system is running. Else it may cause the unit to an electric shock or malfunction.
- Keep away from the strange metallic materials not related to the unit and wiring works should be controlled by the electric expert engineer. Else it may cause the unit to a fire, electric shock or malfunction.

### Caution!


- ✓ **If you disobey the instructions, there may be possibility of personal injury, damage to equipment or explosion. Please follow below Instructions.**
- Check the rated voltage and terminal array before wiring. Avoid the circumstances over 55℃ of temperature. Avoid placing it directly in the sunlight.
- Avoid the place under circumstances over 85% of humidity.
- Do not place Modules near by the inflammable material. Else it may cause a fire.
- Do not permit any vibration approaching it directly.
- Go through module specification carefully, ensure inputs, output connections are made with the specifications. Use standard cables for wiring.
- Use Product under pollution degree 2 environment.

## 1.1. Safety Instruction

### 1.1.1. Symbols

<p><b>DANGER</b></p> 	<p>Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death property damage or economic loss.</p>
<p><b>IMPORTANT</b></p>	<p>Identifies information that is critical for successful application and understanding of the product.</p>
<p><b>ATTENTION</b></p> 	<p>Identifies information about practices or circumstances that can lead to personal injury, property damage, or economic loss. Attentions help you to identity a hazard, avoid a hazard, and recognize the consequences.</p>

### 1.1.2. Safety Notes

<p><b>DANGER</b></p> 	<p>The modules are equipped with electronic components that may be destroyed by electrostatic discharge. When handling the modules, ensure that the environment (persons, workplace and packing) is well grounded. Avoid touching conductive components, e.g. FnBUS Pin.</p>
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### 1.1.3. Certification

c-UL-us UL Listed Industrial Control Equipment, certified for U.S. and Canada  
See UL File E235505

CE Certificate

EN 61000-6-2; Industrial Immunity

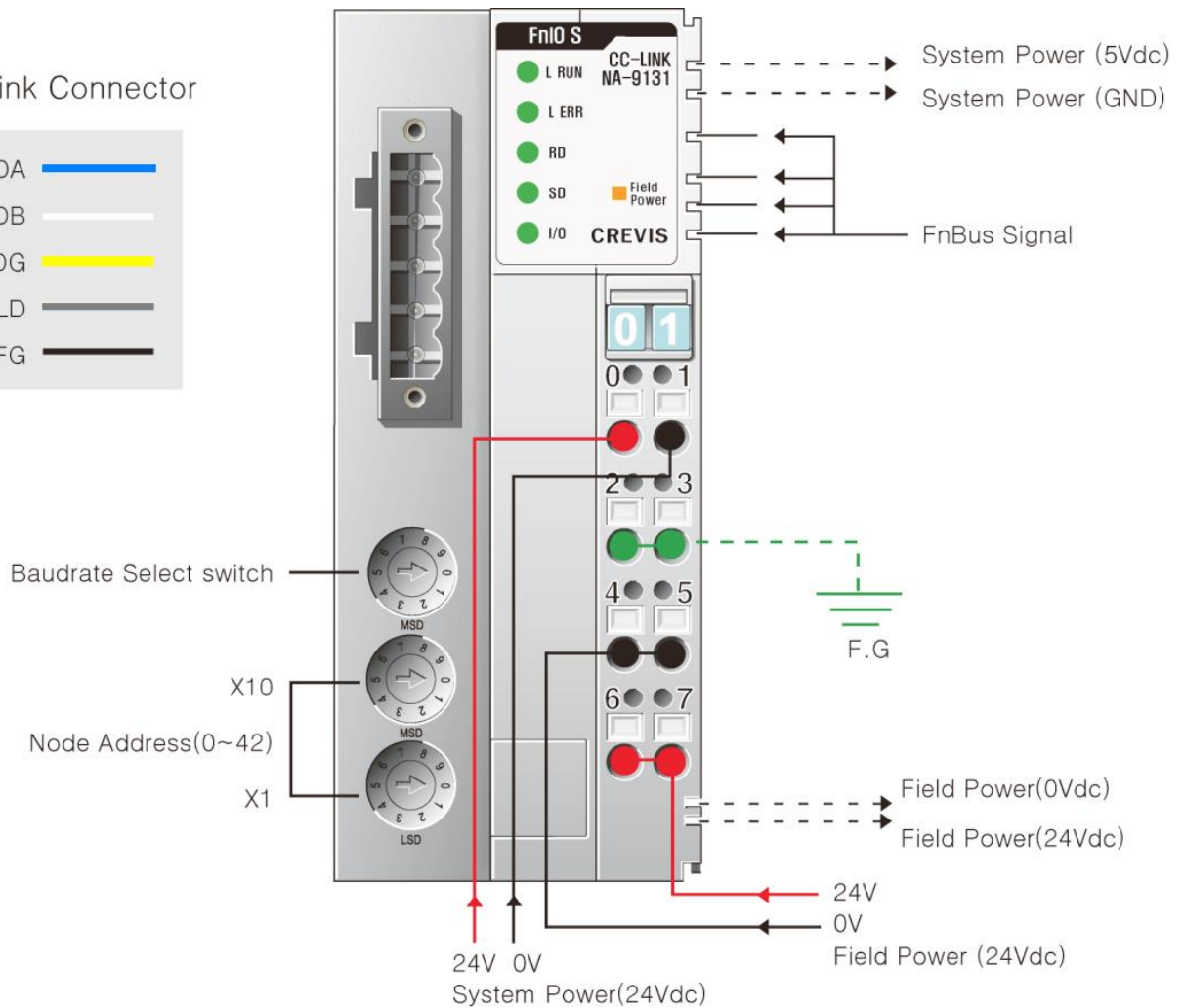
EN 61000-6-4; Industrial Emissions

## 2. Specification

### 2.1. The Interface

#### 2.1.1. NA-9131

##### CC-Link Connector



## 2.2. Specification

### 2.2.1. General Specification

General Specification	
System Power	Supply voltage : 24Vdc nominal Supply voltage range : 11~28.8Vdc Protection : Output current limit (Min. 1.5A) Reverse polarity protection
Power Dissipation	60mA typical @24Vdc
Current for I/O Module	1.5A @5Vdc
Isolation	System power : Non-isolation System to Logic : Isolation
Field Power	Supply voltage : 24Vdc nominal Supply voltage range : 11~28.8Vdc
Max. Current Field Power Contact	DC 10A Max.
Weight	155g
Module Size	45mm x 99mm x 70mm
Environment Condition	Refer to Environment Specification

Environmental Specifications	
Operating Temperature	-20 to 55℃
Non-Operating Temperature	-40℃ to 85℃
Relative Humidity	5%~90% non-condensing
Operating Altitude	2000m
Mounting	DIN rail



## 2.2.2. Interface Specification

Interface Specification, NA-9131	
Protocol Version	Version 1
Station type	Remote Device Station
Number of Nodes	42 Node/Max (Rotary switch #0~99)
Number of Expansion I/O slots	Max. 32 slots
I/O Data Size	System area : 16 points RX / RY : 112 points(4 Stations occupied) RW <sub>r</sub> /RW <sub>w</sub> : 16 points(4 Stations occupied)
Indicators	1 green L RUN Status Indicator 1 red L Error Status Indicator 1 green RD Status Indicator 1 green SD Status Indicator 1 green/red Expansion Module Status indicator 1 green Field Power Status indicator
Baud Rate	156/625/2500/5000/10000 kbps
Module Location	Starter module - left side of FnIO system
Connection cable	CC-Link dedicated cable
Terminal resistor	110ohm, 1/2W(Between DA and DB) ..both trunk line ends
Slave station number	1~64

## 2.3. LED Indicator

### 2.3.1. L RUN LED (L RUN)

State	LED is :	To indicate :
Not Powered Not On-line Connection-Timeout	Off	Device is not on-line or may not be powered. Resetting Hardware. Device is Timeout.
On-Line, Connection	Green	Device is on-line and allocated to a master

### 2.3.2. L ERR LED (L ERR)

State	LED is :	To indicate :
Fail Switch Setting error Communication error	Red	CRC error Invalid MAC ID Baudrate switch setting error
Setting change	Flashing Red	Switch setting has been changed from the setting at the reset cancellation
Device Operational	Off	The unit is operating in normal condition

### 2.3.3. RD LED (RD)

State	LED is :	To indicate :
Unable detect	Off	Unable to detect carriers neither for channel 1 or 2
Connection	Green	Detecting the carrier for channel 1 or 2

### 2.3.4. SD LED (SD)

State	LED is :	To indicate :
Not transmission	Off	Other than listed in the left
Connection	Green	During transmission

### 2.3.5. Field Power Status LED

State	LED is :	To indicate :
Not Supplied Field Power	Off	Not supplied 24V dc field power
Supplied Field Power	Green	Supplied 24V dc field power

### 2.3.6. Expansion Module Status LED (I/O)

State	LED is :	To indicate :
Not Powered No Expansion Module	Off	Device has no expansion module or may not be powered
Fn-Bus On-line, Do not Exchanging I/O	Flashing Green	Fn-Bus is on-line but does not exchanging I/O data - Passed the expansion module configuration.
Fn-Bus Connection, Run Exchanging IO	Green	Expansion Slot is connected and run exchanging I/O data
FnBus connection fault during exchanging IO	Red	One or more expansion module occurred in fault state. - Changed expansion module configuration. - FnBus communication failure.
Expansion Configuration Failed	Flashing Red	Failed to initialize expansion module - Detected invalid expansion module ID. - Overflowed Input / Output Size - Too many expansion module - Initial protocol failure - Mismatch vendor code between adapter and expansion module.

