



MP2000 Series
PCLINK Module User's Manual

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1. Outline

1.1 Functional Outline of the PCLINK Module

The PCLINK-01 module is a communication module with an MP series controller connected to a PCLINK transmission used as a real-time network in a GL series controller by PCLINK, and a serial port (MEMOBUS port) capable of remote engineering. This can be used as a controller-level network between the GL series programmable controller, and an MP2000 series machine controller. A maximum of three modules can be installed in the option slots of the MP2300 machine controller, and a maximum of eight modules can be installed in the MP2200 option slots and the MP2100 expansion slots.

There are two types of PCLINK transmissions: link transmission and message transmission. Link transmission repeatedly performs transmission at each scan according to the necessary assignment definitions. In message transmission, MEMOBUS messaging and general-purpose messaging (non-procedure) are possible using the MSG-SND function block and MSG-RCV function block in the ladder program. In addition, MEMOBUS communication with an upper-level computer (ACGC, etc.) is possible.

In serial transmission, it is possible to use MEMOBUS and programming messages from the upper-level computer (ACGC, etc.) or MPE720 connected to the serial port connected to the PCLINK.

The PCLINK-01 module was developed in order to ease the replacement of GL controllers with MP controllers. The staged replacement shown in the figure below ultimately results in a system configuration free of PCLINK modules. (Because the LAN controllers used in PCLINK are limited in number, it is not possible to maintain the PCLINK-01 module. The following figure is an example of the replacement.)

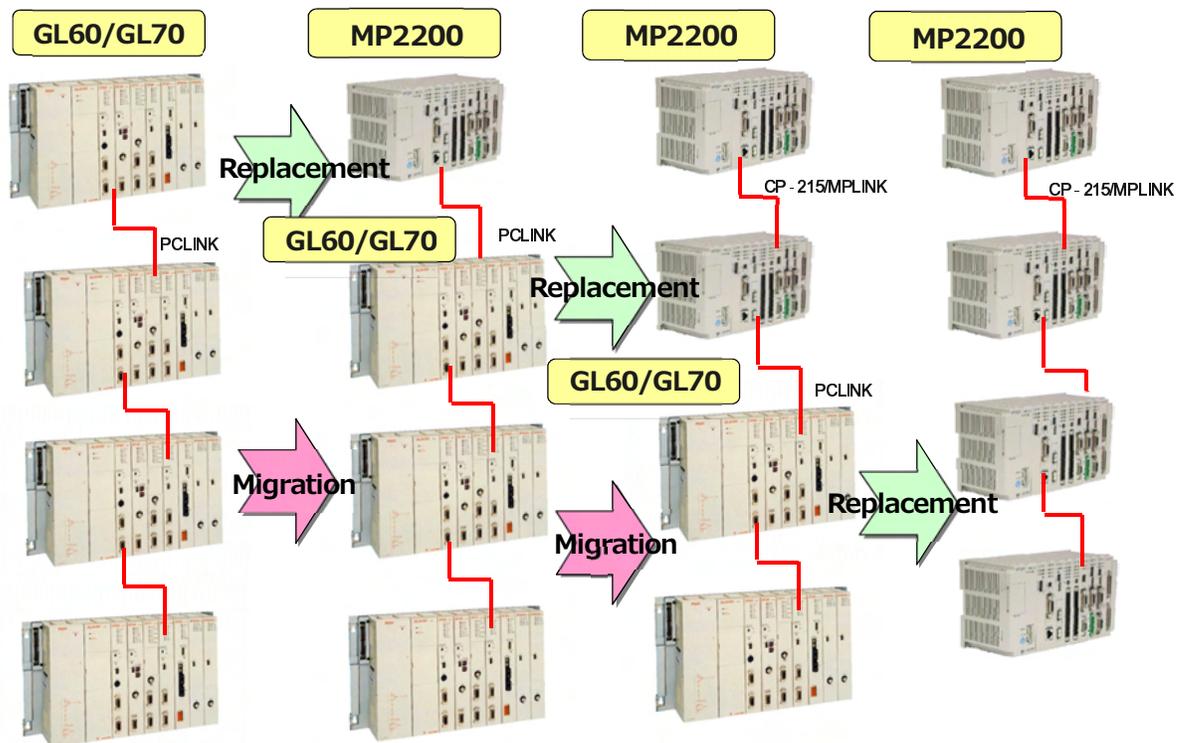
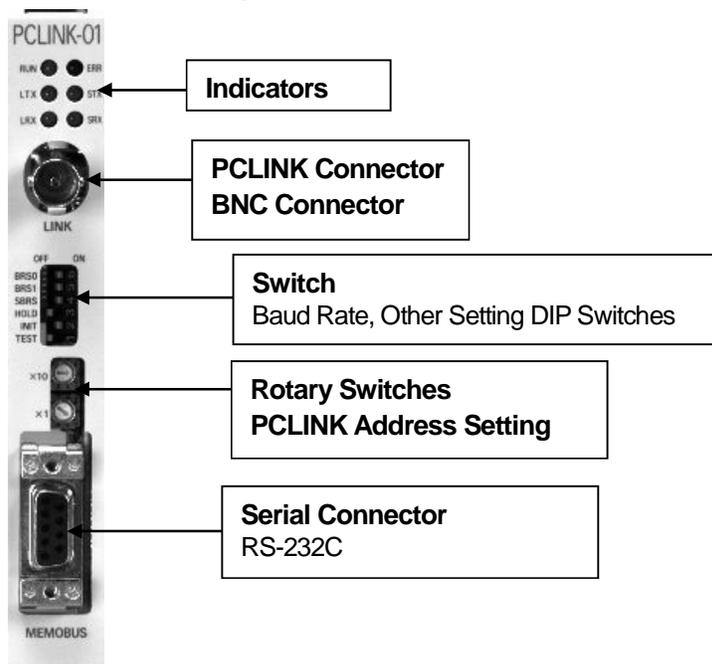


Figure 1.1 GL→MP Replacement System Proposal

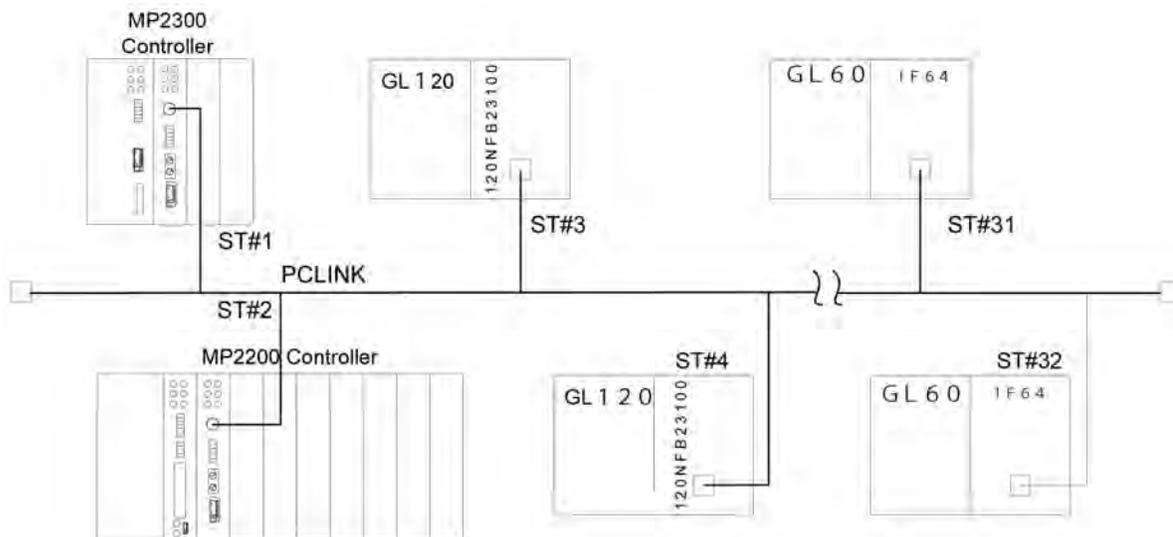
1.2 Appearance and External Diagrams of Connectors



1.3 Characteristics

1.3.1 Link Transmission Between Controllers

Link transmission at a maximum baud rate of 4Mbps is possible between the GL series programmable controllers and the MP2000 series machine controllers simply by performing I/O assignment. It is possible to connect up to a maximum of 32 PCLINK-compatible devices in a single network. The per-station data output size is 256 words maximum, and the total size on a network is 2048 words for registers and 2048 bits for coils (1024 words per register and 1024 discrete bits in networks including GL40, 60, 70).



*The station arrangement does not require a numerical order.

Figure 1.2 Link Transmission Network Connection Diagram

1.3.2 Message Transmission Between Controllers

(1) Message Communication (1:1)

In ladder application, it is possible to read and write the registers, relays and coils where MEMOBUS protocols were used between the GL series programmable controller and the MP2000 series machine controller, by using the MSG-SND function block and MSG-RCV function block. In addition, it is possible to send any data to the counter-party by general-purpose messaging (non-procedure). (GL40, 60 and 70 only support slave functions.)

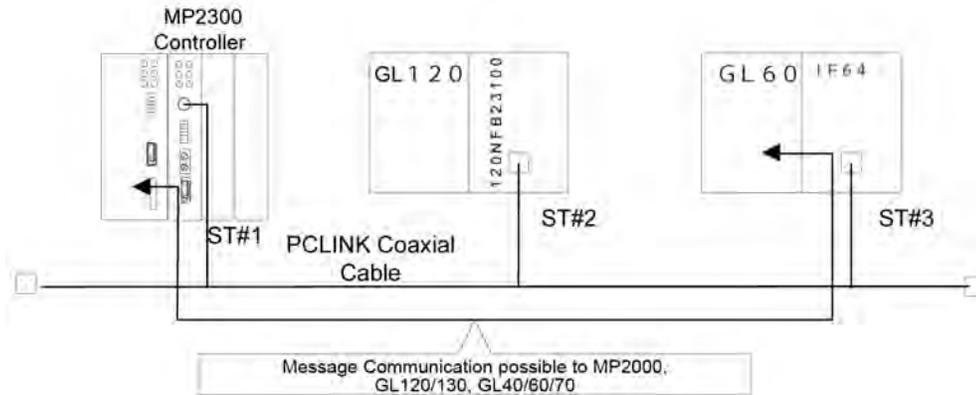


Figure 1.3 Message Transmission Between Controllers Connection Diagram

(2) Message Communication (1:N)

Message transmission (group SEND) is possible to any station group (setting the group number into each station beforehand is necessary). In addition, message transmission (broadcast transmission) between all the stations is possible. Group transmission and broadcast transmission can be used for MEMOBUS messaging and general-purpose messaging. (However, in the case of MEMOBUS messaging, it is only possible to use write commands. Read commands cannot be used.)

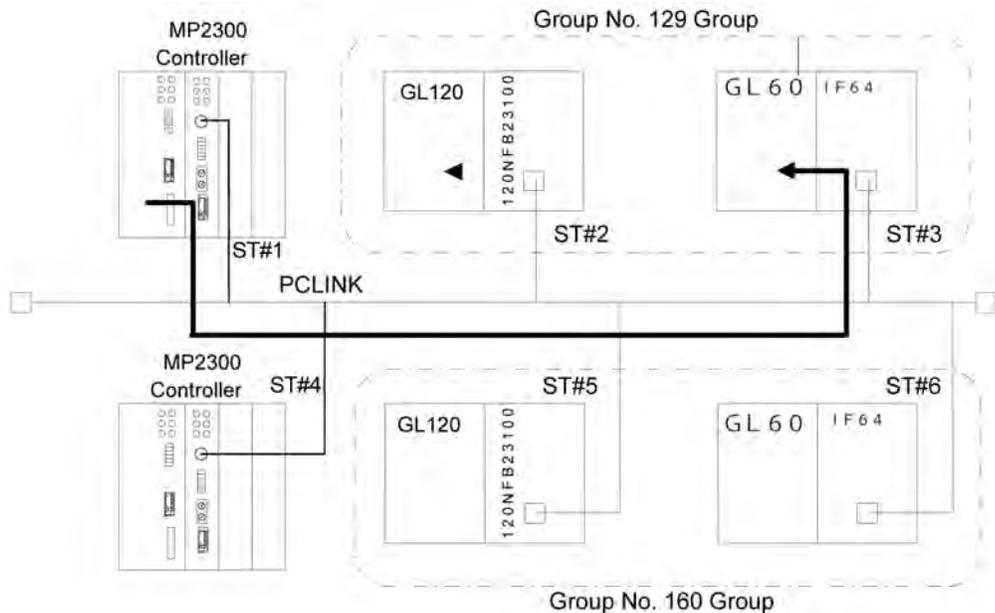


Figure 1.4 Message Transmission (Group Transmission) Between Controllers Connection Diagram

(3) MEMOBUS Relay from Serial Port

MEMOBUS messaging communication with stations connected to the PCLINK network after connecting an upper-level computer (such as an ACGC) or a display to the serial port of an MP2000 series PCLINK-01 module. (The serial port of the PCLINK-01 module supports only MEMOBUS slave functions.)

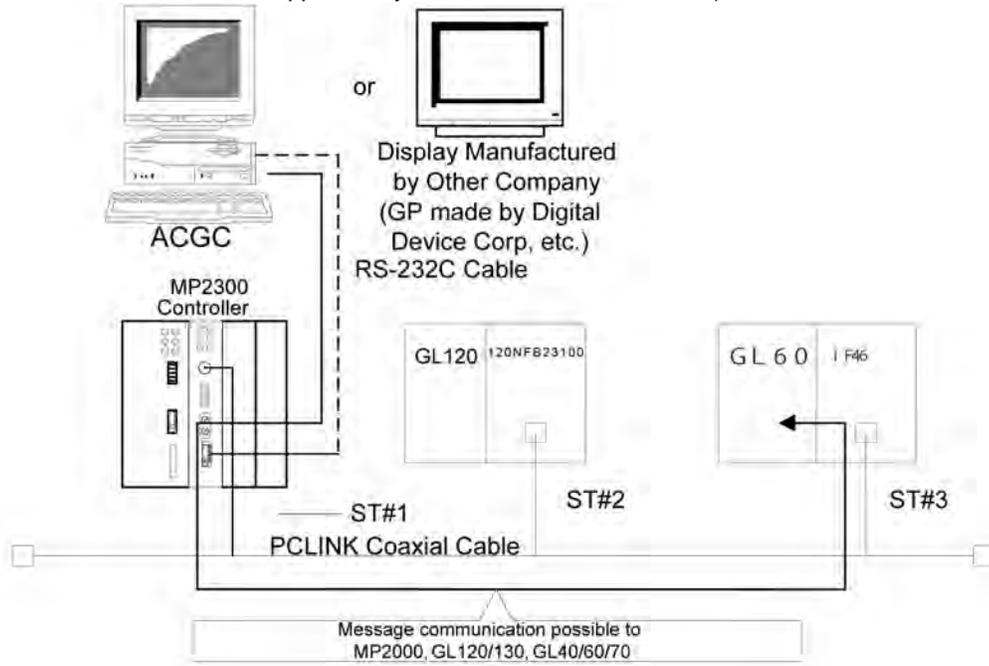


Figure 1.5 MEMOBUS Message via Serial Port Transmission Connection Diagram

1.3.3 Engineering Messages from the Serial Port

By connecting an engineering tool MPE720 to the serial port of an MP2000 series PCLINK-01 module, it is possible to connect to a local MP2000 series controller, as well as an MP2000 series control on a PCLINK network. Program editing and monitoring are possible.

