

CC-Link Communication Converter Quick Instruction Manual

COM-JC [For FB100/FB400/FB900] Manual

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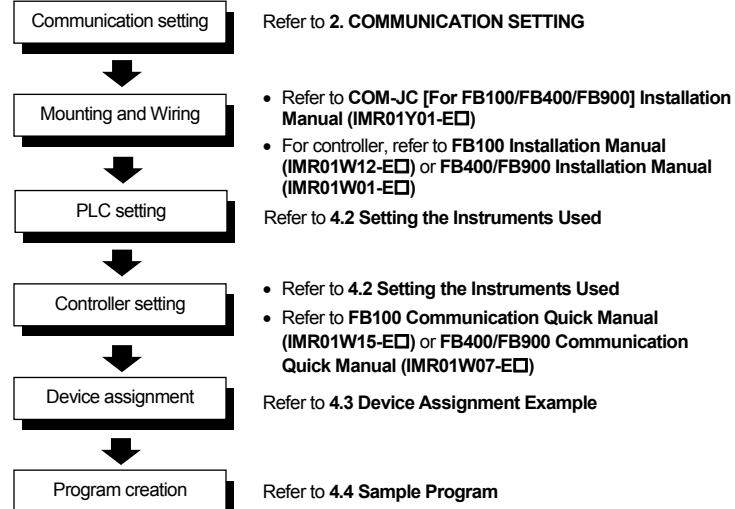
IMR01Y11-E5

In order to achieve maximum performance and ensure proper operation of your new instrument, carefully read all the instructions in the manual. Please place this manual in a convenient location for easy reference.

This manual describes the basic operation only.

For detailed handling procedures and functions, refer to separate **COM-JC [For FB100/FB400/FB900] Instruction Manual (IMR01Y06-EC)**. The manual can be downloaded from the official RKC website: http://www.rkcinst.com/english/manual_load.htm.

1. HANDLING PROCEDURES



To avoid error at operation start-up, COM-JC must be powered on LAST (after the Controller, PLC, etc.).

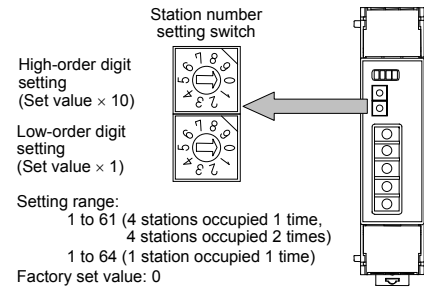
2. COMMUNICATION SETTING

CAUTION

Do not separate the mainframe from the terminal base with the power turned on. If so, instrument failure may result.

2.1 Station Number Setting

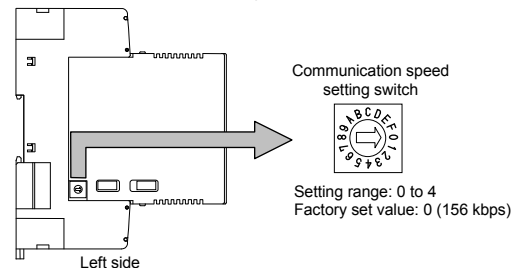
Set the station number of CC-Link using a small blade screwdriver.



When set to any value out of the setting range, the COM-JC becomes the FAIL state.

2.2 Communication Speed Setting

Set the communication speed of CC-Link using a small blade screwdriver.



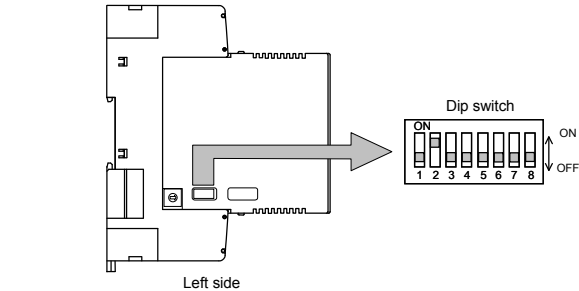
When set to any value out of the setting range, the COM-JC becomes the FAIL state.