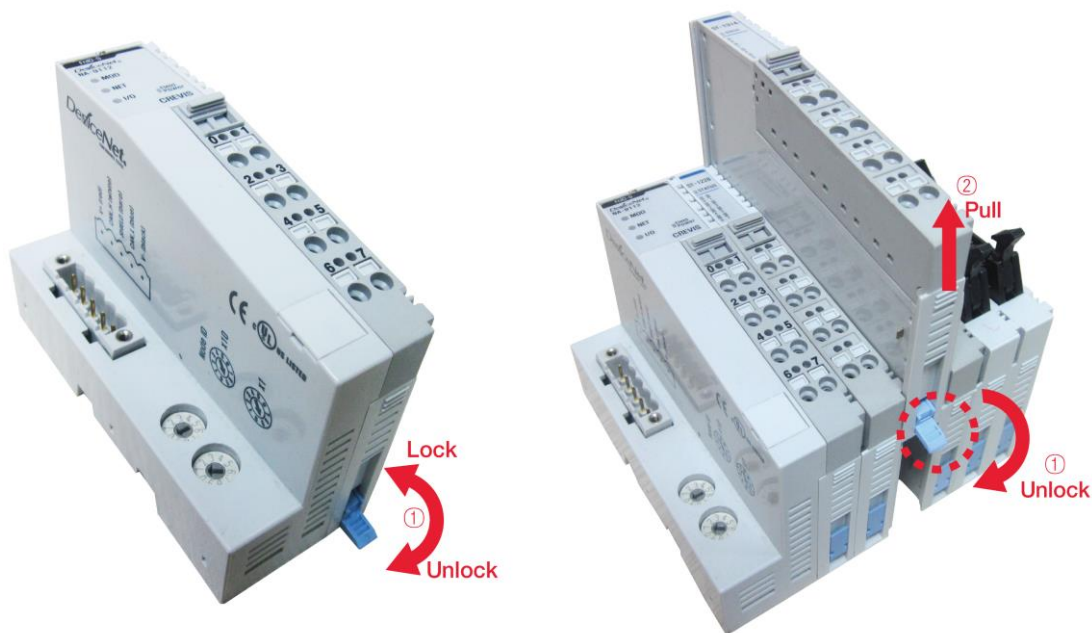


## 4. Mechanical Set Up

### 4.1. Total Expansion

The number of the module assembly that can be connected is 32. So the maximum length is 426mm Exception. ST-2748 is excepted to calculate maximum length because that is double width module.

### 4.2. Plugging and Removal of the Components.



As above figure in order to safeguard the FnIO module from jamming, it should be fixed onto the DIN rail with locking level. To do so, fold on the upper of the locking lever.

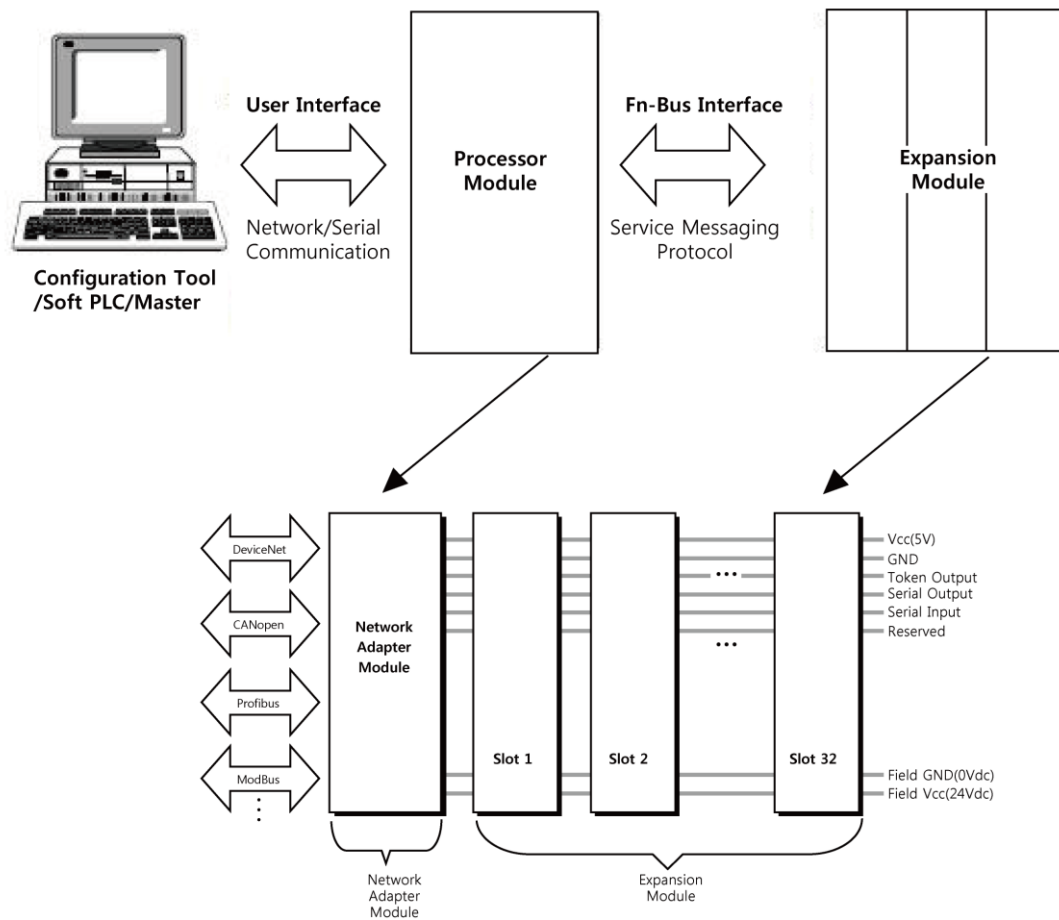
To pull out the FnIO module, unfold the locking lever as below figure.



Before work is done on the components, the voltage supply must be turned off.

## 5. CC-Link Electrical Interface

### 5.1. FnBus System



- **Network Adapter Module**

The Network Adapter Module forms the link between the field bus and the field devices with the Expansion Modules.

The connection to different field bus systems can be established by each of the corresponding Network Adapter Module, e.g. for SyncNet, PROFIBUS, CANopen, DeviceNet, Ethernet/IP, CC-Link, MODBUS/Serial, MODBUS/TCP etc.

- **Expansion Module**

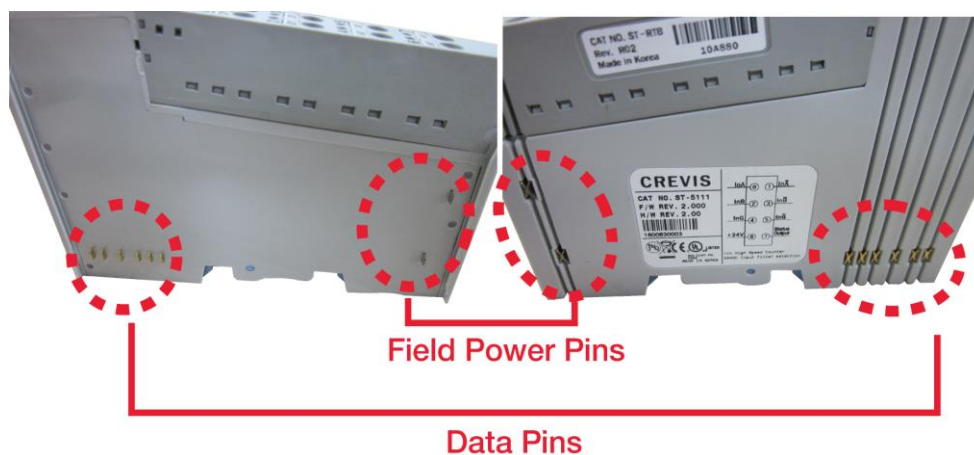
The Expansion Modules are supported a variety of input and output field devices. There are digital and analog input/output modules and special function modules.

- **Two types of FnBus Message**

- Service Messaging
- I/O Messaging

## 5.2. FnBus Pin Description

Communication between the NA series and the expansion module as well as system / field power supply of the bus modules is carried out via the internal bus. It is comprised of 6 data pin and 2 field power pin.



No.	Name	Description
1	Vcc	System supply voltage (5V dc).
2	GND	System Ground.
3	Token Output	Token output port of Processor module.
4	Serial Output	Transmitter output port of Processor module.
5	Serial Input	Receiver input port of Processor module.
6	Reserved	Reserved for bypass Token.
7	Field GND	Field Ground.
8	Field Vcc	Field supply voltage (24Vdc).

### DANGER

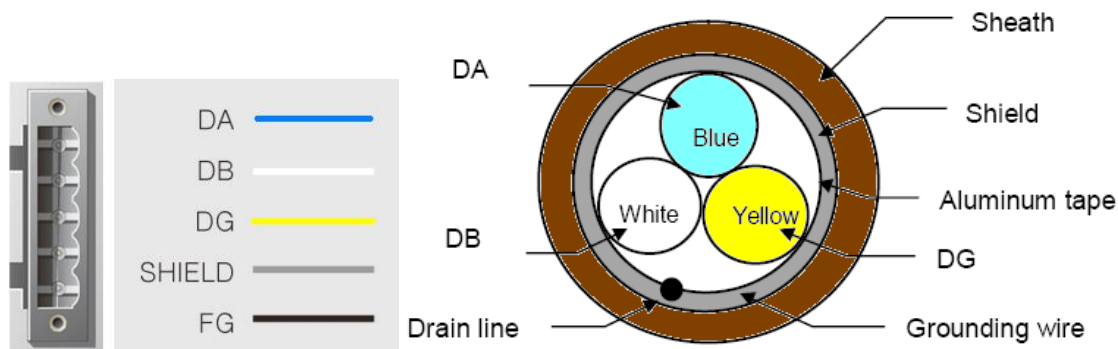


Do not touch data and field power pins in order to avoid soiling and damage by ESD noise.



