MITSUBISHI ELECTRIC
Changes for the Better

CC-Link IE Field Basic (FX5 + Remote I/O)

July 2022

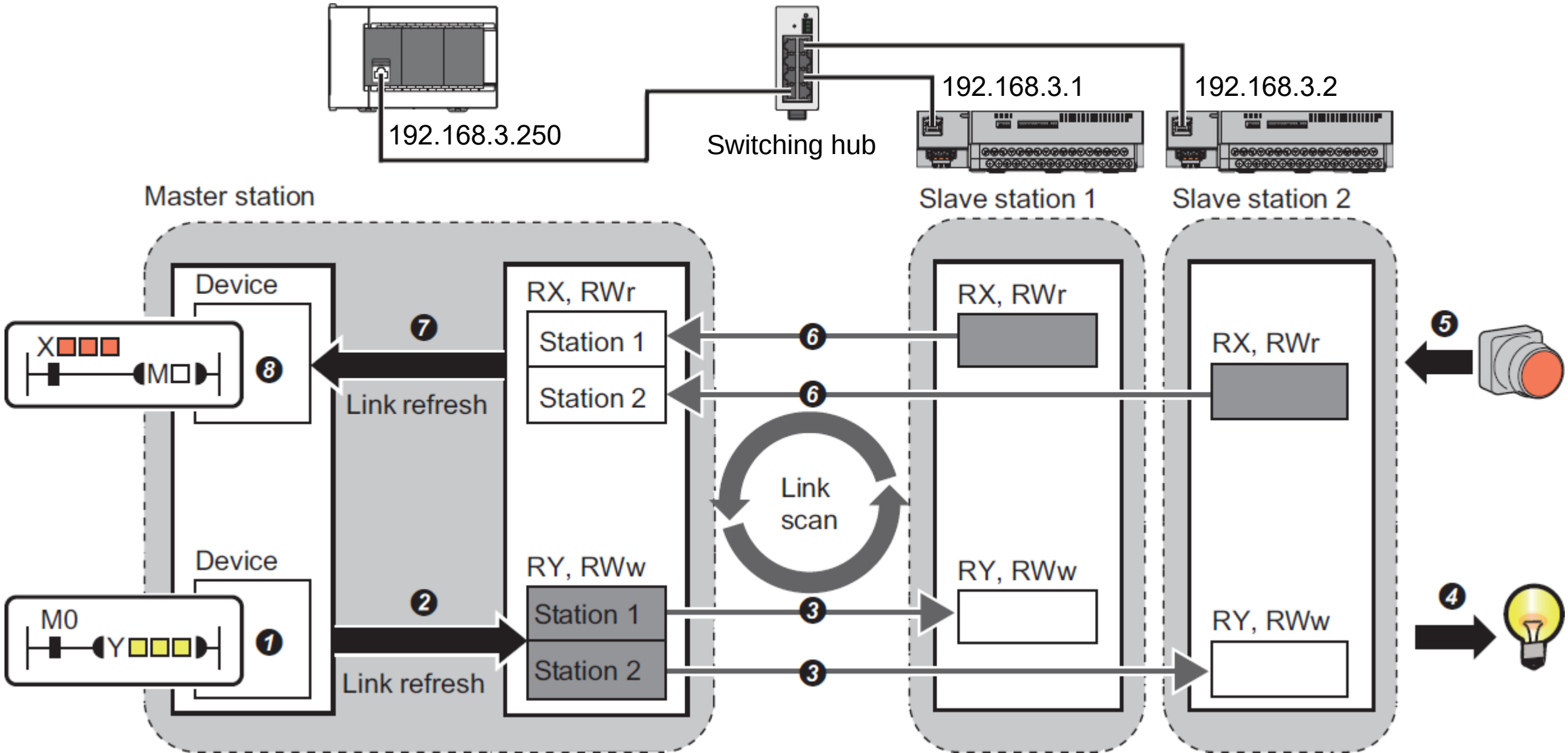
Mitsubishi Electric Factory Automation (Thailand)

เอกสารและคู่มือประกอบ

- sh081684engg_CC-Link IE Field Basic.pdf (คู่มือ CC-Link IE Filed Basic)
- sh081763engf_CC-Link IE Field Basic Remote IO.pdf (คู่มือ Remote I/O)
- jy997d69701a_Training iQ-F (GX Works3) - correction.pdf (คู่มืออบรม PLC)

Overview & cyclic transmission

- คู่มือ CC-Link IE Filed Basic บท 1 OVERVIEW และ 7.1 Cyclic Transmission



Specifications

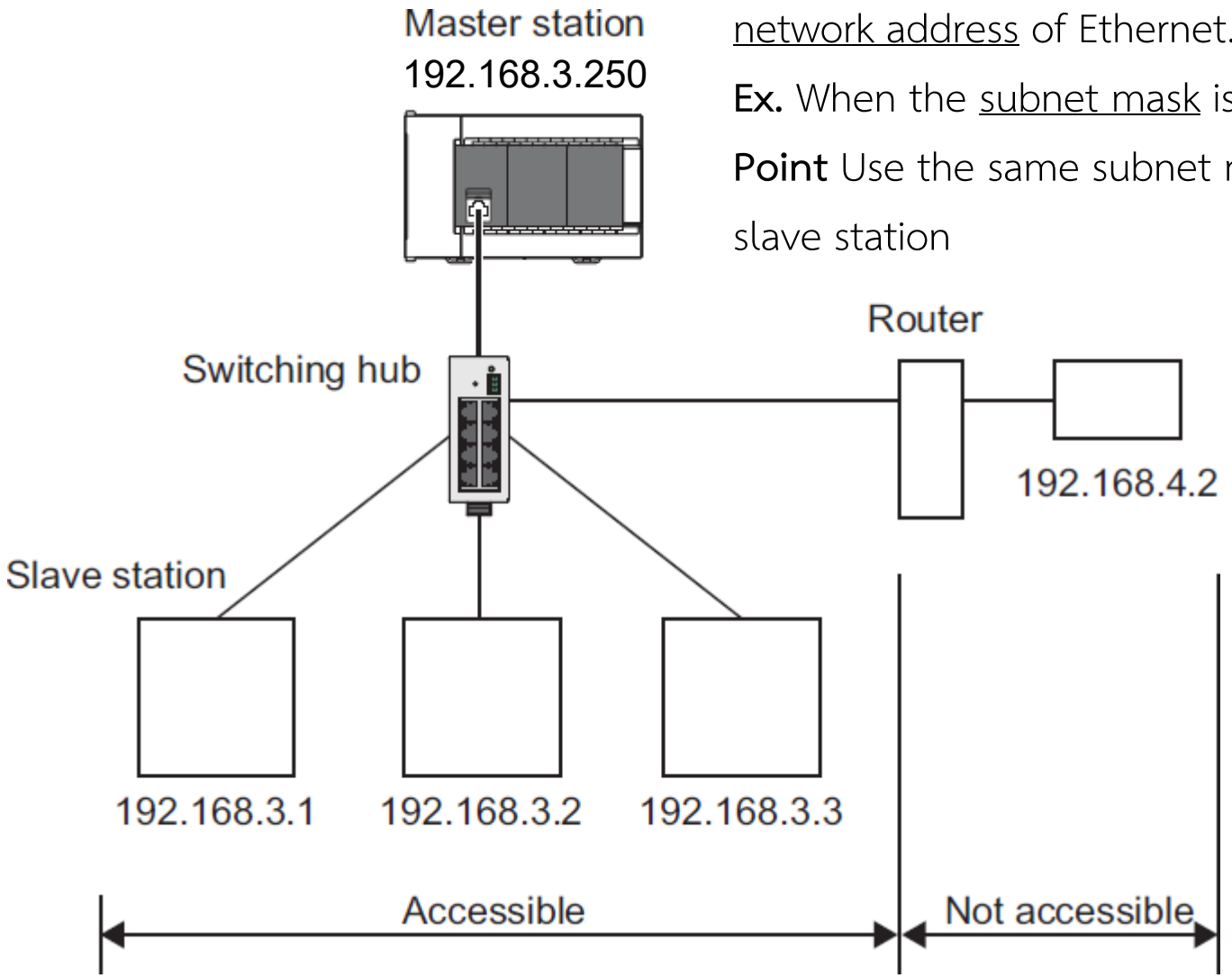
- คู่มือ CC-Link IE Filed Basic บท 2.1 Performance Specifications

Item			Specifications	
			FX5U	
			Firmware ver. >= 1.110	Firmware ver. < 1.110
Number of connectable modules per network	Master station		1	
	Slave station		16	6
Maximum number of link points per station	Master station	RX	1024	384
		RY	1024	384
		RWr	512	192
		RWw	512	192
	Slave station (1 station occupied)	RX	64	
		RY	64	
		RWr	32	
		RWw	32	
Transmission specifications	Data transmission speed		100Mbps	
Network topology			Star, line (with modules support line), mixed	
Connection cable			Ethernet cable 100BASE-TX standard	
Maximum station-to-station distance			100m (Category 5e)	

- คู่มือ CC-Link IE Filed Basic บท 5.1 CC-Link IE Field Network Basic System Configuration ⟶ Network topology

Access range และ Number of link points

- คู่มือ CC-Link IE Filed Basic บท 5.1 CC-Link IE Field Network Basic System Configuration



Access range The access range of CC-Link IE Field Network Basic is within the same network address of Ethernet. The device connected beyond a router is not accessible.