Communication speed and maximum transmitter distance [Use the CC-Link dedicated cable Ver. 1.10]

Communication speed setting	Communication speed	Maximum transmitter distance
0	156 kbps	1200 m
1	625 kbps	900 m
2	2.5 Mbps	400 m
3	5 Mbps	160 m
4	10 Mbps	100 m

2.3 Occupied Stations/Extended Cyclic and Controller Communication Speed Setting

Set the number of Occupied stations/Extended cyclic and controller communication speed.



1	2	Controller communication speed
OFF	OFF	38400 bps
ON	OFF	9600 bps
OFF	ON	19200 bps
ON	ON	38400 bps

Factory set value: 19200 bps

3	4	5	Number of Occupied stations/Extended cyclic setting
OFF	OFF	OFF	4 stations occupied 1 time (8 controllers assignment)
ON	OFF	OFF	4 stations occupied 1 time (16 controllers assignment)
OFF	ON	OFF	4 stations occupied 2 times (16 controllers assignment)
ON	ON	OFF	4 stations occupied 2 times (31 controllers assignment)
OFF	OFF	ON	1 station occupied 1 time (1 controller assignment)
ON	OFF	ON	1 station occupied 1 time (2 controllers assignment)
OFF	ON	ON	Do not set this one
ON	ON	ON	Do not set this one

Factory set value: 4 stations occupied 1 time (8 controllers assignment)

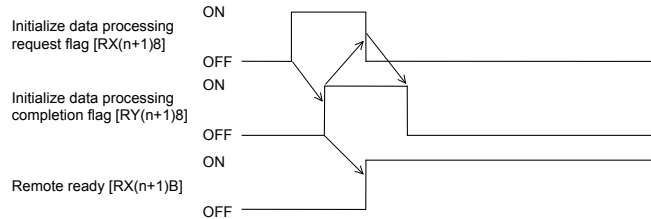
6	7	8	
OFF	OFF	OFF	Fixed

3. CC-Link FLAG OPERATION

Remote input/output and Remote register flag operations are as follows. [Example] When the Occupied station/Extended cyclic of COM-JC is set to 1 station occupied 1 time.

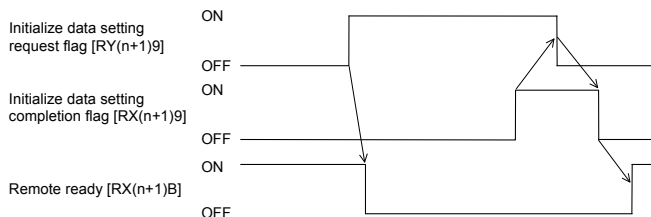
Initialize request processing at power on

- Initialize processing request from remote device station (COM-JC)**
If the COM-JC is initialized at power on, the Initialize data processing request flag [RX(n+1)8] is turned on. Thus, turn on the Initialize data processing completion flag [RY(n+1)8]. When COM-JC becomes a ready state, a Remote ready [RX(n+1)B] is turned on.



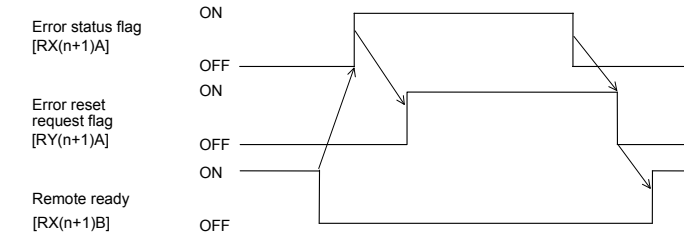
- Initialize processing request from master station (PLC)**

This is a COM-JC initialize setting request. As there is no initialize data specifically, no processing is required.