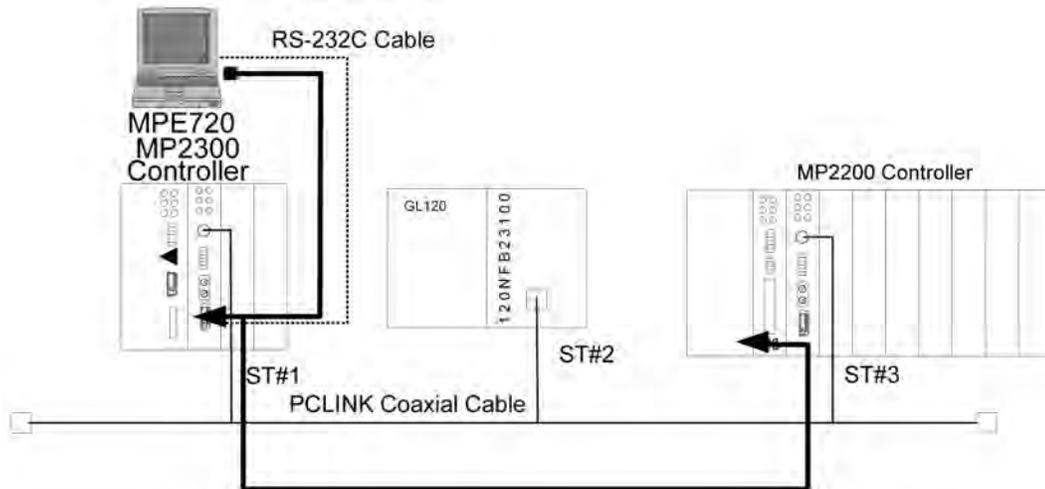


Figure 1.6 Engineering Tool via Serial Port Transmission Connection Diagram

1.3.4 ACGC Replacement Usability

This can also handle replacement from ACGC by using the MP2000 series PCLINK-01 module and a display manufactured by another company (GP series manufactured by Digital Device Corporation, etc.). MEMOBUS command input register readout (FC=04H) can be realized in cases where link data is read out by a display connected by the serial port, and writing to the holding register (FC=10H) is achieved in the case of link data write (copying from the holding register to the output register in the ladder is necessary). In addition, register reading and writing to the stations on a direct PCLINK network is possible using MEMOBUS commands. (Determine whether it is a local CPU or a CPU on the PCLINK network by changing the counterpart address of the MEMOBUS protocol.)

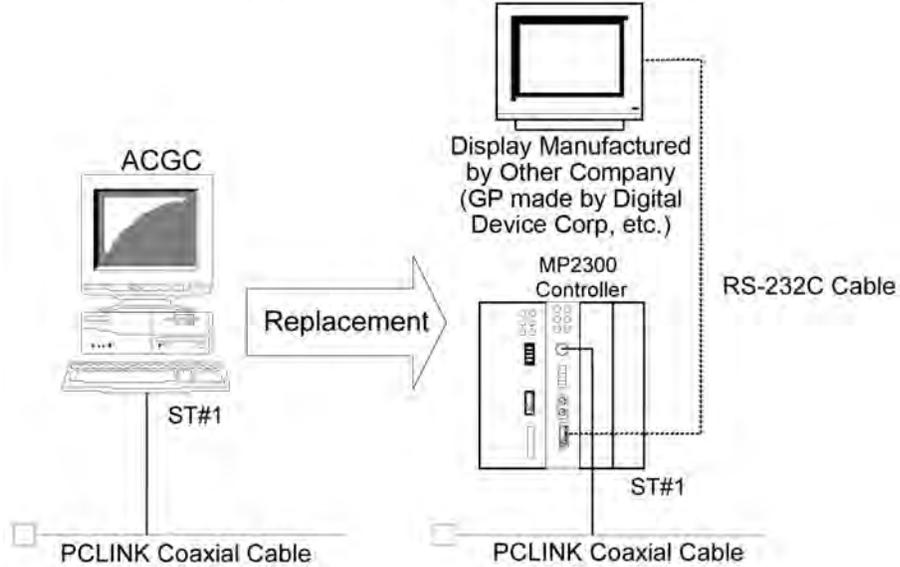


Figure 1.7 ACGC Replacement Proposal Diagram

1.3.5 Maximum Eight-Line System Availability

In the MP2200 controller, a maximum of eight PCLINK-01 modules can be connected. It is possible to assign 2048 register words, and 2048 coil bits to each of the eight PCLINK lines. (GL40, 60 and 70 have one line, and the GL120 and 130 have two lines).

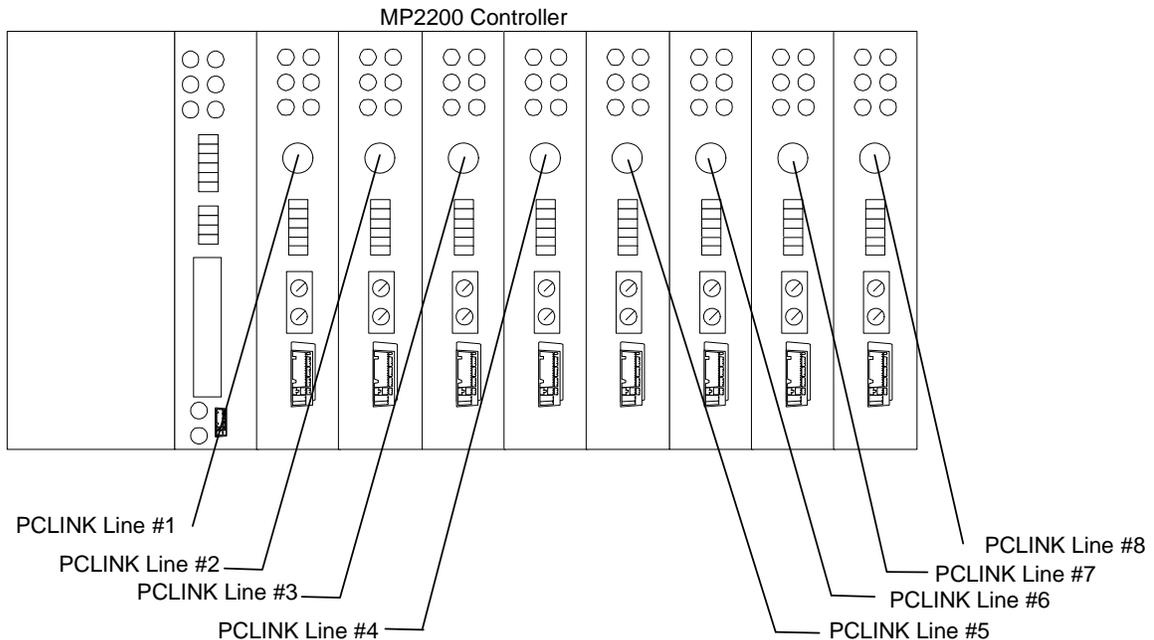


Figure 1.8 Maximum Number of Lines

1.4 Module Specifications

The function specifications of the PCLINK-01 module are shown below.

1.4.1 Hardware Specifications

Item	Specification
Name	MP2300/PCLINK-01
Model	JAPMC-CM2380
Communication Port	PCLINK 1 Port
	RS-232C 1 Port
Indicators	Module Status Indicator LEDs RUN (Green) ERR (Red) LTX (Green) STX (Green) LRX (Green) SRX (Green)
Setting Switch	BRS0, BRS1, SBRS, HOLD, INIT, TEST
Dimensions	Height: 125 mm (4.9 in.) Depth: 95 mm (3.7 in.)
Approximate Mass	130 g (11.8 oz)

1.4.2 Transmission Specifications

■ RS-232C Transmission Specifications

Item	Specification
Connector	D-sub 9-pin (Female)
Transmission Distance	15 m (49.2 ft) MAX
Baud Rate	9600/19200bps
Access Mode	Asynchronous Type (Start-Stop Synchronization)
Transmission Mode	Message Transmission, Engineering Transmission
Transmission Protocol	MEMOBUS Communication
Connection State	1:1
Transmission Format (Settable)	Data Bit Length: Fixed at 8 bits Stop Bit: Fixed at 1 bit Parity Bit: Fixed at even number

■ PCLINK Transmission Specifications

Item	Specification
No. of Communication Lines	1 Line
No. of Communication Ports (connectors)	1 Port (BNC Connectors) (A T-type mounting adapter and F-type adapter are necessary during cable connection)
Terminal Resistor	75Ω
Transmission Path	Coaxial Cable (75Ω)
Transmission Distance	Total Extension (conditional) equal to GL120/PCLINK (see SIZ-C825-70.) At 4Mbps: Approximately 1 km (0.6 mi) (depending on cable) equivalent to GL120 PCLINK (see SIZ-C825-70.)
Baud Rate	0.5M(*)/1M/2M/4Mbps (*) 0.5Mbps is only allowed to be used in response to quotation for the replacement of existing system. Use with new items is not allowed.

Item	Specification
No. of Transmission Words	Link Transmission: Coils: 2048 bits maximum (up to 1024 bits for GL40, 60, 70) Link Transmission: Registers: 2048 words maximum (up to 1024 words for GL40, 60, 70) The transmission size per station is 512 bytes, combining the coil and register. Message Transmission: Maximum 1000 words writing/125 words reading
Transmission Control System	Token Passing System
Data Interchange	N:N
Transmission Mode	Link Transmission, Message Transmission (MEMOBUS, Non-procedural)
Station No.	1 ~ 32
No. of Connected Units	32 Stations

1.4.3 Operating Environment Specifications

Item	Specification	
Physical Environment Conditions	Usage Temperature Range	0~+55°C (32~131°F)
	Ambient Storage Temperature	-25~+85°C (-13~185°F)
	Usage Humidity Range	30~95%RH (however, there should be no condensation)
	Ambient Storage Humidity	5~95%RH (however, there should be no condensation)
	Pollution Level	Standardized on JIS B3502 (Pollution Level 1)
	Corrosiveness	Should be free of corrosive gas
	Usage Altitude	2000m or less above sea level
Mechanical Operation Conditions	Vibration Resistance	Standardized on JIS B3502 Vibration Amplitude/Acceleration $10 \leq f < 57\text{Hz}$ Half-amplitude 0.075 mm (0.003 in.) $57 \leq f < 150\text{Hz}$ Fixed Acceleration 9.8 m/s ² (32.2 ft/s ²) In each of the X, Y, Z directions Sweep (1 Octave/min) × No. of Sweeps 10
	Shock Resistance	Standardized on JIS B3502 Peak Acceleration 147 m/s ² (482.3 ft/s ²) Action Time 11 ms 2 times in each of the X, Y, Z directions
Electrical Operation Conditions	Noise Resistance EN61000-6-2 Standardized on EN55011 (Group 1 Class A) Power Supply Noise (FT Noise): 2kV or more, 1 minute Radiation Noise (FT Noise): 1kV or more, 1 minute	
Installation Conditions	Grounding	D-class Grounding
	Cooling Method	Natural Air Cooling

1.5 LED Display

The statuses of the module displayed by the PCLINK module indicator lamps (LEDs) are shown below.

RUN ○ ○ ERR
LTX ○ ○ STX
LRX ○ ○ SRX

Indicator	Indicator Color	ON/Flash	OFF
RUN	Green	Lights when the control microprocessor is operating normally OFF or ON at error condition	Abnormality Occurrence During module initialization
ERR	Red	Lit/Blinking at Trouble Occurrence OFF when normal	Normal operation
LTX	Green	During PCLINK Transmission	No PCLINK Data Transmission
STX	Green	During RS-232C Transmission	No RS-232C Data Transmission
LRX	Green	During PCLINK Reception	No PCLINK Data Reception
SRX	Green	During RS-232C Reception	No RS-232C Data Reception

■ Status Details According to LED Display Combination

○ : OFF ● : ON ★ : Flashing - : Indeterminate

Classification	Display						Content	Description
	RUN	ERR	LTX	STX	LRX	SRX		
Power ON	○	●	○	○	○	○	At Power ON	This is the status of this module immediately after power ON. This is during initialization of the module. The initial state will result upon completion.
Initial State	●	○	○	○	-	-	Initial Setting Wait	This is the state where the module boots up normally, and waits for initialization from the CPU module. LRX is lit according to the PCLINK connection status. SRX is lit according to the serial port connection status.
Normal	●	○	●	-	●	-	Normal operation	This is the state where the module operates normally, and PCLINK transmission was performed. STX and SRX will flash during serial communication.
Error	●	●	-	-	-	-	Transmission Error	This is the state where a PCLINK transmission error was detected. It is removed from Token Ring. STX and SRX will flash during serial communication.
	★	★	○	○			Hardware Errors or SW Setting Errors No. of Flashes During Error 1: ROM Diagnostic Error 2: RAM Diagnostic Error 3: Common Memory Diagnostic Error 4: CPU Diagnostic Error 5: FPU Diagnostic Error 6: SW Setting Error	Hardware failure of the module. Module replacement is necessary. (If it flashes six times, it is necessary to review the switch settings.)

Classification	Display						Content	Description
	RUN	ERR	LTX	STX	LRX	SRX		
Error (cont.)	○	★	—				Software Error No. of Flashes During Error 1: — 2: Watchdog Timeout 3: Address Error (Read) Exception 4: Address Error (Write) Exception 5: FPU Exception 6: General Illegal Command Exception 7: Slot Illegal Command Exception 8: General FPU Check Exception 9: Slot FPU Check Exception	Module processor error. Module replacement is necessary.
During Flash Write	●	○	○	○	○	○	During Flash Clear During Flash Write	This displays when flash clearing or flash write are underway in cases where a flash writing tool is mounted and power is turned ON.
	○	○	○	○	○	○	Flash Write Normal Completion	This displays when the flash write has been completed, normally in cases where a flash writing tool has been mounted, and power turned ON.
	○	★	○	○	○	○	Flash Write Error	This displays when the flash write has been completed, with an error in cases where a flash writing tool has been mounted, and power turned ON. It is necessary to recycle power, perform writing again and check the ROM.

1.6 Switch Settings

1.6.1 SW 1 Settings



Name	Status	Operation Mode	Function	Default
BRS0	BSR0:ON	BSR1:ON 4M	PCLINK Baud Rate Setting	ON
	BSR0:ON	BSR1:OFF 2M		
BRS1	BSR0:OFF	BSR1:ON 1M		
	BSR0:OFF	BSR1:OFF 0.5M		
SBRS	ON	19200 bps	Serial Port Baud Rate Setting	OFF
	OFF	9600 bps		
HOLD	ON	Holding Mode	Link Data Status at Fault Settings	OFF
	OFF	CLEAR Mode		
INIT	ON	Hardware Switch Enabled	Baud Rate, Station Number Setting Selection	OFF
	OFF	Software Settings Enabled		
TEST	ON	TEST Mode	Run Mode Selection	OFF
	OFF	Normal Operation Mode		

1.6.2 Rotary Switch



Name	Status	Operation Mode	Default	Notes
ADRS X10	0-3	Station Address (10 Digits)	0	Station Address 1~32
ADRS X1	0-9	Station Address (1 Digit)	1	Other settings not possible

The status of each station is enabled only in a power ON state. (Changes after power ON will not be detected.)

1.7 Default Parameters at Initial Startup

■ PCLINK Interface (INIT→ON enabled only at power ON)

Parameter Item	INIT SW = ON
Local Station Number	This follows the rotary switch address settings. (In cases where the setting is out of range, a switch setting error will result *1)
Group Number	160
Token Holding Time	10 ms
Token Monitoring Time	500 ms
Station Search Time	1000 ms
Discrete Offset	800 H
MEMOBUS Monitoring Time	0
Retry Count	0
Baud Rate	This follows the DIP switches.