Ex. When the subnet mask is 255.255.255.0 and the network address is 192.168.3. □

Point Use the same subnet mask value and do not assign the same IP address for each slave station

Number of link points

Each slave: 1 station occupied

Slave station	RX/RY			RWr/RWw		
	Number of point	Start	End	Number of point	Start	End
1	64	0	3F	32	0	1F
2	64	40	7F	32	20	3F
3	64	80	BF	32	40	5F

Interlock Programs

- คู่มือ CC-Link IE Filed Basic บท 6.1 Interlock Programs of Cyclic Transmission

Program using devices

MELSEC iQ-F (FX5U)

- SM1536

Cyclic transmission status

- SD1536.0

Cyclic transmission status of station No.1

- SD1536.1

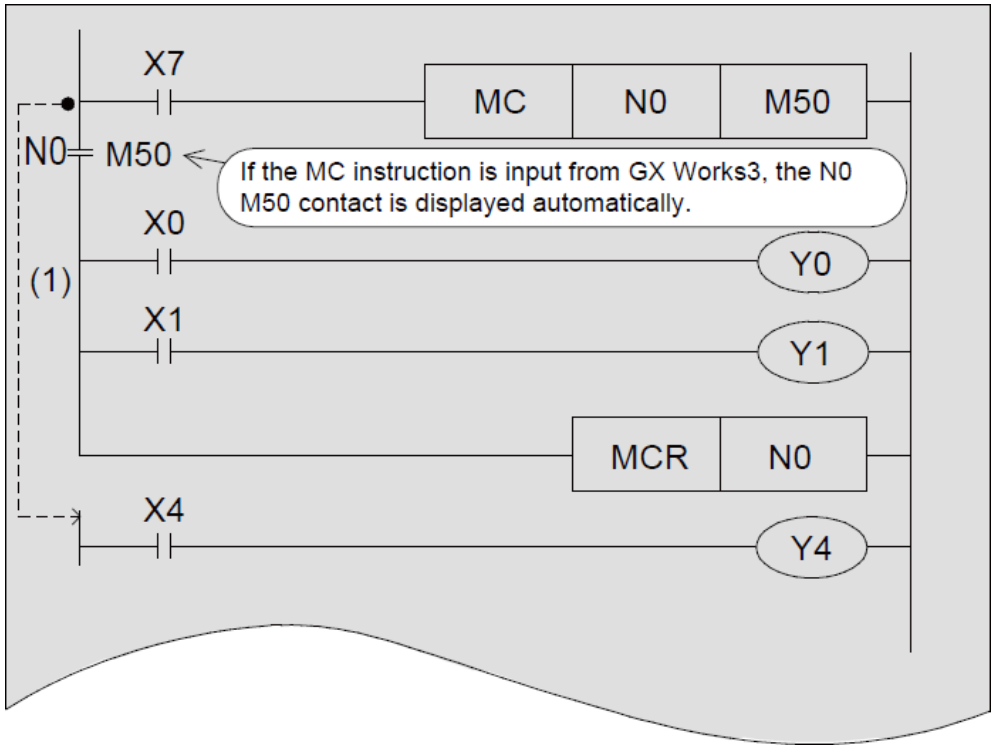
Cyclic transmission status of station No.2

คำอธิบาย SD□.□ และ MC/MCR

- คู่มืออบรม PLC บท 4.2 Types of PLC instructions หน้า 4-6 “the word device (D, W, SD, SW, R, U \G) can handle the bit data for the specified bit No”

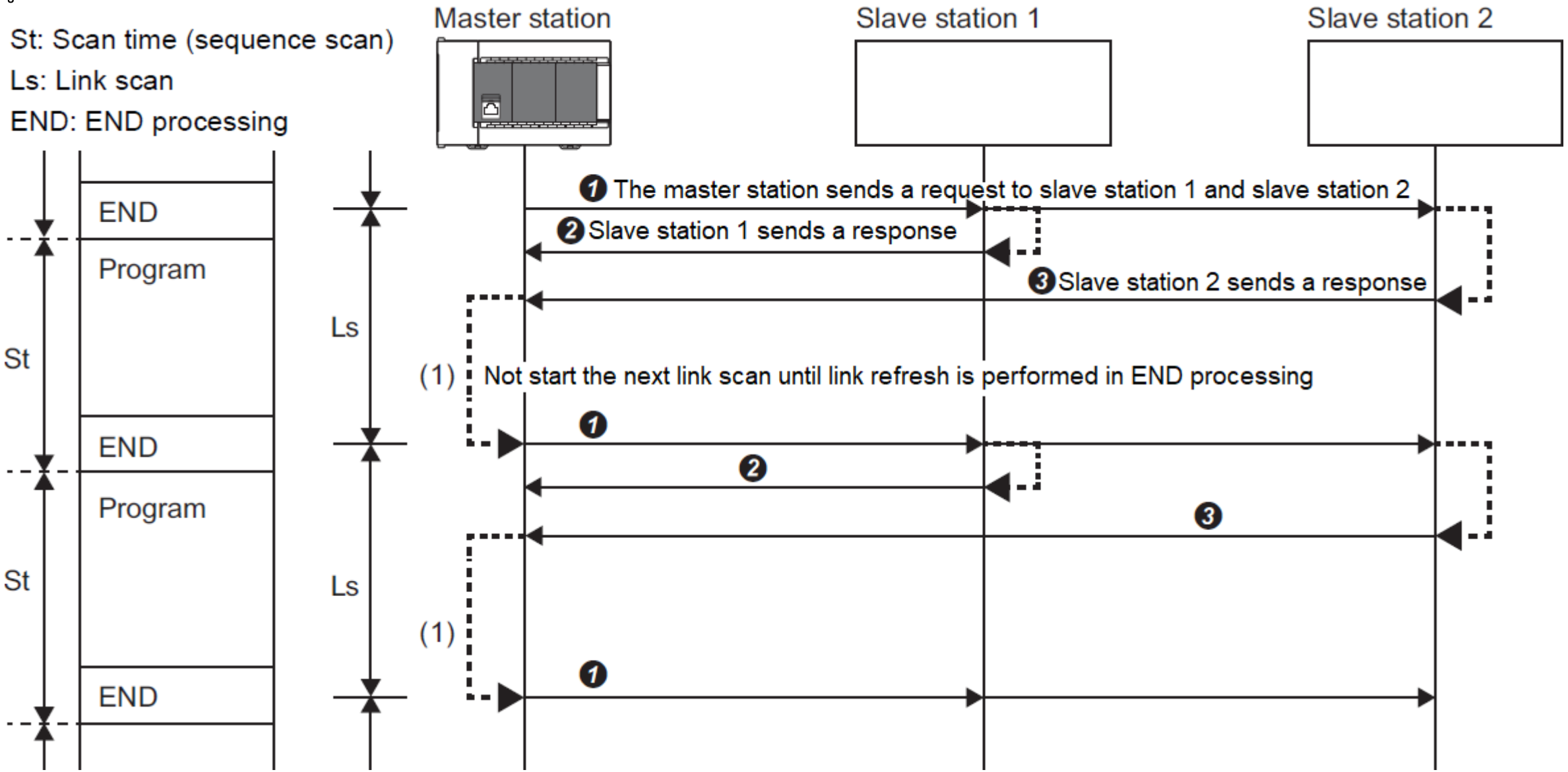
The bit No. can be specified with a hexadecimal in the range of 0 to F.