### 5.3. CC-Link Network Installation

#### 5.3.1. NA-9131 Cable Specification



CC-Link dedicated cable shall be used in CC-Link system. Specification of CC-Link dedicated cable is as follow.

Item		Specifications
Cable Type		Shield twisted cable
Finish outer diameter		8.0mm or less
Drain line		20 lines/0.18 mm or 24 lines/0.18mm Insert separately or in a bundle between the ground cable bundle and aluminum tape.
Conductor resistance (20°C)		37.8Ω/km
Insulation resistance		10000MΩ · km or more
Withstand voltage		500VDC 1minute
Electrostatic capacity(1kHz)		60nF/km or less
Characteristic impedance	1 MHz	110±15Ω
	5 MHz	110±6Ω
Attenuation amount	1 MHz	1.6dB/100mor less
	5 MHz	3.5dB/100mor less

#### ATTENTION



The use of an incorrect supply voltage or frequency can cause severe damage to the component.

### 5.3.2. Connector

Recommended specifications of connector relaying between CC-Link dedicated cables are as followings.

- **M12(Micro) type(4 cores)**

	M12 (Micro) Type	Pin Position
Resistance of conductor	5mΩ or less	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Female</p> </div> <div style="text-align: center;"> <p>Male</p> </div> </div>
Thickness of Gold plate	0.1 μm or more	
Type of water proof	IP67 (JIS C 0920)	
Pin Position	1 pin : SLD 2 pin : DB 3 pin : DG 4 pin : DA	

- **Easy connection water proof type (4 cores)**

	Easy connection water proof type	Pin Position
Resistance of conductor	5mΩ or less	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Female</p> </div> <div style="text-align: center;"> <p>Male</p> </div> </div>
Thickness of Gold plate	0.5 μm or more	
Type of water proof	IP67 (JIS C 0920)	
4 conductors	1 pin : SLD 2 pin : DB 3 pin : DG 4 pin : DA	

### 5.3.3. Minimum radius of bending cable

Please keep the minimum radius of bending in using CC-Link dedicated cable.

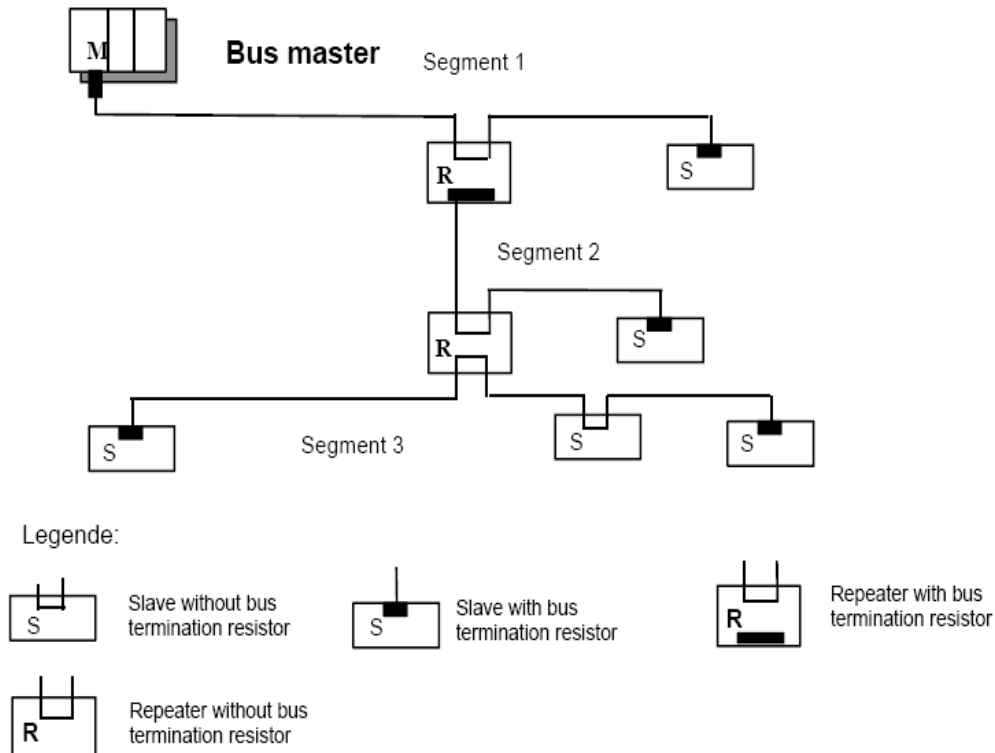
When it is used with less than min. radius by constraint, it may cause pulling out from connector and cable, breaking of cable, etc..

Minimum radius of Bending cable	Connecting	Major diameter of cable × 10 or more
	Stable	Major diameter of cable × 4 or more

connecting : Minimum radius of bending cable permitted in only connecting

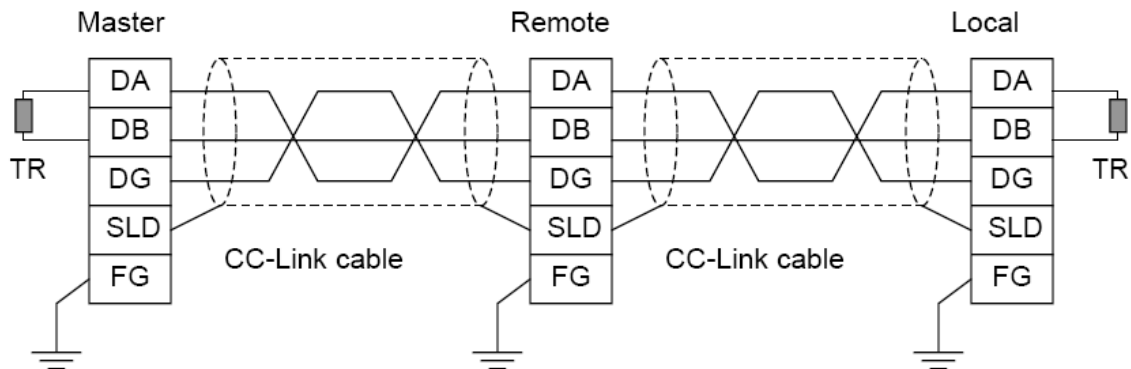
stable : Minimum radius of bending cable at stable permits the characteristic for long period.

### 5.3.4. Terminator Resistor



Specification of terminator Resistors are as follows Resistance Spec.:

- CC-Link dedicated cable  $110\Omega \pm 5\%$  1/2W
- CC-Link dedicate high performance cable  $130\Omega \pm 5\%$  1/2W



- **Easy connection water proof type (4 cores)**

- **When repeater is not used**

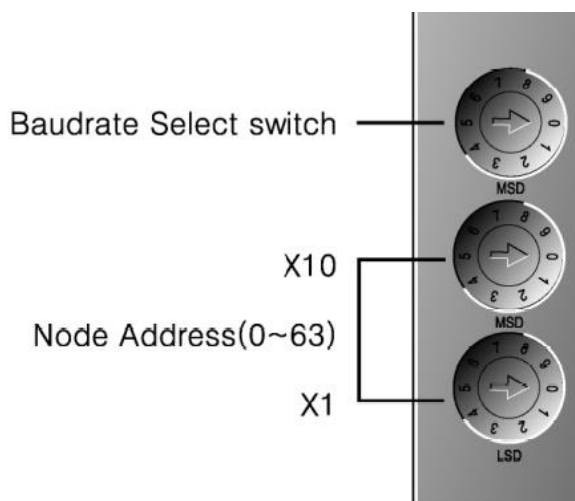
Please connect terminal resistor,  $110\Omega \pm 5\%$  1/2W between DA and DB on each edge of trunk line.  
(Do not use CC-Link dedicated high performance cable)

- **When repeater is used**

Please use Terminal resistor included in Repeater unit.

### 5.3.5. CC-Link Setting

#### ● Node Address Setting



- NA-9131 Node address is determined by the node address rotary switch on the front panel of adapter module.
- Set node address is recognized on the power-on of adapter module.

**Ex) When node address is set as 27: Device MAC ID Setting :  $(2 \times 10 + 1 \times 7) = 27$**

#### ● Baudrate Select Switch Setting

Baudrate	Fixed Addressing	Auto Addressing
156 Kbps	0	5
625 Kbps	1	6
2.5 Mbps	2	7
5 Mbps	3	8
10 Mbps	4	9

- Fixed Addressing: station 4 occupied
- Auto Addressing: auto setting from station 1 to station4 depending on expansion I/O Size

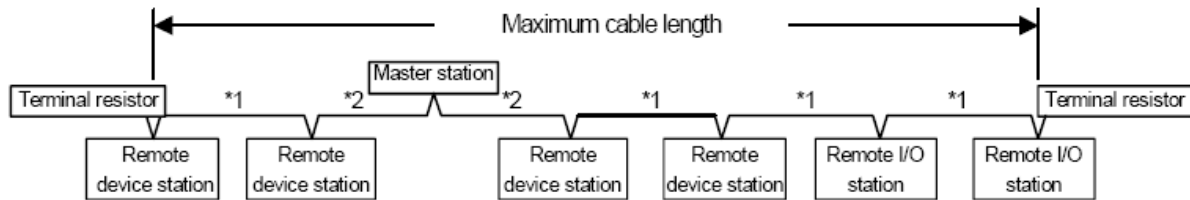
#### ATTENTION



MAC ID addresses have to be unique throughout the entire interconnected networks.