*1 Although the setting of an individual station number and baud rate is performed according to the content of switch setting during self-configuration in a state wherein the transmission definitions have not been set, in cases where an individual station number setting is outside the range, an error will result during self-configuration, and boot-up will not be normal. In this case, make the correct settings.

An error will result when any of the following switches are set.

- Station Address Setting of Rotary Switches S2 and S3: set to 0 or 33 or more

■ RS-232C Interface (INIT→ON enabled only at power ON)

Parameter Item	INIT SW = ON
Transmission Protocol	MEMOBUS
Master/Slave	Slave
Device Address	1 According to the rotary switch.
Transmission Mode	RTU
Data Length	8 bits
Parity Bits	Even number
Stop Bits	1 bit
Baud Rate	19.2 kbps According to the DIP switches.

} Always fixed, except for the switch

2. PCLINK Module Connection Specifications

2.1 Connector Specifications

The connector specifications of the PCLINK-01 module are shown below.

Connector	Name	Connector Name	No. of Pins	Connector Model		
				Module Side	Cable Side	Manufacturer
	RS-232C	MEMOBUS	9	17LE-13090-27 (D2BC) D-sub9-pin Female Connector	17LE-23090-02 (D2BC) D-sub9-pin Male Connector	Daiichi Denshi Kogyo Co., Ltd.
	PCLINK	PCLINK	1	BNCS002C00	—	Daiichi Denshi Kogyo Co., Ltd.

2.2 Connector Pin Arrangement

■ RS-232C Connector

Connects the PC to an HMI device via RS-232C.

Pin Arrangement 	Number	Signal Name	Description	Number	Signal Name	Description
	1	FG	Frame Ground	6	—	—
	2	TXD	Transmission Data	7	SG	Signal GND
	3	RXD	Receive Data	8	—	—
	4	RTS	Request to Send	9	DTR	—
	5	CTS	Clear to Send	—	—	—

■ PCLINK Connector (CN1)

	Item	Classification	Part Name/Manufacturer
	Use Connector	BNC Connector (RECEPTACLE)	BNCS002C00 (JAE)
	Mating Connector	T-connector for Branching	—

2.3 Cable Specifications

■ Yaskawa Standard Coaxial Cable Specifications

The coaxial cable uses the same item as the GL120 remote I/O system. The type and specifications of the Yaskawa standard coaxial cable are shown below.

Model	Cable Length	Coaxial Cable Specifications	Notes
JZMSZ-W60-1	2 m (6.6 ft)	3C-2V (for in-panel use)	Both ends w/ BNC connector
JZMSZ-W60-2	3 m (9.8 ft)		
JZMSZ-W60-3	5 m (16.4 ft)		
JZMSZ-W61-1	2 m (6.6 ft)	5C-FB (for panel-to-panel use)	<ul style="list-style-type: none"> • Both ends w/ F-connector (F-5FB) • Contact gold plating
JZMSZ-W61-2	5 m (16.4 ft)		
JZMSZ-W61-3	10 m (32.8 ft)		
JZMSZ-W61-4	20 m (65.6 ft)		

■ Other Coaxial Cable Specifications

The types and specifications of the coaxial cable manufactured by Fujikura Ltd. are shown below.

Model Manufactured by Fujikura, Ltd.	Static Electricity/Electromagnetic Shield	Application	Use Conditions	Signal Attenuation: Pas(dB/Km)			
				0.5MHz	1MHz	2MHz	4MHz
3C-2V	None	For in-panel use	Dedicated Ducts	9.0	12.0	17.0	25.0
3C-2V (Cu, Fe) ZV	Yes	For in-panel use	Low-voltage ducts				
5C-2V	None	For panel-to-panel use	Dedicated Ducts	5.1	7.6	11.0	16.0
5C-2V (Cu, Fe) ZV	Yes	For panel-to-panel use	Low-voltage ducts				
5C-FB	None	For panel-to-panel use	Dedicated Ducts	4.8	7.4	10.5	14.0
5C-FB (Cu, Fe) ZV	Yes	For panel-to-panel use	Low-voltage ducts				
7C-FB	None	For panel-to-panel use	Dedicated Ducts	4.2	5.8	7.6	10.0
7C-FB (Cu, Fe) ZV	Yes	For panel-to-panel use	Low-voltage ducts				
7C-FL	None	For panel-to-panel use	Dedicated Ducts	2.9	3.8	5.6	8.1
7C-FL (Cu, Fe) ZV	Yes	For panel-to-panel use	Low-voltage ducts				
12C-5AF	None	For panel-to-panel use	Dedicated Ducts	1.46	2.2	3.2	4.5
12C-5AF (Cu, Fe) ZV	Yes	For panel-to-panel use	Low-voltage ducts				

- (Note) 1 Coaxial cables from other manufacturers may be used if equivalent to the above.
 2 Signal Attenuation: Pas (dB/Km) is the standard value.

■ Coaxial Connector Specification

The types and specifications of the coaxial connectors are shown below.

Classification	Name	Model	Abbreviated Model	Function/Application	Manufacturer
Connection Connector	BNC Connector	BNC-P-3-Ni-CAu	BNC-P-3	For 3C-2V, Connector Gold Plating	Daiichi Denshi Kogyo Co., Ltd.
	F-type Connector	FSPW-5-Ni-CAu	—	For 5C-2V, Connector Gold Plating	Fujikura, Ltd.
		F-5FB	—	For 5CV-FB, Connector Gold Plating	Fujikura, Ltd.
		FSPW-7-Ni-CAu	—	For 7CV-FL, Connector Gold Plating	Fujikura, Ltd.
		F-7FB	—	For 7CV-FB, Connector Gold Plating	Fujikura, Ltd.
	Fitting Connector	FT-12C-2.9-TC31	—	For 12C-5AF, Connector Gold Plating	Fujikura, Ltd.
		FT-7C-FL	—	For 7CV-FB, Connector Gold Plating	Fujikura, Ltd.
Branch Connector	T-type Adapter	413592-2	—	Connection/Branch Connector	AMP (Japan), Ltd.
Conversion Connector	Conversion Adapter	T-0298	—	For BNC/F-type Connector Conversion	Yaskawa
	Conversion Connector	FTR-FJ	—	For Fitting Connector and F-type Connector Conversion	Fujikura, Ltd.
Relay Connector	Relay Connector	F-A	—	For F-type Connector Equivalent Connection	Fujikura, Ltd.
		FI-A	—	For Fitting Connector Equivalent Connector	Fujikura, Ltd.
Terminal Connector	Terminator	221629-5	—	Connects and terminates both ends of the transmission path.	AMP (Japan), Ltd.

(Note) 1 The attenuation of the above connectors is 0dB for all.

Precautions

During installation, apply a proper insulation at the connection of the coaxial cables by taking waterproofing countermeasures such as wrapping the coaxial cable adapters with self-fusing tape, in order to prevent unexpected grounding.

3. PCLINK Transmission Definitions

In order to perform PCLINK communication with an MP2000 machine controller, it is necessary to create a PCLINK transmission definitions file.

Here, we will describe the method for performing PCLINK transmission definitions in the MPE720 screen.

3.1 Displaying the PCLINK Transmission Definition Window

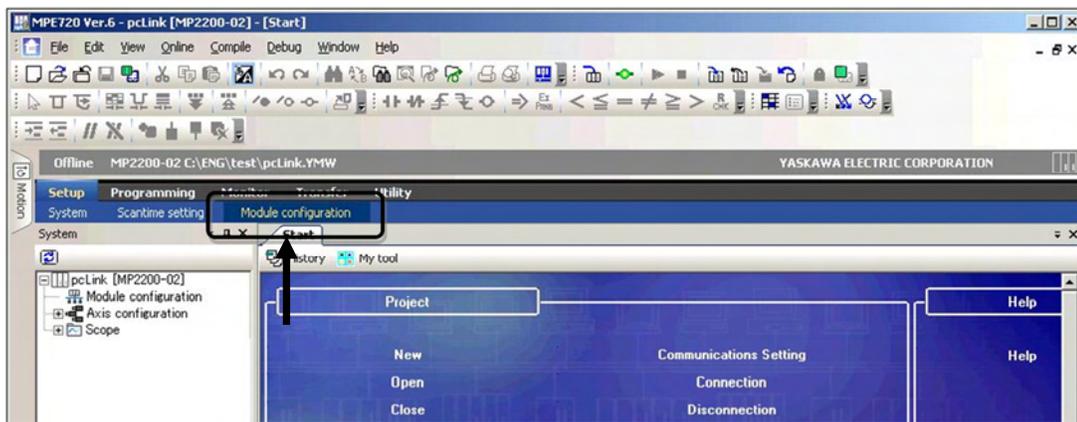
The PCLINK transmission definition settings are performed by opening the module configuration definition screen in the MPE720, and then opening the PCLINK transmission definition window screen.

3.1.1 Displaying the Module Configuration Definition Screen

Use the following procedure to display the module configuration definition screen.

In the Case of MPE720 Ver. 6:

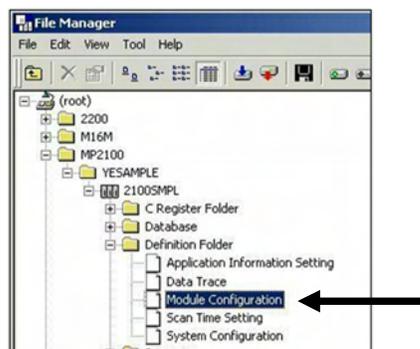
1. Start up the MPE720 with a computer connected to the machine controller, and open the intended project file.
2. Click "Setup" → "Module Configuration Definition" in the launcher.



This displays the Module Configuration Definition screen.

In the Case of MPE720 Ver. 5:

1. Start up the MPE720 with a computer connected to the machine controller, and log on to the application for the intended controller in the File Manager.
2. Double-click "Module Configuration" in the "Definition Folder".



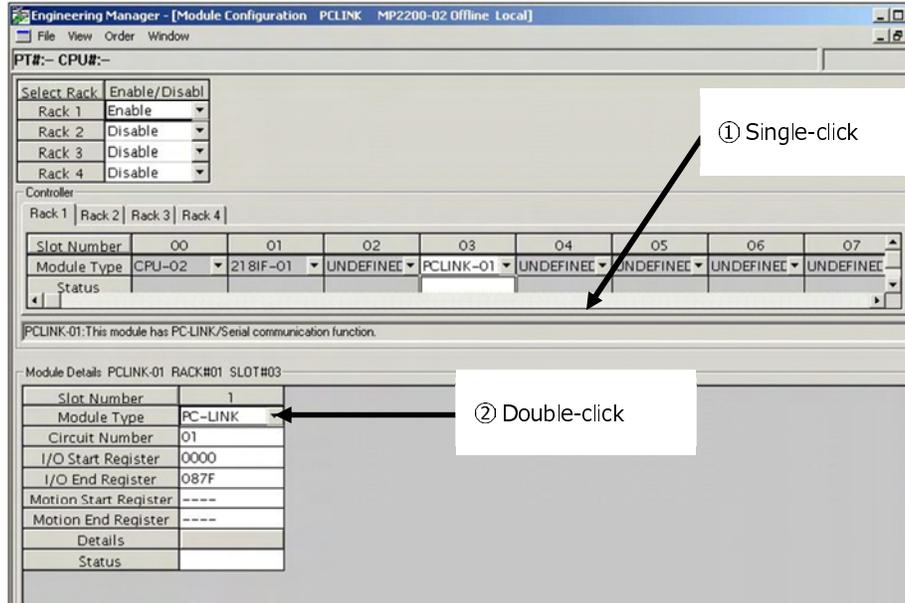
This displays the Module Configuration Definition screen.

3.1.2 Displaying the Module Configuration Definition Screen

Display all the option modules connected to the machine controller in the "Controllers" area of the Module Configuration Definition screen by executing self-configuration.

After selecting the "PCLINK-01" cell, the PCLINK Transmission Definition window (see next page) will be displayed upon double-clicking the "PC-LINK" No. cell in the "Module Details" area.

<MP2200 Example>



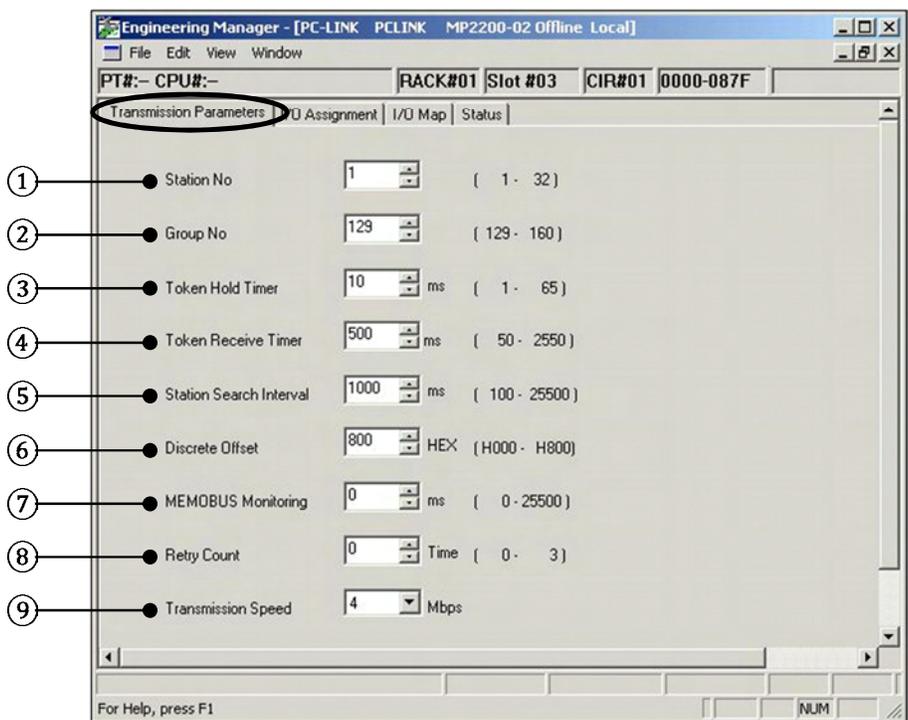
In the on-line mode, the PCLINK transmission definition data stored in the machine controller is displayed, and in the off-line mode, the PCLINK transmission data stored in the MPE720 is displayed.

There are four tabs in the PCLINK transmission definition window: "Transmission parameters", "I/O Assignment", "I/O Map" and "Status".

- In addition, when deciding to open a transmission definition window where no settings have ever been made, a so-called "New File" message box will be displayed, and the PCLINK transmission definition window will be displayed upon clicking "OK".
- When the 217IF No. cell is double-clicked in the module details area, the 217IF transmission (serial port communication) definitions window will be displayed.

3.2 "Parameter Setting" Tag Screen

Set the various parameters necessary for the PCLINK transmission system in the "Transmission Parameters" tag screen.



■ Configuration Information

This displays the PCLINK-01 configuration information. The configuration information is the same as the information displayed in the details area of the module configuration definition window.

- Circuit Number: Sets the PCLINK-01 circuit number.
- I/O Start Register: Sets the lead number of the I/O registers (OWxxxx, IWxxxx) used by the PCLINK-01.
- I/O End Register: Sets the end number of the I/O registers (OWxxxx, IWxxxx) used by the PCLINK-01.
- Motion Start Register: Cannot be set in PCLINK-01.
- Motion End Register: Cannot be set in PCLINK-01.

