Chapter 6 Communication program

Generally, when we are going to communicate, then master module sets slave station as the opposite and sets something like as station number, communication method, data size, communication cycle to communicate with the slaves. It is called SCANLIST file and with this file master module can communicate with slave module. Therefore you set SCANLIST file like as the type of service, communication speed, station number and Dnet I/F module receives SCANLIST file from CPU for communication.

User can set the aboves with using of GMWIN but just only the slave module which set on *High speed link* parameter can communicate just only through connecting with master module. At this time if you want to set slave module then refer to slave product maker's instruction and must be set by users themselves.

High speed link communication function is a method of communication between master module and slave module. It is used for exchanging data or informations with the opposite stations periodically at specific time. It can be efficiently using for both user himself and the opposite for referring to changing data and they can refer to them periodically for their operating systems, and through just setting parameter simply they can do communication. You can set parameter through setting yourself station and the opposite station area you are to communicate,data size, type of message, initiate station number on high speed parameter of GMWIN. The data size is from 1 byte to 256 byte(2,048 points) allowable for communication, setting communication period is possible from 5ms to 10 sec according to communication contents. You can use it easily because through simple setting the parameter you can communicate with the opposite station. In addition internal data accessing speed is very high, thus you can treat a lot of data simultaneously and periodically

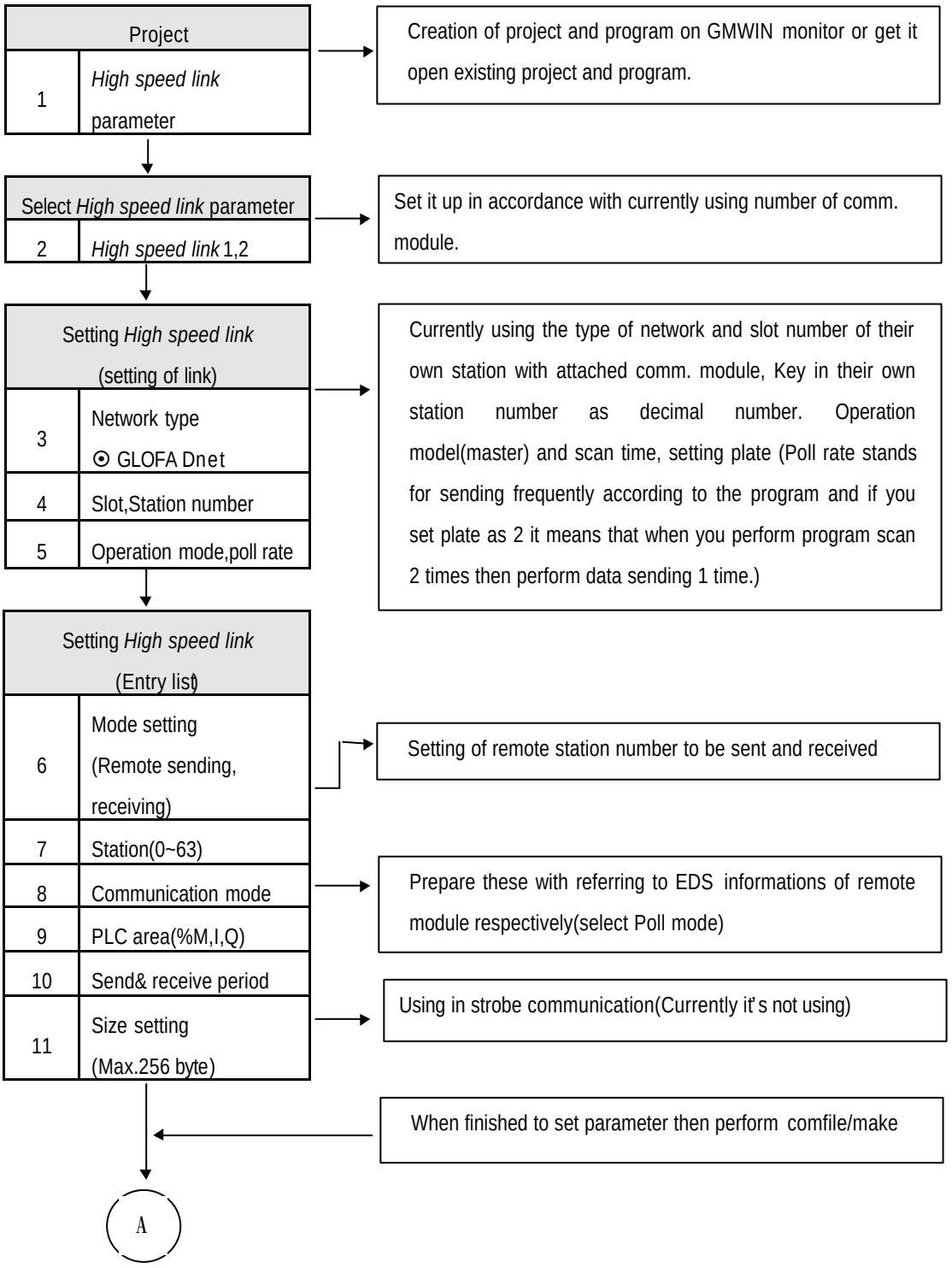
[Table 6.1] represents point number of *High speed link* of individual communication models.