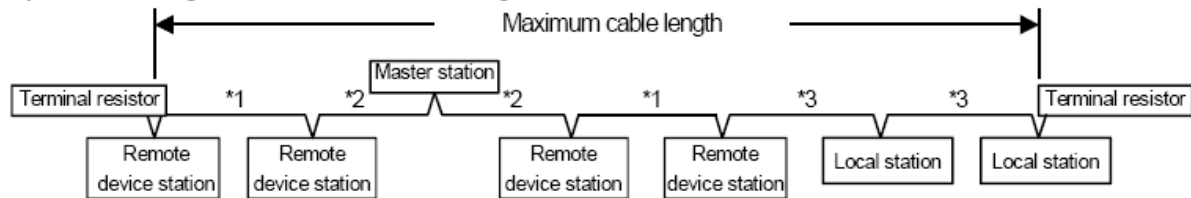
### 5.3.6. CC-Link Network Setup

<System configured with only Remote I/O station and /or Remote device>



- \*1: Cable length between Remote I/O, Remote device and Remote I/O, Remote device.  
 \*2: Cable length between Master and next station.

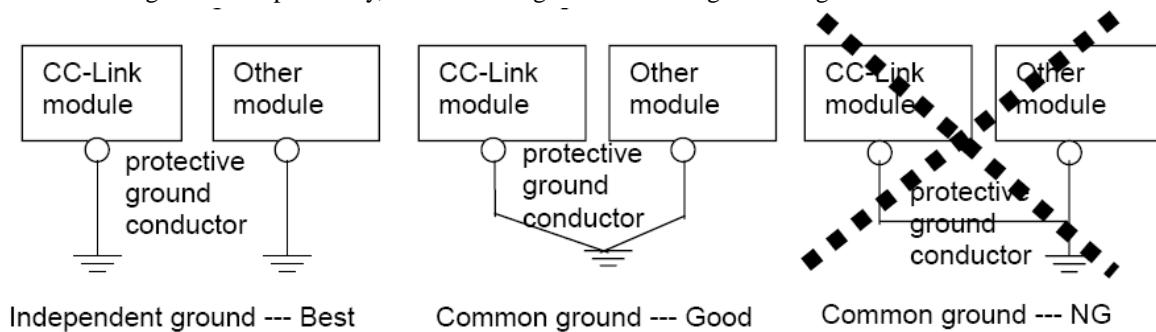
<System including Local station and/ or Intelligent device station >



- \*1: Cable length between Remote I/O, Remote device and Remote I/O, Remote device.  
 \*2: Cable length between Master and next station.  
 \*3: Cable length between Local, Intelligent device and next station.

#### ● Connection of Shield line with ground

- Connect both edges of shield wire for CC-Link dedicated cable with "SLD" of each module.
- Connect "FG" of each module independently .
- Always ground the FG terminal to the protective ground conductor (Ground resistance 100Ω or less)
- If not use ground independently, use common ground according to the Figure.



● The Maximum length of network for each cable type is as follows

✓ In case of CC-Link dedicated cable (Characteristic Impedance : 100Ω)

Communication Speed		156 Kbps	625 Kbps	2.5 Mbps	5 Mbps		10 Mbps		
Station-to-Station cable length	Between Master/Local, Intelligent device station and adjacent stations*	1m or more							
		2m or more							
	Between Remote I/O, Remote device and Remote I/O, Remote device stations (shortest cable) *	30cm or more	30cm or more	30cm or more	60cm or more	30~59 cm or more	1m or more	60~99 cm or more	30~59 cm or more
Max. transmission distance		1200m	600m	200m	150m	110m	100m	80m	50m

\* Upper line includes only Remote I/O, Remote device station. Lower line includes Local, Intelligent device station.

✓ In case of CC-Link dedicated high performance cable (Characteristic Impedance: 130Ω)

Communication Speed		156 Kbps	625 Kbps	2.5 Mbps	5 Mbps		10 Mbps						
Station-to-Station cable length	Between Master/Local, Intelligent device station and adjacent stations*	1m or more											
		2m or more											
	Between Remote I/O, Remote device and Remote I/O, Remote device stations (shortest cable) *	30cm or more	30cm or more	30cm or more	60cm or more	30cm or more	1M or more	70cm or more	40~69cm	30~39cm	40cm or more	30~39cm	30cm or more
Max. No. of remote stations		64	64	64	64		64				48		32
Max. transmission distance		1200m	900m	400m	-	160m	-	100m	30m	20m	100m	80m	100m
		1200m	600m	200m	150m	110m	80m	50m	-	-	-	-	-

\* Upper line includes only Remote I/O, Remote device station. Lower line includes Local, Intelligent device station.

### ● Network construction concept

<b>Node</b>	There are Master and Slave for Node , The master controls CC-Link and arranges external I/O. The Slave connect to external I/O. You can arrange Master and Slave in any position of Node as the above picture .
<b>Trunk Line / Branch Line</b>	A Trunk line means the cable attached terminal resistor on both edges. a Branch line means the cable branched off from trunk line. (Branch length: Max. 6M)
<b>Terminal Resistor</b>	The resisters are attached at both edges of cable. The resister reduces reflected wave at terminal point and prevents disturbance of signal. Use resisters suitable for cable used. CC-Link dedicated cable $110\Omega \pm 5\%$ 1/2W CC-Link dedicated high flexible cable $130\Omega \pm 5\%$ 1/2W
<b>Connection Type</b>	CC-Link basic connection is multi drop connection. And T-branch connection is available in case of 625Kbps or less of communication speed or in case of using repeater .

### ✓ T-Branch connection

#### - When repeater is not used

Please connect terminal resistor,  $110\Omega \pm 5\%$  1/2W between DA and DB on each edge of trunk line. (Do Not use CC-Link dedicated high performance cable)

#### - When repeater is used

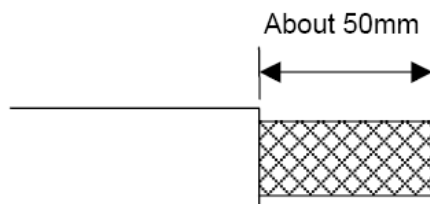
Please use Terminal resistor included in Repeater unit.

### ● Process and connection of CC-Link dedicated cable.

Process CC-Link dedicated cable according to the table, As well, refer to the table for the length of removed cable coat, the length of removed signal wire coat and terminal process of signal wire.

The length of removed cable coat	The length of removed signal wire coat	Terminal process of signal wire
50mm	3mm	Pressure terminal

### ✓ Removing cable coat



Remove CC-Link dedicated cable coat not to scratch shield mesh. But not remove extra amounts not to cause short.

### ✓ Process shield

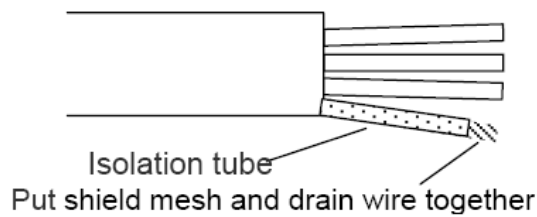
Ravel shield mesh carefully. As well as signal wire, there is one bare drain wire (stranded wire or each wire). Process the shield according to any of followings.

#### (1) When shield mesh is used

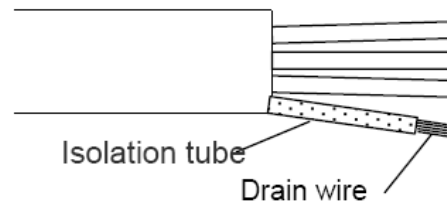
Coat with isolation tube after putting tightly shield mesh and drain wire together.

#### (2) When drain wire is used

Coat drain wire with isolation tube after trimming off the a excess shield mesh.



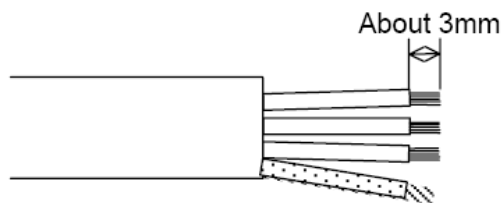
(1) When shield mesh is used



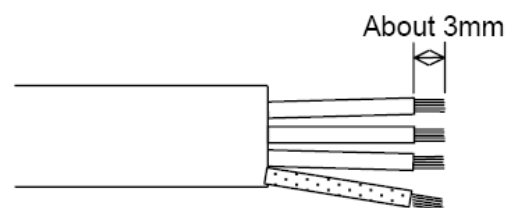
(2) When drain wire is used

### ✓ Remove signal wire coat

Remove coat of signal wire according to size of Pressure terminal. Put tightly bear signal wire together.



