USER'S MANUAL

LG Programmable Logic Controller Profibus-DP Module

GLOFA MASTER-K G3L-PUEA G3L-PUEB G4L-PUEA G4L-PUEB G6L-PUEA G6L-PUEB G7L-PBEA

Before using, please read ' Notices for the safety 'thoroughly. Please keep this user's manual in the place where the user can find easily.



Notices for the Safety

'Notices for the Safety' should be complied by the user to use the product safely and correctly to prevent the occurrence of any accident or danger.

'Notices for the Safety' is divided by "Danger", "Warning" and "Caution" and each meaning is as follows :



The meaning of symbols used in the product and user's manual is as follows :



This symbol is to take care for the items or operation that may occur the danger.

When you find this symbol, you should read the instructions carefully to avoid the danger occurrence.



This symbol is to take care as the electric shock may occur under the specific condition.

Notices in Design

Caution

- I/O Signal/Communication cables shall be designed apart at least 100mm from high voltage cable or power cable to avoid the influence caused by the noise or the change of magnetic filed. It may cause the malfunction by the noise.
- ► In case that installation environment has lots of vibration, cares should be taken not to apply the vibration to the product directly.
- The inflow of metal particle is not permitted as it may cause the malfunction of the product.

Notices in Installation

- \sim Caution
- ▶ PLC should be used in the environment condition described in the general standard.
- If used out of general standard, it may cause the electric shock, fire, malfunction, damage of product or furious flames etc.
- Make sure that the module is fixed correctly.
- ▶ If not installed the module correctly, it may cause the malfunction, failure or falling.

Notices in Wiring



Notices in Startup and Maintenance

• Do not touch the terminal in the state that the power is applied. It may cause the malfunction or electric shock.

Warning



- ► Do not remove PCB from the module case or remodel the module. It may cause the failure, malfunction, damage of the product or fire. The installation and removal of the module should be done after POWER OFF.
- The change of battery should be done in the state of POWER ON.
 - In case of changing in the state 'OFF', the program may be damaged.

Notices in Disposal



REVISION HISTORY

Issue Date	Manual No.	Revised Content
'04.4	10310000334	First edition issued.

* User's Manual no. is marked on the right bottom side of the back cover.

• Table of Contents •

CHAPTER 1 OVERVIEW
1.1 Notices in using 1-2
CHAPTER 2 TERMINOLOGY
CHAPTER 3 GENERAL SPECIFICATION
3.1 General Specification 3-1 3.2 Pnet Telecommunication module structure 3-2
CHAPTER 4 PERFORMANCE SPECIFICATION
4.1 Telecommunication Specification 4-1
CHAPTER 5 SYSTEM CONFIGURATION
5.1 Profibus-DP System ······ 5-1
CHAPTER 6 TELECOMMUNICATION CONFIGURATION
 6.1 High speed link 6-1 6.1.1 Overview 6-1 6.1.2 Operation procedure by high speed link 6-2 6.1.3 SyCon 6-2
6.1.4 High speed link parameter setting in GMWIN······· 6-11 6.1.5 High speed link operation in GMWIN ······ 6-16 6.1.6 High speed link information in GMWIN ······ 6-17
6.1.7 High speed link parameter setting in KGLWIN 6-22
6.2 Example Program
6.2.1 Pnet master slave telecommunication in GMWIN······ 6-28 6.2.2 Smart I/O Pnet master slave telecommunication in GMWIN······ 6-38 6.2.3 Pnet master slave telecommunication in KGLWIN······ 6-46 6.2.4 Smart I/O Pnet master slave telecommunication in KGLWIN······ 6-55

CHAPTER 7 DIAGNOSIS FUNCTION······7-1 ~ 7-2
7.1 LED
CHAPTER 8 INSTALLATION & STARTUP······8-1 ~ 8-7
8.1 Installation ······ 8-1 8.1.1 Notices in installation····· 8-1
8.1.2 Cable installation 8-2
8.2 Startup
8.2.1 Notices in system configuration ······ 8-4
8.2.2 Checklist before startup 8-4
8.3 Maintenance & Checking 8-6
8.3.1 Daily checking 8-6
8.3.2 Regular checking····· 8-7

9.1 Basic procedure of Trouble shooting
9.1.1 Hardware Error 9-2
9.1.2 Interface Error ····· 9-3
9.1.3 Network Error 9-4
9.1.4 CPU and Interface error during operation
9.1.5 High speed parameter error
9.1.6 High speed link operation error
9.1.7 GMWIN/KGLWIN communication time out
9.1.8 GMWIN/KGLWIN internal communication error

CHAPTER 10 EXTERNAL DIMENSION	
-------------------------------	--

CHAPTER 1 OVERVIEW

This user's manual describes GLOFA-GM/MASTER-K Profibus (hereinafter referred as'Pnet') which is Profibus module among network modules of PLC system technically in detail.

Please refer to the following user's manuals to prepare the program.

- GLOFA-GM PLC Command collection
- GLOFA-GM PLC GMWIN User's manual
- MASTER-K PLC Command collection
- MASTER-K PLC KGLWIN User's manual

For Pnet system configuration, cares should be taken to the followings

- · GLOFA-GM PLC GMWIN Program Tool: more than Ver 3.4
- · GLOFA GM1/2 CPU : more than Ver 3.2
- · GLOFA GM3 CPU : more than Ver 2.4
- · GLOFA GM4 CPUA/CPUB/CPUC : Ver 2.5/ Ver 2.5/ more than Ver 2.0
- · GLOFA GM6 CPUA/CPUB/CPUC : Ver 1.8/ Ver 1.8/ more than Ver 1.8
- · GLOFA GM7 CPU : more than Ver 1.5
- · MASTER-K PLC KGLWIN Program Tool: more than Ver 3.2
- · MASTER-K 1000S CPU : more than Ver 3.0
- MASTER-K 300S CPU : more than Ver 3.0
- · MASTER-K 200S CPU : more than Ver 2.5
- · MASTER-K 120S CPU : more than Ver 1.1
- · MASTER-K 80S CPU : more than Ver 1.5

The features of GLOFA Pnet are as follows :

•	International standard	: EN 50170
•	Device type	: Profibus DP Master/ Slave
•	Auto Baud Rate Detect	: support
•	Sync mode	: support
•	Freeze mode	: support
•	Max. input data	: 64 byte/Slave
•	Max. output data	: 64 byte/Slave
•	Max. data size	: 128 byte/Slave, (1kbytes or 7kbytes)/Master
•	Communication speed	: 9.6K, 19.2K, 93.75K, 187.5K, 500K, 1.5M, 3M, 6M, 12M
•	Modular Station	: support

1.1 Notices in using

When you install this device, cares should be taken to the following items for the reliability and safety of system.