It is possible to change the configuration information in the Details area of the Module Configuration Definition window. At this time, the circuit numbers will not be duplicated in the other PCLINK-01.

① Station No

Set the PCLINK-01 local station number in a range of 1~32.

② Group No

Set the group address used in cases where data transmission is performed for each group during message transmission in a range of 129~160.

③ Token Hold Timer

Set the time held from when the station receives a token until token transmission at 1~65 ms (1 ms units).

Link data and message data transmission is possible during token holding. In cases where there is no data to be sent, the tokens will be sent to the next station even if the token holding time setting is not met.

When hold timer is short, message transmission may not be possible.

④ Token Receive Timer

This is set in order to monitor the data transmission from the station in the PCLINK network. Set the timeout time in a range of 50~2550 ms (10 ms units) from the previous data reception until the next data reception. If no data is received in this set time, that station will be treated as an error.

⑤ Station Search Interval

This sets the search interval for detecting new stations in a range of 100~25500 ms (100 ms units). The station will search whether any new stations have come on-line.

⑥ Discrete Offset

This sets the lead offset address of the link coils in a range of 000 H~800 H in order to differentiate the I/O registers as link register fields and link coil fields. The I/O register lead number + this setting becomes the lead of this link coil field. Caution is necessary, as the link register fields and coil register fields may overlap according to the settings.

There is no overlap between the link register fields and the link coil fields at 800 H.

⑦ MEMOBUS Monitoring

Set the time until the MEMOBUS message transmission detects a communication timeout in the range of 0~25500 ms (100 ms units). Setting zero (0) will result in an indefinite wait.

⑧ Retry Count

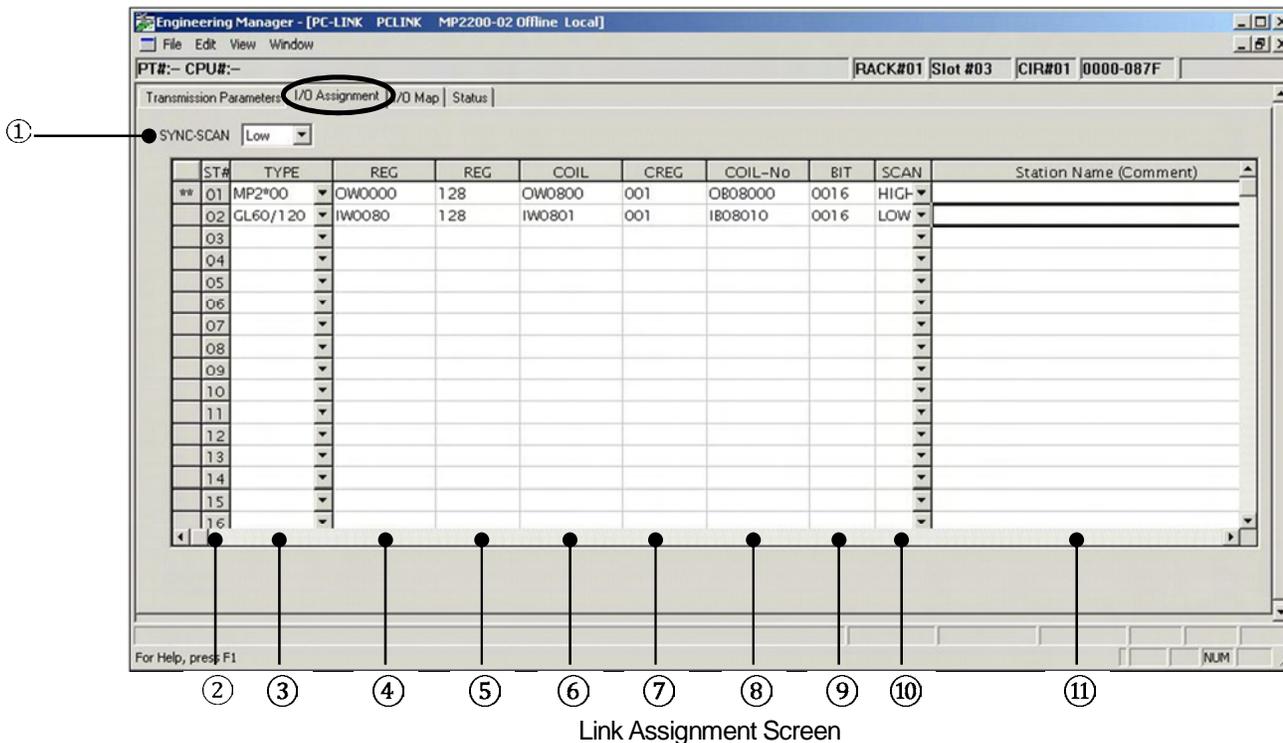
Set the number of retries after detection of MEMOBUS message transmission communication timeout in the range of 0~3. The set number of retries will be performed after communication timeout, and if no response is still obtained, a message communication error will be detected.

⑨ Transmission Speed

Set the PCLINK-01 transmission baud rate in the range of 0.5/1/2/4 Mbps.

3.3 Link Assignment

This performs assignment in order to input and output link data between the various stations connected on the PCLINK network.



① SYNC-SCAN

This selects whether the PCLINK-01 synchronization period is to be synchronized to a high or low scan period. In PCLINK-01, link data transmission processing on the transmission path is performed at this scan period timing. The actual transmission of the data on the transmission path is after token reception.

② ST#

This displays the station number. The local station number is displayed as "****".

③ TYPE

This selects the name of the I/O devices connected to each station. The following device names can be selected: GL60/120, ACGC4000, MP2*00 (GL60/120 includes GL40/60/70 and GL120/130).

④ REG-No

Input the lead register number when performing link register I/O with each station. Input the O register number of local stations, and I register numbers for the other stations.

Set so that there is no register duplication between the stations.

⑤ REG WORD

This sets the number of link register I/O words. The maximum assignments per station is 256 words, combining links and coils.

⑥ COIL REG-No

Input the lead register number when performing link coil I/O with each station. Input the O register number of local stations, and I register numbers for the other stations.

Set so that there is no register duplication between the stations.

⑦ CREG WORD

This sets the number of link register I/O words.

The maximum assignments per station is 256 words, combining links and coils.

⑧ COIL-No

This displays the lead coil numbers during link coil I/O. Input is not possible.

The register numbers input in COIL REG-No are displayed in the coil number format.

⑨ BIT

This displays the number of link coil I/O bits. Input is not possible. The number of link coil I/O words input in CREG-WORD is shown in the number of bits.

⑩ SCAN

This selects the scan performing input and output between the CPU module and the PCLINK-01 from "High/Low". In the case of a local station, there will be a transmission data output scan, and in the case of other stations, a reception data input scan.

In the case of the local station, set the same scan as the SYNC-SCAN setting.

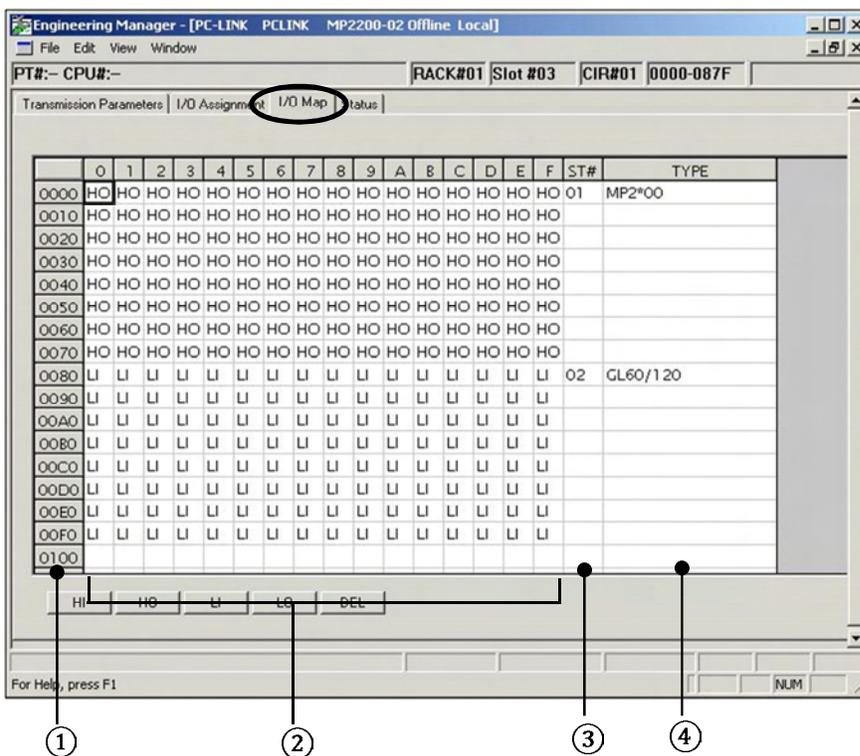
⑪ Station Name

Input the station comments in 32 characters.

3.4 I/O Map Assignment

The I/O map assignment field from the I/O lead register number to the I/O end register number set in the PC-LINK function module of the module configuration definitions is displayed in word units.

The ST# and TYPE name set in the link assignment are displayed in the line corresponding to the register number.



I/O Map Assignment Screen

① Register Number

The module configuration definition screen displays from the I/O start register number to the I/O end register number set in the PCLINK-01 module.

② Map Assignment Fields

- HI: High-speed scan input.
- HO: High-speed scan output.
- LI: Low-speed scan input.
- LO: Low-speed scan output.

③ ST#

The ST# (station number) set in the "Link Assignment" tab is displayed.

④ TYPE

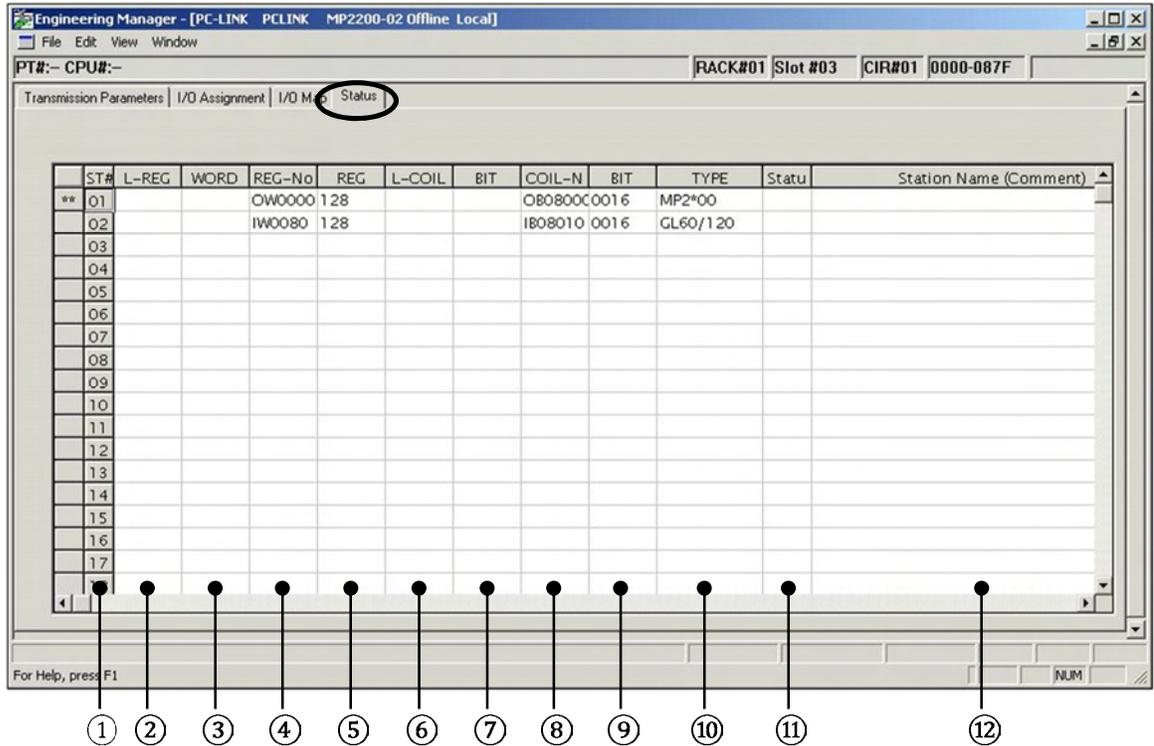
The TYPE (I/O Device Name) set in the "I/O Assignment" tab is displayed.

Restrictions During I/O Map Assignment

- Unidirectional scan I/O deletion is possible (Ex: "LI"→" " is OK)
- Scan classification change is possible (Ex: "LI"→"HI" is OK)
- A change between Input and Output is not possible (Ex: "LI"→"LO" is NG)

3.5 Link Status

This displays the data actually being link-transmitted by the PCLINK-01. This is for display only, and modification of the individual settings is not possible.



Link Status Screen

① ST#

This displays the station number. The local station number is displayed as "****".

② L-REG

In the case of the local station, the address actually being output is displayed. In the case of other stations, the addresses actually being input are displayed. Nothing is displayed in off-line mode.

③ WORD

In the case of the local station, the data size actually being output is displayed. In the case of other stations, the data size actually being input is displayed. Nothing is displayed in off-line mode.

④ REG-No

This displays the REG-No set in the "I/O Assignment" tab.

⑤ REG WORD

This displays the REG WORD set in the "I/O Assignment" tab.

⑥ L-COIL

In the case of the local station, the address actually being output is displayed. In the case of other stations, the addresses actually being input are displayed. Nothing is displayed in off-line mode.

⑦ BIT

In the case of the local station, the data bit size actually being output is displayed. In the case of other stations, the data bit size actually being input is displayed. Nothing is displayed in off-line mode.

⑧ COIL-No

This displays the COIL-No set in the "I/O Assignment" tab.

⑨ BIT

This displays the BIT set in the "I/O Assignment" tab.

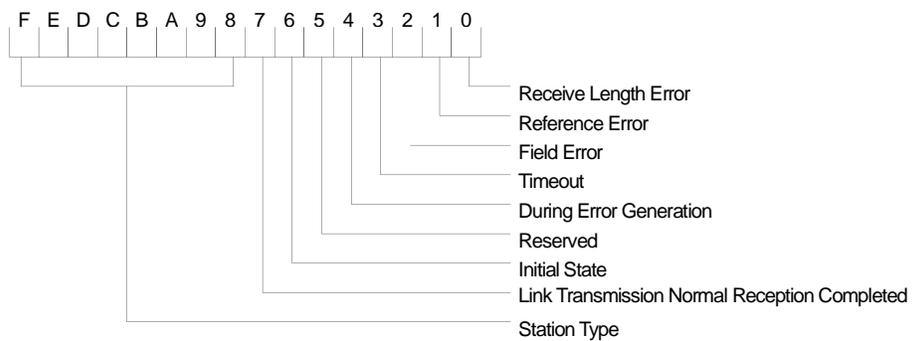
⑩ TYPE

This displays the TYPE set in the "I/O Assignment" tab.

⑪ Status

In on-line mode, the PCLINK link status data is displayed in hexadecimal.

- Nothing is displayed in off-line mode.
- Other Station Link Status (When Normal: 1280H)



⑫ Station Name

This displays the Station Name set in the "I/O Assignment" tab.

4. PCLINK Transmission Format

4.1 Link Transmission

The link transmission function communicates data cyclically between the devices connected by PCLINK simply by performing link assignment with an engineering tool. No ladder program is necessary to send and receive data. An outline of the function is given below.