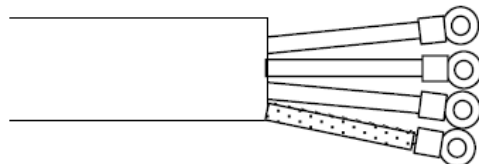
(1) When shield mesh is used



(2) When drain wire is used

### ✓ Connection pressure terminal

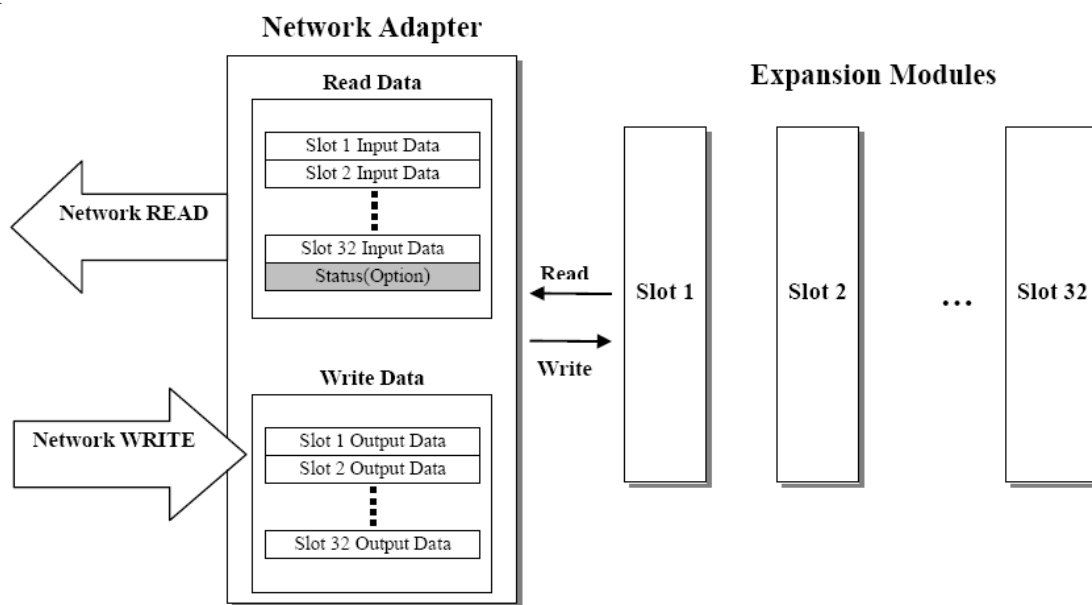
Connect signal wire removed coat, shield wire with pressure terminal differently.





### 5.3.7. I/O Process Image Map

An expansion module may have 3 types of data as I/O data, configuration parameter and memory register. The data exchange between network adapter and expansion modules is done via an I/O process image data by FnBus protocol. The following figure shows the data flow of process image between network adapter and expansion modules.



### 5.3.8. Remote input / Output area

#### ● Remote input area

Address	Configuration	Size	Signal name
RXm0~RXmF	1 Station	2 Bytes	Discrete Input
RX(m+1)0~RX(m+1)F	2 Station	6 Bytes	
RX(m+2)0~RX(m+2)F	2 Station		
RX(m+3)0~RX(m+3)F	3 Station	10 Bytes	
RX(m+4)0~RX(m+4)F	3 Station		
RX(m+5)0~RX(m+5)F	4 Station	14 Bytes	
RX(m+6)0~RX(m+6)F	4 Station		
RX(m+n)0~RX(m+n)F	n=1,3,5,7 (1 Station, 2 Station, 3 Station, 4 Station)	2 Bytes	System Area

m : Register number that was introduced by head station number

n : Final register number for occupied number

1 station : 16 point(n=1) / 2 station : 48 point(n=3) / 3 station : 80 point(n=5) / 4 station : 112 point(n=7)

#### ● Remote Output area

Address	Configuration	Size	Signal name
RYm0~RYmF	1 Station	2 Bytes	Discrete Output
RY(m+1)0~RY(m+1)F	2 Station	6 Bytes	
RY(m+2)0~RY(m+2)F	2 Station		
RY(m+3)0~RY(m+3)F	3 Station	10 Bytes	
RY(m+4)0~RY(m+4)F	3 Station		
RY(m+5)0~RY(m+5)F	4 Station	14 Bytes	
RY(m+6)0~RY(m+6)F	4 Station		
RY(m+n)0~RY(m+n)F	n=1,3,5,7 (1 Station, 2 Station, 3 Station, 4 Station)	2 Bytes	System Area

● **RWr/RWw area**

Address	Configuration	Size	Signal name	Address	Configuration	Size	Signal name
RWrm0 ... RWrm3	1 Station	4 Word	Analog Input and Special module (ST-5xxx)	RWwm0 ... RWwm3	1 Station	4 Word	Analog Output and Special module (ST-5xxx)
RWrm4 ... RWrm7	2 Station	8 Word		RWwm4 ... RWwm7	2 Station	8 Word	
RWrm8 ... RWrm11	3 Station	12 Word		RWwm8 ... RWwm11	3 Station	12 Word	
RWrm12 ... RWrm15 ... RWrm127	4 Station	16 Word		RWwm12 ... RWwm15 ... RWwm127	4 Station	16 Word	

### 5.3.9. System area

Link Input	Signal name	Link Output	Signal name
RX(m+n)0	Reaction on network error	RY(m+n)0	Reaction on network error
RX(m+n)1	Reaction on network error	RY(m+n)1	Reaction on network error
RX(m+n)2	Reserved	RY(m+n)2	Reserved
RX(m+n)3	Reserved	RY(m+n)3	Reserved
RX(m+n)4	Reserved	RY(m+n)4	Reserved
RX(m+n)5	Reserved	RY(m+n)5	Reserved
RX(m+n)6	Msg service ready	RY(m+n)6	Msg service start request
RX(m+n)7	Msg response completed	RY(m+n)7	Msg request
RX(m+n)8	Reserved	RY(m+n)8	Reserved
RX(m+n)9	Initial data setting completion	RY(m+n)9	Initial data settings request
RX(m+n)A	Error status flag	RY(m+n)A	Reserved
RX(m+n)B	Remote station is ready	RY(m+n)B	Reserved
RX(m+n)C	Reserved	RY(m+n)C	Reserved
RX(m+n)D	Reserved	RY(m+n)D	Reserved
RX(m+n)E	Reserved	RY(m+n)E	Reserved
RX(m+n)F	Reserved	RY(m+n)F	Reserved

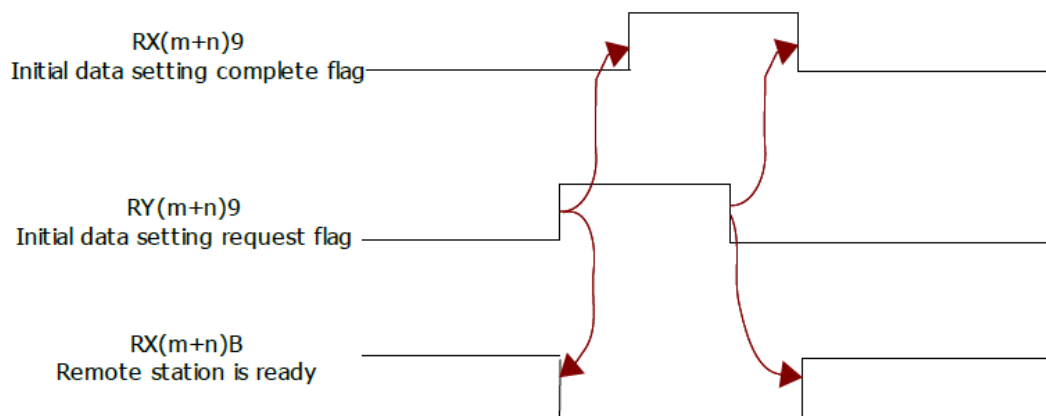
#### ● Reaction on network error

RY(m+n)1	RY(m+n)0	Description
0	0	Hold last value
0	1	Clear outputs to zero (Factor default setting)
1	0	Stop the FnBus (Each expansion module reacts according to its parameter)
1	1	Not used (internally switched to 10)

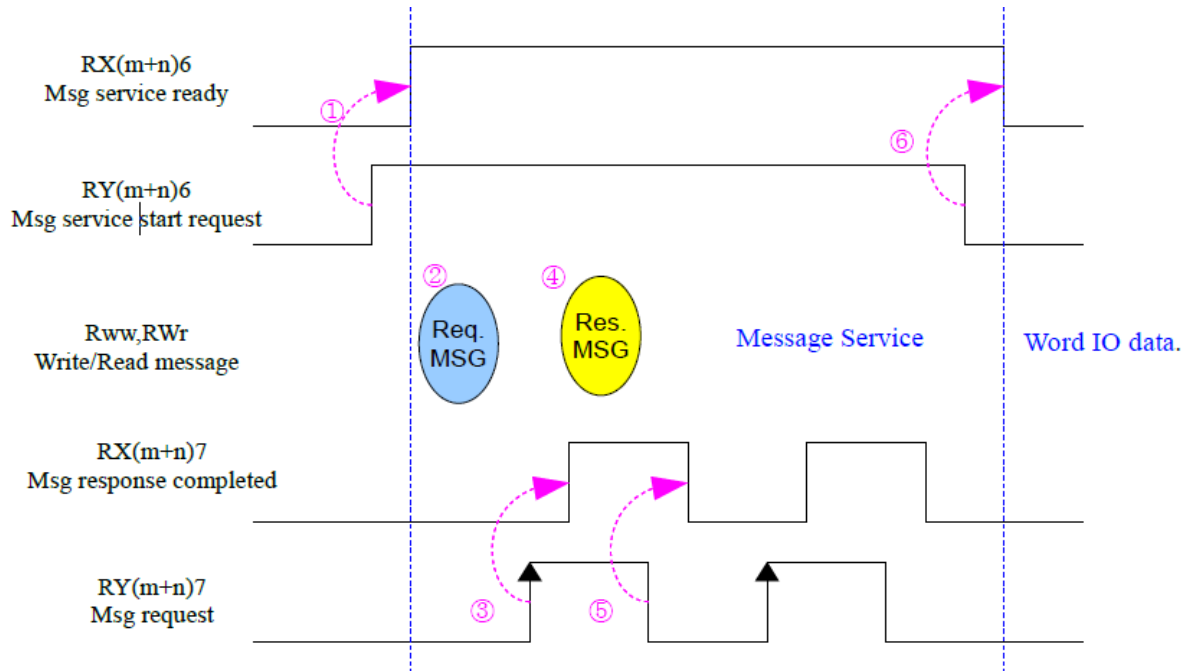
#### ● RX(m+n)9/RY(m+n)9: Initial data setting completion/request flag

This is used if there is a request from the user sequence for initial setting of the NA-9131 station.