Items	Classification	Description				
Temperature	Condition	• When installing this device, the use temperature should be 0 ~ 55% for the part elements				
		SS C for the part elements.				
		Direct exposure to the direct ray of light is not allowed.				
	Action	• If the temperature is high, the fan or air conditioner is required				
		while you should maintain the proper temperature if the				
		temperature is low.				
Dew	Condition	No dew by a sudden change of temperature.				
condensation		 Install inside the control panel available for water-proof or 				
		vibration resistance.				
	Action	The temperature change due to frequent power On/Off may				
		cause the dew condensation. In this case, keep the power ON				
		even in the night time.				
Impact	Condition	Install in the place free from impact or vibration.				
	Action	• In case of serious impact or vibration, use the vibration-resistant				
		rubber to prevent from applying the impact or vibration to the				
		device.				
Gas	Condition	 Install in the place having no corrosive gas. 				
	Action	• In case of inflow of the corrosive gas from outside, it is required				
		to take measures for air conditioning of the control panel where				
		installed the device.				
EMC	Condition	Install in the proper place for the electric magnetic field.				
environment	Action	Select the correct path of the cables in case of wiring.				
		 Check if the sheltering of the control panel is done properly. 				
		• For the lighting inside the control panel, use the incandescent				
		lamp instead fluorescent lamp.				
		Power module should be grounded on the standard electric				
		potential.				

CHAPTER 2 TERMINOLOGY

Profibus

Profibus is a protocol designated as German standard DIN 19245, developed by Bosch, Siemens, Klockener-Moeller in Germany and also a network designated as European standard EN50170 together with WorldFIP, P-NET.

Profibus is used for the real time communication between field equipments in the area of production automation, processing control, building automation etc. and the product group is divided into Profibus-FMS (Fieldbus Message Specification), Profibus-DP (Decentralized Periphery), Profibus-PA(Process Automation).

Profibus-FMS

This is a solution for the general purpose providing the communication function on the cell level. The services provided include program file to run the field equipment, the function to send the data related to the program file, the function to control the program remotely through network, and the function to manage various accidents that may occur while operating the control or automation system.

Profibus-DP

This is a communication system to send the real time data between field equipments within the short time and replace the existing communication system using an analog signal of 24V and 4-20mA with a high speed digital communication mode. The examples for application are the communication between field equipments such as various kinds of sensor or actuator installed in PLC or in the field.

Profibus-PA

This is designed especially for the processing automation and enables to connect the sensor and actuator by one common bus line with the embedded safety device, and supply the power to the data communication on bus by using 2-wire technology in accordance with international standard IEC 1158-2.

Sycon

This is a Profibus Network Configuration Tool. When using a master module (G3/4/6L-PUEA/PUEB) of LGIS, it is required to configure Pnet by using Sycon and download the information to the relevant master module.

GSD file

This is an electronic device data sheet that includes manufacturer, device name, hardware/ software sales, support transmitting rate, master related specification (max. number of connectable slave, upload/download option etc.) and slave related specification (number and type of I/O channels, diagnosis text specification and module information available with modular device).

EDD (Electronic Device Description)

This describes the registration information of Profibus field device generally and allows to explain the complicated automation system as well as simple field device (sensor and/or actuator) regardless of manufacturer. The device description is provided in electronic format made by the manufacturer per device. EDD file should be read by engineering tool and enables to simplify the Profibus system setting. This file describes the variables and the function of the device and contains the elements for operation and visualization.

Broadcast Communication

This is to send the message not recognized by Operation Station to all station (Master, Slave).

Multicast Communication

This is to send the not recognized message to the pre-fixed Station group (Master, Slave) by Operation Station.

CHAPTER 3 GENERAL SPECIFICATION

3.1 General Specification

The General Specification for the communication module of GLOFA series and MASTER-K series is as follows:

No.	ltems	Specification					Reference
1	Use Temperature	0 ~ 55 °C					
2	Storage Temp.	−25°C ~ +70 °C	−25°C ~ +70 °C				
3	Use humidity	5 ~ 95%RH, no de	W				
4	Storage humidity	5 ~ 95%RH, no de	W				
		Ind	In case of Intermittent vibration -				
		Frequency	Acceleration		Amplitude	Times	
		10 ≤f<57Hz	-		0.075mm		
5	Vibration-resistant	57 ≤f≤150Hz	9.8m/s ² {1G} –				
		ln c	case of Con	tinuous vik	pration		IEC61131-2
		Frequency	Acce	leration	Amplitude	each direction	
		10 ≤f<57Hz		-	0.035mm		
		57 ≤f≤150Hz	4.9m/	s²{0.5G}	-		
6	Impact-proof	 Max. impact acceleration : 147 m/s²{15G} Application time : 11ms Pulse wave type : semi-sine wave pulse (3 times each direction X,Y,Z) 				IEC61131-2	
	Noise-resistant	Square wave impulse noise	± 1,500 V			LGIS internal test standard	
		Electrostatic discharge		Voltag	ge : 4kV (Touch disch	narge)	IEC61131-2 IEC1000-4-2
7		Radiant electromagnetic field noise		2	7 ~ 500 MHz, 10 V/m		IEC1131-2, IEC1000-4-3
7		Fast transient / Bust noise	Classi- fication	Power modul e	Digital I/O (more than 24V)	Digital I/O (less than 24V) Analog I/O Communication interface	IEC1131-2 IEC1000-4-4
			Voltage	2kV	1kV	0.25kV	
8	Surrounding environment	No corrosive gas, no dust					
9	Use altitude	Less than 2,000m					
10	Pollution	Less than 2					
11	Cooling method	Natural air-conditioning					

Table 3.1 General Specification

Note

1) IEC(International Electrotechnical Commission) : International civil community that promotes international cooperation for standardization of electric/electro technology, publishes international standard and operates suitability assessment system related to the above.

2) Pollution Degree : An index to indicates the pollution degree of used environment that determines the insulation performance of the device. For example, pollution degree 2 means the state to occur the pollution of non-electric conductivity generally, but the state to occur temporary electric conduction according to the formation of dew.

3.2 Pnet I/F Module Configuration



No.	Names	Description		
1	LED indicator	Refer to LED display contents.		
2	Profibus-DP connector	Connector for Profibus network (D-SUB 9 pin connector, female type)		
3 Configuration Configuration		Connector to download the layout diagram of the prepared Profibus network, by using configuration tool.(D-SUB 9 pin connector, female type, refer to cable connection drawing.)		
4	Station no. switch	Station no. switch of slave module (1~126 stations setting)		
(5)	Extension connector	Connector to connect the extension module.		

Table 3.2 Module Configurations

*G3L-PUEB, G4L-PUEB, G6L-PUEB are the same configuration.