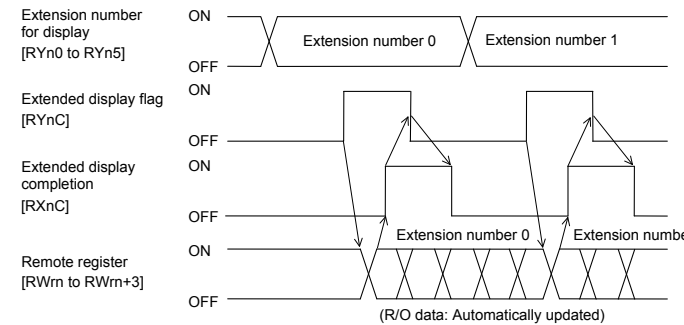
Error flag/Error reset processing

If the Error reset request flag [RY(n+1)A] is turned on while the Error status flag [RX(n+1)A] is turned on, the Error status flag history is cleared and the flag [RX(n+1)A] turns off.



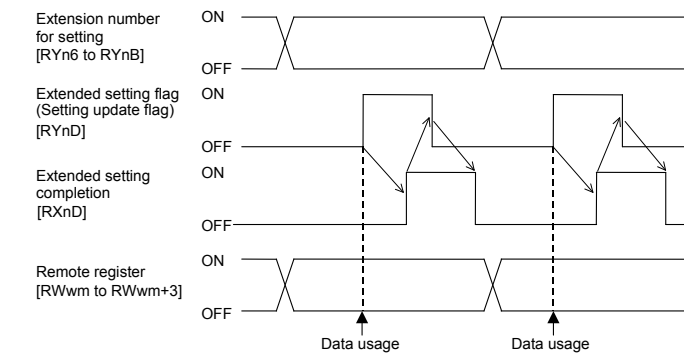
Extension number for display selection processing

After the Extension number for display [RYn0 to RYn5] is set, turn on the Extended display flag [RYnC]. After the data in the Remote register [RWm to RWm+3] is displayed, check that Extended display completion [RXnC] is turned on and then turn off the Extended display flag [RYnC]. If the Extended display flag is turned off, the Extended display completion is turned off.



Extension number for setting selection processing

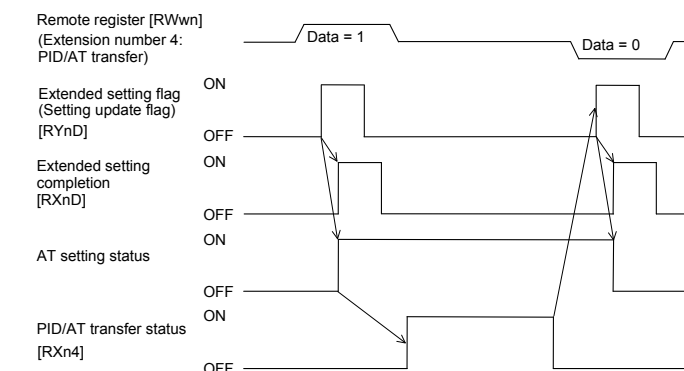
The content of the extended setting remote register is selected and the set value is changed. After the Extension number for setting [RYn6 to RYnB] is set, turn on the Extended setting flag [RYnD]. After the content of the Remote register [RWm to RWm+3] is set, check that Extended setting completion [RXnD] is turned on and then turn off the Extended setting flag [RYnD]. If the Extended setting flag [RYnD] is turned off, the Extended setting completion [RXnD] is turned off.



Regardless of the number of occupied stations and the extended cyclic, the above processing is also necessary if the Set value (SV) assigned to the Remote register (RWw) as a fixed value is changed.

AT start procedure

Instructs AT execution.