- Note: Linked with RX(m+n)B (Slave station ready).



### ● Service Message



- ① Set RY(m+n)6. Then Service message will be mapped on the RW area.
- ② If RX(m+n)6 is 1, write service message request on Rww area.
- ③ Set RY(m+n)7 bit.
- ④ If RX(m+n)7 bit is 1, read service message response from RWr area.
- ⑤ Reset RY(m+n)7 bit.
- ⑥ Reset RY(m+n)6 bit. Then IO data will be mapped on the RW area.

### ● Service message request

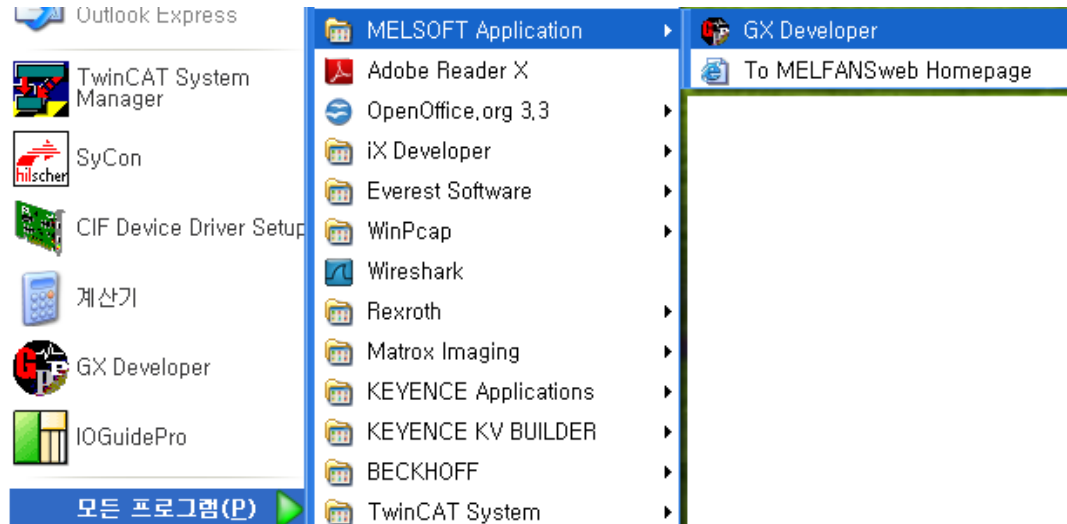
Address	High Byte	Low Byte	Stations
RWw[0]	Slot Number	Service code - Read Parameter : 2 - Write Parameter : 3 - Read Memory : 4 - Write Memory : 5	1 Station
RWw[1]	Offset		
RWw[2]	User Data 0	User Data Length	
RWw[3]	User Data 2	User Data 1	
RWw[4]	User Data 4	User Data 3	2 Stations
RWw[5]	User Data 6	User Data 5	
RWw[6]	User Data 8	User Data 7	
RWw[7]	User Data 10	User Data 9	
RWw[8]	User Data 12	User Data 11	3 Stations
RWw[9]	User Data 14	User Data 13	
RWw[10]	User Data 16	User Data 15	
RWw[11]	User Data 18	User Data 17	
RWw[12]	User Data 20	User Data 19	4 Stations
RWw[13]	User Data 22	User Data 21	
RWw[14]	User Data 24	User Data 23	
RWw[15]	User Data 26	User Data 25	

### ● Service message response

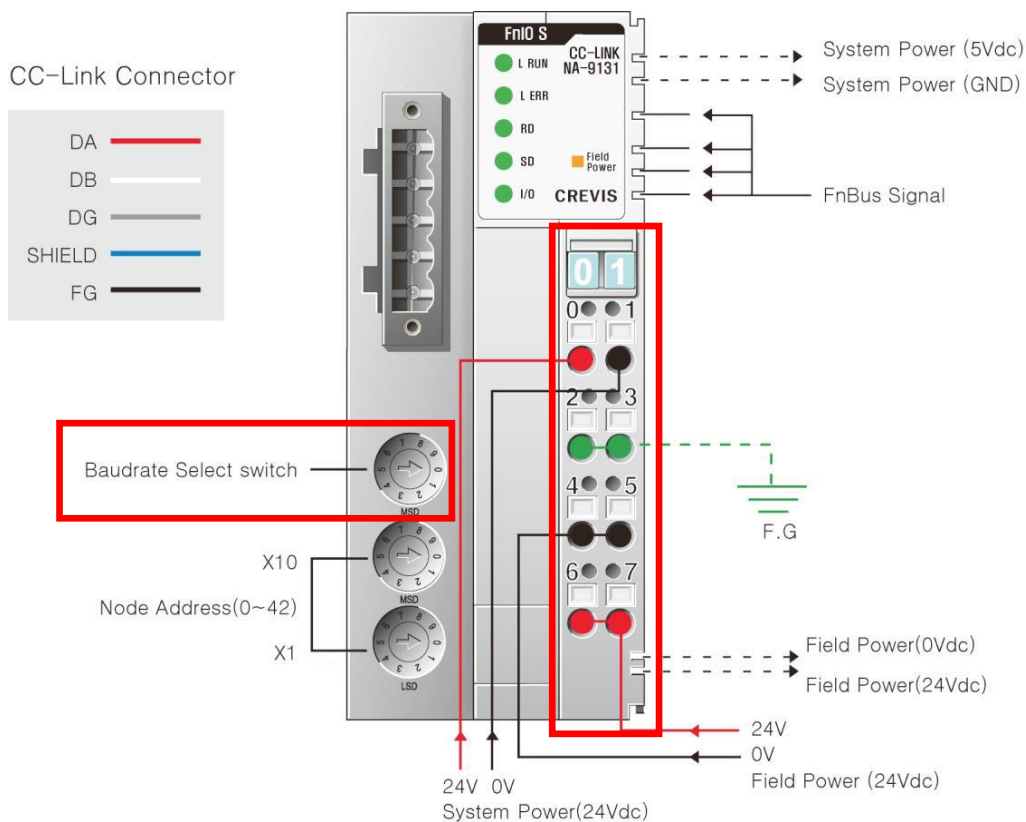
Address	High Byte	Low Byte	Stations
RWr[0]	Slot Number	Service code - Read Parameter : 2 - Write Parameter : 3 - Read Memory : 4 - Write Memory : 5	1 Station
RWr[1]	Offset		
RWr[2]	User Data 0	User Data Length	
RWr[3]	User Data 2	User Data 1	
RWr[4]	User Data 4	User Data 3	2 Stations
RWr[5]	User Data 6	User Data 5	
RWr[6]	User Data 8	User Data 7	
RWr[7]	User Data 10	User Data 9	
RWr[8]	User Data 12	User Data 11	3 Stations
RWr[9]	User Data 14	User Data 13	
RWr[10]	User Data 16	User Data 15	
RWr[11]	User Data 18	User Data 17	
RWr[12]	User Data 20	User Data 19	4 Stations
RWr[13]	User Data 22	User Data 21	
RWr[14]	User Data 24	User Data 23	
RWr[15]	User Data 26	User Data 25	