4.1.1 Link Data Assignment

- **Register Maximum: 2048 words**
- **Coil Maximum: 2048 bits**
- **Per-station Output Size Conditions**

Coil Output (16-point units) + Register Output \leq 256 words

- **Link Size Restrictions in the PCLINK Network**

Because the data size that can be used differs between the MP series and the GL120/130 series PCLINK (registers: 2048 words, coils: 2048 bits) and the GL40, 60 and 70 series PCLINK (registers: 1024 words, coils: 1024 bits), when they are combined on the same network it is necessary to compose the system with small upper limit on size with 1024 words for registers, and 1024 bits for coils.

- **Link Coils and Link Registers**

In GL series PCLINK, the registers used in PCLINK transmission use dedicated registers for link coils (Dxxxx) and for link registers (Rxxxx). Because there are no dedicated registers in the MP series PCLINK modules, I/O registers (OB, IB in the case of link coil access, and OW, IW for link register access) are used instead. The following shows the correspondence between the link coil, link registers and I/O registers (an I/O register number for example).

Type	GL120/130 Reference Number	MP PCLINK Reference Number
Register	Ru0001~Ru2048	IW0000~IW07FF OW0000~OW07FF
Coil	Du0001~Du2048	IB08000~IB087FF OB08000~OB087FF

u: Channel number 1 or 2

*The I/O register lead number and end number are indicated when the PCLINK-01 module is assigned in an MP series controller. In the PCLINK module, an I/O register of a maximum 2176 words (2048 words + 2048 bits) is needed. (The size can be contracted as needed.)

The following shows the correspondence between the link coils, link registers and I/O registers.

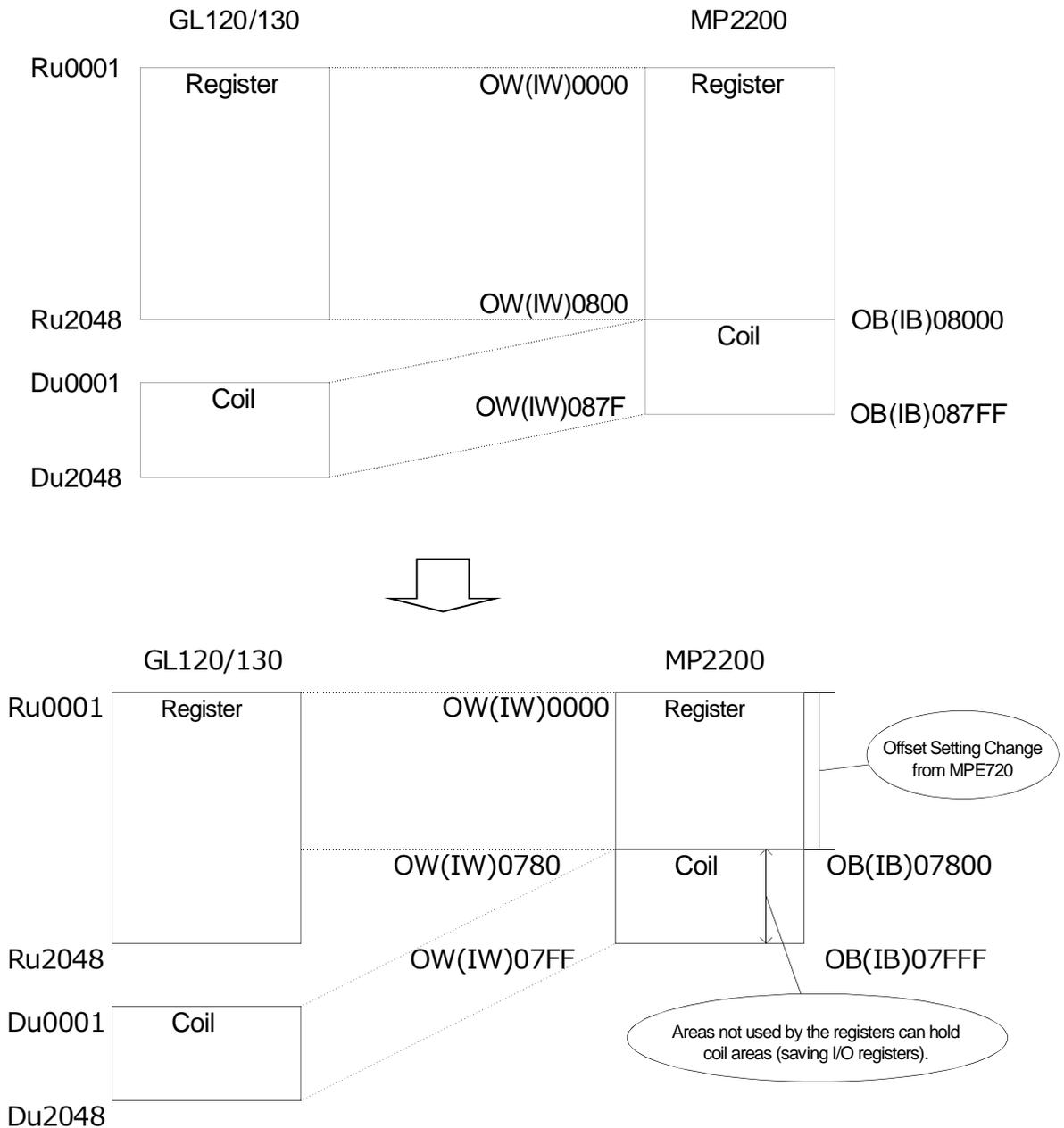


Figure 4.1 I/O Registers Corresponding to Link Coils and Registers

4.1.2 Link Data Reception

PCLINK has a memory (link memory) for link data. PCLINK performs link data reception through link memory reading according to the I/O register assignment performed from the CPU module.

The link memory determines the write regions for each station according to the assignment. The PCLINK for each station cyclically transmits the link data written by the CPU module to all of the stations. The PCLINK of the other stations reads the received link data into its local memory.

So, the content of the link memories of all the link stations is held in the same state. When reading the link data from the other stations, it is possible to read from the link memory by performing readout link assignment.

After each station writes the transmission data into the determined regions of the local link memory, the region information and transmission data will be transmitted to all the stations upon token reception.

Upon receiving this data, all the stations will write the reception data in the corresponding region of the local link memory according to the content of the region information.

Note: When output assignments are duplicated, the duplicated parts of the data will be corrupted. During assignment, make sure there is no output assignment duplication between all the stations.

The following shows the relationship of the token circulation and the outputs of the various stations in a case where four stations are connected.

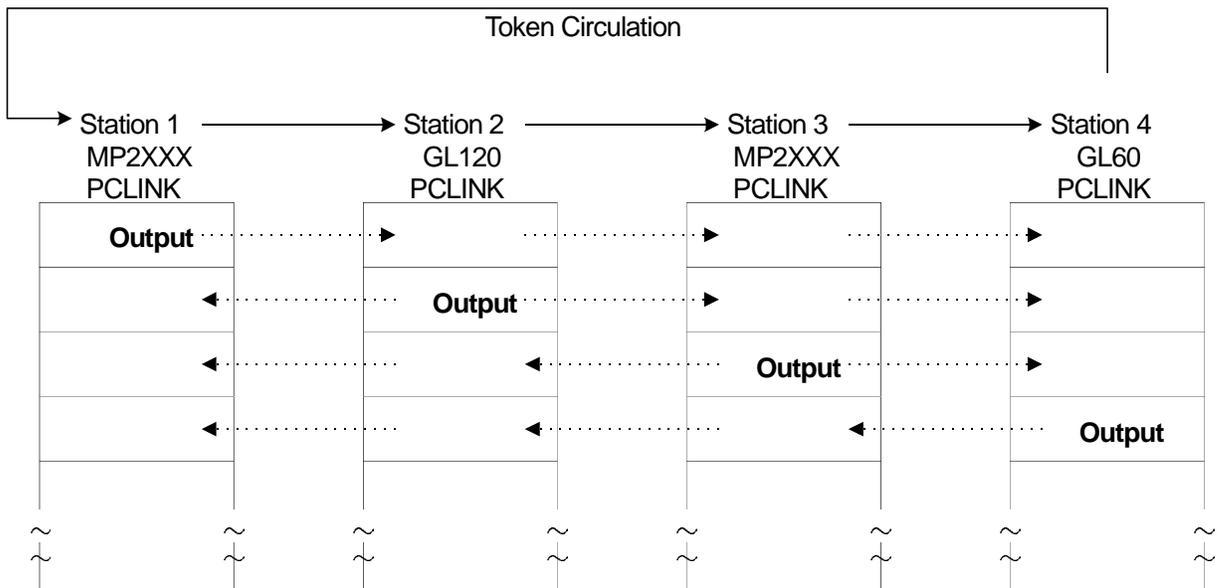


Figure 4.2 Token Circulation and Link Data Output

4.2 Message Transmission

The message transmission function is capable of sending and receiving user programs and is of two types, MEMOBUS messages and general-purpose messages (non-procedural). A functional outline is shown below.

4.2.1 MEMOBUS Messages

Message transmission using the MEMOBUS protocol is performed between the stations connected on the PCLINK network. To perform message transmission as the master, use the MSG-SND function, and to receive the message as a slave, use the MSG-RCV function (the MSG-RCV function operates up to command reception and the accompanying response transmission). There are four message channels for MEMOBUS messaging (used together with general-purpose messages). Master/slave selection is possible for each channel (the MSG-SND function channel is the master, and the MSG-RCV function channel is the slave). Four message transmissions are possible at the same time.

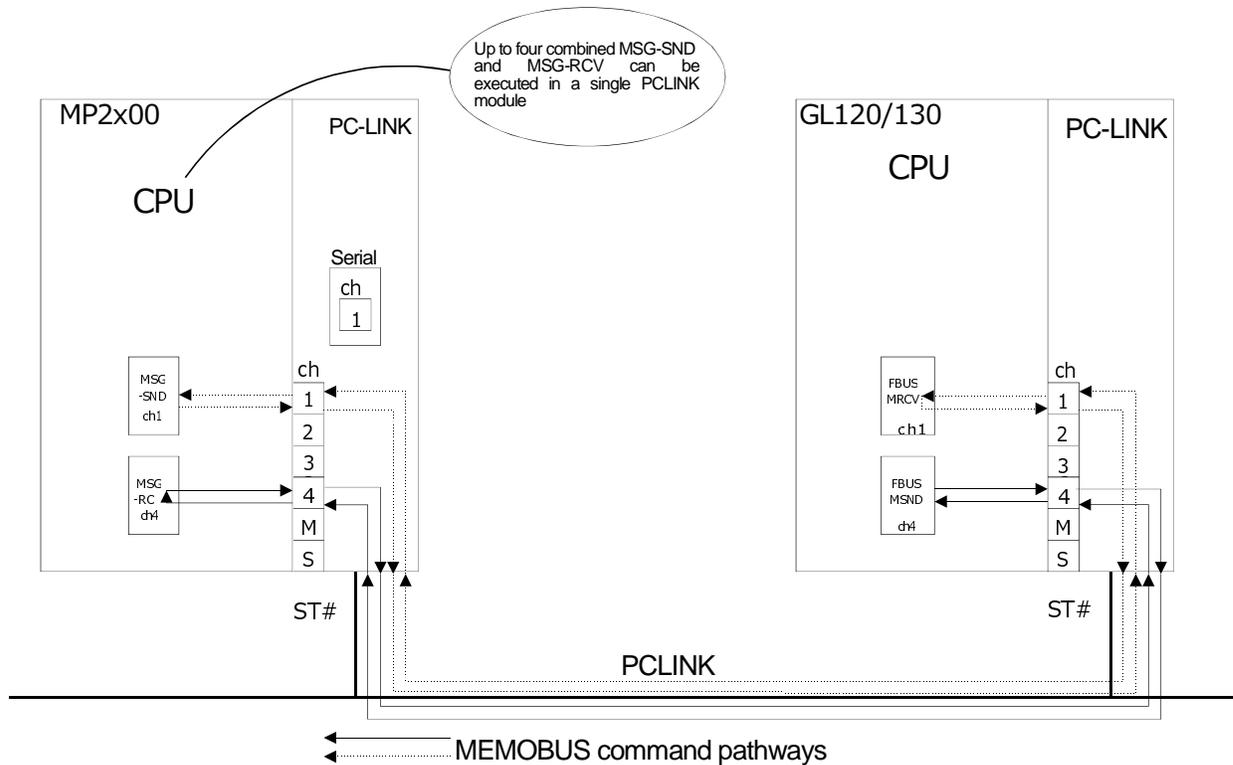


Figure 4.3 MEMOBUS Messaging Between the Controllers

In addition, connection of a MEMOBUS master device to the serial port of the MP2000 series PCLINK-01 module and MEMOBUS message communication via the PCLINK network are possible. The PCLINK-01 reception side has a MEMOBUS message reception function. (When a MEMOBUS message is received via the serial port, CH5 is used by the MSG-RCV function.) The controller on the transmission side does not need a ladder protocol. The MEMOBUS messages received from the serial port will be automatically determined to be either received by the local CPU module or transmitted on the PCLINK network according to the station address of the MEMOBUS protocol.

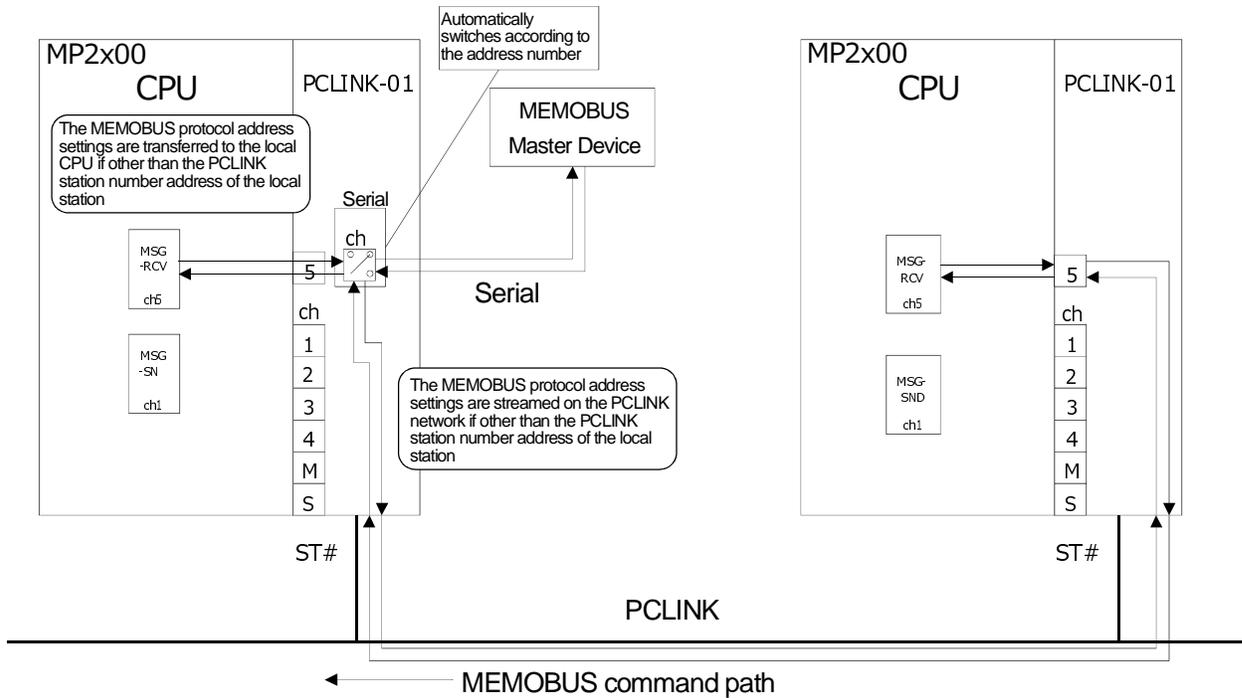


Figure 4.4 MEMOBUS Messaging Between the Controllers via the PCLINK Serial Port

* In cases of a GL40, 60, 70 and GL120/130 side message slave, the message reception function can be omitted.