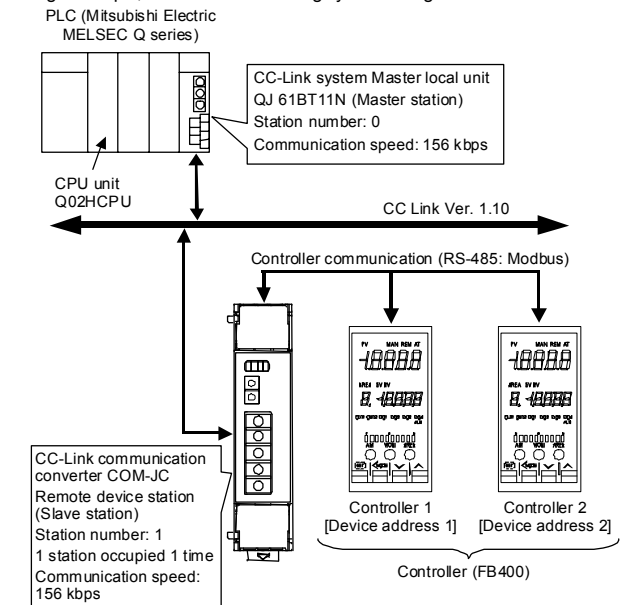
For Remote input/output and Remote register, refer to **COM-JC [For FB100/FB400/FB900] Communication Data List (IMR01Y16-EC)** or **COM-JC [For FB100/FB400/FB900] Instruction Manual (IMR01Y06-EC)**.

4. USAGE EXAMPLE

A usage example of CC-Link communication is described in the following.

4.1 System Configuration

In this usage example, described the following system configuration.



Use instruments

- CC-Link communication converter: COM-JC1
- Temperature controller: FB400 [input type: TC (K) 0 to 400 °C]2
- Mitsubishi PLC MELSEC Q series
 - CPU unit: Q02HCPU
 - CC-Link system master local unit: QJ 61BT11N
- CC-Link dedicated cable Ver. 1.10
- COM-JC and controller connection cable

4.2 Setting the Instruments Used

Set the PLC, COM-JC and controller as the following.

PLC setting

For operation of the CC-Link system master local unit QJ61BT11N and MELSEC sequencer programming software GX Developer, refer to Instruction Manual of PLC.

Setting item	Setting value
Station number	0
CC-Link communication speed	156 kbps

Setting item	Setting value
No. of boards in module	1
Start I/O number	0000
Operational settings	Parameter name: None Data link disorder station setting: Clear Case of CPU STOP setting: Refresh
Type	Master station
CC-Link mode setting	Remote net (Ver. 1 mode)
Total number of connected modules	1
Number of retries	5
Number of automatic return modules	1
Standby master station number	Blank
Operation specification when CPU is down	Stop
Scan mode specification	Asynchronous
Delay time setting	10 (500 μs)
Station information (Number of COM-JC connection: 1, Station number: 1)	Station type: Remote device station Expanded cyclic setting: Single Number of occupied stations: Occupies 1 station Remote station points: 32 points Reserved/invalid station select: No setting Intelligent buffer select (word): No setting

Setting item	Setting value
Remote input (RX) refresh device	X1000
Remote output (RY) refresh device	Y1000
Remote register (RW) refresh device	W0
Remote register (RWw) refresh device	W100
Special relay (SB) refresh device	SB0
Special register (SW) refresh device	SW0

COM-JC setting

[CC-Link communication conditions]

- Number of Occupied station/Extended cyclic: 1 station occupied 1 time (2 controllers assignment)
- Station number: 1
- CC-Link communication speed: 156 kbps
- Controller communication speed: 19200 bps (Factory set value)

For setting method, refer to 2. COMMUNICATION SETTING.

Controller (FB400) setting

[Controller communication conditions: Communication 1 side]

- Protocol: Modbus
- Device address: 1 and 2
- Communication speed: 19200 bps (Factory set value)
- Data bit configuration: Data 8-bit, Without parity bit, Stop 1-bit

For setting method, refer to FB400/FB900 Communication Quick Manual (IMR01W07-EC).

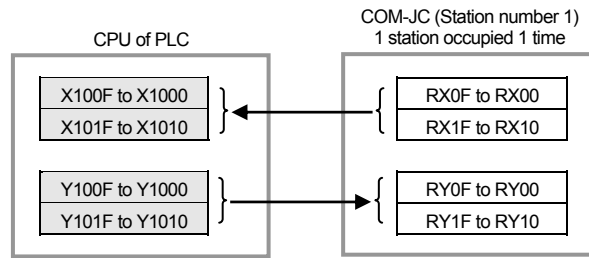
4.3 Device Assignment Example

According to the contents set by 4.2 Setting the Instrument Used, each device is assigned.