- คู่มืออบรม PLC บท 4.3.6 MC/MCR instruction



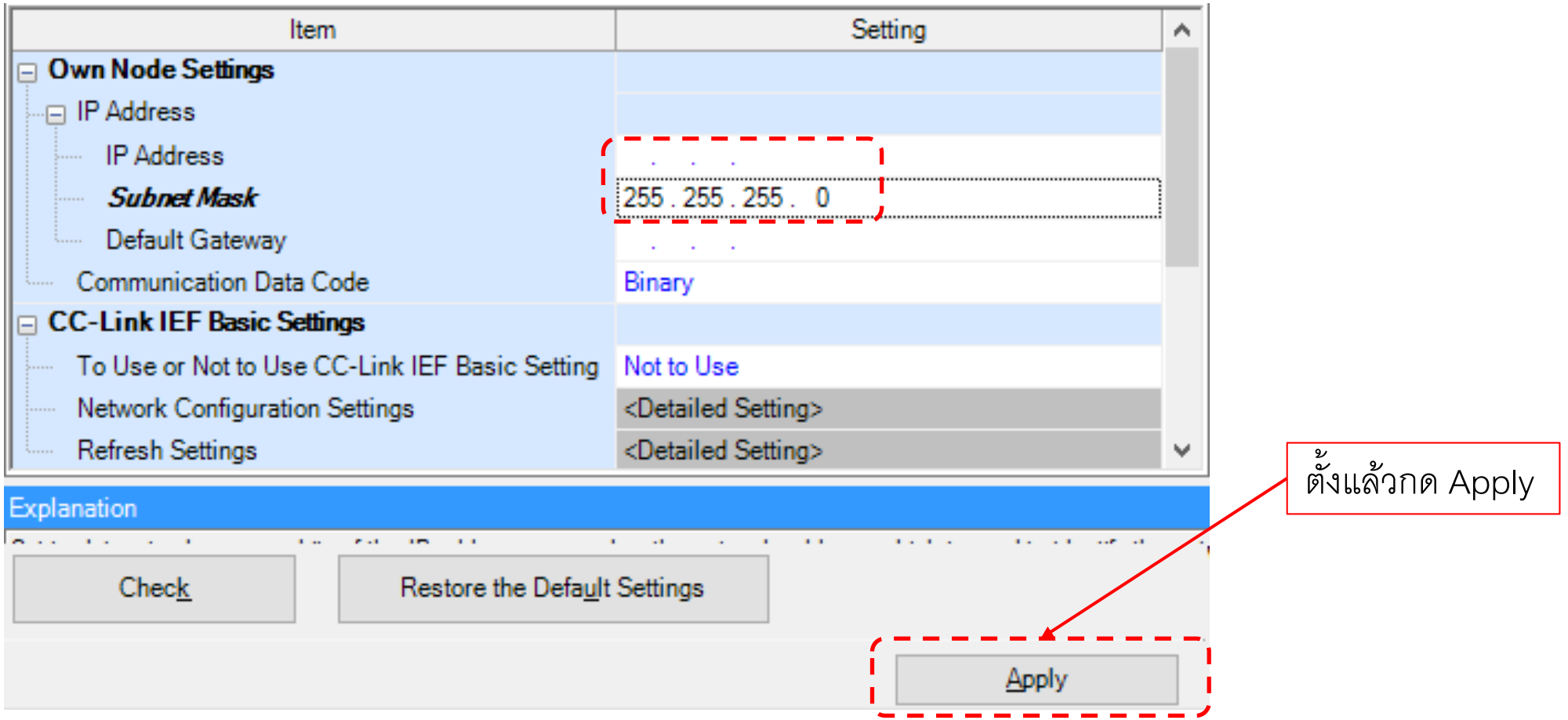
Operation of the link scan

- คู่มือ CC-Link IE Filed Basic บท 7.1 Cyclic Transmission ⟶ Operation of the link scan ⟶ MELSEC iQ-F

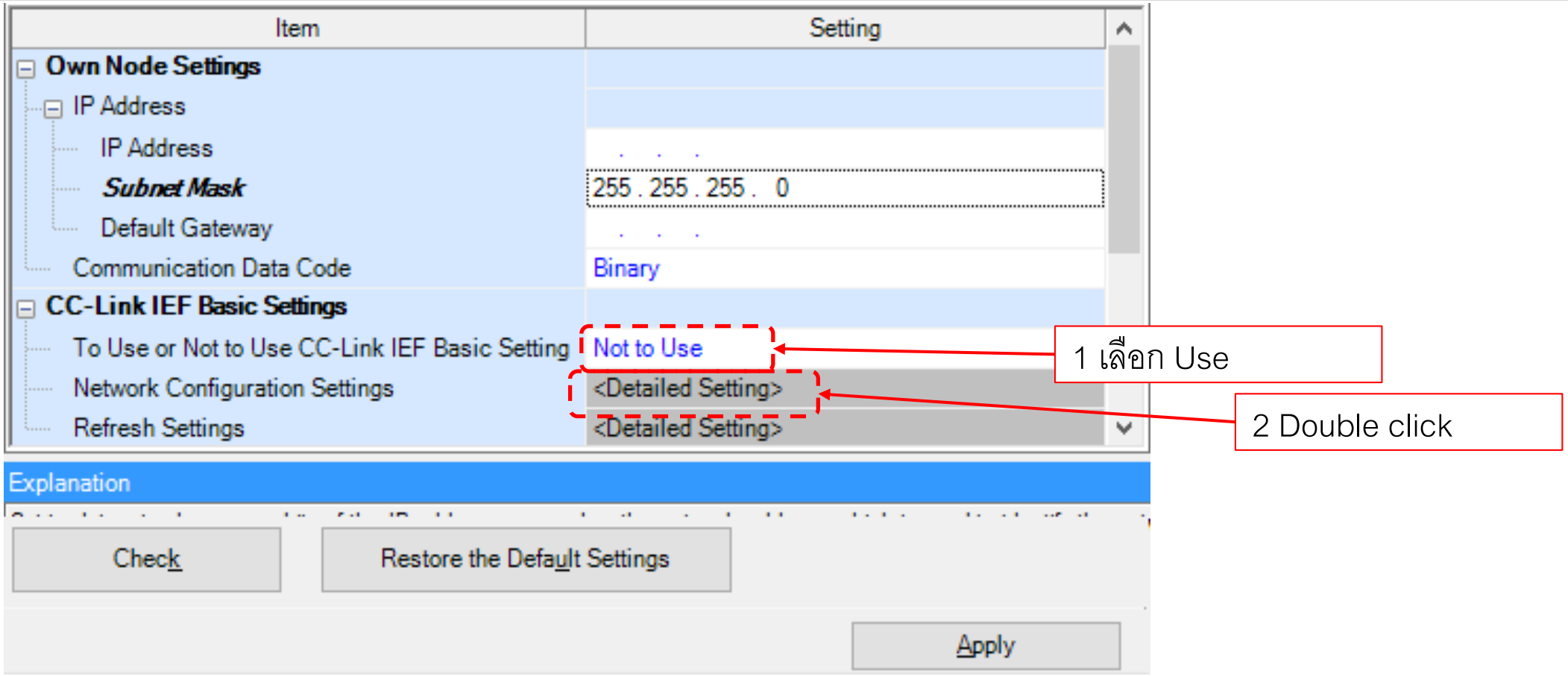


Parameter settings

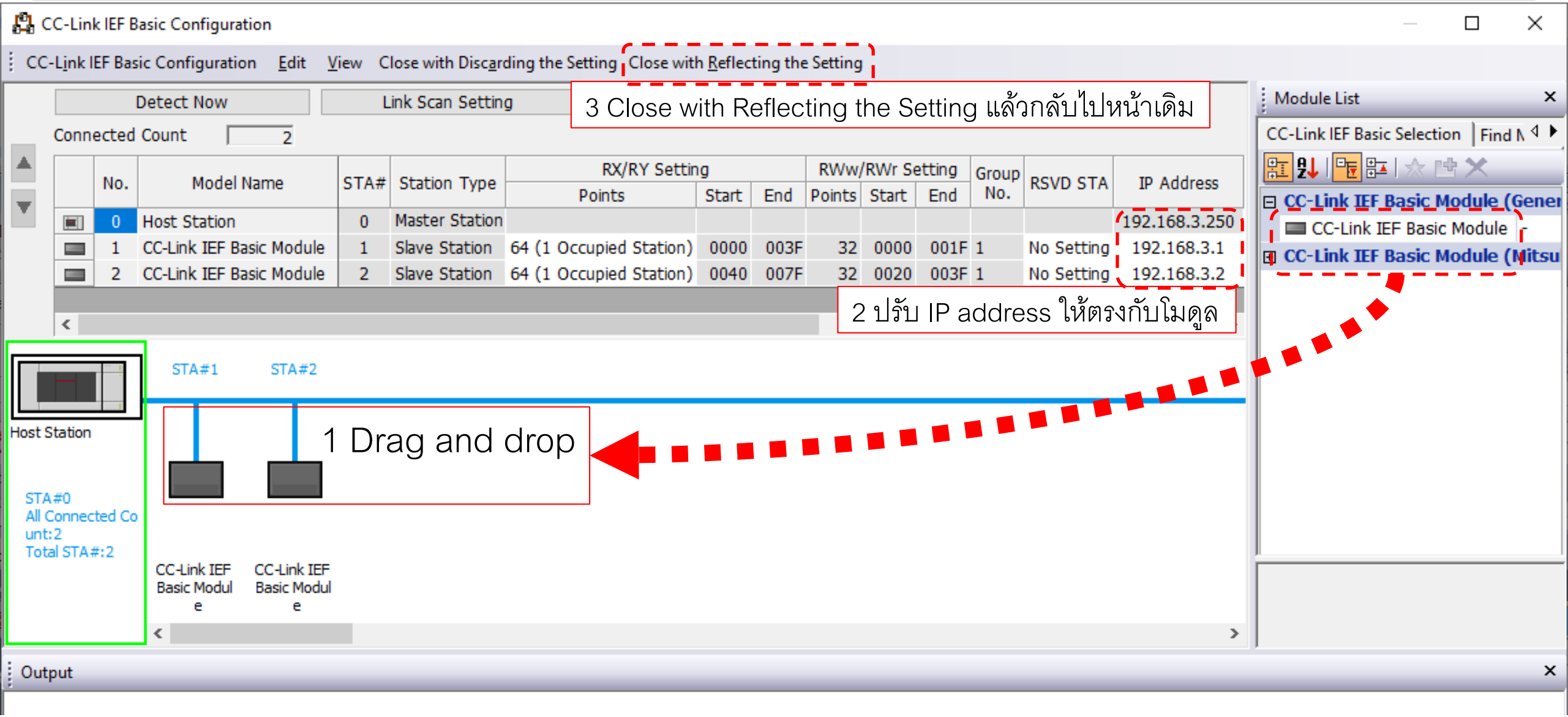
- คู่มือ CC-Link IE Filed Basic บท 8.1 Settings for MELSEC iQ-R/MELSEC iQ-L/MELSEC iQ-F ⟶ IP address settings ⟶ MELSEC iQ-F
- Navigation window ⟶ Parameter ⟶ CPU module model name ⟶ Module Parameter ⟶ Ethernet Port ⟶ Basic Settings ⟶ Own Node Settings
- ถ้าไม่ตั้ง IP address FX5 จะใช้ 192.168.3.250 แต่ต้องตั้ง Subnet Mask 255.255.255.0 สำหรับ IP address ที่เริ่มด้วย 192 หรือมากกว่า