The MEMOBUS protocol capable of being used in PCLINK transmission is as follows.

Function Code	Meaning	Data Address Setting Range	Data Size	MEMOBUS
01H	Coil Status Readout	0 ~ 65535	1~2000 (No. of bits)	○
02H	Input Relay Status Readout	0 ~ 65535	1~2000 (No. of bits)	○
03H	Holding Register Content Readout	0 ~ 65534	1~125 (No. of words)	○
04H	Input Register Content Readout	0 ~ 32767	1~125 (No. of words)	○
05H	Single Coil Status Change	0 ~ 65535	Disabled	○
06H	Write to Single Holding Register	0 ~ 65534	Disabled	○
08H	Loopback Test	Disabled	Disabled	○
0FH	Multiple Coil Status Change	0 ~ 65534	1~800 (No. of bits)	○
10H	Write to Multiple Holding Registers	0 ~ 65534	1~100 (No. of words)	○

In PCLINK transmission, the transmission target can be designated by the group number in addition to the station number in the message transmission target. In group number designation, it is possible to multicast messages to stations with the same group number. However, the available messages are limited to the write series.

4.2.2 General-Purpose Messages (Non-Procedural)

Message transmission using a proprietary user message format is performed between the stations connected on the PCLINK network. To perform message transmission as the master, use the MSG-SND function, and to receive the message as a slave, use the MSG-RCV function (as in MEMOBUS protocol, the response is not accompanied). There are four message channels for general-purpose messaging (used together with MEMOBUS messages). Master/slave selection is possible for each channel (the MSG-SND function channel is for transmission, and the MSG-RCV function channel is for reception). Four message transmissions are possible at the same time.

* General-purpose message is the call name during GL series use. In the MP series, these are called non-procedural.

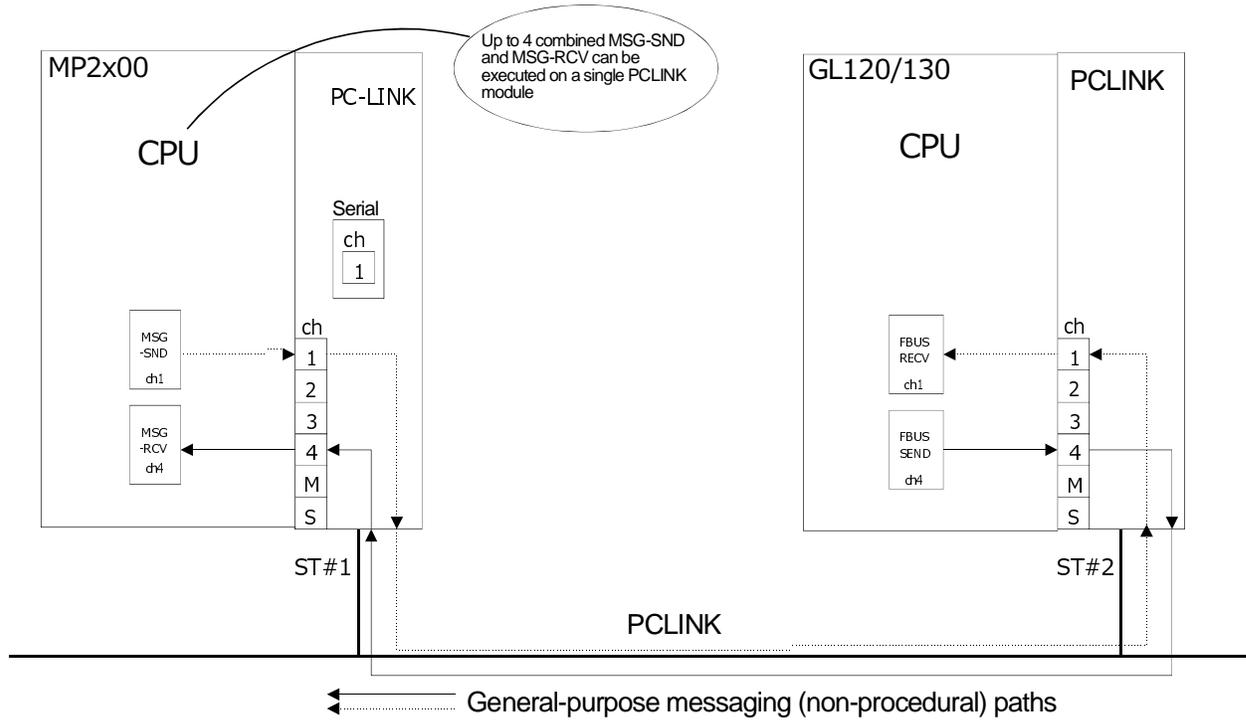


Figure 4.5 General-Purpose Messages Between Controllers

4.2.3 Message Functions

The message function specifications during PC-LINK use are shown below.

(1) Message Transfer Function

Function Name	MSG-SND			
Function	<p>The messages are transmitted to the counterpart station on the line designated in the transmission device type. Multiple protocol types are supported.</p> <p>Hold the execution command (EXECUTE) until COMPLETE or ERROR go "ON".</p> <p>Transmission Device: PC-LINK</p> <p>Protocol: MEMOBUS, non-procedural</p>			
Function Definition	<p>The diagram shows a central box labeled 'MSG-SND'. On the left side, there are six input lines: EXECUTE, ABORT, DEV-TYPE, PRO-TYP, CIR-NO, and CH-NO. On the right side, there are three output lines: BUSY, COMPLETE, and ERROR. Dashed arrows point from the input labels to the box, and solid lines connect the output labels to the box.</p>			
I/O Definition	No.	Name	I/O Designation	Content
Input Items	1	EXECUTE	B-VAL	Message Transmission Command
	2	ABORT	B-VAL	Message Transmission Forced Stop Command
	3	DEV-TYP	I-REG	Transmission Device Classification PC-LINK=3
	4	PRO-TYP	I-REG	Transmission Protocol MEMOBUS=1, Non-procedural 1=2, Non-procedural 2=3
	5	CIR-NO	I-REG	Circuit Number: Sets the PCLINK-01 circuit number. PC-LINK = 1~8
	6	CH-NO	I-REG	Transmission Buffer Channel Number PC-LINK = 1~4
	7	PARAM	Address Input	Set Data Lead Address (MW, DW)
Output Items	1	BUSY	B-VAL	During Message Transmission
	2	COMPLETE	B-VAL	Message Transmission Completed
	3	ERROR	B-VAL	Error Generation

*Although the CH-NO can be set up to 5, 1~4 will be used as the MSG-SND function. CH5 can only be used by the MSG-RCV.

Parameters During PC-LINK Communication

PARAM No.	IN/OUT	Content		Notes
		MEMOBUS	Non-procedural	
00	OUT	Processing Results	Processing Results	–
01	OUT	Status	Status	–
02	IN	Counterpart Station Number	Counterpart Station Number	1~32: Individual Transmission 129~160: Group Transmission 255: Broadcast Transmission
03	IN	System Reservation	System Reservation	–
04	IN	Function Code	–	–
05	IN	Data Address	Data Address	–
06	IN	Data Size	Data Size	–
07	IN	Counterpart CPU Number	Counterpart CPU Number	–
08	IN	Coil Offset	–	–
09	IN	Input Relay Offset	–	–
10	IN	Input Register Offset	–	–
11	IN	Holding Register Offset	Holding Register Offset	–
12	SYS	For System	For System	–
13	SYS	System Reservation	System Reservation	–
14	SYS	System Reservation	System Reservation	–
15	SYS	System Reservation	System Reservation	–
16	SYS	System Reservation	System Reservation	–

(2) Receive Message Function

Function Name	MSG-RCV			
Function	<p>The messages are received from the counterpart station on the line designated in the transmission device type. Multiple protocol types are supported.</p> <p>Hold the execution command (EXECUTE) until COMPLETE or ERROR go "ON".</p> <p>Transmission Device: PC-LINK</p> <p>Protocol: MEMOBUS, non-procedural</p>			
Function Definition	<p>The diagram shows a central rectangular block labeled 'MSG-RCV'. On the left side, there are six input lines: 'EXECUTE' (solid line), 'ABORT' (solid line), 'DEV-TYPE' (dashed line with arrow), 'PRO-TYP' (dashed line with arrow), 'CIR-NO' (dashed line with arrow), and 'CH-NO' (dashed line with arrow). At the bottom, there is an input labeled 'PARAM'. On the right side, there are three output lines: 'BUSY' (solid line), 'COMPLETE' (solid line), and 'ERROR' (solid line).</p>			
I/O Definition	No.	Name	I/O Designation	Content
Input Items	1	EXECUTE	B-VAL	Receive Message Command
	2	ABORT	B-VAL	Message Reception Forced Stop Command
	3	DEV-TYP	I-REG	Transmission Device Classification PC-LINK=3
	4	PRO-TYP	I-REG	Transmission Protocol MEMOBUS=1, Non-procedural 1=2, Non-procedural 2=3
	5	CIR-NO	I-REG	Circuit Number PC-LINK = 1~8
	6	CH-NO	I-REG	Transmission Buffer Channel Number PC-LINK = 1~5
	7	PARAM	Address Input	Set Data Lead Address (MW, DW)
Output Items	1	BUSY	B-VAL	During Message Reception
	2	COMPLETE	B-VAL	Message Reception Completed
	3	ERROR	B-VAL	Error Generation

*The CH-NO 1~4 are for message transmission between PCLINKs, and 5 is for reception from the MEMOBUS port.

Parameters During PC-LINK Communication

PARAM No.	IN/OUT	Content		Notes
		MEMOBUS	Non-procedural	
00	OUT	Processing Results	Processing Results	–
01	OUT	Status	Status	–
02	OUT	Counterpart Station Number	Counterpart Station Number	–
03	SYS	System Reservation	System Reservation	–
04	OUT	Function Code	–	–
05	OUT	Data Address	–	–
06	OUT	Data Size	Data Size	–
07	OUT	Counterpart CPU Number	Counterpart CPU Number	–
08	IN	Coil Offset	–	–
09	IN	Input Relay Offset	–	–
10	IN	Input Register Offset	–	–
11	IN	Holding Register Offset	–	–
12	IN	Write Range LO	Register Offset	–
13	IN	Write Range HI	Write Range HI	–
14	SYS	System Reservation	System Reservation	–
15	SYS	System Reservation	System Reservation	–
16	SYS	System Reservation	System Reservation	–

4.3 Engineering Transmission

The engineering transmission function is capable of connecting the engineering tool to the serial port of the PCLINK module, and of performing program editing and monitoring, etc. of register data to the controller connected on the PCLINK network.

The connectable morphology is as follows.

MP2000 Series Controller Connection

MP2000 Series Engineering Tool

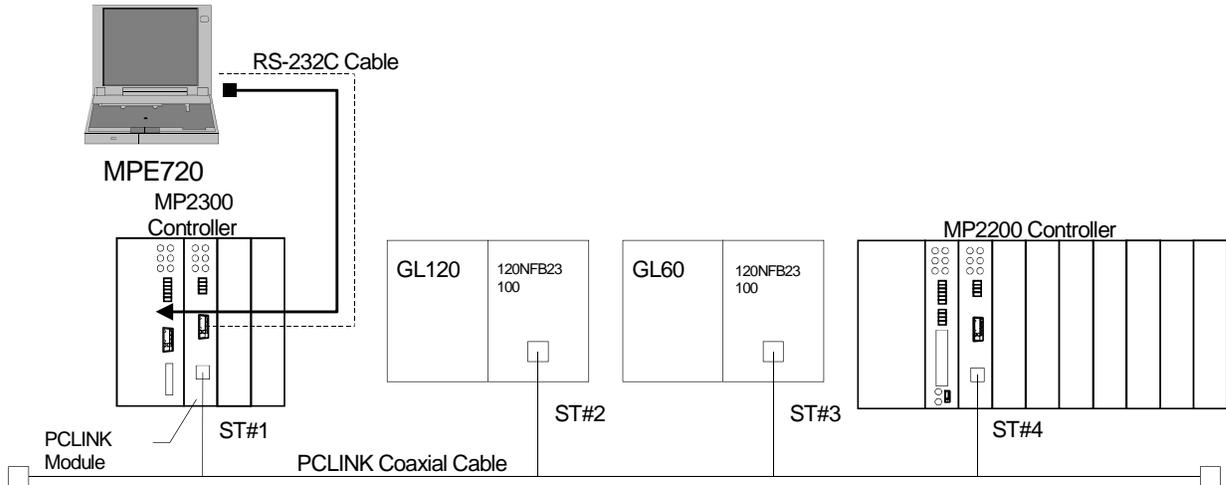


Figure 4.6 MP2000 Local Connection

MP2000 Series Engineering Tool

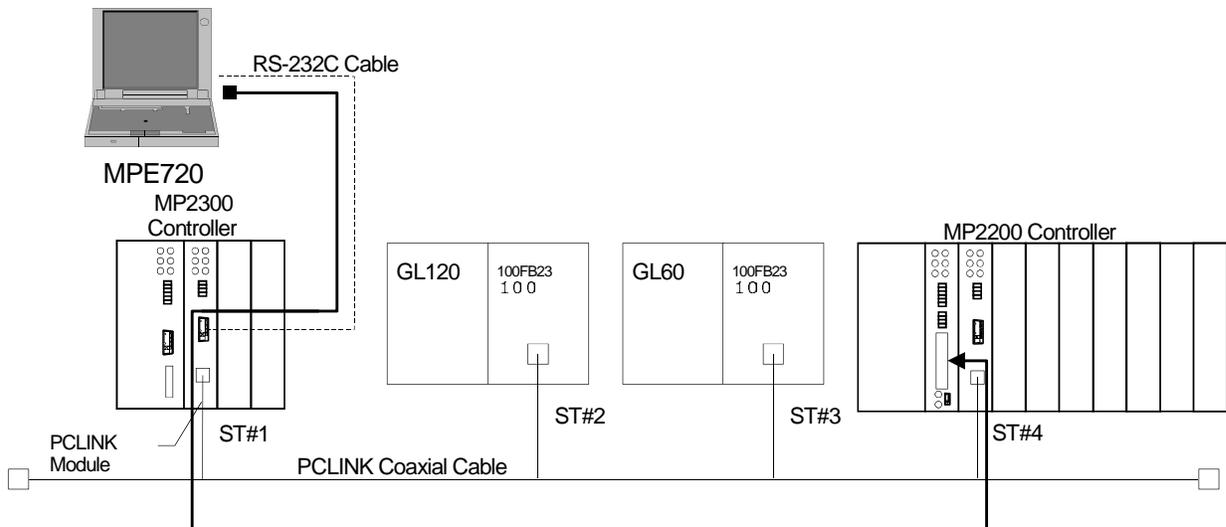


Figure 4.7 MP2000 Remote Connection

*It is not possible to simultaneously connect the MPE720 from multiple MEMOBUS ports to the same station. Operation cannot be ensured during simultaneous connection.

Note: PCLINK-01 is not compatible to the link batch assignment-related functions.