Assignment conditions

- COM-JC station number: 1
 Number of Occupied station/Extended cyclic: 1 station occupied 1 time (2 controllers assignment)
- Automatic refresh device setting
- Remote input (RX): X1000
 - Remote output (RY): Y1000
 - Remote register (RW): W0
 - Remote register (RWw): W100
 - Special relay (SB): SB0
 - Special register (SW): SW0

Remote input (RX) and Remote output (RY)



□ : The device that a controller actually uses

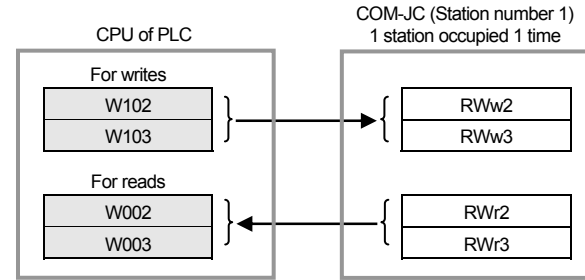
Device assignment table of Remote input (RX)

CPU device number	Communication item	Remote input (RX) address
X1000	Device address 1 (Controller 1)	Event 1 state
X1001		Event 2 state
X1002		Burnout state
X1003		Heater break alarm (HBA) state
X1004	PID/AT transfer	RX04
X1005	Device address 2 (Controller 2)	Event 1 state
X1006		Event 2 state
X1007		Burnout state
X1008		Heater break alarm (HBA) state
X1009	PID/AT transfer	RX09
X100A	Unused	RX0A
X100B	Unused	RX0B
X100C	Extended display completion	RX0C
X100D	Extended setting completion	RX0D
X100E	Unused	RX0E
X100F	Hardware error flag	RX0F
X1010	Reserved	RX10
⋮		⋮
X1017		RX17
X1018	Initialize data processing request flag	RX18
X1019	Initialize data setting completion flag	RX19
X101A	Error status flag	RX1A
X101B	Remote ready	RX1B
X101C	Reserved	RX1C
⋮		⋮
X101F		RX1F

Device assignment table of Remote output (RY)

CPU device number	Communication item	Remote output (RY) address
Y1000	Extension number for display	RY00
Y1001		RY01
Y1002		RY02
Y1003		RY03
Y1004		RY04
Y1005	Extension number for setting	RY05
Y1006		RY06
Y1007		RY07
Y1008		RY08
Y1009		RY09
Y100A		RY0A
Y100B		RY0B
Y100C	Extended display flag	RY0C
Y100D	Extended setting flag	RY0D
Y100E	Unused	RY0E
Y100F	RUN/STOP transfer	RY0F
Y1010	Reserved	RY10
⋮		⋮
Y1017		RY17
Y1018	Initialize data processing completion flag	RY18
Y1019	Initialize data setting request flag	RY19
Y101A	Error reset request flag	RY1A
Y101B	Reserved	RY1B
⋮		⋮
Y101F		RY1F

Remote register (RW, RWw)



□ : The device that a controller actually uses

Device assignment table of Remote register (RWw)

CPU device number	Communication item	Remote register (RWw) address
W102	For extension area setting of device address 1 (Controller 1)	RWw2
W103	For extension area setting of device address 2 (Controller 2)	RWw3

Device assignment table of Remote register (RWr)

CPU device number	Communication item	Remote register (RWr) address
W002	For extension area display of device address 1 (Controller 1)	RWr2
W003	For extension area display of device address 2 (Controller 2)	RWr3