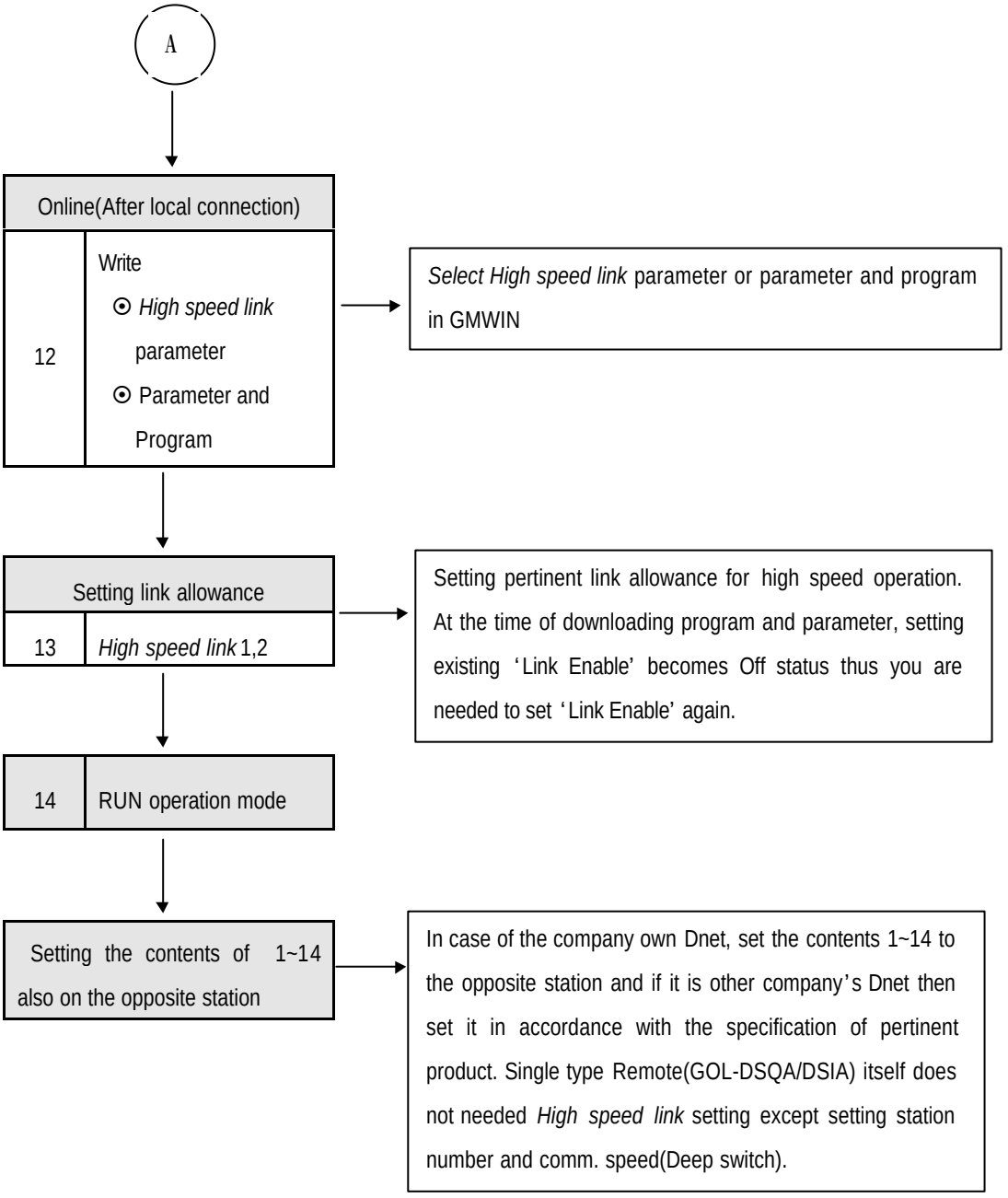
[Table 6.1] Maximum communication points of individual models

Model		Max. comm. point	Max. block number	Point of individual block number
Dnet I/F module	G4L-DUEA	2,048 points	64 blocks (0-63)	2,048 points
	G6L-DUEA	2,048 points	64 blocks(among 0-63)	2,048 points
	G0L-DSQA	16 points	1 blocks(among 0-63)	16 points
	G0L-DSIA	16 points	1 blocks(among 0-63)	16 points

* [Table 6.1] Basic point is 1 bit unit

6.1 Operation sequence by means of *High speed link*




A
Online(After local connection)
12
Write
⊙ High speed link parameter
⊙ Parameter and Program
Select High speed link parameter or parameter and program in GMWIN
Setting link allowance
13
High speed link 1,2
Setting pertinent link allowance for high speed operation. At the time of downloading program and parameter, setting existing 'Link Enable' becomes Off status thus you are needed to set 'Link Enable' again.
14
RUN operation mode
Setting the contents of 1~14 also on the opposite station
In case of the company own Dnet, set the contents 1~14 to the opposite station and if it is other company's Dnet then set it in accordance with the specification of pertinent product. Single type Remote(GOL-DSQA/DSIA) itself does not needed High speed link setting except setting station number and comm. speed(Deep switch).