GL120/130 Series Controller Connection

GL120/130 Series Engineering Tool

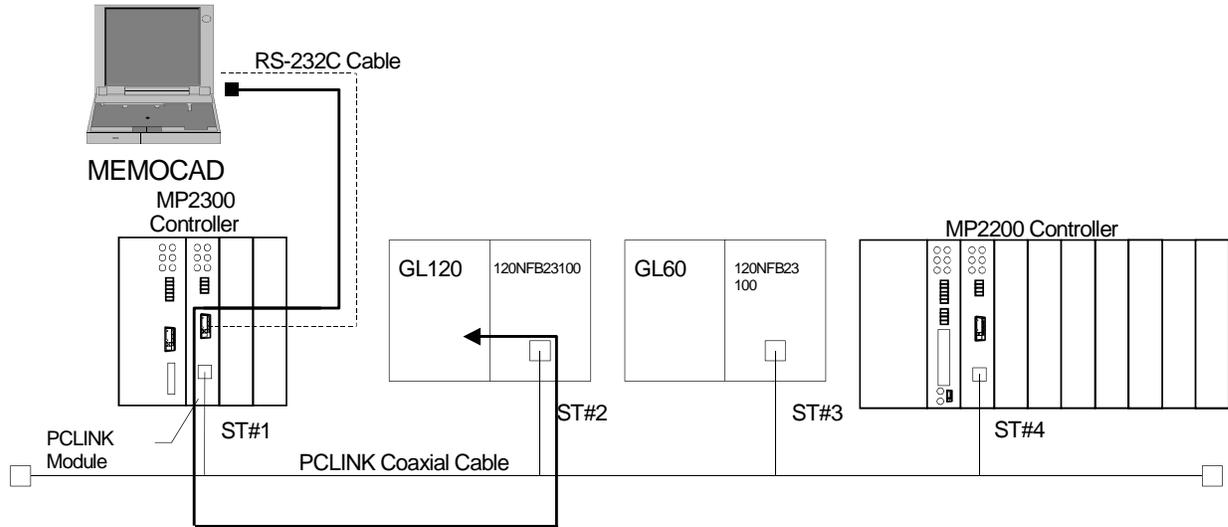


Figure 4.8 GL120/130 Remote Connection

Note: The link batch assignment-related function cannot be executed via the PCLINK-01 MEMOBUS port.

GL40/60/70 Series Controller Connection

GL40/60/70 Series Engineering Tool

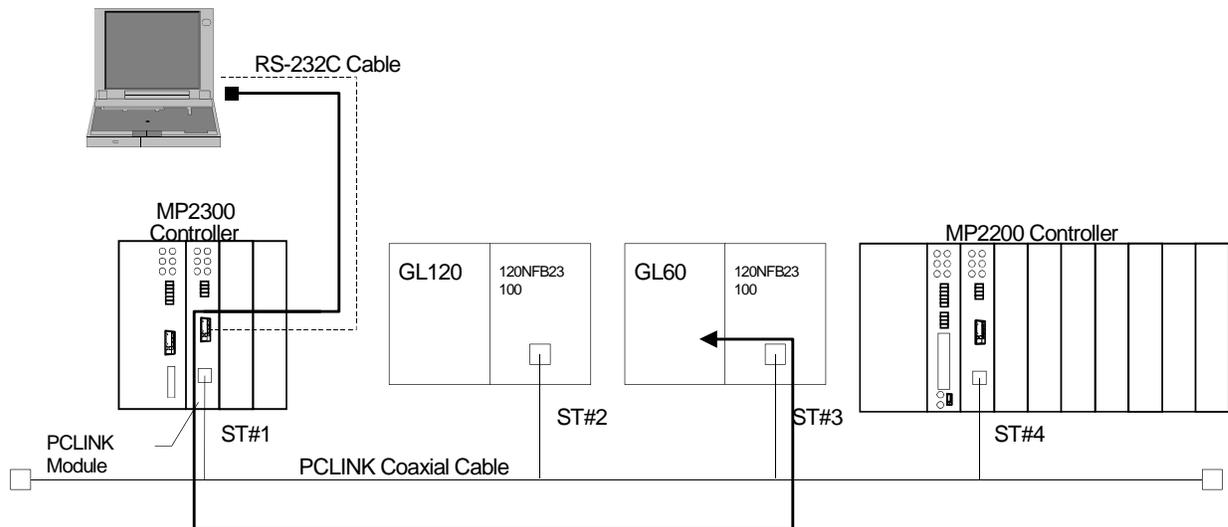


Figure 4.9 GL40/60/70 Remote Connection

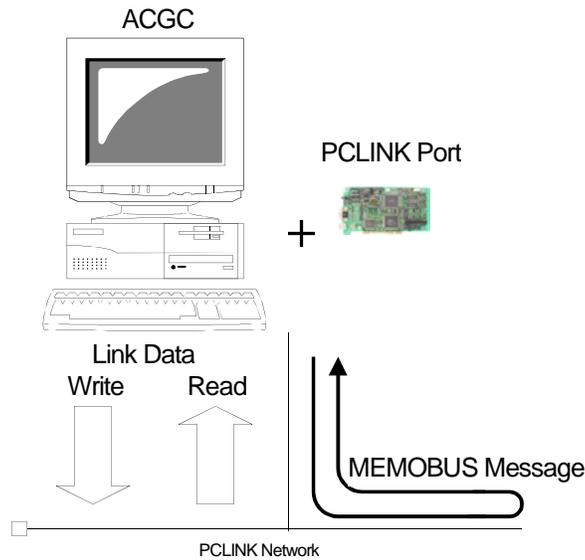
Note: The link batch assignment-related function cannot be executed via the PCLINK-01 MEMOBUS port.

Appendix 1. ACGC Replacement Proposal

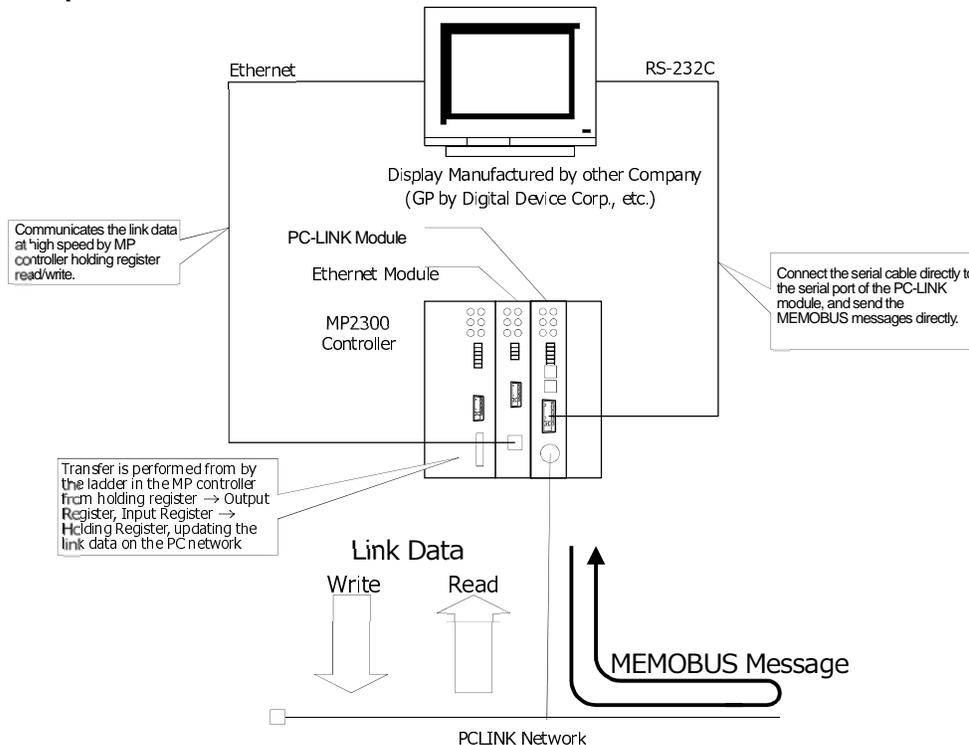
In conventional systems where ACGC + a dedicated PCLINK port is used, it was possible to perform link data read/write and MEMOBUS message transmission directly from the ACGC. In order to achieve this, a proposal where an MP controller + a display device made by another company (such as GP manufactured by Digital Device Corporation) is possible. The MP controller becomes a link data collection device, placed between the display device and the PCLINK network, and the link data is accumulated in a holding register that can be referenced from the outside. By performing holding register reading and writing to the MP controller from the display device via Ethernet, input and output of the link data on the PCLINK transmission path are performed. The MP controller needs only a message reception function performing Ethernet communication and a simple program performing transfer between the I/O registers.

In addition, with regard to MEMOBUS messaging, the MEMOBUS commands sent from the monitoring device can be directly sent to other stations on the PCLINK network according to the counterpart MEMOBUS format station number by directly connecting to the serial port of the PCLINK-01 module from the display device. At this time, no MP controller program is required.

Conventional



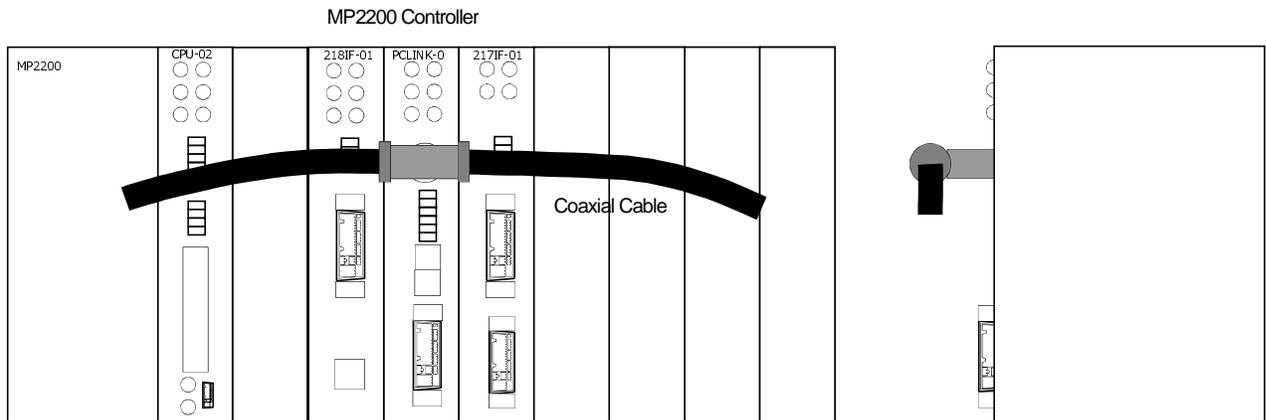
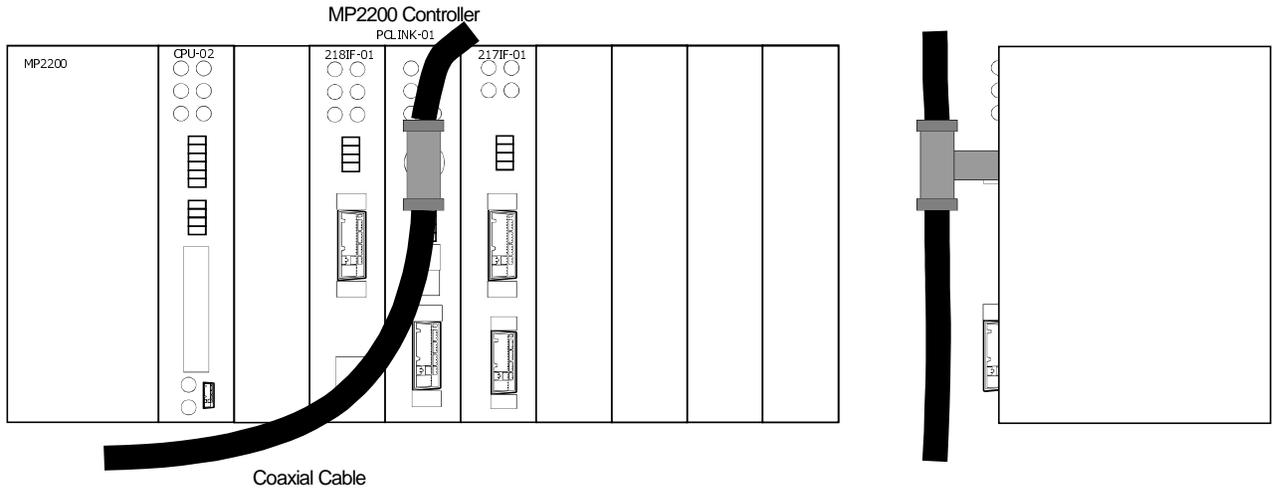
Proposal



Appendix 2. Mounting Image

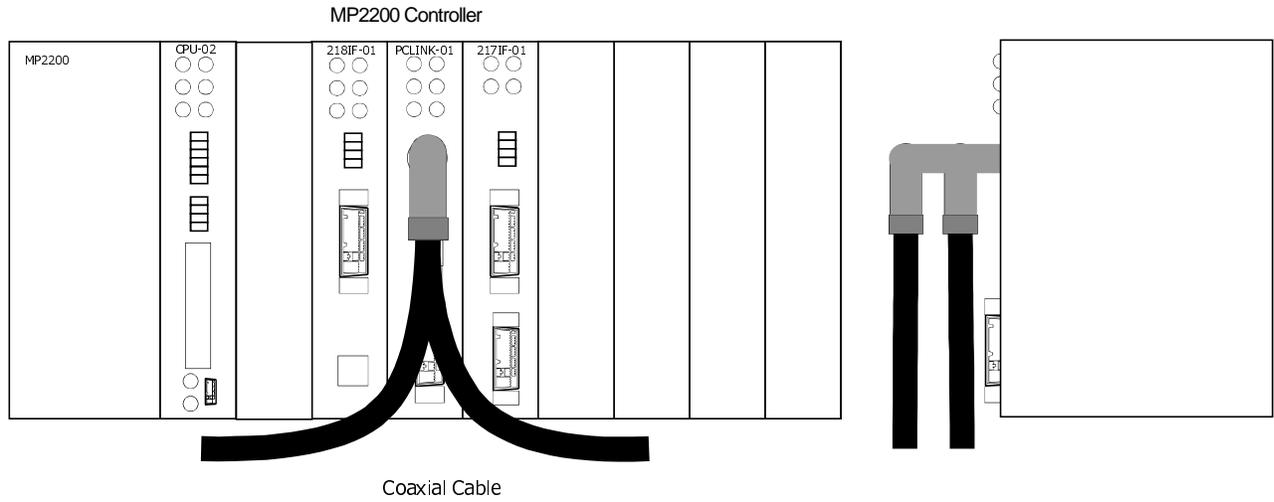
The following shows an image of a PCLINK-01 module mounted to an MP2000 series controller with a coaxial cable connected. In cases where a T-adapter is used, caution must be exercised during use due to the possibility of the adjoining I/O connector or communication port interfering with the coaxial cable according to the direction of the adapter.

When using a T-adapter:



Caution: The figure is an image. The dimensions and scale reduction of the module and the adapter may differ from the actual item.

When using an F-adapter:



Caution: The figure is an image. The dimensions and scale reduction of the module and the adapter may differ from the actual item.

Appendix 3. Supplemental Description

Appendix 3.1 Assignment Points

In PCLINK link transmission, the link data received by the counterpart station is stored in a set location according to the link map address where the transmission data is included because the link map address and size are included in the transmission data of each station. Therefore, the link maps are the same for all the stations (Figure F3.1.1). The figure is an example link map of each station in a situation where the link register outputs of each of stations 1-4 have been assigned with 128 words.