4.4 Sample Program

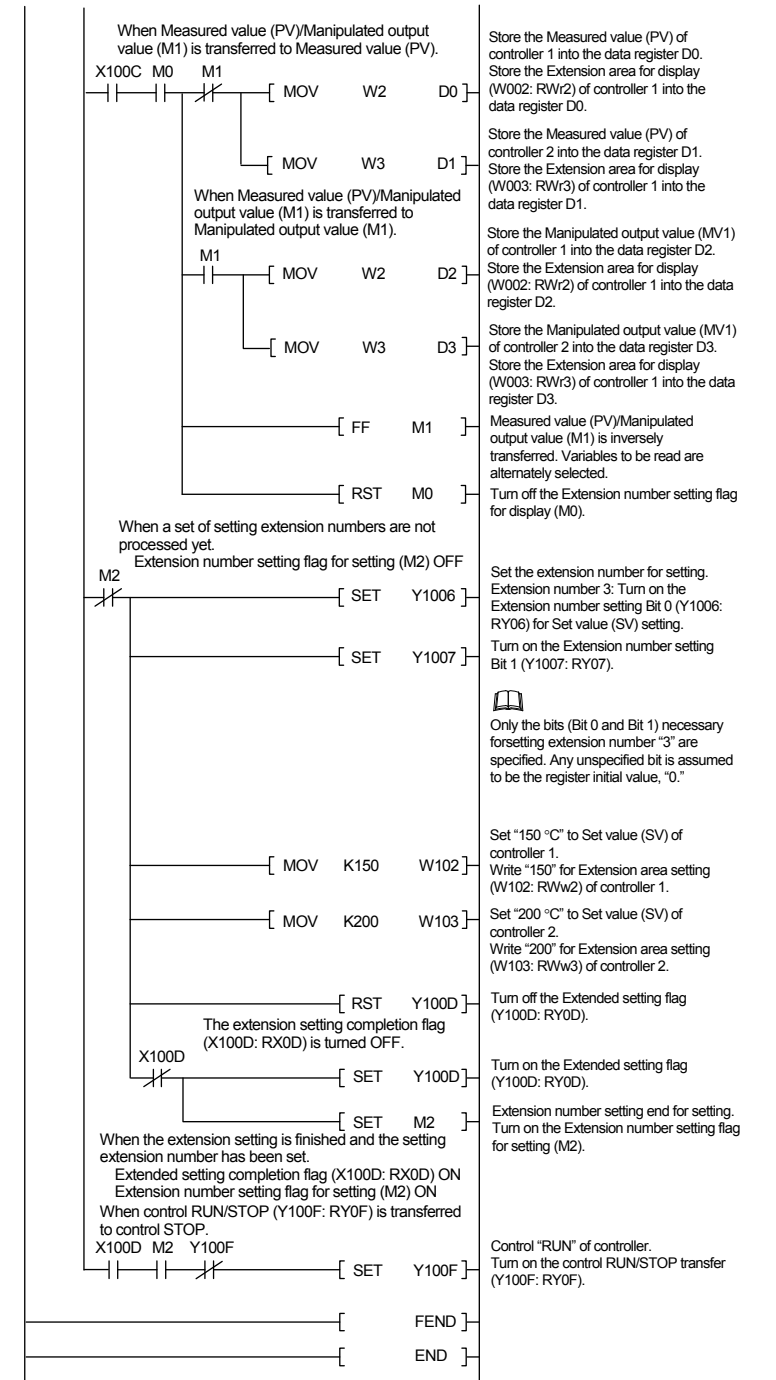
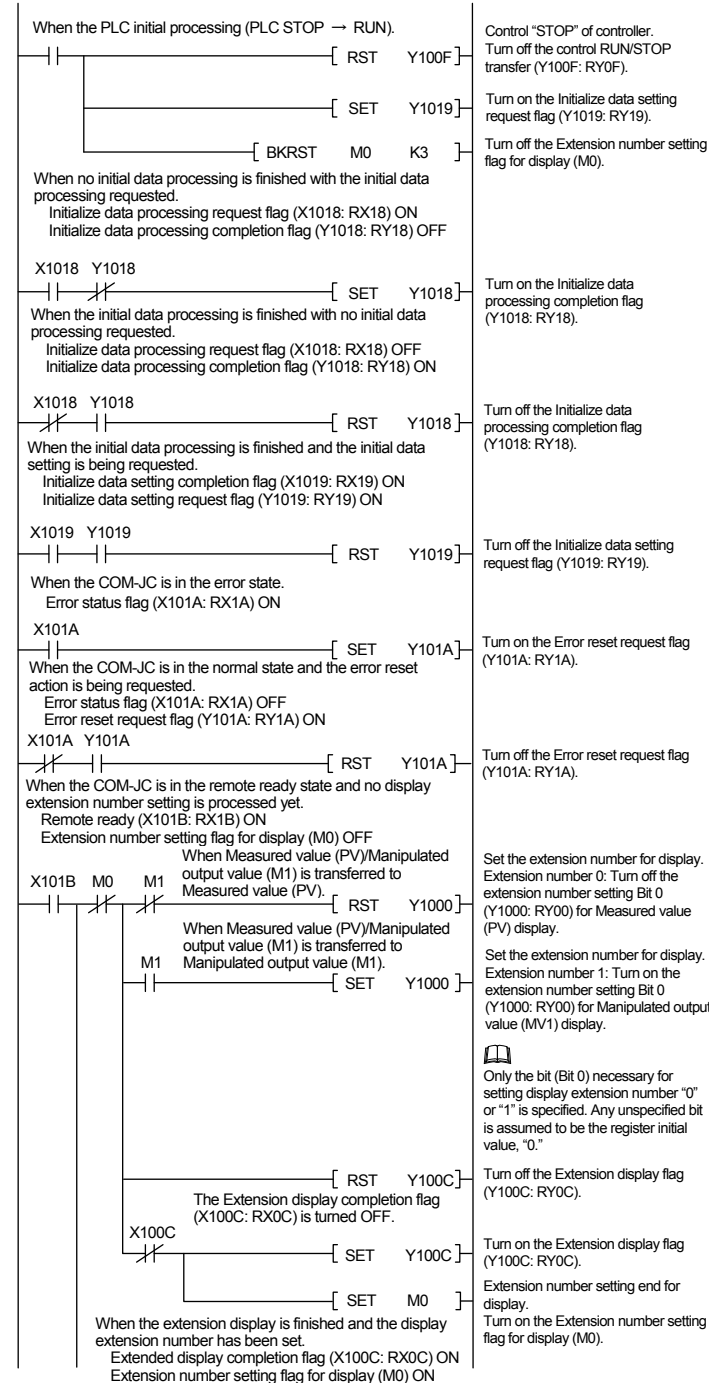
Program conditions