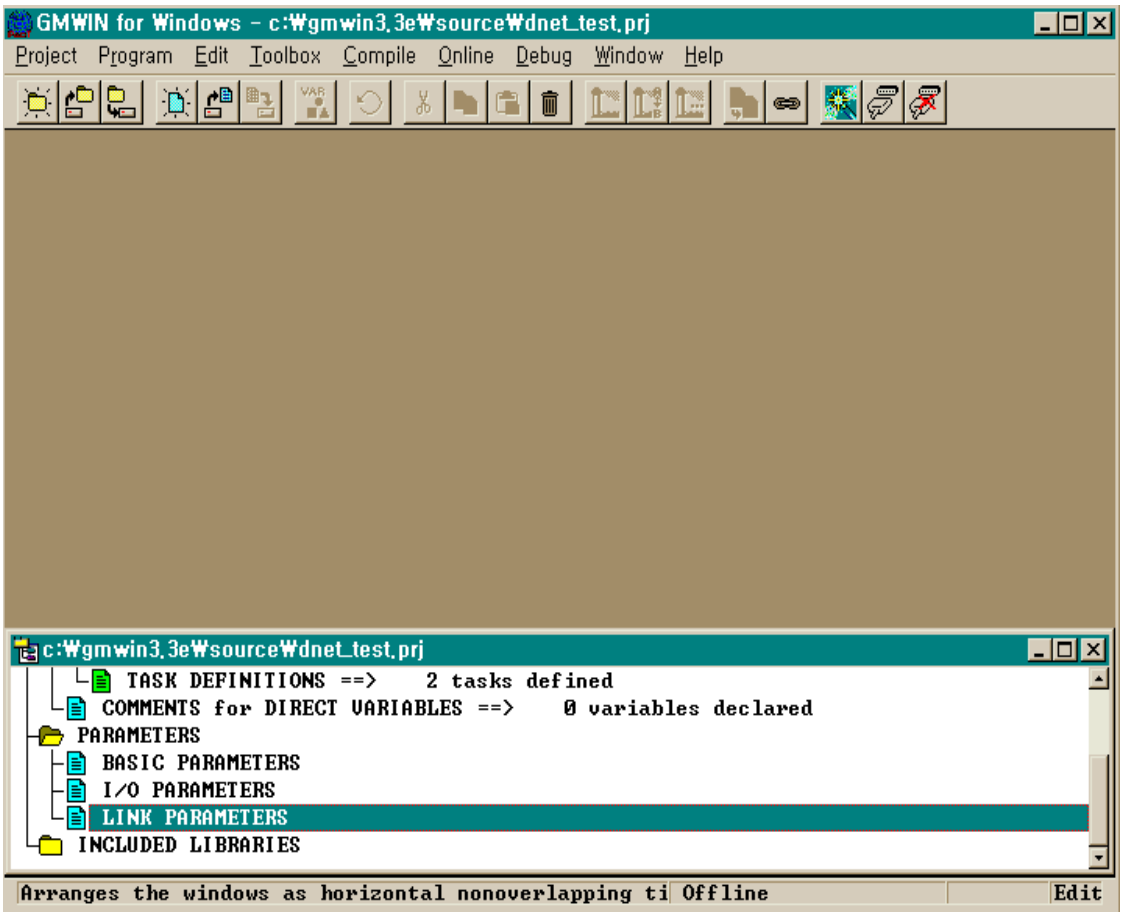
6.2 *High speed link* service

6.2.1 Master communication using master module(G4L-DUEA,G6L-DUEA)

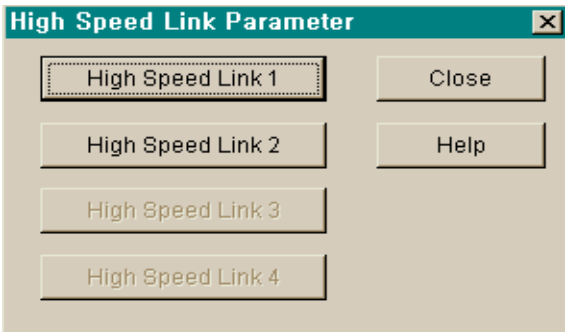
SCANLIST represents a kind of communication information data that has to be set by user for programmed communication with slave module whenever power on. Therefore user has to set information about Dnet I/F module and slave module with which you want to communicate through using *High speed link*

Now, setting method of SCANLIST is explained here with using of *High speed link* parameter for Dnet communication. At first select project file according to CPU type by using GMWIN, select *High speed link* parameter in project files and next select '*High speed link* 1' (Refer to [Fig 6.1] and [Fig.6.2])

[Fig. 6.1] Setting of project on GMWIN

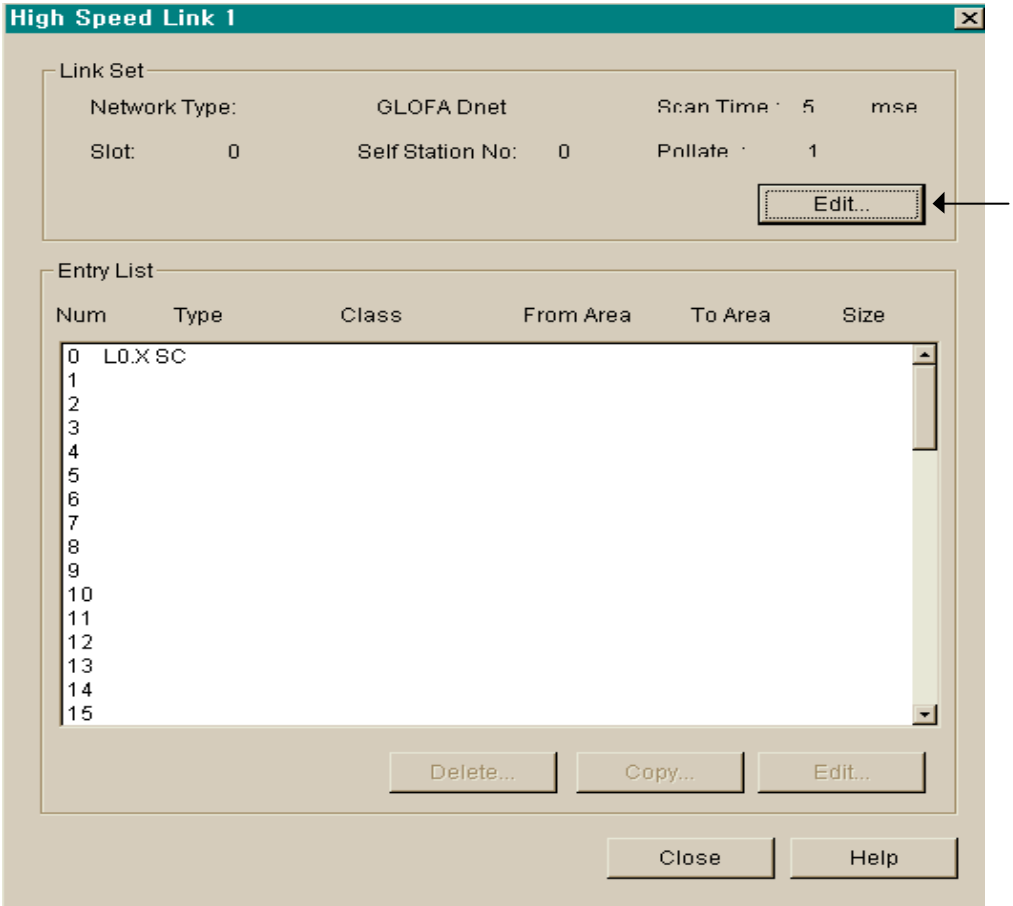


[Fig. 6.2] Display for selecting *High speed link* parameter

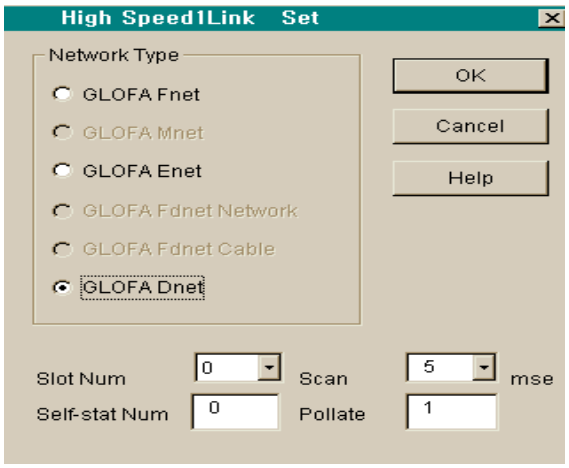


If you select '*High speed link* 1' [Fig.6.3] will be shown. And then select '→' symbol on [Fig.6.3] display to set slot position where Dnet I/F module is attached and station number, operation mode, scan time and pollate.