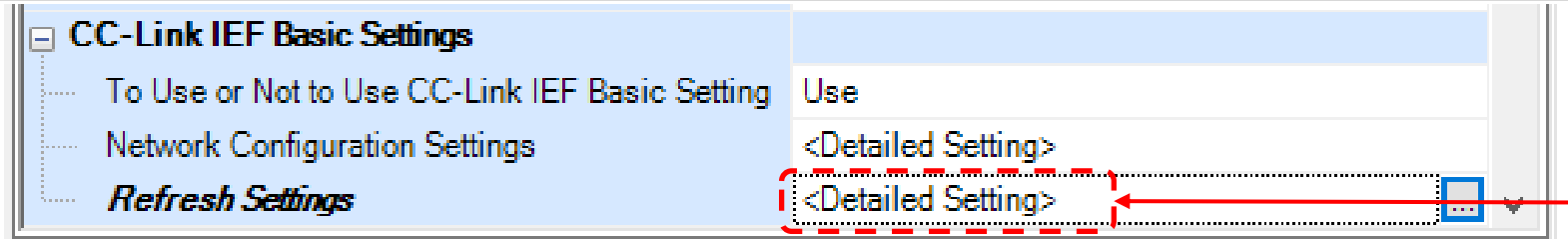
CC-Link IEF Basic Settings

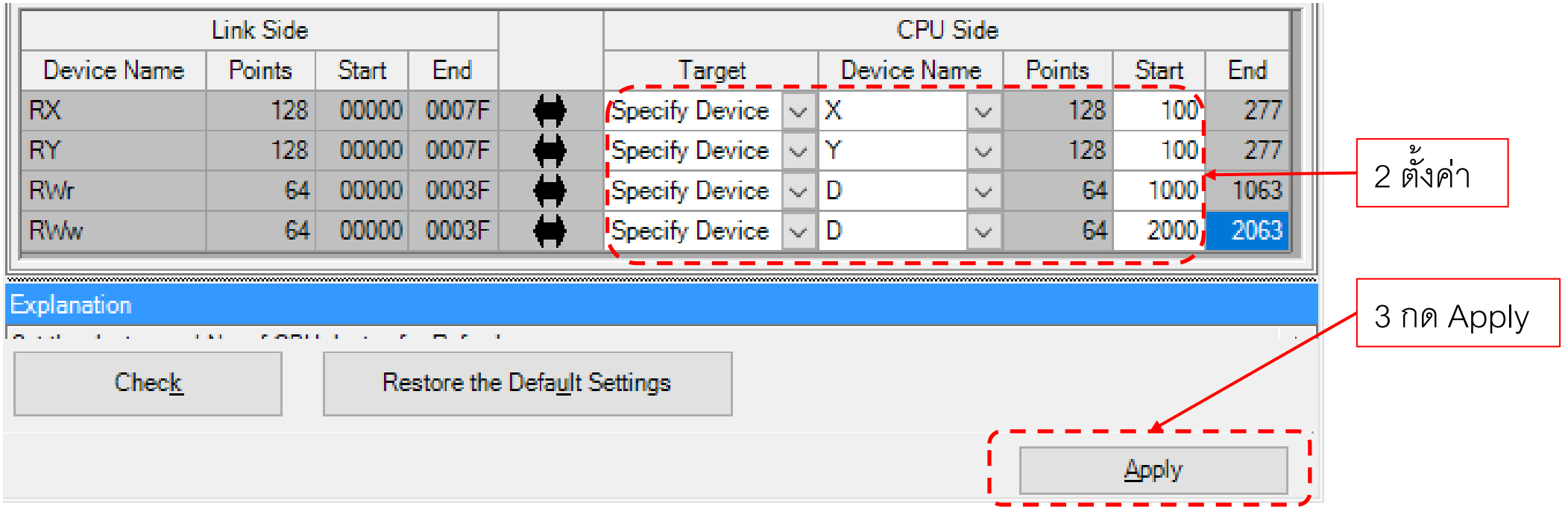


Network Configuration Settings



Refresh Settings





การนับ I/O จาก Link Refresh

- จากตัวอย่าง Refresh setting เป็นการจับคู่หมายเลข RX, RY, RWr, RWw กับหมายเลข X, Y, D ที่จะใช้ในโปรแกรมจริง

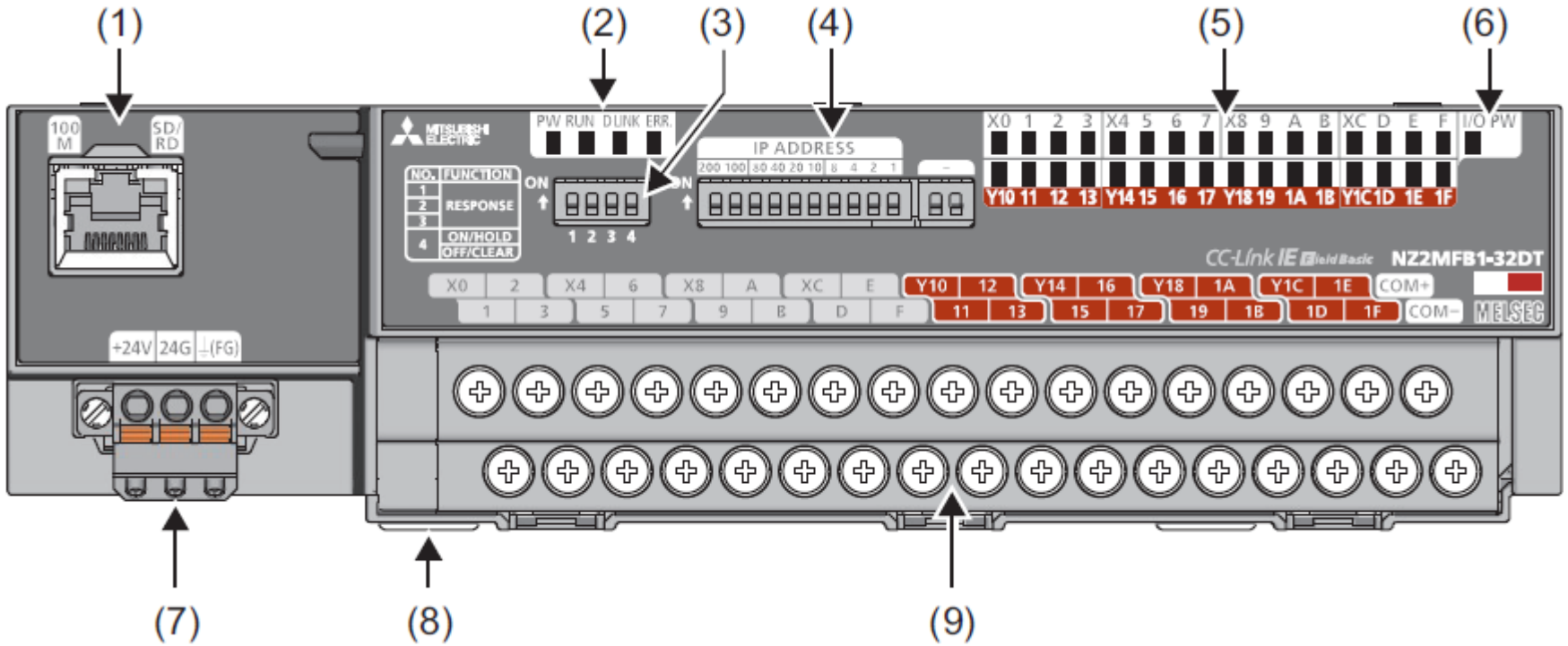
Link Side					CPU Side				
Device Name	Points	Start	End		Target	Device Name	Points	Start	End
RX	128	00000	0007F	⇔	Specify Device	X	128	100	277
RY	128	00000	0007F	⇔	Specify Device	Y	128	100	277
RWr	64	00000	0003F	⇔	Specify Device	D	64	1000	1063
RWw	64	00000	0003F	⇔	Specify Device	D	64	2000	2063