CHAPTER 4 PERFORMANCE SPECIFICATION

4.1 Communication Specification

Type	G3/4/6L-PUEA	G3/4/6L-PUEB	G7L-PBEA		
Module type	Mas	ter	Slave		
Network type	Profibus-DP				
Standard		EN50170/DIN19245			
Interface		RS-485(electric powe	er)		
Transmission mode		Bus mode			
Modulation mode		NRZ			
MAC	Local tok	en ring	Poll		
		1000m(9.6k~187kbp	s)		
Total extension length &	400m(500kbps)				
speed		200m(1.5Mbps)			
		100m(3M~12Mbps)			
Max. no. of connection per network	126 stations				
Max. no. of connection per	32 stations				
segment					
Use cable	Electric : twisted pair cable				
Max. communication point	1kbyte	64byte / slave			
			GMWIN		
		communication			
		parameter			
	Configuration	(in case of using GM7			
Communication parameter	GMWIN/KGI WIN	basic module)			
setting		nigh speed link	KGLWIN		
	param	communication			
		parameter			
		(in case of using			
		K80S basic module)			
Internal consumption current (mA)	542/544/505	594/656/682	337		
Weight (g)	373/230/135	373/230/135	204		

Table 4.1 Communication specifications

CHAPTER 5 SYSTEM CONFIGURATION

5.1 Profibus-DP System



CHAPTER 6 COMMUNICATION FUNCTION

- Supports only the high speed link communication.
- Parameter setting and configuration in SyCon and GMWIN/KGLWIN.
- Sets only sending/receiving area in GMWIN high speed link parameter setting.
- The sending/receiving data shall be saved and sent continuously from the setting area. (e.g. similar to the continued MAP of MASTER-K.)
- The number of sending/receiving and slave area per slave station shall be set using a SyCon and downloaded by master module using a Configuration port.
- The number of sending/receiving is available up to 512byte/3584byte respectively according to the dot board type.
- The number of sending/receiving per slave station shall be set by byte (set in SyCon).
- The communication starts through GMWIN/KGLWIN high speed link allowable setting function.

6.1 High Speed Link

6.1.1 Overview

High speed link is a communication method between GLOFA-GM/MASTER-K PLC communication modules that enables to receive the data by high speed link parameter setting, and a high speed data transmitting service that the user can set the sending/receiving data size, sending/receiving period, sending/receiving area or saving area in the parameter and exchange the data by using GMWIN/KGLWIN. The functions are shown as below :

- High speed link block setting : Available to set the sending/receiving area of 64byte per slave.
- Sending/receiving area setting : Available to set the sending/receiving area per data block according to I/O MAP of the user.
- High speed link information provided : provides the user with high speed link information as GMWIN/KGLWIN user keyword to build the reliable communication system.

Table 6.1 shows the high speed link score per communication device mode
--

Classification	G3/4/6L-PUEA	G3/4/6L-PUEB	G7L-PBEA
Max. I/O data	1kbytes	7kbytes	64 byte/ slave

Table 6.1 Max. communication score per device model

6.1.2 Operation procedure by high speed link

- If master module is a product of LGIS (G3/4/6L-PUEA, G3/4/6L-PUEB), make a configuration of Pnet by using SyCon.
- Download the Pnet Configuration by master module.
- Set and download the high speed link parameter of master module in GMWIN/KGLWIN.
- Set 'high speed link allowable'.
- If the product of other manufacturer is used as master, make a configuration of Pnet by using a Configuration Tool of the relevant product.
- Set and download the high speed link parameter of slave module in GMWIN/KGLWIN.
- Convert the operation mode to RUN.

6.1.3 SyCon

If you use the master module of LGIS (G3/4/6L-PUEA, G3/4/6L-PUEB), it is required to make a configuration of Pnet by using a SyCon and download that information to the relevant master module. As Pnet Configuration Tool is different per master module, if you use the master module of LGIS (G3/4/6L-PUEA, G3/4/6L-PUEB), you should use a SyCon.

Execute a SyCon as shown on Figure 6.1.



Figure 6.1 Execution of SyCon

If there is no project used before, the screen like Figure 6.2 will appear. If you have been using the project already, the latest used project will appear.

🚅 SyCon – [Unnamed1]			
🚡 <u>F</u> ile <u>E</u> dit <u>V</u> iew <u>I</u> nsert <u>O</u> nl	ine <u>S</u> ettings <u>T</u> ools <u>W</u> indo [.]	v <u>H</u> elp	_ 8 ×
💑 📲 🏹 PDD			
.			
For Help, press F1		PROFIBUS	Config Mode

Figure 6.2 Initial Screen

Insert Master module

Select from the tool bar on the left upper side and click the proper position on the left upper

side from the below windows.

📲 📲 🏹 PDD

Figure 6.3 Tool bar

	TI			
Insert Master				×
Available masters CIF50-PB CIF60-PB CIFPS1-DPM CIFPS1-FMS COM-DPM / PKV20-DPM COM-PB / PKV20-PB Other FMS devices PKV30-PB PKV40-PB	Add >> Add All >> << Remove All << <u>R</u> emove	Selected masters COM-DPM / PKV	V20-DPM	<u>Q</u> K <u>C</u> ancel
Vendor name Hilscher GmbH Ident number 0x7506 GSD file name HIL_7506,GSD		Station address Description	1 Master1	

Figure 6.4 Insert Master

If the using master module is G3/4/6L-PUEA, select COM-DPM/PKV20-DPM from Figure 6.4 and click 'Add ' button in the middle. If the using master module is G3/4/6L-PUEB, select COM-PB/PKV20-PB and click 'Add' button in the middle part. Check the Station address and if necessary, you can change the description. Press [OK] button to insert the master module.



Figure 6.5 Inserted master module

Master Module Setting

If you click the right button of the mouse on the inserted master module and select "Master Settings..."from the popup window, the window appears as like Figure 6.6.

From "Parameter to user interface", select "Controlled release of the communication by the application program", from "Storage format (Word module)", select "Little Endian(LSB-MSB)", and from "Handshake of the process data", select "Buffered, host controlled", in order.

DP Master Settings Parameter to user interface Startup behavior after system initialisation C Automatic release of the communication by the device C Controlled release of the communication by the application program	⊠ QK
User program monitoring Watchdog time 1000 ms	
Parameter to process data interface Addressing mode Byte addresses Word addresses Storage format (word module) Big Endian (MSB-LSB) Little Endian (LSB-MSB) Handshake of the process data C Bus synchronous, device controlled O Bus ferred, device controlled Buffered, host controlled C Bus synchronous, host controlled	
Hardware parameter © 2 kB dual-port memory O 8 kB dual-port memory O 16 kB dual-port memory	

Figure 6.6 Master module setting

Insert slave

Similar to master module, select is from the tool bar on the left upper side and click under the

master, 'Insert Slave' window will appear as shown on Figure 6.7.

Insert Slave	×
Slave Filter Vendor All 💌 Slave type All 🔍	Master COM-DPM / PKV20-DPM <u>OK</u>
Available slaves	Selected slaves
CIF30-DPS / CIF104-DPS /-R CIF50-DPS CIF60-DPS CIF60-DPS COM-DPS ETOS OptForProfibus GLOFA GM7 Inverter IS3 PKV30-DPS	GLOFA GM7
Vendor name LG Industrial System Co., Ltd. Ident number 0x7777 GSD file name LG_GM7,GSD GSD Revision Version 1,001	Station address 2 Description Slave2

Figure 6.7 Insert Slave

In case of using G7L-PBEA, select "GLOFA GM7" from "Available Slaves" and click "Add" button in the middle part. If there are several masters, select one from "Master" on the right upper side and verify "Station address" and "Description" and then click "OK" button.