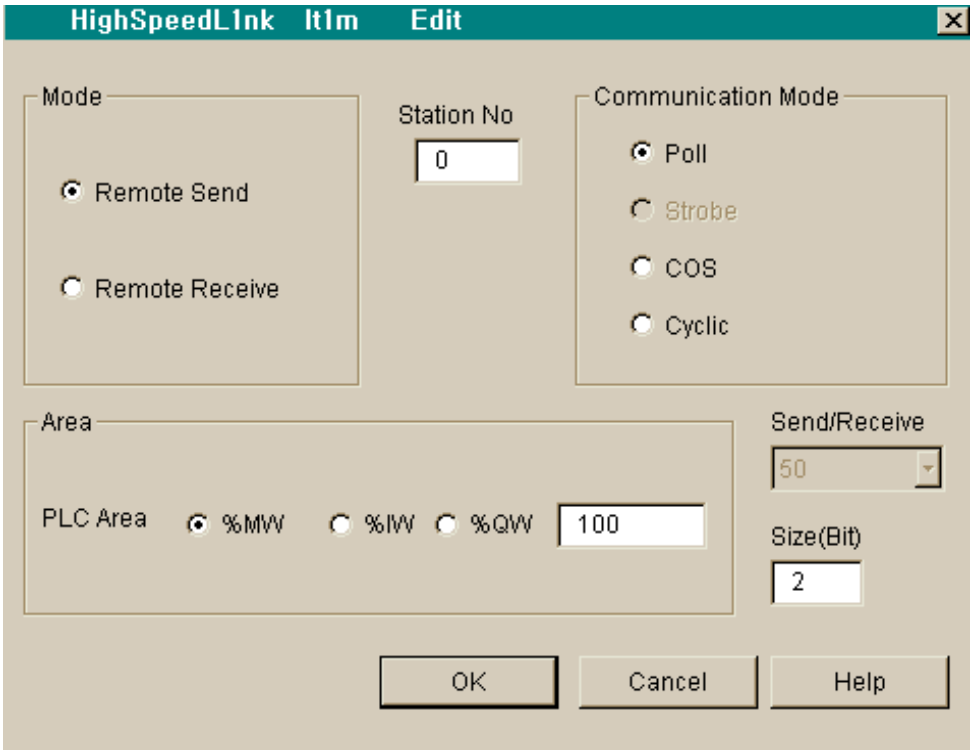
[Fig 6.3] Initial display for setting parameter



[Fig 6.4] Display for setting of *High speed link*



[Fig 6.5] Display for setting mode and comm. Area(sending)



If you set network type, slot number, station number, delay scan time, pollate etc..on [Fig. 6.4] display then like as [Fig. 6.3] display will be shown up. And number 0 as one of Entry list on [Fig 6.3] will be set automatically and 1 to 63 registration number will be selected for user's communications module.

[Table 6.2] Contents for setting link

Item	Contents
Network type	This is for setting of module type and it can be set by GLOFA Dnet.
Slot number	Select one number among 0-7 for slot number on which you want to attach communication module (The right side of CPU is 0 slot)
Station number	Key set station number into station switch where the front side of communication module. You can set 0 to 63 as decimal scale, and do not use station number as duplicated, their own station number is specific number for classifying communication module on the same network
Scan time	It's the delayed scan time(msec) from after scanning all slave module by Dnet I/F to next scan.
Pollate	It's the ratio of scanning slave module by Dnet I/F module. As it is, if the value is '2' this means that after scanning Dnet I/F module 2 times it performs 1 poll against set station module on parameter.

Among GLOFA Dnet remote module if you want to communicate with only output module(GOL-DSQA) you are just only required to set sending like as [Fig 6.5]. There is no receiving setting (refer to column 6.2.3 'Communication with single I/F module)

[Table 6.3] Contents of *High speed link* parameter(Entry list)

Item		Contents
Mode	Remote sending	To send their own station data to programmed station.
	Remote receiving	To receive data from programmed station.
Station number		To set the opposite station number for communicating.
Comm. Mode [1)]	Poll	Perform Poll service
	Strobe	Reserved(Not in use)
	COS	Reserved(Not in use)
	Cyclic	Reserved(Not in use)

Item		Contents
Area	In case Remote sending mode	To set an area of their own station's data which will be sent to the opposite station
	In case remote receiving mode	To set an area of their own station's data storage that is received from the opposite station.(%IW area is Disable)
Cycle of sending/receiving(msec)		To set the cycle of data sending and receiving
Size(Byte) [2),3)]		It sets the size of data to be sent or received. 2 byte unit when you want to communicate with your own company internally as it is, only by word size you can communicate. If you are to communicate among the other company's and you, you must set byte value according to pertinent module requires