- ใช้ RX, RY โมดูลละ 64 หมายเลขเสมอแม้โมดูลจริงมี I/O ไม่ถึง 64 จุด ยังต้องใช้หมายเลข X, Y สำหรับโมดูล Station ถัดไปต่อจาก 64 หมายเลข
- จาก Number of link points ระบบ CC-Link มีหมายเลข RX, RY เป็นฐาน 16 แต่ FX5 มีหมายเลข X, Y เป็นฐาน 8 จับคู่ได้ดังนี้

Station	RX		X		RY		Y		RWr		D		RWw		D	
	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
1	0	3F	100	177	0	3F	100	177	0	1F	1000	1031	0	1F	2000	2031
2	40	7F	200	277	40	7F	200	277	20	3F	1032	1063	20	3F	2032	2063

Remote I/O Module

- คู่มือ Remote I/O บท 2 PART NAMES ⟶ Screw terminal block type



(1) ขั้ว Ethernet และ LED แสดงสัญญาณ

(2) LED แสดงสถานะโมดูล

PW	ติด	= มีแหล่งจ่ายไฟ
RUN	ติด	= โมดูลทำงาน
D LINK	ติด	= เชื่อมต่อข้อมูลได้
ERR.	ดับ	= ไม่มีข้อผิดพลาด

(3) Function setting switch

(4) IP address setting switch

(5) ON/OFF status of I/O

(6) I/O PW LED

(7) Terminal block for module power supply (24VDC)

(8) DIN rail hook

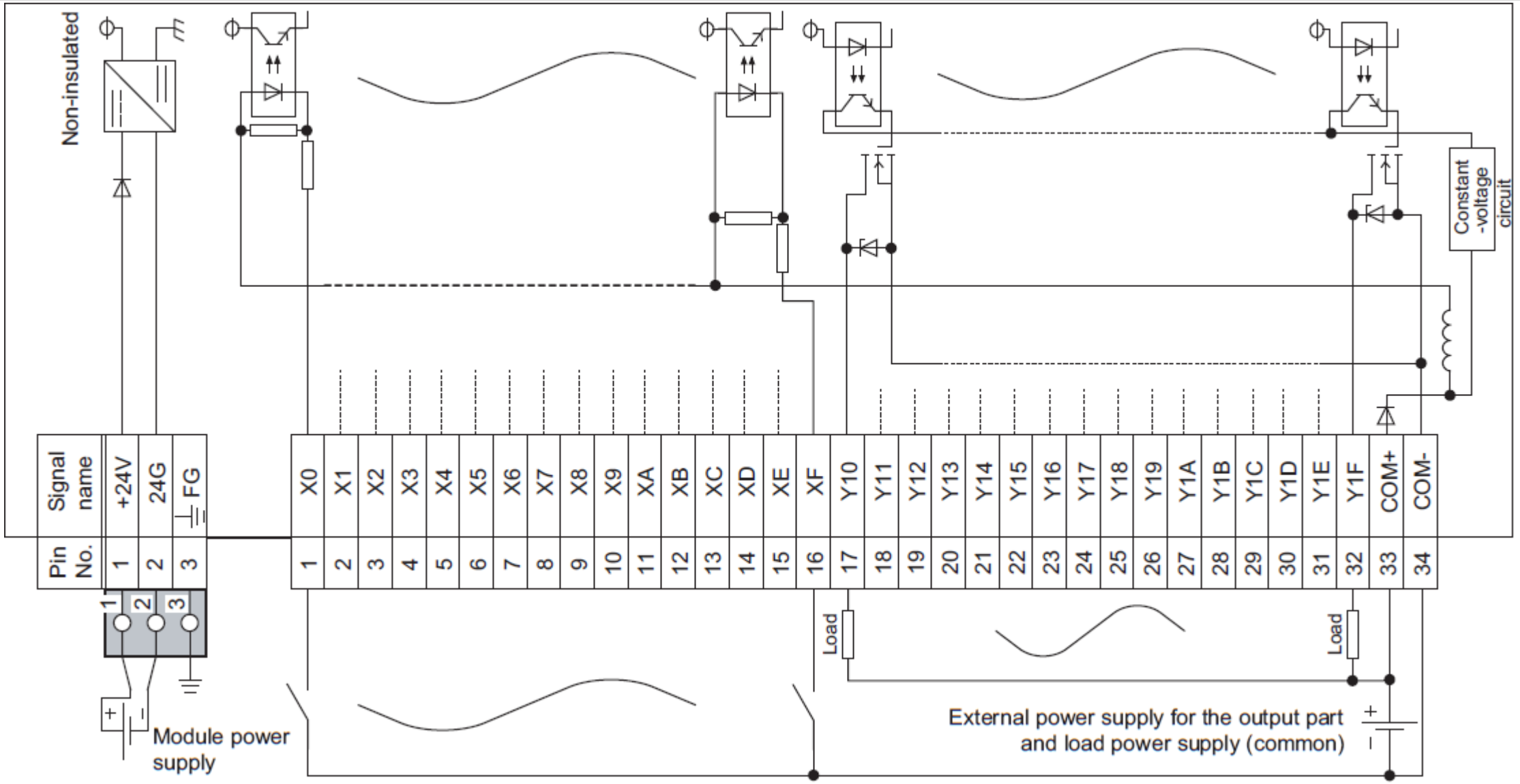
(9) Terminal block for I/O power supply and I/O signals

NZ2MFB1-32DT DC input/transistor output module

- คู่มือ Remote I/O บท 3.2 Performance Specifications ⟶ I/O combined module

Item		NZ2MFB1-32DT	
		Input specifications	Output specifications
Station type, Number of occupied stations		Slave station, One station	
Number of input points		16 points	—
Rated input voltage		24VDC	
Rated input current		6.0mA TYP. (for 24VDC)	
Input response time	OFF→ON	0ms/0.2ms/1ms/1.5ms/5ms/10ms/20ms/70ms (Initial setting: 10ms)	
	ON→OFF		
Input type		Positive common type	
Number of output points		—	16 points
Rated load voltage			24VDC
Max. load current			0.5A/point, 4A/common
Output response time	OFF→ON		0.5ms or less
	ON→OFF		1.5ms or less (resistance load)
Surge suppressor			Zener diode
External power supply for output part			24VDC
Output type			Sink type
Wiring method for common		16 points/common (1-wire, screw terminal block)	16 points/common (1-wire, screw terminal block)