- COM-JC station number: 1
 Number of Occupied station/Extended cyclic: 1 station occupied 1 time (2 controllers assignment)
- Automatic refresh device assignment: Refer to 4.3 Device Assignment Example
- Special relay (M) assignment: M0: Extension number setting flag for display
 M1: Measured value (PV)/Manipulated output value (MV1) transfer
 M2: Extension number setting flag for setting
- Data register (D) assignment: D0: Measured value (PV) storage of controller 1
 D1: Measured value (PV) storage of controller 2
 D3: Manipulated output value (MV1) storage of controller 1
 D4: Manipulated output value (MV1) storage of controller 2

Program operation

- Store Measured value (PV) and Manipulated output value (MV1) to a data register.
- Write in Set value (SV) of controller 1 and Set value (SV) of controller 2.
 Controller 1 set value (SV): 150 °C
 Controller 2 set value (SV): 200 °C
- Change the controller to the control RUN.

Sample program



Data processing precautions

Numeric data values (Remote register) obtained via communication with the COM-JC and processed by PLC include those with and without decimal points and also those with minus signs.

- For numeric data value without decimal point
 If there is no decimal point the value is processed as it is.
- For numeric data value with decimal point
 The decimal point is omitted.
 [Example] When the Measured value (PV) is 120.5 °C
 Read value of Remote register (RWw) [Measured value (PV)]:
 1205 (Hexadecimal number: 04B5H)
- For numeric data value with minus sign
 The value is expressed as a 2's complement value which is obtained by subtracting the minus value from the hexadecimal number 10000H.
 [Example] When the Measured value (PV) is -2.5 °C
 Read value of Remote register (RWw) [Measured value (PV)]:
 Hexadecimal number: FFE7H
 (10000H - 25 = 10000H - 19H = FFE7H)

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