Slave Configuration

Click the inserted slave by the right button of mouse and select "Slave Configuration" from the pop-up window.

Slave Configuration											×
General Device GLOFA GM Description Slave2 I♥ Activate device in actua I♥ Enable watchdog contro	? I configur	ration	GSD fil	s	Statior LG	n addre _GM7,(ss GSD	2			<u>Q</u> K <u>C</u> ancel <u>P</u> arameter Data,
Max, length of in-/output data Max, length of input data Max, length of output data Max, number of modules	a 368 244 244 244 2	Byte Byte Byte	Length Length Length Numbe	of in- of inp of ou er of m	-/outp out da tput d nodule	iut data ta lata es		6 2 4 2	Byte Byte Byte	- Assi Statu Masi	DPV1 Settings gned master on address I ter1
Module	Inputs	Outputs	In/Out	Ident	ifier					17	
1 byte output (0x20)		1 Byte		0x20							
2 byte output (0x21)		2 Byte		0x21						Actu	al slave
3 byte output (0x22)		3 Byte		0x22						Statio	on address 2
4 byte output (0x23)		4 Byte		0x23						Slave	e2
8 byte output (0x27)		8 Byte		0x27						27	
10 byte output (0x29)		10 Byte		0x29					•	157	
Slotlidx Module	Sumbol	Tune	I Addr	llen	Tune	ID Addr	l0 Len	T			
1 1 2 byte input (0x11)	Module1	1 IB	0	2	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			-			
2 1 4 byte output (0x23)	Module2	2			QB	0	4				<u>R</u> emove Module
		•									Insert Module
											Predefined <u>M</u> odules
										•	<u>Symbolic Names</u>

Figure 6.8 Slave Configuration

The list box shown in the middle shows all available modules. If you select the module with necessary scores from those and click "Append Module" button on the right bottom side, it will be inserted in the list box below. In this case, input module should be inserted in advance and output module should be inserted in the below. The number of available module is 2.

Bus Parameter Setting



Figure 6.9 Bus Parameter Settings

Select "Settings/Bus Parameter..."from the menu. In the field of 'Optimize', there are "Standard" and "User definition" settings, and Baud rate contains 9.6kbps ~ 12Mbps settings. Basically, **Baud rate is set as 1.5Mbps and Optimize as standard.**

CHAPTER 6 COMMUNICATION FUNCTION

Bus Parameter				×
Baud rate	1500	kBits/s	¥	<u>O</u> Ancel
Optimize	standard		¥	<u>E</u> dit

Figure 6.10 Bus Parameter

Point

- 1) Communication speed has a correlation with transmission distance.
- 2) For 12Mbps, use the dedicated connector and cable for 12Mbps.
- 3) For 12Mbps, minimum distance between stations should be more than 1m.
- 4) If communication is stopped in case of using 12Mbps (especially, the station located far from the master), it is required to seek the proper vertical resistance value and set it temporarily.

Verify the cable type and transmission distance and select the proper "Baud rate".

Device Assignment

Click the master module by the left button of mouse and select the master module. Select "Setting/Device Assignment..."from the menu.

<u>S</u> ettings	<u>T</u> ools	<u>W</u> indow	<u>H</u> elp	
Device	e <u>A</u> ssign	ment		Ctrl+B
<u>B</u> us Parameter				

Figure 6.11 Device Assignment

Driver select		×
CIF TCP/IP Dri CIF Device Driv CIF Serial Drive	ver er r	<u>O</u> K <u>C</u> ancel
Vendor Version Date Functions	Hilscher GmbH V1,002 13,10,1999 5	k

Figure 6.12 Driver select

Select "CIF Serial Driver" from Figure 6.12.

Point

 The only driver provided by G3/4/6-PUEA/B type master module is RS-232C port. Therefore, "CIF TCP/IP Driver", "CIF Device Driver" can not be used.

Device Assignment	CIF Serial Dr	iver						×
Driver Descriptio	n CIF Serial I	Driver						<u>2</u> K
Board Selection	Name	Туре	Version	Date	Error			incel
	DPM	COM-DPM	V01, 147	14,04,00	0	Connect COM 1	~	
🗖 COM 2					0	Connect COM 2		
□ colyi s					-20	Connect COM 3		
					-20	Connect COM 4		
	Figure	6.13 Device	Assigr	nment C	IF Serial D	river		
2 If the rele	evant mo	odule			① Press "	'Connect COM1" b	outton	
nformation is dis	splayed, c	heck			to verify i	if the relevant m	odule	
COM1"check bo	DX.				information	n is displayed.		
						③ If all is finished	d normally	y without

Connect the serial port of PC and the Configuration port of Pnet master module and apply the power of master module. According to the serial port of the connected PC, press "Connect COM1" or other button to check if the relevant module is selected without error. In Figure 6.13, "version" and "Date" may have different value. If no error, check the check box on the left side and click "OK" button.

Point

- 1)In case of pressing "Connect COM1" button, if the module information is not displayed normally and the error occurs, check the connection of cable for configuration and the cable condition at first.
- 2) If the cable is normal, it means that the cable is poor. Please contact to the Customer Service center.

Configuration Download

If you select "Online/Download" from the menu, the warning window "if the download is done during the bus operation, the communication between master and slave is stopped." appears as like Figure 6.15. After checking if the communication disconnection causes the problem, click "Yes(Y)"button. Downloading will be proceeded as like Figure 6.16. In this case, all LED is OFF and only "READY"LED blinks. After downloading, all LED shows its original function.

:	<u>O</u> nline	<u>S</u> ettings	<u>T</u> ools	<u>W</u> indow	<u>H</u> elp	
	<u>D</u> ow	nload	C	trl+D		
-	Start Debug Mode					

Figure 6.14 Configuration Download

Question	×
?	If the download is done during the bus operation, the communication between the master and the slaves is stopped. Do you really want to download?
	<u>Y</u> es <u>N</u> o

Figure 6.15 Warning Message

Download Station Address 1	
P	
Data base	Unnamed1 1700
Error	0
0	1200

Figure 6.16 Downloading

6.1.4 High speed link parameter settings in GMWIN

High speed link parameter selects the link parameter from the GMWIN project screen and sets the relevant items. The setting procedure and the function per item are as follows :

1) High speed link parameter setting in GMWIN

If you select 'high speed link parameter' from the basic screen of the project in Figure 6.17, you are led to the basic screen of high speed link parameter of Figure 6.18 and able to select the relevant items.



Figure 6.17 GMWIN Project Basic Screen

- 2) High speed link parameter selection
 - A) Setting method

Select the relevant parameter from the basic screen of Figure 6.18 and enter into the parameter setting.