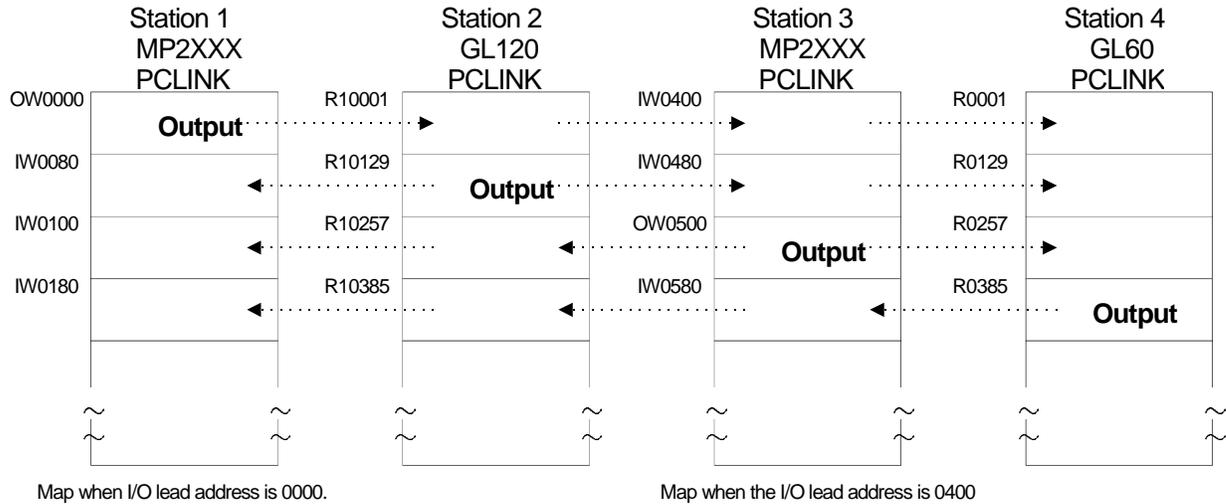


Figure F3.1.1 Link Map of Each Station

When I/O registers (I registers, O registers) are used in link transmission by MP, the lead number used will change according to the module configuration definition. Even in that case, the counterpart address from the lead is the same as the link maps of the other stations. (If the I/O lead address is 400H in the module configuration definition, R0001 of the GL corresponds to IW (OW) 0400 of the MP.)

Even in cases where input data assignment is performed from the link assignment screen, the link assignment will be performed together with the output side data address. (It is not possible to change the register numbers as desired on the input side. It is necessary to assign an MP-side input register counterpart address.)

When the transmission data address is duplicated, the data of the duplicated portion will be corrupted (Figure F3.1.2). Perform assignment such that the transmission data addresses of each of the stations are not duplicated. This shows a case where the output ranges of Station 3 and Station 2 are duplicated. (Although Station 3 normally assigns OW0500~128 words, assignment of OW04C0~192 words is being performed. The 64 words of data shaded in the figure are data corrupted due to overlap in Station 2 and Station 3.)

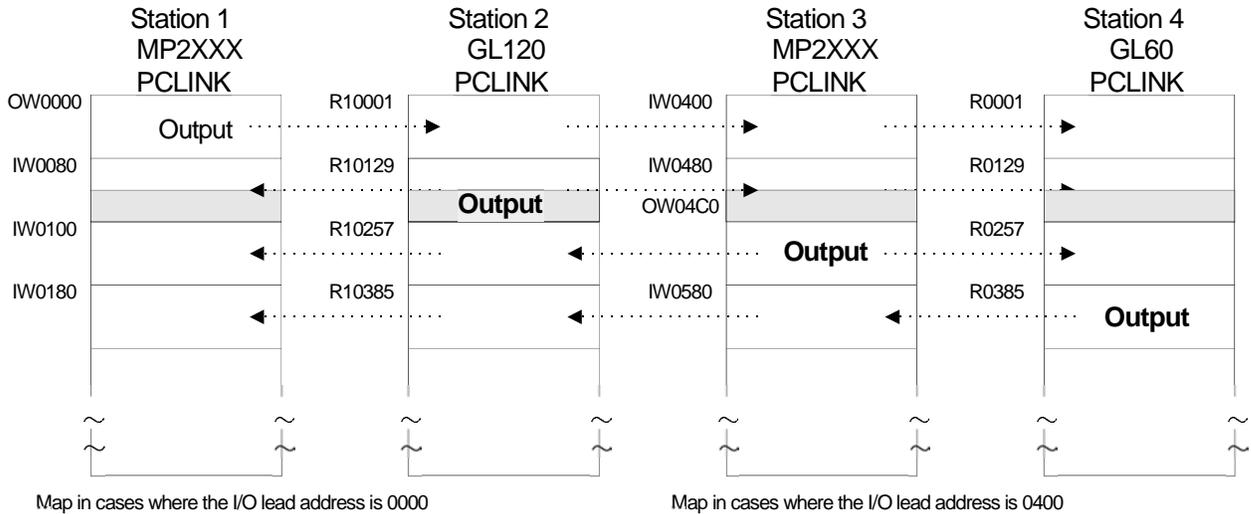


Figure F3.1.2 Address Duplication Link Map

Appendix 3.2 Settings at Remote Connection

The setting points for engineering communication via the MEMOBUS port of the PCLINK-01 module are as follows.

(1) Connection to GL120/130

Set the port selection as follows in cases of connection by MEMOSOFT.

- Set the protocol to "Link/Remote Receiver Port".
- For the address, set the PCLINK station number of the connection target GL120/130.
- Mode: Set RTU, Data Bits: 8, Parity: EVEN, Stop Bit: 1.
- Set the communication speed to 9600bps or 19200bps according to the serial transmission baud rate setting switch of the PCLINK-01 module.

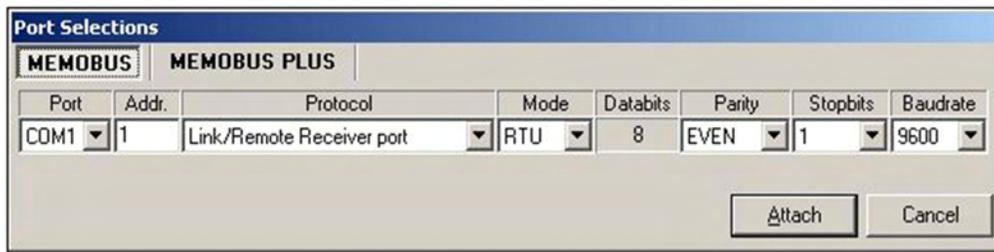


Figure F3.2.1 MEMOSOFT Port Selection Screen

(2) Connection to MP2000 Series

In the case of MPE720 Ver. 5, set the "PLC Information"- "Network" as follows.

- Online: Set to "Yes".
- Logical Port No: Set to "CP-217".
- Unit No: Set the station number of the connection target PCLINK-01. In cases of connection to a local MP2000 series CPU, set the station number of the PCLINK-01 to the serial cable that is connected.
- Route: Set "No".

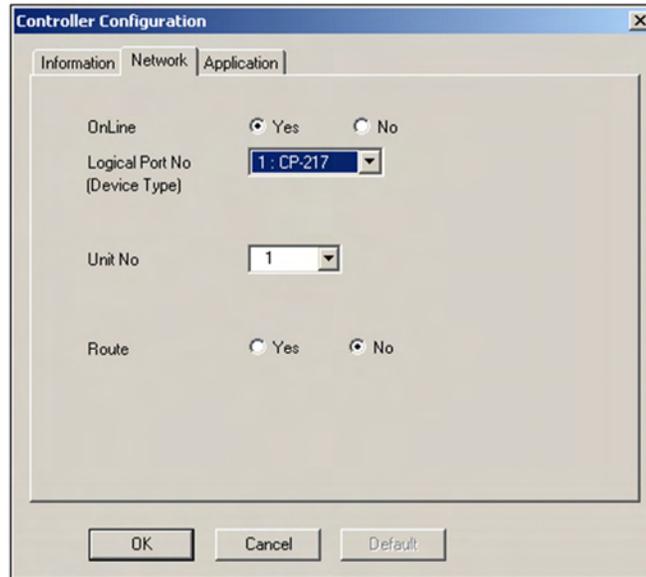


Figure F3.2.2 MPE720 Ver. 5 PLC Information Network Setting Screen

In the case of MPE720 Ver. 6, set the "Communication Setting" as follows.

- Communication port: Set to "Serial".
- Unit No: Set the station number of the connection target PCLINK-01. In cases of connection to a local MP2000 series CPU, set the station number of the PCLINK-01 to the serial cable that is connected.
- Use the router: Set "No Check".

The "Unit No" and "Use the router" are displayed or hidden by pressing the "Detail" button.

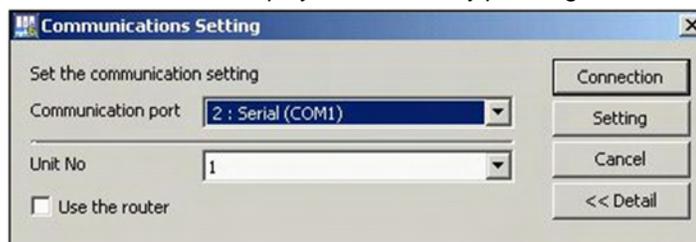


Figure F3.2.3 MPE720 Ver. 6 Communications Screen

Appendix 3.3 Link Batch Assignment

PCLINK-01 is not compatible with batch assignment of links.

- No reply will be made to commands related to link batch assignment streamed on the PCLINK. (Even if link assignment compilation is performed with a GL device by a PCLINK network, including the PCLINK-01 module, the assignment will not be realized at the PCLINK-01 station.)
- Operations related to batch link assignment cannot be executed after the connection of the GL engineering tool to the MEMOBUS port of the PCLINK-01 module.

Appendix 3.4 MEMOBUS Transmission Communication via the MEMOBUS Port

- In cases where a MEMOBUS message is transmitted to a PCLINK-01 on a PCLINK line or a local one via the MEMOBUS port of the PCLINK module, a reception function (MSG-RCV) is absolutely required on the reception side MP (CH-NO uses 5).
- CH-NO = 5 of the MSG-RCV function is the channel number dedicated to MEMOBUS message reception via the MEMOBUS port.
- Simultaneous message transmission (including both the MEMOBUS and engineering) is possible to the same PCLINK-01 from multiple MEMOBUS ports. Although forward procedural processing is executed in the PCLINK-01 in this case, caution is needed in the following case.
 - i) When the MSG-RCV function is not executed in the case of both engineering and MEMOBUS messages: The CPU module will not return a reply if the MEMOBUS message lacks an MSG-RCV function. Although the PCLINK-01 will wait about 20 seconds until a reply is returned during this period, other messages cannot be processed. Communication will be aborted if an MPE720 is connected.

Even in cases where the MEMOBUS message communication via the MEMOBUS port is not performed, execution of the MSG-RCV function is always recommended.

Appendix 3.5 Output Data at Power ON

The initial PCLINK-01 output data may be made "0" at power ON.

(Reason)

In the MP2000 series, the initial output processing is performed before H drawing and L drawing ladder processing. For this reason, initial "0" data will be output to the PCLINK-01 from the CPU module. However, the transmission of data from the PCLINK-01 units on the PCLINK line will be transmitted after the reception of the token. If output processing is performed from the 2nd time onward from the CPU module until token reception, the old data in the PCLINK-01 is discarded, and the new data becomes the subject of transmission on the PCLINK line. The following method results so that "0" data is not output at power ON.

("0" Data Output Avoidance Method)

Write the data into the output register in the MP2000 series A drawing (initial startup drawing). The A drawing is started up at the initial power ON, and is processed ahead of the H drawing, L drawing and I/O output processing and, therefore, it is possible to output any data in the initial output.

Appendix 3.6 Hold/Clear Mode Switch

The PCLINK-01 DIP switch (S1-3) "HOLD" selects whether to hold or clear the initial value data in cases where the data from other stations on the PCLINK line exceeds the token monitoring time, and cannot be received. However, in the MP2000 series, holding and clearing of data will be performed regardless of this switch. Perform setting of the holding scan in the MPE720 engineering tool. Unlimited holding at error is not possible in the MP2000 series. Holding will be done to a maximum 255 scan times. The input data will be cleared when the set scan time has been exceeded even if the PCLINK-01 is in a holding mode switch state. Conversely, the previous value will continue to be held if within the set scan time even if the PCLINK-01 is in a clear mode switch state.

The following shows the setting screen in the case of MPE720 Ver. 5.

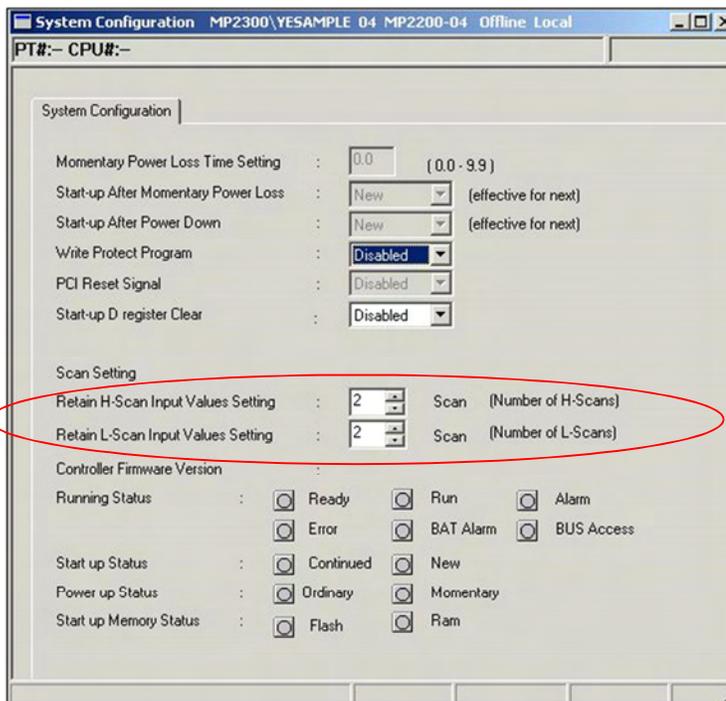


Figure F3.6.1 MPE720 Ver. 5 System Definition Screen

The following shows the setting screen in the case of MPE720 Ver. 6.

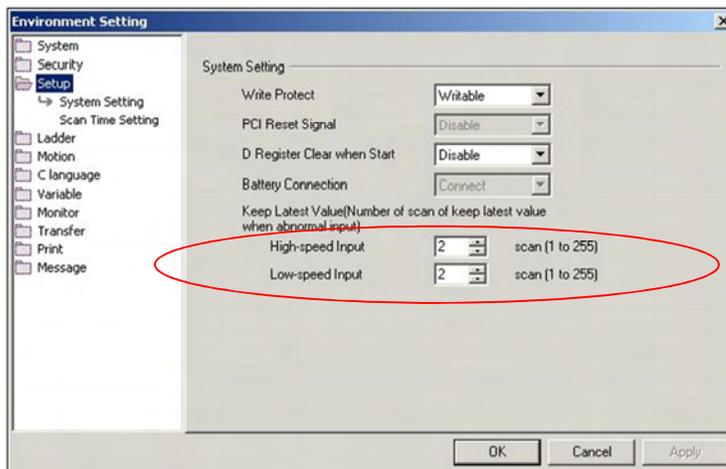


Figure F3.6.2 MPE720 Ver. 6 Environment Setting Screen



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