## 5.4. Example (Connect with MELSEC)

### ① The 'GX Developer' runs.

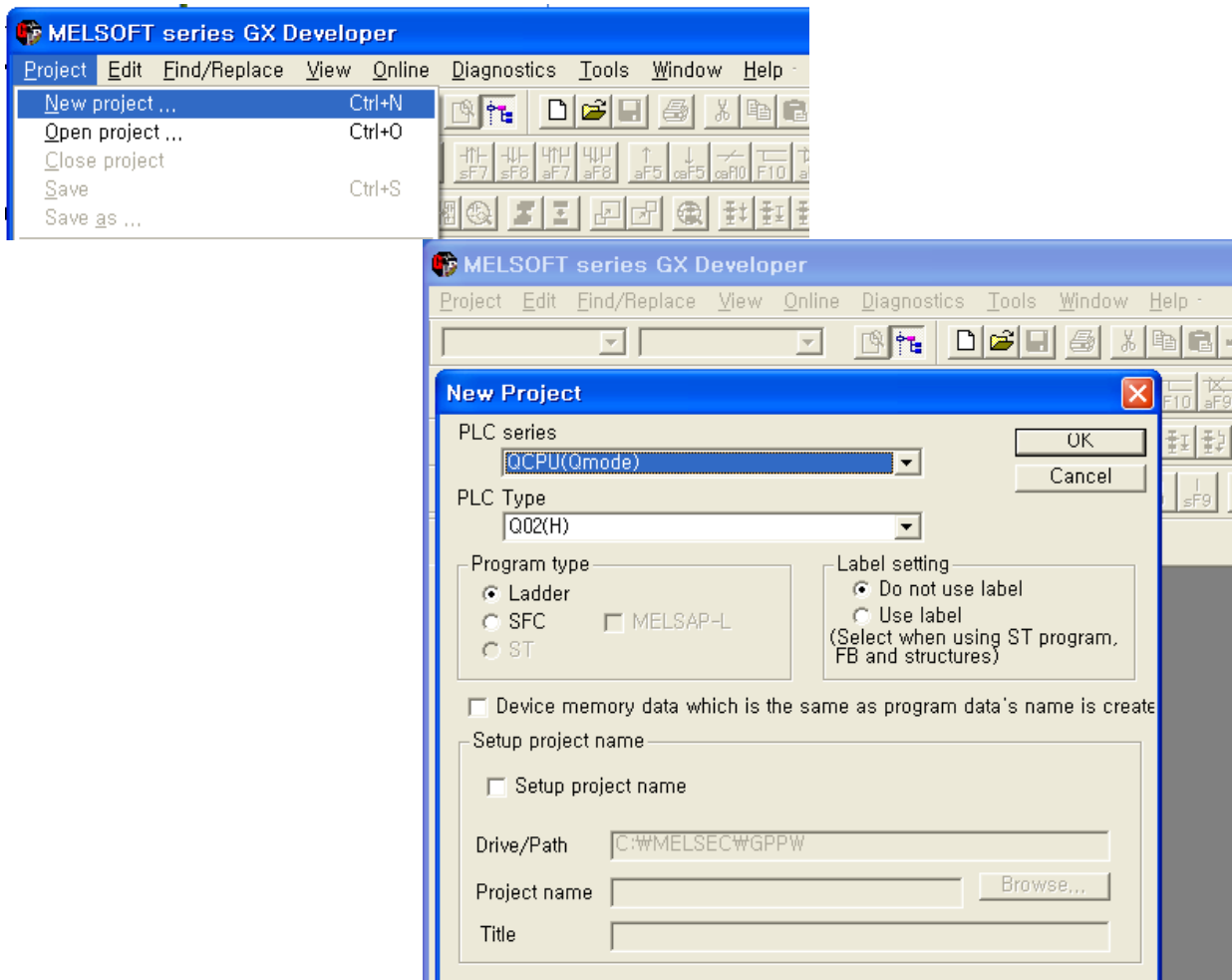


### ② 'NA-9131' and 'MELSEC' will to power on. And set the communication speed.



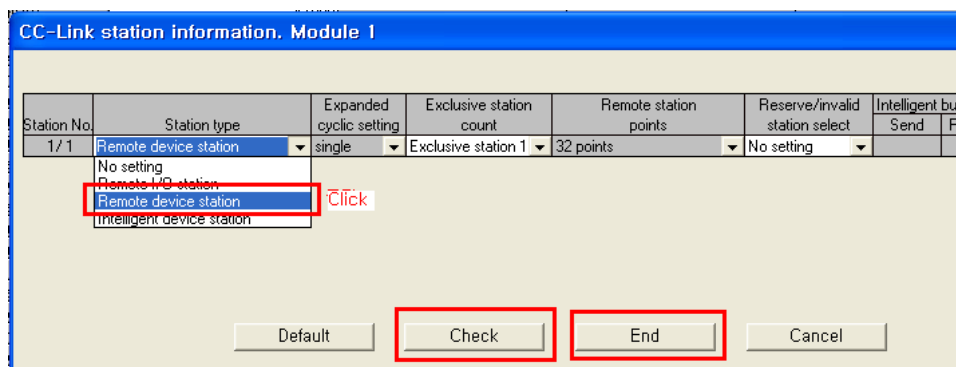
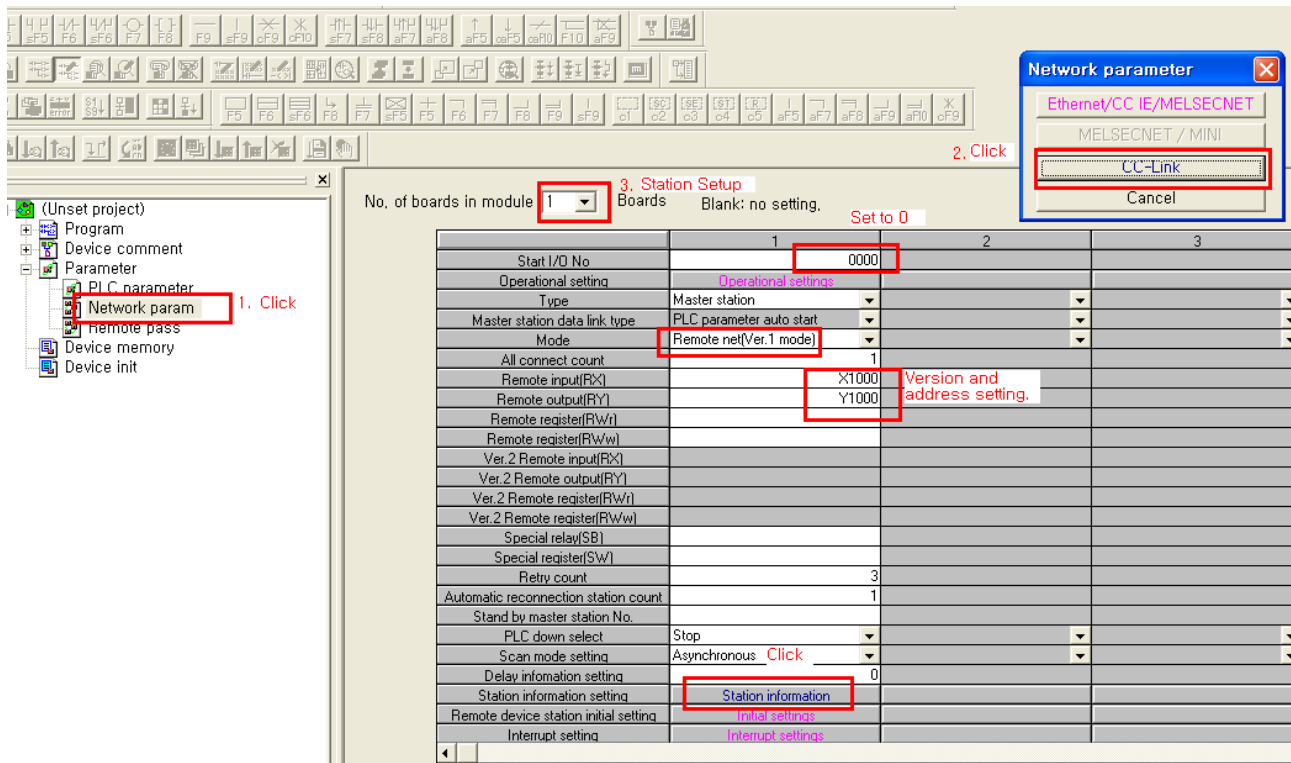
✓ NA-9131 and MELSEC are same communication speed.

- ③ Project -> New project; We have QCPU. So PLC series setup is QCPU.



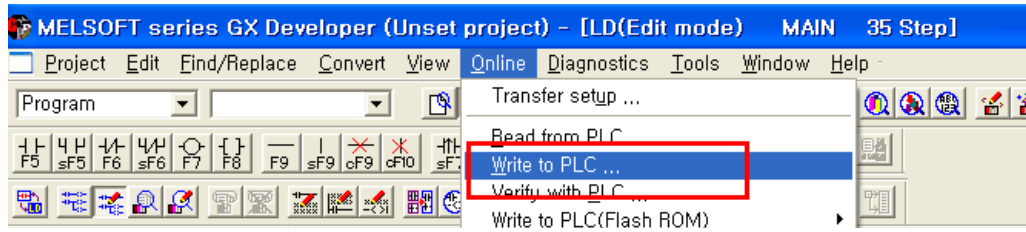


#### ④ Option setting.



- ✓ After setting, just click 'check'.
- ✓ So Identify errors.

⑤ Download to PLC.



## 6. Trouble Shooting

### 6.1. How to diagnose by LED indicator

LED Status	Cause	Action
All LED turns off	- No power	- Check main power Cable
	- System power is not supplied.	- Contact Sales team and send module for repair.
L RUN LED turns off	- Device is not on-line or may not be powered. - Resetting Hardware - Device is Timeout	- Check main power Cable - Check the communication cable - Check the configuration with the respect to CC-Link in PLC program.
L ERR LED turns Flashing Red	- Switch setting has been changed from the setting at the reset cancellation.	- All of settings should be checked again.
L ERR LED turns Red	- CRC error - Invalid MAC ID - Baud rate switch setting error	- Contact Sales team and send module for repair. - Check Baud rate setting. - Check Node setting. - Check the configuration with the respect to CC-Link in PLC program.
I/O LED turns off	- Failure of realization expansion Module - None expansion Module	- Check connector status both NA series and expansion module.
I/O LED flashes red	Failure of configuration baud rate	- Check communication cable with Master - Check power for master.
	Failure of initialization I/O	- Use expansion slot up to 32. - Compose that IO total size is not excess.
		NA series notice unidentified expansion module ID. Check status of expansion module.
I/O LED is red	Failure of exchanging I/O data	Check status of expansion IO connection.
RD LED turns off	- Unable to detect carriers neither for channel 1 or 2	- Check the communication cable - Contact Sales team and send module for repair.
SD LED turns off	- Other than listed in the left	- Check Baud rate setting. - Check the communication cable - Contact Sales team and send module for repair.
Field Power Status LED turns off	- Other than listed in the left	- Check the connection of Field Power.

## 6.2. How to diagnose when device couldn't communicate network

### Inspection of wrong or omission cable connection.

- Check status of cable connection for each node.
- Check that all color matches between connector and cable.
- Check wire omission.

### Terminator resistor

- If terminator resistor is not installed, install terminator resistor
- Check location of terminator resistor

### Configuration of Node address

- Check duplication node address.