Figure 6.18 Basic Screen of High speed link parameter

B) Setting function

The items of high speed link from Figure 6.18 means max. number of communication module installation according to PLC CPU type. For example, GLOFA-GM1/GM2/GM3 CPU is available to install max. 4 communication modules that enables to set in high speed link 1~4. For GLOFA-GM4 CPU, it is available to install max. 2 communication module that only high speed link 1, 2 button is displayed and the remaining is not possible to set. In this case, high speed link no. is not related to the installed slot no. and the slot no. should be set in the individual parameter setting screen and it is available to set only one high speed link parameter for one communication module.

 Table 6.2
 GLOFA

 CPU type and max. number of installation.
 CPU type and max. number of installation.

Classification	Available communication module	Max. number of installation	Remarks
GLOFA-GM1			Available to
GLOFA-GM2	G3L-PUEA, G3L-PUEB	4EA	install by
GLOFA-GM3			combining with
GLOFA-GM4	G4L-PUEA, G4L-PUEB	2EA/4EA	other
			communication
GLOFA-GINIO	GOL-FOEA, GOL-FOEB	ZEA	module.
GLOFA-GM7	G7L-PBEA	1EA	

Table 6.2 Communication module installation relation per CPU model

3) Link parameter setting

If you select the relevant parameter in the 'parameter setting' basic screen of Figure 6.18, the initial screen of high speed link parameter setting will appear as like Figure 6.19.

High Speed	Link1					×
Link set-						1
Netwo	irk type:	GLOFA Fnet				
Slot:	0	Self station No.:	0			
					Edit	
Entry list						1
No.	Туре	Send/Receive	Read Area	Store Area	Size	
0 1 2 3						
4 5 6 7						
9 10					-	
		Delete	e	nhà	Eair	
				Close	Help	

Figure 6.19 Parameter setting initial screen

The initial screen for parameter setting is composed of 2 items : link setting and registration list, and the setting method per item and its function is as follows:

A) High speed link setting

High speed link setting is the item to set the basic elements of communication module desired to set in the parameter setting. You can select 'modify' button of link setting in Figure 6.19 and set the module type, slot no. self station no. in 'high speed link setting' screen of Figure 6.20.

High Speed1Link Set	×
Network type	
C GLOFA Fnet	UK
O GLOFA Mnet	Cancel
GLOFA Enet	Help
C GLOFA Ednet Network	
O GLOFA Ednet Cable	
GLOFA Dnet	
GLOFA Pnet	
GLOFA FEnet	
GLOFA FDEnet	
C GLOFA Rnet	
Slot No.: 0	
Self-sta No.:	

Figure 6.20 High speed link setting screen

- Network type : to set the type of the installed communication module and GLOFA Pnet should be set.
- Slot no. : to set the position that the communication module desired to set is installed.

(0 ~ 7 slot).

Self station no. : Master module shall be set in Sycon and slave module shall be set by rotary switch. Not available to modify here.

B) Registration list setting

Registration list is the area to register the sending/receiving information of the actual data. After completing the link setting, you should set the registration no.'0'in the registration list area and the major setting items are shown on the upper side of registration list menu. If you select (click twice) the relevant list in Figure 6.19, you can set the relevant items in 'high speed link item modify' screen of Figure 6.21. Figure 6.22 shows the screen after setting the sending/receiving parameter. To modify the parameter, click twice the relevant registration no. (Refer to Figure 6.21)

High Speed Link	: Item	Edit				×
Mode O Send O Receive						
Area						
				Address	Size(Byte)	
Receive area:	● %MVV		C %QW	100	64	
Transmit area:	● %MVV	○ %IW	C %QW	200	32	
		0	ĸ	Cancel	Help	

Figure 6.21 High speed link item modify screen

gh Speed	Link1				
Link set-					
Netwo	ork type:	GLOFA Pnet			
Slot:	0	Self station No.:			
					Edit
Entry list					
No.	Receive Area	Size	Transmit	Size	
0 %	MW100	64	%MW200	32	
P					
		Dele	te		Edit
		Dele	te		Edit

Figure 6.22 Sending/Receiving parameter setting completion screen (Example)

The functions of each registration item in Figure 6.21 are as follows :

- Area : to set the area to read the data to send when sending and to set the area to save the received data when receiving.
- Size : the size of data to send/receive. The unit for sending/receiving is 1byte.

It is available to set 1Kbyte for G3/4/6L-PUEA and 7Kbytes for G3/4/6L-PUEB. G7L-PBEA slave module is available to set 64bytes for sending and 64bytes for receiving, respectively.

Point

- The size of sending/receiving area is total I/O contact number that is created in SyCon.
- G4L-PUEA 1EA and GPL-TR2A(16points), GPL-TR4A(32points), GPL-D22A(16points) are created in order and if setting the sending area with %MW0 and the receiving area with %MW100,
 - * Sending area: %MW0
 - * Receiving area: %MW100
 - * Sending area size: 6 bytes (total output contact number)
 - * Receiving area size: 2 bytes (total input contact number)
 - * %MW0 data -> output by GPL-TR2A
 - * %MW1 ~ %MW2 data -> output by GPL-TR4A
 - * GPL-D22A input -> saved in %MW100
- **3)** The created order in SyCon is prior to station no. or cable connection when sending/receiving the data.

6.1.5 High speed link operation in GMWIN

After completing the high speed link parameter setting, download the parameter to PLC CPU and run the high speed link service in order to start the high speed link service. In case that the high speed link parameter is changed, execute 'make' from the GMWIN compile menu and download the parameter before starting the high speed link.

/rite		×
Area		
C Basic Pa	arameter	
C I/O Para	meter	
C HS Link	Parameter	
C Redund	ancy Parameter	
🔿 Commu	nication Paramete	er
🔿 Special	Parameter	
(Special, High-Spe	PID, Positioning I ed Counter Modu	Module and Ile)
O Program	ı	
Upli	oad Program	
Paramet	ter and Program	
🔽 Upli	oad Program	
C Upload i	Program	
ок	Cancel	Help

1)Parameter Download

Figure 6.23 Parameter download screen

The high speed link parameter prepared by the user should be saved in GMWIN project file and if you select 'write' after connecting PLC through 'online connect' of GMWIN menu, the window 'write' appears as like Figure 6.23. If you select 'high speed link parameter' or 'parameter and program' in the Figure and download the parameter, only parameter or with program will be downloaded. In this case, the high speed link start information' LINK Enable' shall be OFF. Therefore, after downloading the program, the relevant parameter item should be ON in 'LINK Enable' setting.

2)High speed link start



Figure 6.24 Link Enable setting

After downloading the parameter, if you set 'LINK Enable' of GMWIN online menu, the 'LINK Enable' command is delivered to PLC and becomes the high speed link operation state.