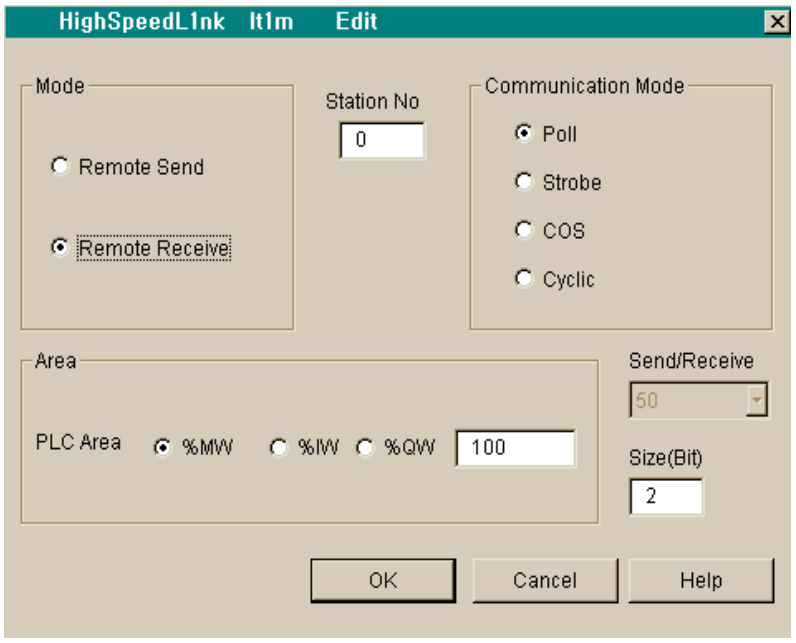
Remark

1) Select Poll on Communication mode box.(Others will be served later)
2) When sending/receiving data with the opposite(slave), always *High speed link* sending/receiving parameter should be set simultaneously. Data size must be set according to the value setting available by pertinent module. But in case sending only with slave module, you may set not only receiving parameter of *High speed link* but also set receiving parameter and data size inside receiving parameter as '0' and as the same way in case receiving only, key in sending data as '0' at setting parameter on *High speed link* and sending data size must be key in as '0'.
   (refer to Program example 1)
3) When communicating between master module and single type remote module, select sending/receiving according to data size on pertinent remote module.

[Fig 6.5],[Fig 6.6] are seen if you select 'Entry list' on [Fig 6.3]. At here required the opposite station number, service type(Comm. Mode), sending/receiving area, data size must be set.

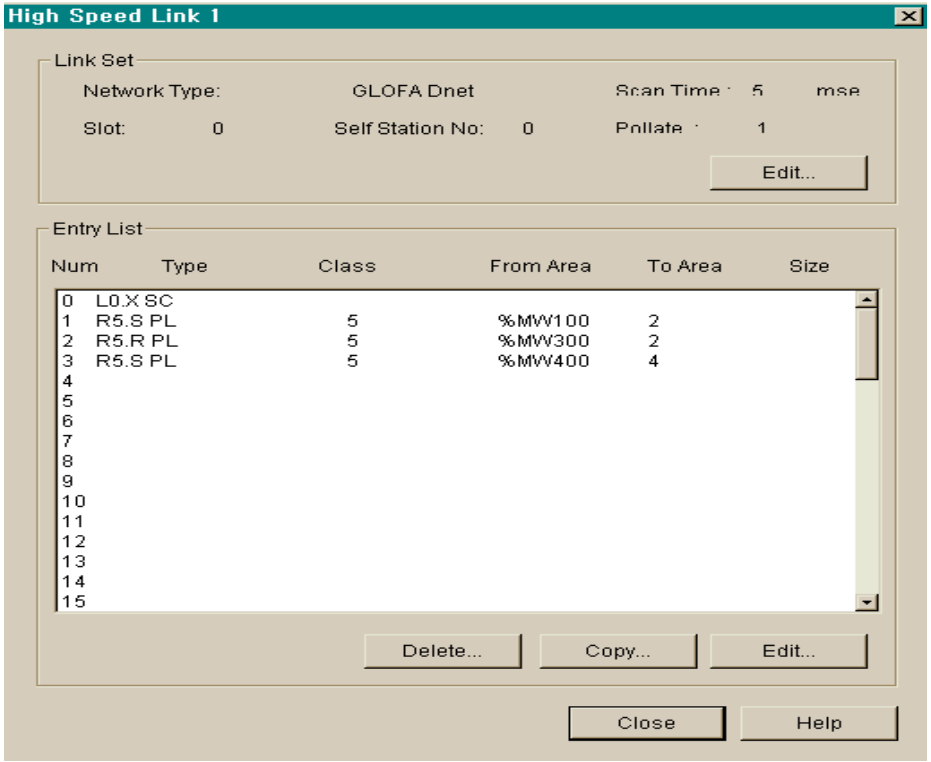
In order to communicate with input module(GOL-DSIA) on GLOFA Dnet I/F remote module you are only needed to set receiving like as [Fig 6.6]. There is no receiving setting.(refer to clause 6.2.3 communication with single I/F.

[Fig 6.6] Display of setting mode and communication area (receiving)



[Fig 6.7] shows setting for communicating with station number 5,7 with using of Poll service.

