Chapter 14 The RS422/485 communication of GM6-CPUB

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14.1 Introductions

1) The GM6-CPUB module can be used as the master station of RS422/485 network and applicable for the 1:N network of GLOFA PLCs and/or PC.
2) To operate the GM6-CPUB as the master station, basic parameters and high speed link parameters should be set properly.
3) The dedicated GLOFA Cnet protocol is used for transmission control.
4) The GM6-CPUA and GM6-CPUC does not support the master station function.

14.2 Features

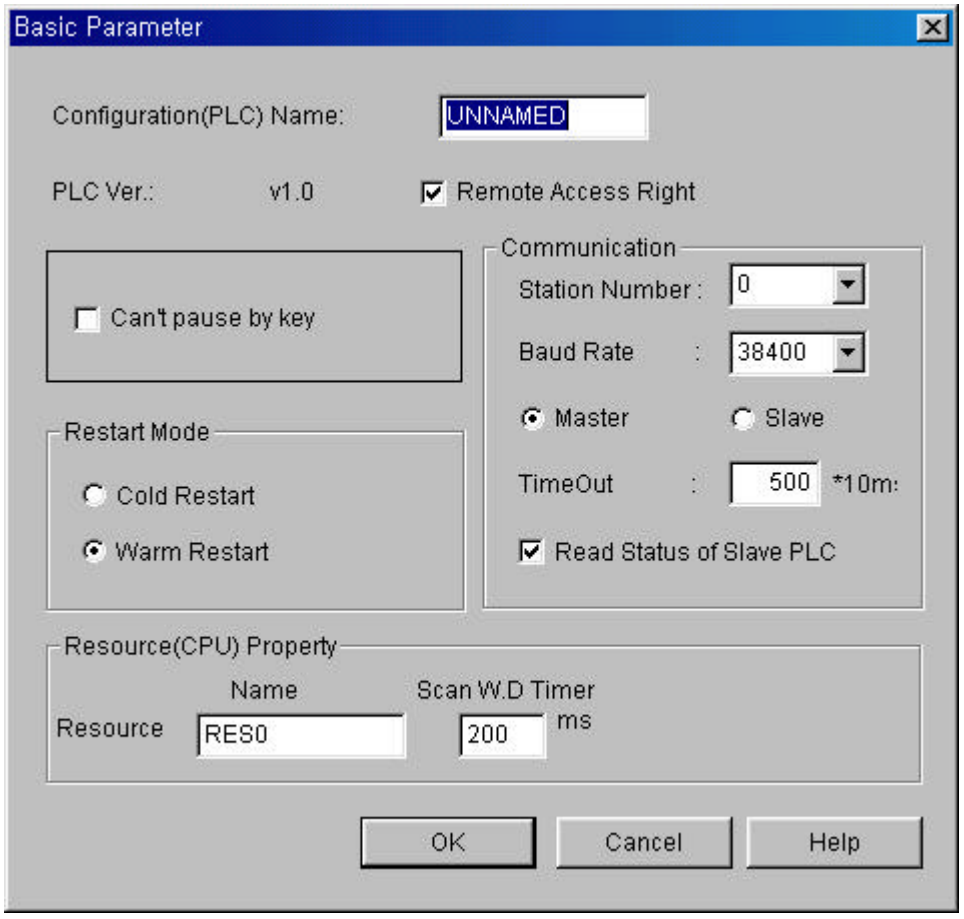
1) Max. 64 high speed link items can be assigned.
2) Max. 32 stations can be linked.
3) According to the parameter setting, the operation mode and error code of slave stations is stored at the relevant flag.
4) The communication status can be monitored with the monitoring function of GMWIN software.

14.3 Parameter setup

To start RS422/485 communication,

- The CPU module type should be a B-type CPU. (GM6-CPUB)
- Set the communication parameters of the ' Basic Parameters' of GMWIN software.
- Set the ' High speed link 1' of the ' High Speed Link Parameters'
- Enable the high speed link 1 with ' Link Enable ..'. menu.