'LINK Enable' setting is available when PLC is in STOP mode. If the high speed link starts after setting 'LINK Enable', it carries out the high speed link regardless of PLC action mode and the 'parameter' and 'Link Enable' information shall be battery backup in PLC CPU and the data shall be preserved even in case of power off.

Classification	Parameter download	Link enable setting	High speed link action	Remarks
PLC Run	Х	Х	0	Run when
PLC Stop	0	0	0	high speed
PLC Pause	Х	Х	0	link is
PLC Debug	Х	Х	0	enabled.

Table 6.3 describes the action relation of PLC mode and high speed link.

6.1.6 High speed link information in GMWIN

1) High speed link information function

As high speed link service carries out the data exchange between more than 2 communication stations, it provides the user how to verify the high speed link service status to verify the reliability of the data got from opposite station, as high speed link information. That is, the communication module provides the user the high speed link information every regular time whether the high speed link is run by the user setting parameter, by collecting the data received till that time and the high speed link information includes the whole information of RUN-LINK (_PHSxRLINK) and LINK-TROUBLE (_PHSxLTRBL) that enables to know the whole information of communication network, and the individual information of _PHSxSTATE that enables to know the communication state per slave station. The user can use the above information in the keyword format when preparing the program, and monitor the high speed link status by using the high speed link information monitor function. When operating several PLC by using the high speed link information such as RUN-LINK or LINK-TROUBLE etc. before using.

A) RUN-LINK (_PHSxRLINK)

This is the whole information that describes whether the high speed link is running normally by the user setting parameter, and a contact point that once it is 'ON', 'ON' is maintained till the 'LINK Enable'. If the following conditions are given, 'ON' shall be maintained :

- ① when 'LINK Enable' is ON'
- 2 when the parameter registration list setting is all set normally
- ③ when all data related to the registration list is sending/receiving well according to the setting period
- ④ when all opposite stations set in the parameter are RUN and having no error at the same time.





Station 1	Station 2	Station 3	Station 4	Station 5
Sending:2words	Sending:2words	Sending:2words		
Receiving:2words	Receiving:2words	Receiving:2word	Conding	Sonding
(station 2)	(station 1)	(station 1)	Senaing.	Senaing.
Receiving:2words	Receiving:2words	Receiving:2words	Zwords	Zwords
(station 3)	(station 4)	(station 5)		

Table 6.4 High speed link parameter setting at each station (example)

Figure 6.25 and Table 6.4 shows the example of the high speed link system configuration to describe the condition that RUN-LINK is 'ON'. In case that 5 communication modules are linked to the network as like Figure 6.25 and are high speed linked by the parameter as shown on Table 6.4, the condition to be RUN-LINK 'ON' in Station 1 is as follows :

- ① when Link-Enable is ON in the self station (station 1),
- 2 when self station (station 1) is RUN mode,
- ③ when self station (station 1) is not in error,
- When the sending parameter data set in the self station (station 1) is sending normally,
- (5) when the data receiving from Station 2&3 is receiving normally,
- 6 when the action mode of the opposite station (Station 2, Station 3) sending the data to the self station (Station 1) is RUN and having no error and communicating normally,
- When the action mode of another opposite station (station 4 & 5) set in the parameter of the opposite station (station 2&3) of the self station (station 1) is RUN and not in error and communicating normally.

If 7 items on the above are all satisfied, RUN-LINK of station 1 shall be 'ON'. If using the RUN-LINK contact with the program in the system that PLC of several stations is interlocking through high speed link, it is available to carry out the sending/receiving data monitoring and reliable communication. But as once RUN-LINK contact is 'ON', it is maintained 'ON' till LINK-Enable is 'OFF', it is required to use the Link-Trouble information contact of the following items when monitoring the abnormal state such as communication error etc.

B) LINK-TROUBLE (_PHSxLTRBL x=high speed link no.(1~2))

This is the whole information describing whether the high speed link is running normally by the user setting parameter. If the case to violate the condition that RUN-LINK is ON may occur in the state RUN-LINK is ON, this will be ON and when recovered, it will be OFF.

C) High speed link state (_PHSxSTATE[0..127] x=slave station no.(0~127))

This is the individual information describing the action mode of slave station and displays the high speed link state of max. 127 stations same as max. number of slave station. That is, in case that the sending/receiving of the relevant list is normal and the action mode is RUN and having no error, this will be ON and in case of violating the above items, it will be OFF.

2) High speed link information monitoring

It is available to monitor High speed link information by using the monitoring function after GMWIN online connection and there are 2 ways of monitoring : one is to select the variable monitor from the monitor menu and another one is by link parameter monitor.

A) Variable monitor

Variable monitor is the function to select the necessary items for monitoring by using GMWIN flag monitor function. If you select the variable monitor from online monitor items and Figure 6.26 variable registration screen appears, select the flag and select high speed link information flag one by one from 'variable, flag list' screen to register. In this case, as _PHSxSTATE[n] is Array type flag, the user should select the array no. directly and the array no. means station no. of slave. 'x'means high speed link no. and it has 1~4 range in GM1/2/3 PLC CPU and 1~2 range in GM4 PLC CPU, and 1 range effective in GM6 PLC CPU. If you register the variable in Figure 6.26 and select 'close', Figure 6.27 monitor screen will appear. If you press 'Start'from the tool bar on the right side separately, monitoring starts.

ilag List			×
Flag	Туре	Comment	Register
PHS1LTRBL	BOOL	Abnormal information of HS(Link.	
_PHS1RLINK	BOOL	HS RUN_LINK information	Close
_PHS1STATE	ARRAY[128] of BOOL	General communication status i	
_PHS2LTRBL	BOOL	Abnormal information of HS(Link.	Help
_PHS2RLINK	BOOL	HS RUN_LINK information	
_PHS2STATE	ARRAY[128] of BOOL	General communication status i	
_PHS3LTRBL	BOOL	Abnormal information of HS(Link.	
_PHS3RLINK	BOOL	HS RUN_LINK information	
_PHS3STATE	ARRAY[128] of BOOL	General communication status i	
_PHS4LTRBL	BOOL	Abnormal information of HS(Link.	
_PHS4RLINK	BOOL	HS RUN_LINK information	
_PHS4STATE	ARRAY[128] of BOOL	General communication status i	
_PNET1_G_CLE	BOOL	Clear output command	
_PNET1_G_CMD	BYTE	Global command	
_PNET1_G_FRE	BOOL	Freeze input command	
_PNET1_G_GID	BYTE	The group number of global com.	
_PNET1_G_SLV	UDINT	The slave station address of glo	
_PNET1_G_SYNC	BOOL	Synchronize output command	
_PNET1_G_UNF	BOOL	Unfreeze input command	
_PNET1_G_UNS	BOOL	Unsynchronize output command	
_PNET1_IN_LEN	UINT	Received bytes number	
_PNET1_OUT_L	UINT	Transmited bytes number	
_PNET2_G_CLE	BOOL	Clear output command	
•			

Figure 6.26 High speed link information variable registration screen

⊡- Variable	Resource	Instance	Variable name	Variable value
⊡ Variable Configuration glob Resource global v ⊡ Instance variable Direct variable Flag	Resource Flag Flag Flag Flag Flag Flag Flag Flag	Instance	Variable name _PHS1LTRBL _PHS1RLINK _PHS1STATE[0] _PHS2LTRBL _PHS2RLINK _PHS2STATE[0] _PHS3LTRBL _PHS3RLINK _PHS3STATE[0]	Variable value 0 0 0 0 0 0 0 0 0 0
	Flag Flag Flag		_PHS4LTRBL _PHS4RLINK _PHS4STATE[0]	0 0 0

Figure 6.27 High speed link information monitor screen (variable registration)

B) Link parameter monitor

If you select 'link parameter' item from GMWIN online connection monitor menu, link parameter select screen appears as like Figure 6.28. If the user select the desired items from the user setting parameter numbers and verify it, 'Figure 6.29 High speed link parameter monitor' screen appears and the setting registration list is monitored and displayed on the screen.