[Fig 6.7] setting of *High speed link* parameter sending/receiving

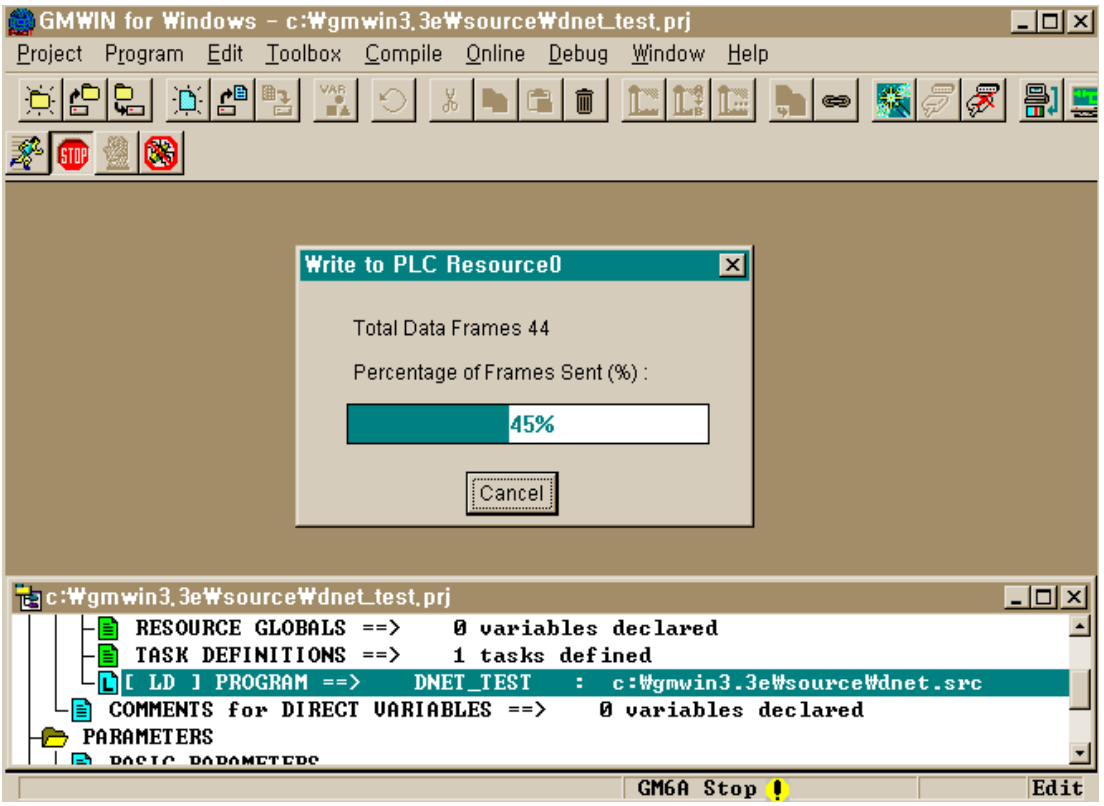


[Table 6.4] Meaning of setting Poll service

Scan type	Sending cycle	PLC area	size	Contents
R5.S PL	5×1 = 5msec	%MW100	2	Sending 2 byte data on %MW100 to station 5 with using of Poll Request in terms of every 5 msec.
R5.R PL	-	%MW300	2	Store 2 byte into %MW300 with using of Poll Response from station 5
R7.S PL	5×1 = 5msec	%MW 400	4	Sending 4 byte data on %MW400 to station 7 with using of Poll request in terms of every 5 msec.

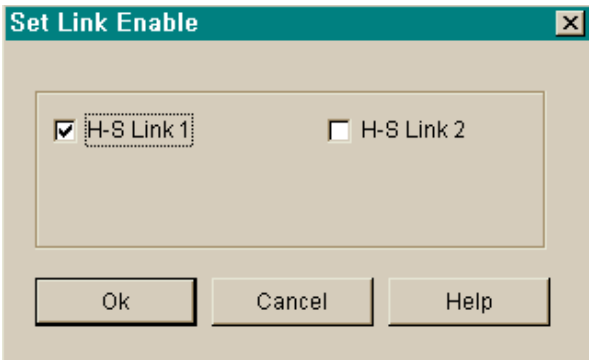
* Hereby, sending cycle stands for scan time x plate

[Fig 6.8] Writing program



As you see in the above, in order to communicate between master module and slave module, user must set *high speed link* parameter after figuring out informations about slave module. Therefore user should do download through GMWIN online connection after setting *high speed link* parameter.

[Fig 6.9] Setting of *high speed link* enable



When program downlode is completed, you must set 'Link Enable' on online. And then please change CPU mode into RUN. After CPU mode is just changed, it become to share all data and start to communicate.

6.2.2 Slave communication using master module(G4L-DUEA,G6L-DUEA)

GLOFA Dnet I/F module can play a role not only master function but also slave function. Therefore you can communicate with your own company's master module or other company's master module as a slave module against them. But communication mode can use only poll service and you must set your own station number to the station you want to communicate. And in order to act as slave role you may have to set all switche

Existing the front of Dnet I/F communication module to slave mode 1(Refer to 3.2.7 Mode switch setting), necessarily 1 master station acts as slave. Therefore we can't set against multiple of list and only 1 sending /receiving list should be set.

[Table 6.5] Contents of link setting

Item	Contents
Network type	This is for setting of module type and it can be set by GLOFA Dnet.
Slot number	Select one number among 0-7 for slot number on which you want to attach communication module (The right side of CPU is 0 slot)
Station number	Key set station number into station switch where the front side of communication module. You can set 0 to 63 as decimal scale, and do not use station number as duplicated, their own station number is specific number for classifying communication module on the same network
Scan time	It's the delayed scan time(msec) from after scanning all slave module by Dnet I/F to next scan.
Poll rate	It's the ratio of scanning slave module by Dnet I/F module. As it is, if the value is '2' this means that after scanning Dnet I/F module 2 times it performs 1 poll against set station module on parameter.

[Table 6.6] Contents of setting *high speed link* parameter(Entry list)

Item		Contents
Mode[1)]	Remote sending	To send their own station data to master module.
	Remote receiving	To receive data from master module.
Station number		To set it's own station number for communicating.

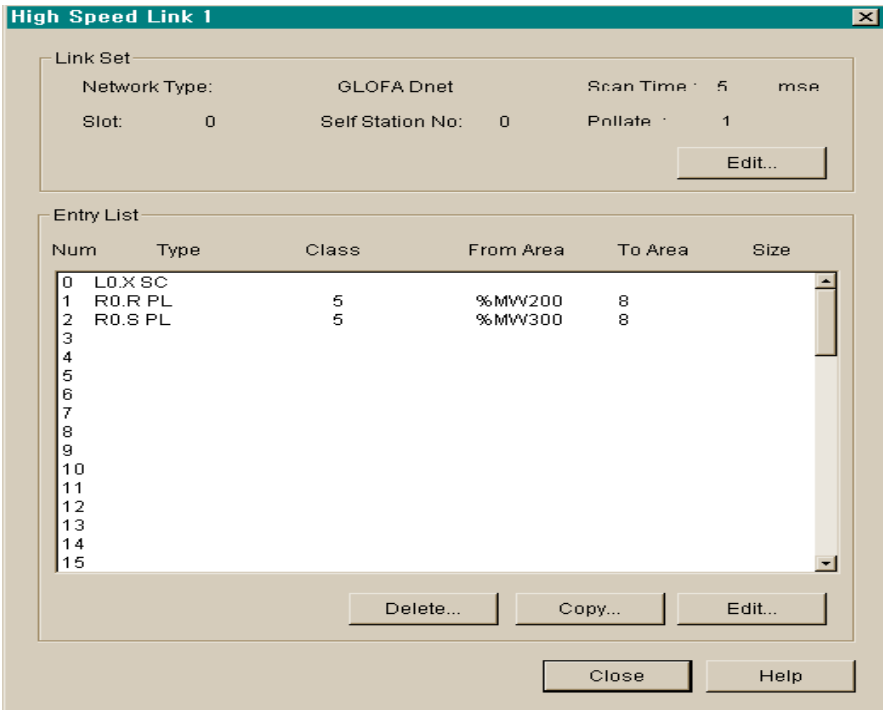
Item		Contents
Comm Mode [2]	Poll	Perform Poll service
	Strobe	Reserved(Not in use)
	COS	Reserved(Not in use)
	Cyclic	Reserved(Not in use)
Area	In case Remote sending mode	To set an area of its own station's data which will be sent to the opposite station
	In case remote receiving mode	To set an area of its own station's data storage that is received from the opposite station.(%IW area is Disable)
Cycle of sending/receiving(msec)		To set the cycle of data sending and receiving
Size(Byte) [2),3)]		It sets the size of data to be sent or received. 2 byte unit when you want to communicate with your own company internally as it is, only by word size you can communicate. If you are to communicate between the other company and you, you must set byte value according to pertinent module requires