1) Basic parameter setup



a) Station number : Assign the station number of master station in the range of 0 ~ 31

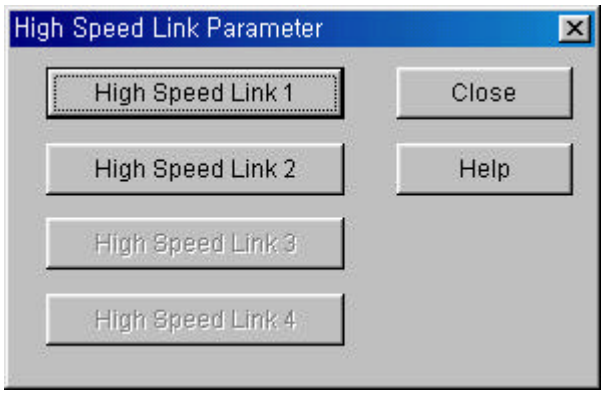
b) Baud rate : Select the communication as 9600, 19200 or 38400 bps.

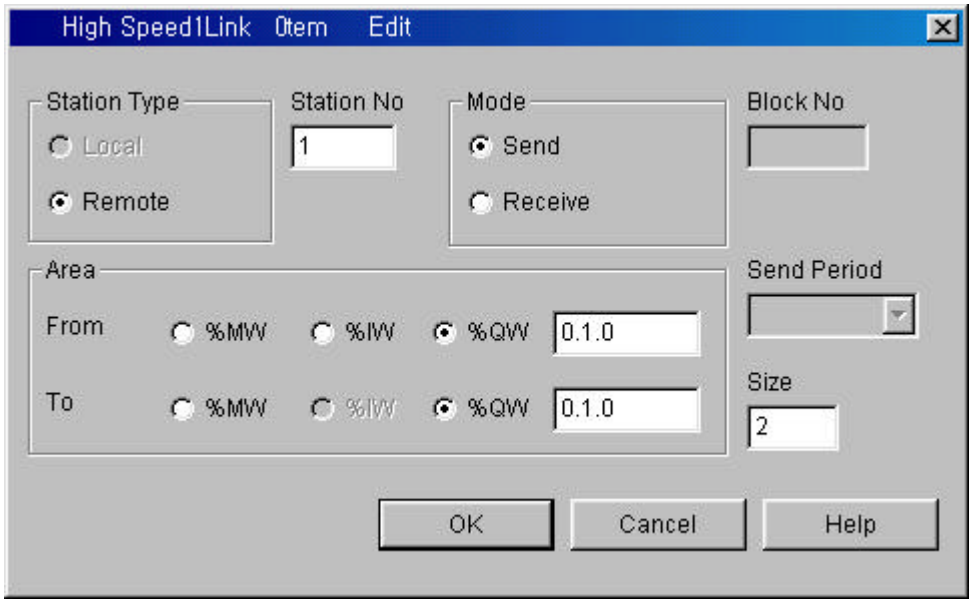
c) Master/Slave : Only GM6-CPUB can be set as master station. If the CPU is selected as master station, the network type of high speed link 1 is automatically set as GLOFA 422/485.

d) Timeout : Set the period that the interval until a timeout error occurs. The default value is 500msec and minimum value is 10msec (1×10msec).

e) Read status of slave PLC : If check this item, the master station reads the status of slave PLCs and store the status at the corresponding flags.

2) High speed link parameter setup





a) Only the ' High speed link 1' can be set as GLOFA 422/485 network type.

b) The setup is similar as the high speed link parameter setup with other communication modules such as Fnet module.