Se	lect Link Parameter		×
	HS Link Parameter HS link1 HS link2 HS link3 HS link4 HS link5 HS link6 HS link7 HS link8	OK Cancel	

Figure 6.28 Link parameter select screen

The link parameter monitor is displayed as shown on Figure 6.29 that the general information of RUN-LINK and LINK-TROUBLE is displayed on the upper side of the screen and the individual information such as mode (action mode), communication (sending/receiving state), error are displayed as much as setting number together with registration list no.

10	ID= 📄 — 🕂] 🏶 🚟 🗲	→ ║몰	e l 🕺	•	2 🛞
Run_Link: O	Link_Trouble: O	HS Link 1				
No Type	Class	From Area T	o Area	S Mode	Trx	Error
0 %MW200	32	%MW100 64		0	0	0
1				- 0	0	0
2				0	0	0
3				0	0	0
4				0	0	0
5				0	0	0
6				0	0	0
7				0	0	0
8				Ō	0	Ō

Figure 6.29 High speed link parameter monitor screen

If you select the high speed link information as like Figure 6.29, as the user setting high speed link parameter and information can be monitored together and the individual information setting value is monitored as shown on the Figure, it enables to monitor the high speed link state together with the I/O data.
6.1.7 High speed link parameter setting in KGLWIN

Profibus-DP master for MASTER-K also use a SyCon for Configuration setting and the setting method is also same as GLOFA-GM. For MASTER-K, **it is required to set the high speed link parameter after downloading the Configuration to master module** and high speed link parameter selects the parameter from KGLWIN project screen and set the relevant items. The setting procedure and the function of each item are as follows :

1) High speed link parameter setting in KGLWIN

If you select the parameter from the following project basic screen, the high speed link parameter basic screen appears and you can select the relevant items.

KGLWIN Project basic screen



- 2) High speed link parameter select
 - A) Setting method

Select the relevant parameter from the basic screen as shown on the figure below and enter into the parameter setting.

	霎Parameter [K3005 Profibus.PRJ]	
② Set 'Link- Enable'	Besic Interrupt I/O Link1 Link2 Link3 Link4 Unk: Enable Self Station No: Base: I Slot: I Type: Fret I To Area Size 1 When parameter window is open, press "link1" tab to set high speed link parameter. 3 Set the base no. , the current master module is loaded, slot no. and Pnet	

Parameter setting basic screen

The items of high speed link from the Figure means max. number of communication module installation according to PLC CPU type. High speed link button of available number of installation is actuated and in this case, high speed link no. is not related to the installed slot no. and the slot no. should be set in the individual parameter setting screen and it is available to set only one high speed link parameter for one communication module.

The following Table shows the communication model available to install per MASTER-K CPU type and max. number of installation.

Classification	Available communication module	Max. no. of installation	Remarks
K1000S CPU	G3L-PUEA, G3L-PUEB	4EA	
K300S CPU	G4L-PUEA, G4L-PUEB	2EA/4EA (more than Version 3.0)	
K80S, K120S CPU	G7L-PBEA	1EA	

Max. number of installation per MASTER-K CPU type

* If you use by combining the communication module using the high speed link, the number of installation is limited.

- Iink : the item to allow the high speed link, the initial value is prohibited, and need to set 'Enable' to execute the high speed link.
- self station no. : master module should be set in SyCon and slave module by rotary switch. It is not available to modify here.
- Base : to set the base position where the communication module desired to set is installed.
- Slot : to set the slot position where the communication module desired to set is installed. (0 ~ 7 slot).
- Type : to set the type of the installed communication. Pnet should be set.

3) Parameter setting and modification

If you double click the relevant parameter in the parameter setting basic screen of the Figure, the high speed link parameter setting screen will appear.

×

parameter setting initial s	creen
Edit Parameter	
- Area	
From : D0000	Size(Byte): 0
(P,M,L,K,T,C,D,S ??)	
	Size(Byte): 0
[P,M,L,K,T,C,D,S ??]	
	1
<u> </u>	Cancel Help

- Area : to set the reading area of the data to send when sending, and the saving area of the received data when receiving.
- Size : the size of data for sending/receiving. The unit is 1byte and it is available to set 1kbyte for total sending/receiving G3/4/6L-PUEA and 7kbytes for G3/4/6L-PUEB.

Point

- The size of sending area and receiving area is total no. of I/O contact that created in SyCon.
 - G4L-PUEA 1EA, GPL-TR2A(16points), GPL-TR4A(32points), GPL-D22A(16points) is created in order and when setting the sending area by P000, receiving area by P010,
 - * Sending area : P000
 - * Receiving area : P010
 - * Sending area size : 6 bytes(total output contact number)
 - * Receiving area size : 2 bytes(total input contact number),
 - * P000의 data -> output by GPL-TR2A
 - * P001~P002 data -> output by GPL-TR4A
 - * GPL-D22A input -> saved in P010.
 - 3) The created order in SyCon is prior to station no. and cable connection when sending/receiving the data.

6.1.8 High speed link speed calculation

1) Overview

High speed link data transmission speed is determined by a variety of factors because one block data should pass the path as like Figure 6.30 until it can be saved in the receiving area of another station from that of one station.



Figure 6.30 Data transmission path through communication module

In order to send the data through communication from one station to another station in Figure 6.30, there are 3 paths to pass and the required time for each path determines the sending time.

Table 6.5 shows the major path of data transmission and the factor that effects to the time for each path.

Items	Path	Factor to effect the Time
1	PLC CPU(A)> communication module (station 1)	PLC-A program scan time
2	Communication module (station1)	Communication scan
2	>communication module(station2)	time+communication O/S scan time
2	Communication module (station 2)>	PLC P program agon time
3	PLC CPU(B)	PLC-b program scan time

Table 6.5 Data transmission path and time factor

As the data delivery from(to) PLC CPU to(from) communication module is executed at the point that PLC user program is finished, the PLC user program scan time can be a major factor of data transmission and if you select 'PLC information' from GMWIN online menu, you can find max/min/current program scan time. And for communication module to send the data, it is required to wait the Poll of master module.