Remark

1) When communicates with slave module it's being done as Broadcast-Oriented type and it does not set the opposite station but just only by its own station setting it can communicate with master.
2) Select Poll on Communication mode box.(Others will be served later)
3) When sending/receiving data with the opposite(master), always *high speed link* sending/receiving parameter should be set simultaneously. Data size must be set according to the value setting available by pertinent module. But in case sending only with master module, you may set not only receiving parameter of *High speed link* but also set receiving parameter and data size inside receiving parameter as '0' and as the same way in case receiving only, key in sending data as '0' at setting parameter on *High speed link* and sending data size must be key in as '0'. (refer to Program example 1)

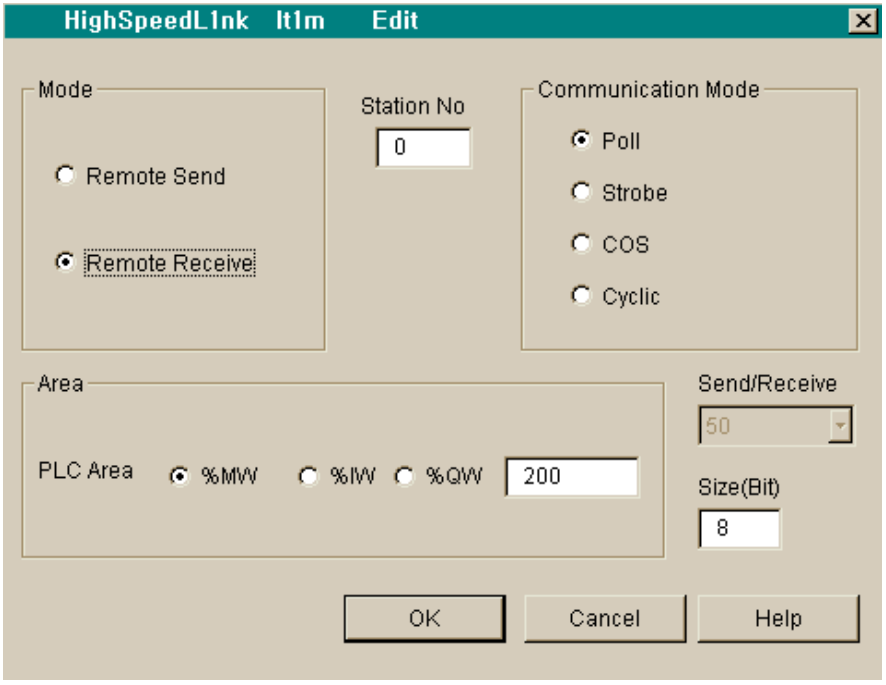
[Fig 6.10] represents a example for setting *high speed link* parameter of Dnet I/F module which moves as slave.

[Fig 6.10] Setting of *high speed link* parameter as slave function

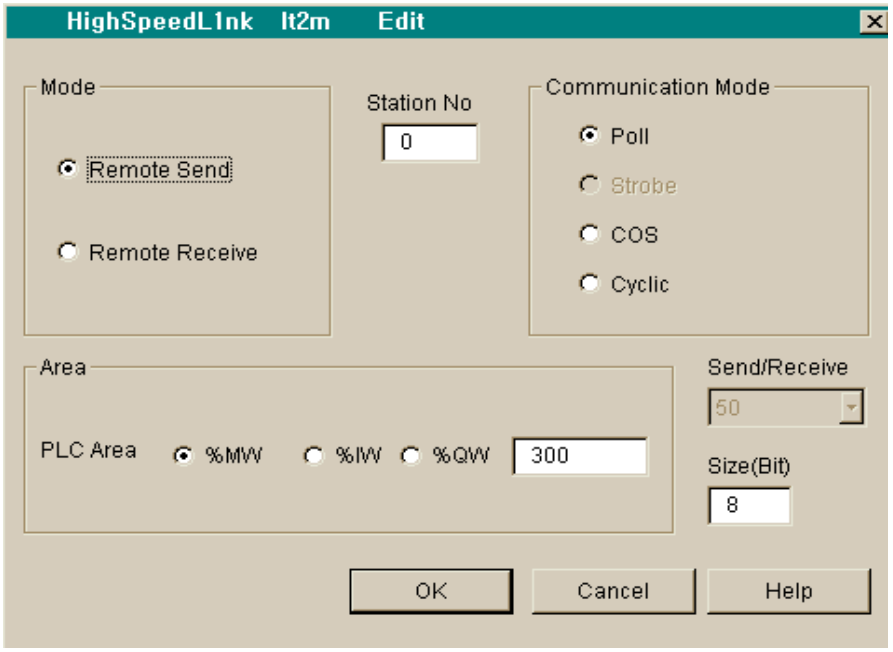


In link setting station number sets its own station number. Refer to clause 6.2.1 master communication for other settings.

[Fig 6.11] Setting of parameter as slave function



[Fig 6.12] Setting of sending parameter as slave function



[Fig 6.11] represents to store 8 byte received with using of Poll service from master station into %MW200 area. [Fig 6.12] represents sending and receiving with using of Poll service on master station through reading 8 byte data from %MW300.

6.2.3 Communication with single type remote module (G0L-DSQA,G0L-DSIA,other company's product)

GLOFA Dnet single-type remote module shows that it can communicate with long distance away master module without power module or CPU module. It can be set its own station number and communication speed for communicating with master module through using Dip switch. In order to control single remote module just only by setting of *high speed link* parameter with GMWIN on the module pertinent to master. And it's easy to interface among company own and other' s module.