### Configuration of Master

- Check configuration of master
  - Check whether to do download or don't
  - Check composition is right
- Configuration of communication baud rate  
I/O size  
Configuration of each node

### Ground and environment

- Check ground is contacted
- Check environment factor (temperature, humidity, etc) is in less than regular limit

## APPENDIX A

### A.1. Product List

No.	ST-Number	Description	ID(hex)	Production Status
<b>Digital Input Module</b>				
	ST-1114	4 Points, Sink(Positive), 5Vdc,	41 00 01	Active
	ST-111F	16 Points, Sink(Positive), 5Vdc,	41 01 19	Active
	ST-1124	4 Points, Source(Negative), 5Vdc,	41 00 02	Active
	ST-112F	16 Points, Source(Negative), 5Vdc,	41 01 1A	Active
	ST-1214	4 Points, Sink(Positive), 12V/24Vdc,	41 00 03	Active
	ST-1218	8 Points, Sink(Positive), 12V/24Vdc,	41 00 07	Active
	ST-121F	16 Points, Sink(Positive), 12V/24Vdc,	41 01 13	Active
	ST-1224	4 Points, Source(Negative), 12V/24Vdc,	41 00 04	Active
	ST-1228	8 Points, Source(Negative), 12V/24Vdc,	41 00 08	Active
	ST-122F	16 Points, Source(Negative), 12V/24Vdc,	41 01 14	Active
	ST-1314	4 Points, Sink(Positive), 48Vdc,	41 00 05	Active
	ST-131F	16 Points, Sink(Positive), 48Vdc,	41 01 17	Active
	ST-1324	4 Points, Source(Negative), 48Vdc,	41 00 06	Active
	ST-132F	16 Points, Source(Negative), 48Vdc,	41 01 18	Active
	ST-1804	4 Points, 110Vac,	41 00 09	Active
	ST-1904	4 Points, 220Vac,	41 00 0A	Active
<b>Digital Output Module</b>				
	ST-2114	4 Points TTL Inverting, 5Vdc/20mA,	81 00 0D	Active
	ST-2124	4 Points TTL Non-Inverting, 5Vdc/20mA,	81 00 0F	Active
	ST-221F	16 Points Sink(Negative Logic), 24Vdc/0.5A,	81 01 15	Active
	ST-222F	16 Points Source(Positive Logic), 24Vdc/0.5A,	81 01 16	Active
	ST-2314	4 Points Sink(Negative Logic), 24Vdc/0.5A,	81 00 0E	Active
	ST-2318	8 Points Sink(Negative Logic), 24Vdc/0.5A,	81 00 11	Active
	ST-2324	4 Points Source(Positive Logic), 24Vdc/0.5A,	81 00 10	Active
	ST-2328	8 Points Source(Positive Logic), 24Vdc/0.5A,	81 00 12	Active
	ST-2414	4 Points Sink(Negative Logic), 24Vdc/0.5A, Diagnostics	81 00 08	Active
	ST-2424	4 Points Source(Positive Logic), 24Vdc/0.5A, Diagnostics	C1 00 00 38	Active
	ST-2514	4 Points Sink(Negative Logic), 24Vdc/2A, Diagnostics	C1 00 00 35	Active
	ST-2524	4 Points Source(Positive Logic), 24Vdc/2A, Diagnostics	C1 00 00 36	Active
	ST-2614	4 Points Sink(Negative Logic), 24Vdc/2A,	81 00 3B	Active
	ST-2624	4 Points Source(Positive Logic), 24Vdc/2A,	81 00 3C	Active
	ST-2742	2 Points, 230Vac/2A, 24Vdc/2A, Relay	81 00 0B	Active
	ST-2744	4 Points, 230Vac/2A, 24Vdc/2A, Relay	81 00 51	Active
	ST-2748	8 Points, 230Vac/2A, 24Vdc/2A, Relay	81 00 50	Active

	ST-2792	2 Points, 230Vac/2A, 24Vdc/2A, Relay, Manual/Auto	C1 00 01 BE	Active
	ST-2852	2 Points, 12~125Vac/0.5A, Triac	81 00 0C	Active
	ST-2924	4 Points, 24Vac/2A, 24Vdc/2A, 4 Points/4COM	81 00 C0	NEW
	ST-2944	4 Points, 24Vac/2A, 24Vdc/2A, 1 Points/1COM	81 00 C1	NEW
	ST-2734	4 Points, 24~220Vac,dc/0.5A, 1 Points/1COM	81 00 C2	NEW
<b>Analog Input Module</b>				
	ST-3114	4 Channels, Current, 0~20mA, 12bit	41 43 1C	Active
	ST-3118	8 Channels, Current, 0~20mA, 12bit	41 47 82	Active
	ST-3134	4 Channels, Current, 0~20mA, 14bit	41 43 1E	Active
	ST-3214	4 Channels, Current, 4~20mA, 12bit	41 43 1D	Active
	ST-3218	8 Channels, Current, 4~20mA, 12bit	41 47 83	Active
	ST-3234	4 Channels, Current, 4~20mA, 14bit	41 43 1F	Active
	ST-3274	4 Channels, Current, 4~20mA, 12bit, Sensor Connector	41 43 A3	Active
	ST-3424	4 Channels, Voltage, 0~10Vdc, 12bit	41 43 20	Active
	ST-3428	8 Channels, Voltage, 0~10Vdc, 12bit	41 47 22	Active
	ST-3444	4 Channels, Voltage, 0~10Vdc, 14bit	41 43 22	Active
	ST-3474	4 Channels, Voltage, 0~10Vdc, 12bit, Sensor Connector	41 43 A0	Active
	ST-3524	4 Channels, Voltage, -10Vdc~10Vdc, 12bit	41 43 21	Active
	ST-3544	4 Channels, Voltage, -10Vdc~10Vdc, 14bit	41 43 23	Active
	ST-3624	4 Channels, Voltage, 0~5Vdc, 12bit	41 43 24	Active
	ST-3644	4 Channels, Voltage, 0~5Vdc, 14bit	41 43 25	Active
	ST-3702	2 Channels, RTD, Status	41 41 28	Active
	ST-3704	4 Channels, RTD, Status	41 43 64	Active
	ST-3708	8 Channels, RTD, Status	41 47 65	Active
	ST-3802	2 Channels, TC	41 41 2A	Active
	ST-3804	4 Channels, TC	41 43 66	Active
	ST-3808	8 Channels, TC	41 47 67	Active
<b>Analog Output Module</b>				
	ST-4112	2 Channels, Current, 0~20mA, 12bit	81 41 2C	Active
	ST-4114	4 Channels, Current, 0~20mA, 12bit	81 43 6D	Active
	ST-4212	2 Channels, Current, 4~20mA, 12bit	81 41 2D	Active
	ST-4214	4 Channels, Current, 4~20mA, 12bit	81 43 6E	Active
	ST-4274	4 Channels, Current, 4~20mA, 12bit, Sensor Connector	81 43 B3	Active
	ST-4422	2 Channels, Voltage, 0~10Vdc, 12bit	81 41 2E	Active
	ST-4424	4 Channels, Voltage, 0~10Vdc, 12bit	81 43 6A	Active
	ST-4474	4 Channels, Voltage, 0~10Vdc, 12bit, Sensor Connector	81 43 B0	Active
	ST-4491	1 Channel, Voltage, 0~10Vdc, 12bit, Manual Type	C1 40 41 BF	Active
	ST-4522	2 Channels, Voltage, -10~10Vdc, 12bit	81 41 2F	Active
	ST-4622	2 Channels, Voltage, 0~5Vdc, 12bit	81 41 30	Active
	ST-4911	1 Channel, Current, 0~1A, 12bit	81 40 31	Active

<b>Special Module</b>				
	ST-5101	1 Channel, High Speed Counter, 5V Input	C1 01 05 34	Active
	ST-5111	1 Channel, High Speed Counter, 24V Input	C1 01 05 39	Active
	ST-5112	2 Channel, High Speed Counter, 24V Sink Input	C1 01 07 4D	Active
	ST-5114	4 Channel, High Speed Counter, 24V Sink Input	C1 03 0F 4C	Active
	ST-5211	RS232 Communication, 1Channel, RTS/CTS Flow Control	C1 05 05 42	Active
	ST-5212	RS232 Communication, 2Channel	C1 0B 0B 43	Active
	ST-5221	RS422 Communication, 1Channel	C1 05 05 44	Active
	ST-5231	RS485 Communication, 1Channel	C1 05 05 45	Active
	ST-5232	RS485 Communication, 2Channel	C1 0B 0B 46	Active
	ST-5351	SSI Interface 1CH	C1 01 09 9E	Active
	ST-5422	2 CH PWM output, 1.5A/24Vdc, source	C1 05 01 57	Active
	ST-5442	2 CH PWM output, 0.5A/24Vdc, source	C1 05 01 56	Active
	ST-5444	4 CH PWM output, 0.5A/24Vdc, source	C1 0B 03 54	Active
	ST-5641	1 CH Pulse output, 0.5A/24Vdc, source	C1 05 03 92	Active
	ST-5642	2 CH Pulse output, 0.5A/24Vdc, source	C1 09 07 90	Active
	ST-5651	1 CH Pulse output, RS422	C1 05 03 98	Active
<b>Power Module</b>				
	ST-7408	8 Channels, Shield, ID Type	02 00 E4	Active
	ST-7508	8 Channels, Common, 0Vdc, ID Type	02 00 E5	Active
	ST-7511	1 Channel, Expansion Power, Input 24Vdc, Output 1.0A/5Vdc, ID Type	02 00 E0	Active
	ST-7518	8 Channels, Common, 24Vdc, ID Type	02 00 E6	Active
	ST-7588	8 Channels, Common, 0Vdc and 24Vdc, ID Type	02 00 E7	Active
	ST-7641	1 Channel, Field Distributor, 5Vdc~48Vdc, 110Vac~220Vac, ID Type	02 00 E2	Active

## A.2. Glossary

- System Power: The power for starting up CPU.
- Field Power: The power for input and output line.
- Terminator Resistor: Resistor for prevention reflected wave.
- EDS: Electronic Data Sheet.
- sinking: The method of input and output what device does not have power source.
- sourcing: The method of input and output what device have power source.