NZ2MFB1-32DT External connection

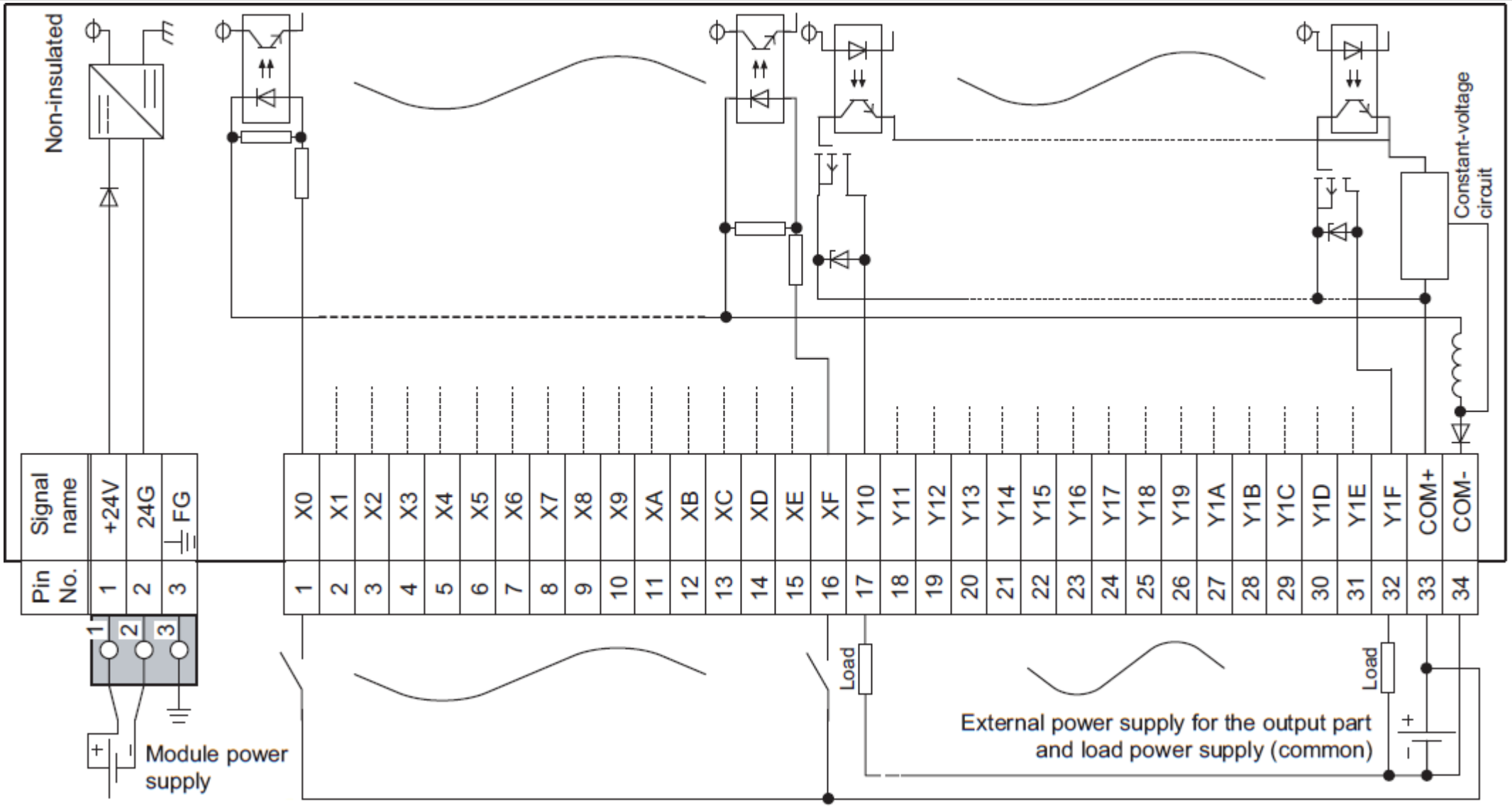


NZ2MFB1-32DTE1 DC input/transistor output module

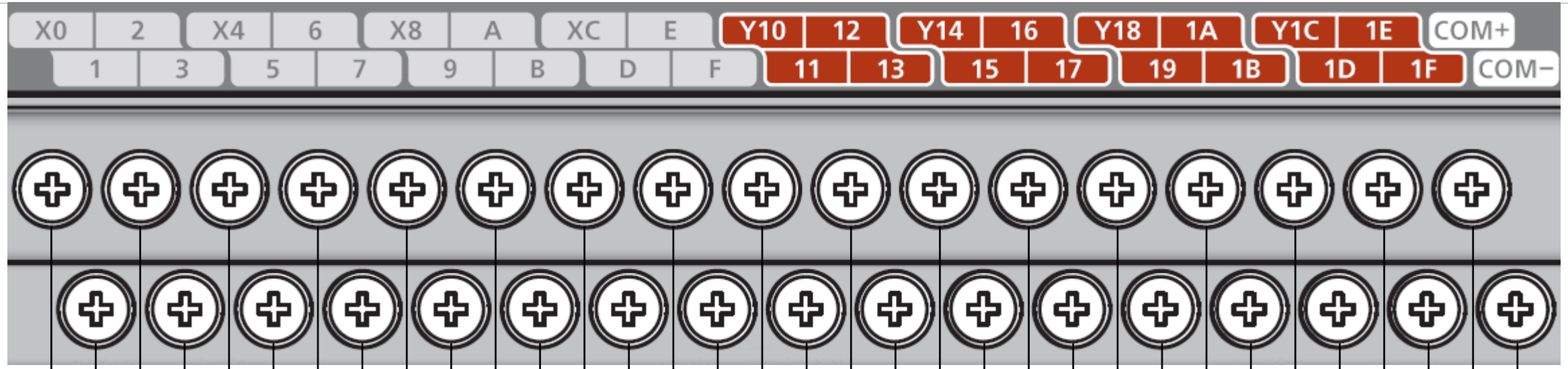
- คู่มือ Remote I/O บท 3.2 Performance Specifications ⟶ I/O combined module

Item		NZ2MFB1-32DTE1	
		Input specifications	Output specifications
Station type, Number of occupied stations		Slave station, One station	
Number of input points		16 points	—
Rated input voltage		24VDC	
Rated input current		6.0mA TYP. (for 24VDC)	
Input response time	OFF→ON	0ms/0.2ms/1ms/1.5ms/5ms/10ms/20ms/70ms (Initial setting: 10ms)	
	ON→OFF		
Input type		Negative common type	
Number of output points		—	16 points
Rated load voltage			24VDC
Max. load current			0.1A/point, 1.6A/common
Output response time	OFF→ON		0.5ms or less
	ON→OFF		1.5ms or less (resistance load)
Surge suppressor			Zener diode
External power supply for output part			24VDC
Output type			Source type
Wiring method for common		16 points/common (1-wire, screw terminal block)	16 points/common (1-wire, screw terminal block)

NZ2MFB1-32DTE1 DC input/transistor output module



I/O terminal block และการนับ X, Y ในโปรแกรม FX5

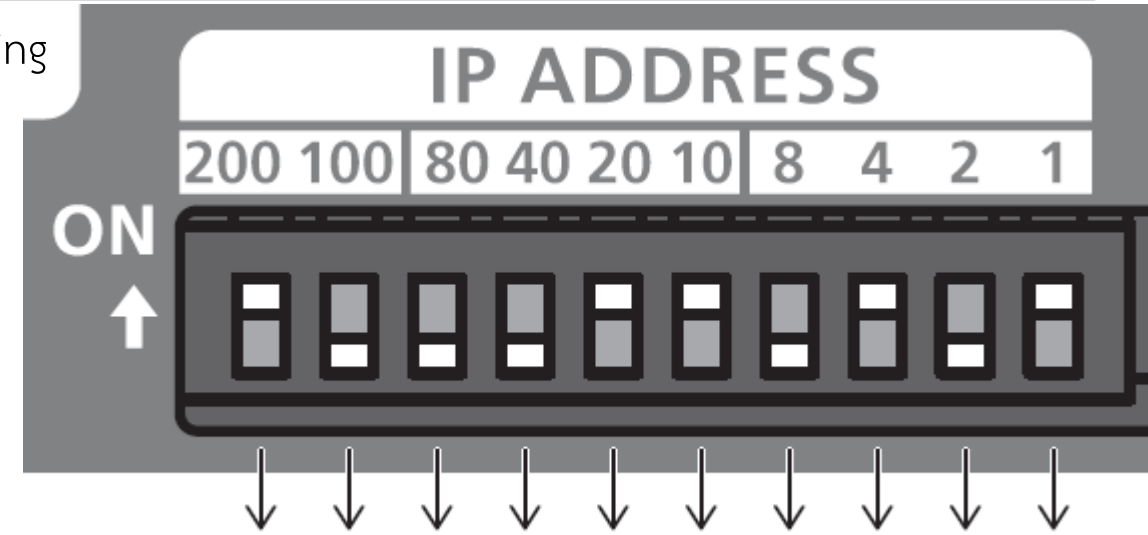


Pin no.	Station 1	Station 2
1	X100	X200
2	X101	X201
3	X102	X202
4	X103	X203
5	X104	X204
6	X105	X205
7	X106	X206
8	X107	X207
9	X110	X210
10	X111	X211
11	X112	X212
12	X113	X213
13	X114	X214
14	X115	X215
15	X116	X216
16	X117	X217
17	Y120	Y220
18	Y121	Y221
19	Y122	Y222
20	Y123	Y223
21	Y124	Y224
22	Y125	Y225
23	Y126	Y226
24	Y127	Y227
25	Y130	Y230
26	Y131	Y231
27	Y132	Y232
28	Y133	Y233
29	Y134	Y234
30	Y135	Y235
31	Y136	Y236
32	Y137	Y237
33	COM+	COM+
34	COM-	COM-

IP address setting

- คู่มือ Remote I/O บท 6.2 Setting Switch, IP address setting switch setting
- Set the fourth octet of IP address: 192.168.3.□□□