- Max. 64 items can be assigned.
- The size of data block is assigned by the unit of word, and the Max. size is 60 words.
- Area setup

Send	From : I / Q / M	To : Q / M
Receive	From : I / Q / M	To : Q / M

14.4 The status flag

1) Communication error counter flag

- Flag name : _M422_ERR_CNT[n] (Array_Byte Type, n = 0 ~ 31)
- Description

  Each byte of the '_M422_ERR_CNT[n]' array indicates how many times communication errors occurred at the relevant station. For example, the _M422_ERR_CNT[5] is the error counter of station 5.

2) The error code

- Flag name : _M422_ERR[n] (Array_Byte Type, n = 0 ~ 31)
- Description

  0 : No error 1 : Timeout error 2 : NAK

3) Operation mode and error of slave station

- Flag name : _S422_STATE[n] (Array_Byte Type, n = 0 ~ 31)
- Description

  Bit 0 : Indicates an error of slave PLC. (0 : No error, 1 : Error occurred)

  Bit 1 ~ Bit 3 : Reserved

  Bit 4 ~ Bit 7 : Indicates the operation mode of slave PLC

  Bit 4 : STOP Bit 5 : RUN

  Bit 6 : PAUSE Bit 7 : DEBUG

4) The status flag of master station

- Flag name : _M422_STATE (Byte Type, n = 0 ~ 31)
- Description

  Bit 0 : Turn on when the CPU module is assigned as master station but it is not B type (GM6-CPUB)

  Bit 1 : Turn on when the master station number of basic parameter setting is duplicated with one of the slave station numbers of high speed link parameters setting.

  Bit 2 : Turn on when the M area of high speed link parameter setting is out of the range.

5) The scan time of RS422/485 communication

- Description _M422_SCAN_MAX (Time Type) : The maximum scan time

  _M422_SCAN_MIN (Time Type) : The minimum scan time

  _M422_SCAN_CUR (Time Type) : The current scan time

Remark

Scan time : A total time of the processing time of the all parameter settings. (From the execution of the first parameter setting to the next execution)

14.5 Monitoring

Users can monitor the communication status of RS422/485 network with the monitor function of the GMWIN software. The high speed link parameter 1 monitoring screen is used for monitoring the RS422/485 network status.

- The CPU module should be a B-type, and assigned as master station in the basic parameter setting. Otherwise, the monitor screen will show the status of high speed link service.
- In the monitoring screen, the following flags are shown;

Master PLC parameter	_M422_STATE (On / Off)
The scan time of communication	_M422_SCAN_MAX (Maximum scan time)
	_M422_SCAN_MIN (Minimum scan time)
	_M422_SCAN_CUR (Current scan time)
No., Type, From, To, Size	The contents of high speed link 1 parameters
Error counter and code	_M422_ERR_CNT, _M422_ERR
Slave PLC	_S422_STATE

14.6 Communication method and termination resistor

1) Data type

Data bit : 8 bits

Stop bit : 1 bit

Parity : None

2) Communication speed (Baud rate) : Selectable one of 9600, 19200, 38400 bps

3) Termination resistor

When use a long cable for connecting two or more PLCs, a termination resistor should be connected at the both ends of network. Otherwise, the communication can be disturbed by the reflected wave of cable. The termination resistor should be 1/2W grade and have the equivalent resistance with the characteristic impedance of cable. (When use the RS-422 protocol, connect two termination resistors between SDA and SDB, RDA and RDB. With the RS-485 protocol, connect a termination resistor between RDA and RDB, or SDA and SDB.)

14.7 RS-422/485 pin assignment

1) The RS-422 network is connected with 5-pin connector. The following table shows the name, and description of each pins and direction of signal.

Pin No.	MASTER	Signal direction	SLAVE
1	RDA	←	SDA
2	RDB	←	SDB
3	SDA	→	RDA
4	SDB	→	RDB
5	SG	↔	SG

2) When using RS-485 interface, connect cable as RS-422 interface, then interconnect RDA and SDA, RDB and SDB. With the RS-485 interface, the send / receive signals share one line and communication is performed as half-duplex method.