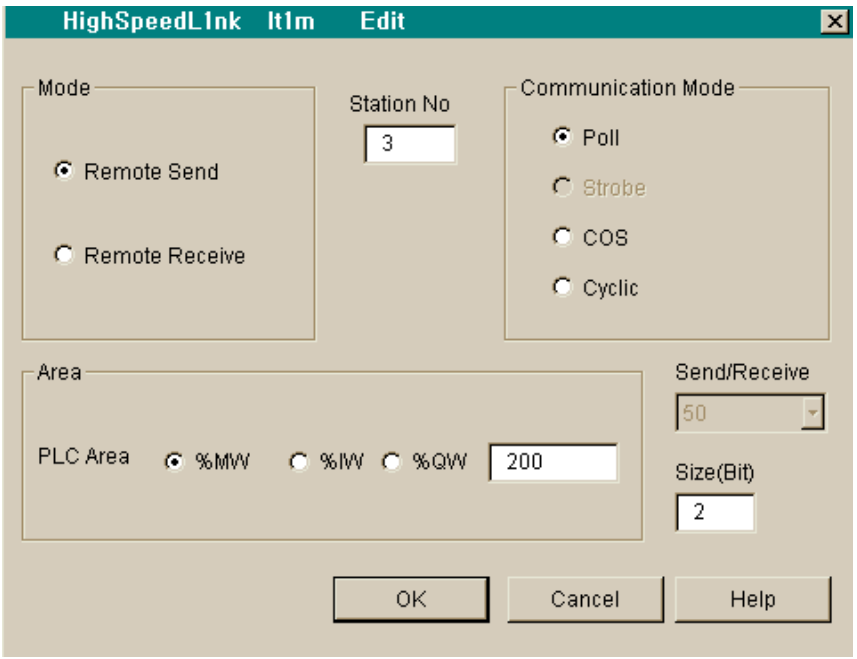
[Table 6.7] shows basic structure of single type remote modules.

[Table 6.7] Specifications of single type remote module

Module name			Contents	Service module
GLOFA-GM		G0L-DSQA	Relay output 16points	Poll service
		G0L-DSIA	DC 24V Input 16points	
Other company' s products	OMRON	DRT1-OD08	TR output 8points	Poll service
	A.B	1794-OB16	TR output 16points	Poll service
		1794-OB16	DC 24V Input 16points	

[Fig 6.13] shows setting example for *high speed link* of GMWIN to control single type remote module.

[Fig 6.13] Setting *high speed link* parameter of G0L-DSQA



[Fig 6.13] shows setting method of sending data on single type I/F output module(G0L-DSQA). Mode among parameter sets alternative of data receiving or not, the opposite station number(G0L-DSQA), communication mode is poll, data area to be sent and the size should be set as 2. There is no additional setting on single type I/F module and it's being controlled on master module according to communication speed.

[Fig 6.14] Setting *high speed link* parameter on G0L-DSIA

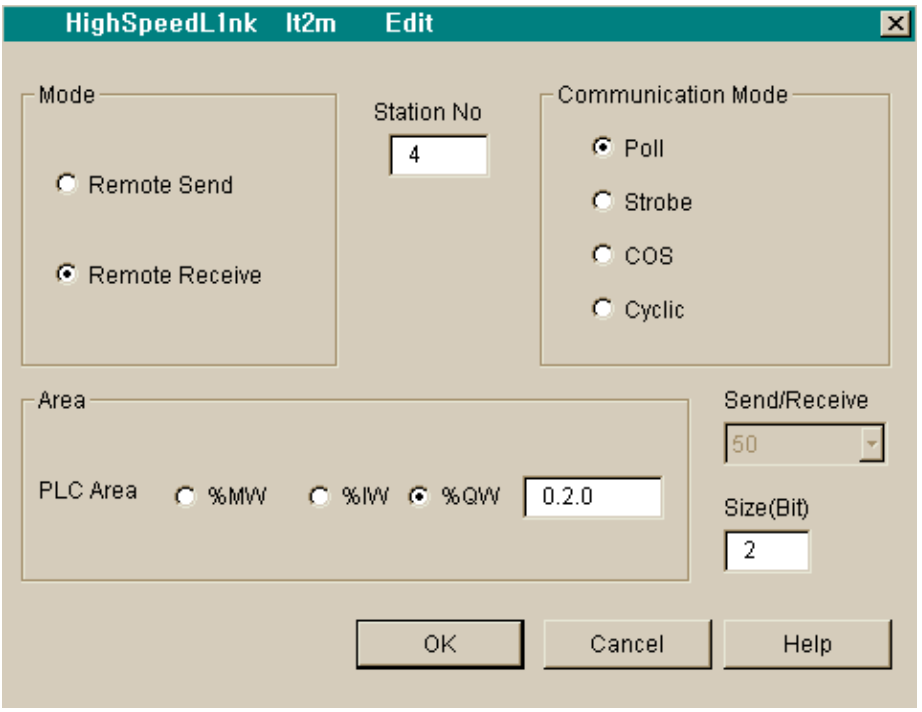


Figure above shows setting method of receiving data on single type I/F input module(G0L-DSIA). It can be set with the opposite station number, communication mode, storage area for received data and size(2 byte) like as output module.

Remark

1) This can be set as the same way of GLOFA-GM series at the time of communicating with other company's single type I/F module. Only data size is set like following.

① DRT1-OD08 : 1byte

② 1794-OB16/IB16 : 4 byte

[Table 6.8] Contents of *high speed link* parameter setting(setting master module)

Item		Contents
Mode	Remote sending	To send data to single type I/F output module.
	Remote receiving	To receive data from single type I/F input module.
Station number		To set station number of single type I/F module for communicating.
Comm. Mode [1]	Poll	Perform Poll service
	Strobe	Reserved(Not in use)
	COS	Reserved(Not in use)
	Cyclic	Reserved(Not in use)
Area	In case of Remote sending	To set an area of its own station's data which will be sent to the opposite station
	In case of Remote receiving	To set an area to store data received from single type I/F module(%Iw area is Disable)
Sending/Receiving cycle(msec)		It sets the sending/receiving cycle and it can be set by selecting 'link setting' item on *high speed link.*
Size(Byte) [2]		It sets the size of data to be sent or received. It is set as 1 word.(2 byte).

Remark

1) Communication mode is selected as Poll(Others will be served later)

2) Size setting is fixed as 1 word for both single type I/F input/output.
If you do not select 2 byte then communication is Impossible
(1byte,3byte,4byte).

3) When you communicate with master module and single type remote module, according to the type of pertinent remote module you must set one of both sending or receiving. (refer to program example 3)