The fourth octet



- **Ex.** To set to **235** = 200 + 0 + 0 + 0 + 20 + 10 + 0 + 4 + 0 + 1

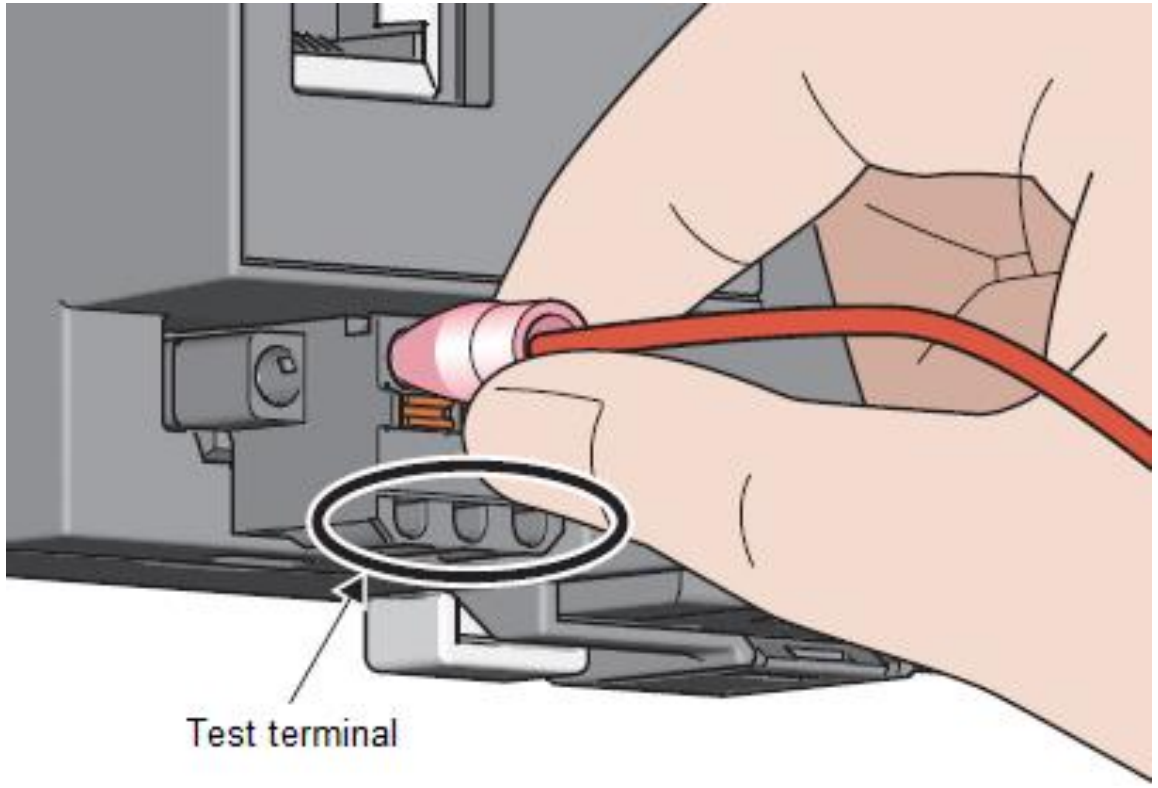
- **Automatic setting of the first to third octet of IP address** by the I/O module according to the settings of the master station. (The factory default setting is 192.168.3.)

	No.	Model Name	STA#	Station Type	RX/RY Setting			RWw/RWr Setting			Group No.	RSVD STA	IP Address
					Points	Start	End	Points	Start	End			
	0	Host Station	0	Master Station									192.168.3.250
	1	CC-Link IEF Basic Module	1	Slave Station	64 (1 Occupied Station)	0000	003F	32	0000	001F	1	No Setting	192.168.3.1
	2	CC-Link IEF Basic Module	2	Slave Station	64 (1 Occupied Station)	0040	007F	32	0020	003F	1	No Setting	192.168.3.2

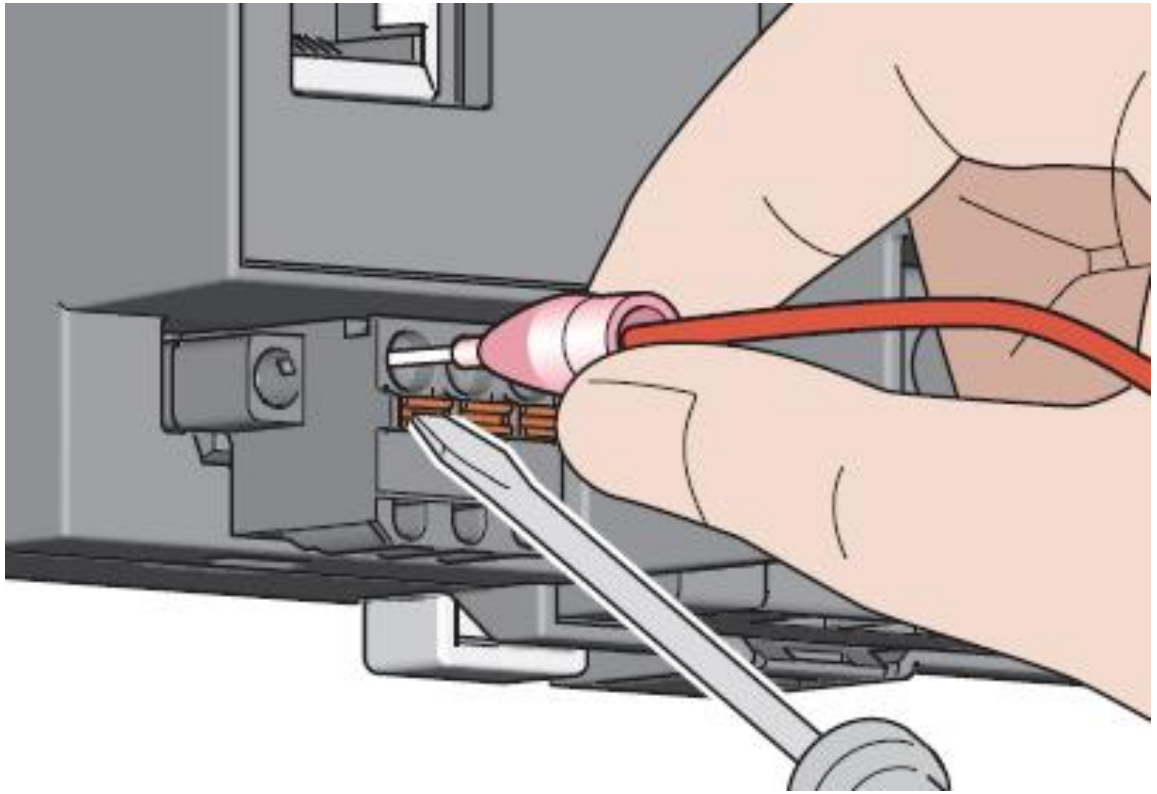
The first to third octet

Wiring of terminal block for module power supply

- คู่มือ Remote I/O บท 6.5 Wiring, Wiring of terminal block for module power supply and FG



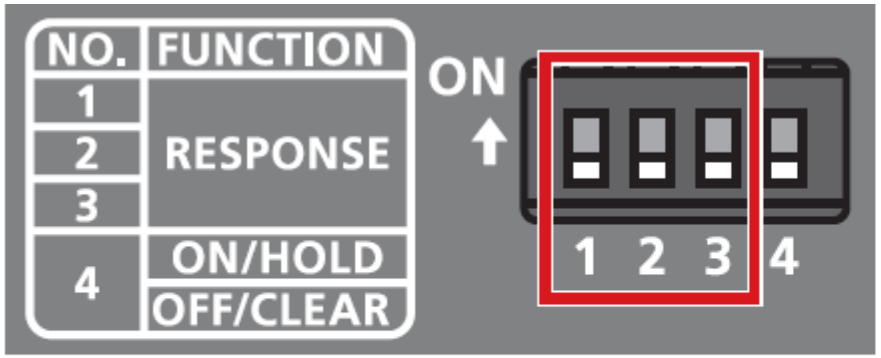
- To connect the cable



- To disconnect the cable

Input Response Time Setting

- คู่มือ Remote I/O บท 8.1 Input Response Time Setting Function

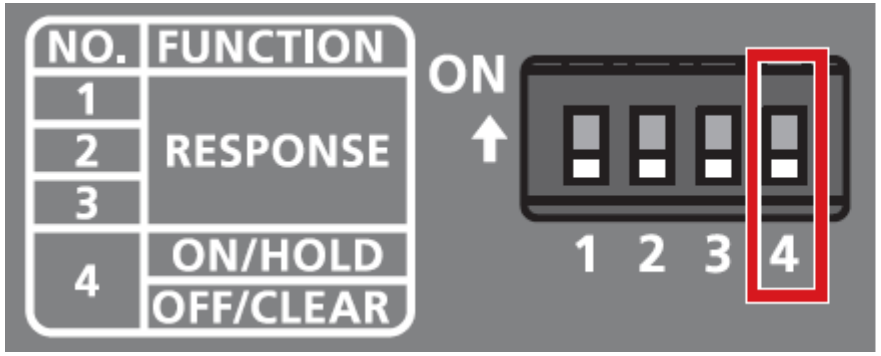


Function setting switch 1 to 3			Input response time setting
1	2	3	
OFF	OFF	OFF	10ms (default)
OFF	OFF	ON	0ms
OFF	ON	OFF	0.2ms
OFF	ON	ON	1ms
ON	OFF	OFF	1.5ms
ON	OFF	ON	5ms
ON	ON	OFF	20ms
ON	ON	ON	70ms

Output HOLD/CLEAR Setting

- คู่มือ Remote I/O บท 8.2 Output HOLD/CLEAR Setting Function

Operating status		Output HOLD/CLEAR setting HOLD		Output HOLD/CLEAR setting CLEAR	
		Last output status OFF	Last output status ON	Last output status OFF	Last output status ON
Data link in operation	CPU module in RUN	OFF	ON	OFF	ON
	CPU module in STOP	OFF	ON	OFF	OFF
	CPU module in PAUSE	OFF	ON	OFF	ON
	CPU module in RESET	OFF	ON	OFF	OFF
	CPU module suspended by error	OFF	ON	OFF	OFF
During disconnection/cyclic stop		OFF	ON	OFF	OFF



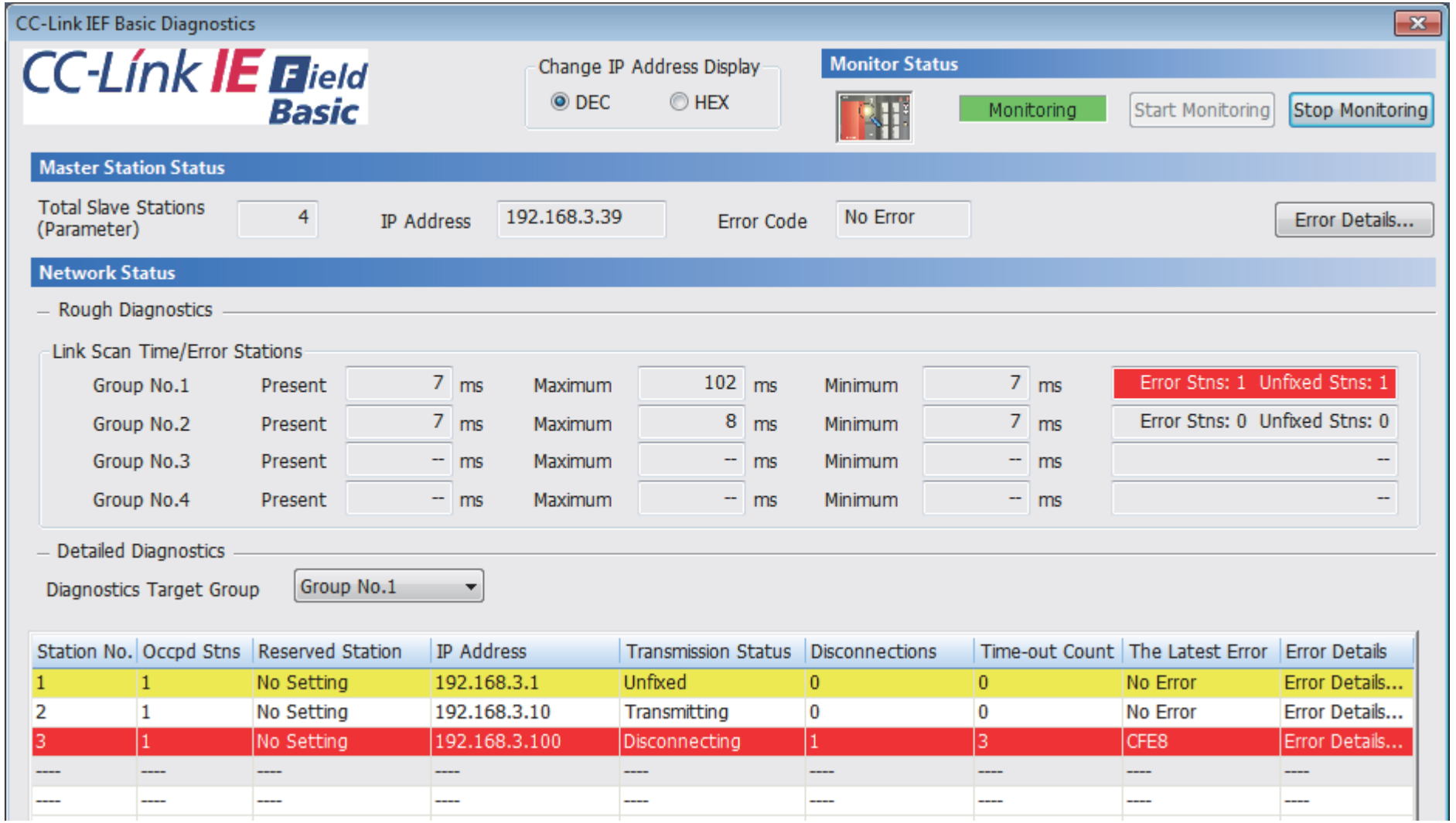
Function setting switch 4	Output HOLD/CLEAR setting
OFF	CLEAR (default)
ON	HOLD

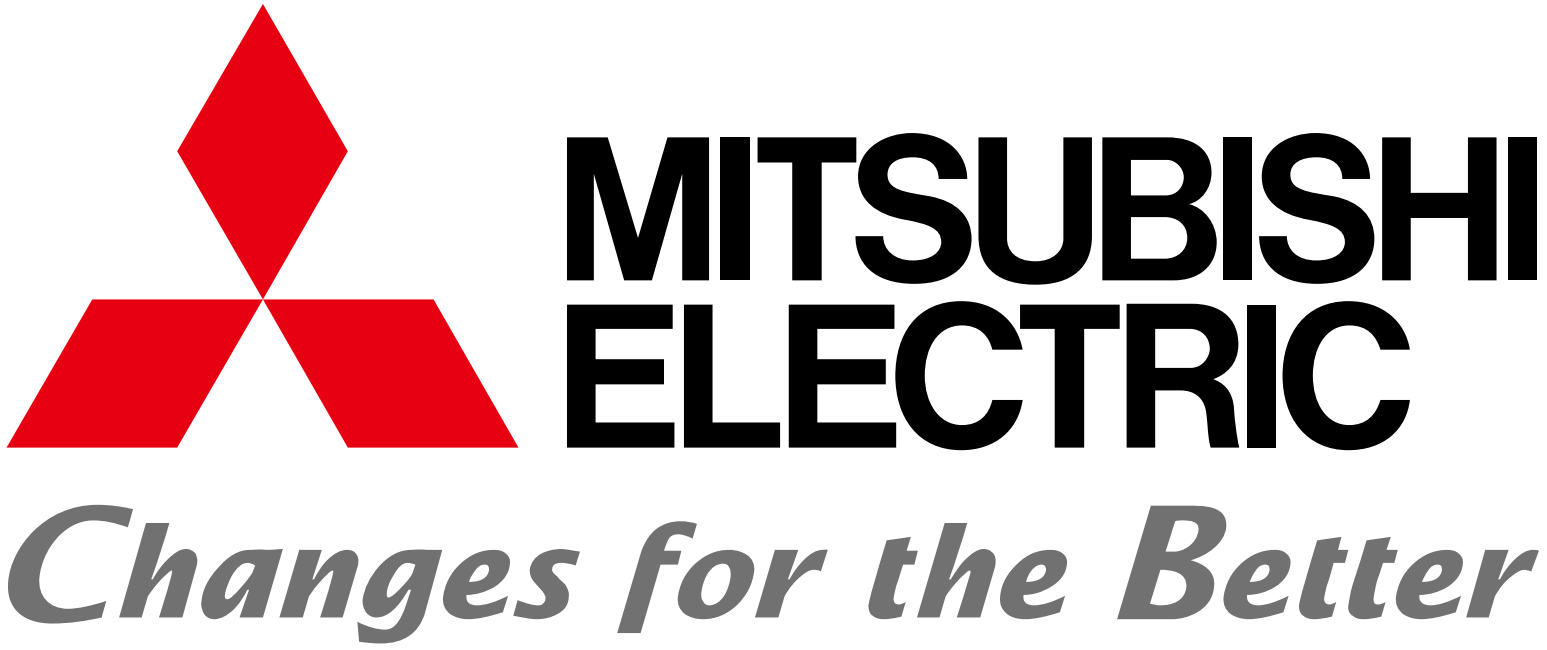
Input and output status when failure occurs

- คู่มือ CC-Link IE Filed Basic บท 7.1 Cyclic Transmission ⟶ Input and output status when failure occurs
- Input status from data link faulty station
  - RX is cleared.
  - Regarding RWr, the data before an error occurs is held
- Cyclic data output when a stop error occurs in the CPU module
  - MELSEC iQ-F: Data is cleared.
- Output status for CPU STOP
  - MELSEC iQ-F: Data is cleared.

CC-Link IE Field Network Basic Diagnostics

- คู่มือ CC-Link IE Filed Basic บท 9.1 CC-Link IE Field Network Basic Diagnostics
- [Diagnostics] ⟶ [CC-Link IEF Basic Diagnostics]




MITSUBISHI
ELECTRIC
Changes for the Better