Figure 6.31 shows PLC program scan time and the sending point according to communication scan time.



Figure 6.31 Relation of PLC scan time and communication scan time

In Figure 6.31, PLC-A station delivers the sending data by communication module in T1 that is the point that PLC-A station program is finished, therefore, the time delay as much as Tdelay_plc1 may occur. After receiving the data from PLC, communication module can send the data after waiting the communication scan delay time(Tdelay_com) and max.delay time is as much as Tcom_Scan1.

Even for PLC-B, as communication module can send the received data to PLC after waiting for Tdelay_plc2time, max. delay time as much as Tscan2 may occur. As shown Figure 6.30 and Figure 6.31, communication delay time is determined by a variety of variables such as total number of communication station, program size and O/S scan time of communication module. As it is not easy to calculate the value of such variables, here the simple and easy calculation method is provided for the user.

2) High speed link speed calculation method

High speed link speed is defined as max. time required to send one block data from PLC-A to PLC-B as an example of Figure 6.31 and the high speed link speed calculation is divided into 2 ways for: complicated system that total number of sending data to more than 10 communication stations exceeds total 512 bytes and the simple system less than 512 bytes, and the calculation method is as follows :

(A) Simple system

For the system that total communication station is under 10 stations and total size of sending data is less than 512 bytes, it is recommended to calculate high speed link speed by the simple formula as like Formula 1:

Formula 1 St = P_ScanA + C_Scan + P_ScanB

(St = high speed link max. transmission time

P_ScanA = plc A max. program scan time

P_ScanB = plc B max. program scan time

C_Scan = max. communication scan time)

In Formula 1, C_Scan can be calculated easily by the following formula.

Formula 2 C_Scan = Th × Sn

(Th = data sending time from media per station)

Sn = Total Station Number : Total communication station number)

(B) Complicated system

For the system that total communication station is more than 10 stations and total size of sending data is more than 512 bytes, it is recommended to calculate high speed link speed by the following formula:

Formula 3 St = Et ×To ×Ntx + Mf

Where as { Et = Effective Tx Ratio} To = Octet time (1 byte sending time) Ntx = Total Tx number Mf = Margin Factor }

And each item is determined as follows :

1 Et = St × Nf

 ${St = total communication station number}$

Nf = Network Factor, a constant value according to communication system characteristic and it is 1.5 in Pnet system}

② To = {octet time, a time required to transmit 1 byte data in serial}

- Pnet : 0.8 #s}

- ③ Ntx = total sending data number, calculated including Variable service number and determined according to the system as follows:
 - Pnet : total high speed link sending byte number + FB + LGIS service data number × 1,024
- ④ Mf = Margin value for the factor not described in the above formula such as O/S scan time of communication module etc. which is determined as follows :

- Pnet : 25 ms

6.2 Example Program

6.2.1 Pnet master slave communication in GMWIN

Example 1

Communication module (Station 0) G4L-PUEA is installed in GM4 base slot 0, communication module G7L-PBEA in GM7. This is the program for sending/receiving the data from station 0(master) to station 1(slave).

(Refer to I/O configuration map.)

GM4 master (Station 0, Pnet slot 0)



GM7 slave (Station 1, G7L-PBEA)



• I/O configuration map

Sending/receiving configuration		Reading area	Saving area	Size(byte)
GM4 (Station 0)	Sending:GM7 Station 1	%MW0	-	64
(master)	(master) Receiving:GM7		%QW0.1.0	64
GM7 (Station 1)	Sending:GM4 Station 0	%MW10	-	64
(slave)	Receiving:GM4 Station 0	-	%QW0.0.0	64

- 1) High speed link parameter setting in GM4 (Station 0)
 - Master module GMWIN program (GM4)



Master module high speed link

Master module 'link information' setting

High Speed Link1			net	work type	setting.	Slot no.	•
Link set	GLOFA Fnet		sel	ection.			
Slot: 0	Self station No.:	0		Edit			
Entry list							
No. Type	Send/Receive	Read Area	Store Area	Size			
0 1 2 3 4 5 6 7 8 9 9 10				•			
	Deleti	e C	ору	Edit			
			Close	Help			

High Speed1Link Set		×	
Network type			
C GLOFA Fnet		ок	
C GLOFA Mnet		Cancel	
C GLOFA Enet		Help	
C GLOFA Ednet Network			
C GLOFA Ednet Cable			
C GLOFA Dnet	Sele	ct 'GLOFA Pnet'	
GLOFA Pnet	0.10		4 - f 11
C GLOFA FEnet	Sele	ect slot no. as tha	it of the
C GLOFA FDEnet	Pnet	t master module i	nstalled
C GLOFA Rnet	base	e	
/			
Slot No.: 0			
Self-sta No.:			

• High speed link network type setting

n Speed	LINKI				
ink set-					
Netwo	rk type:	GLOFA Pnet			
Slot:	0	Self station No.:			
					Edit
Entry list-					
No.	Receive Area	Size	Transmit	Size	
No.	Receive Area	Size relect this bar of r igh speed link ending/receiving	Transmit no. 0 and mo for designa area.	Size	
No.	Receive Area	Size select this bar of r igh speed link ending/receiving Dele	Transmit	Size	Edit

GM7 Station 1 sending/receivin	g parameter set	Receiving area is the area receiving from slave(GM7) area to master(GM4) and,
High Speed Link Item Edit		designate the sending area as the area to send from master(GM4) to slave(GM7).
C Send C Receive		
Receive area: 🔿 %Mvv Transmit area: 💿 %Mvv 🔿 %	Add © %QW 0.4.0 W © %QW 0	Size(Hyte) 64 64
	OK Can	Cel Hel SyCon, set the same size as high speed link setting
		as ingli opoda initi odding.

• Master module 'high speed link 1' setting completion screen

High Sp	ieed Link	:1					×
Link	set —						
N	etwork typ	oe:	GLOFA Pnet				
SI	lot:	0	Self station N	0.:			
						Edit	
_ Entry	list						
N	o. Re	ceive Area	Size	Transmit	Size		
Ö	1 %QW0).4.0	64	%MVV0	64		
			D	elete		Edit	
					Close	Heln	
					01038		

2) High speed link parameter setting in GM7(Station 1)

• Slave module GMWIN program (GM7)



• Slave module 'link information' setting

ommunication Par	ameter			×	
Communication	method				
Station No.:	0 💌				
Baud rate:	19200 🔽	Data bit:	8 👻		
Parity bit:	None	Stop bit:	1 💌		
Communicati	on channel				
C RS232C N	Null Modem or R8422/485				
C R\$2320 N	dodem (Dedicated Line)	Initial comr	mand:		
C R82320 E	Dial-up Modern	ATZ		-	
		,			
Protocol and mo	de		-		
	Timeout in m	aster mode:	500 ms	_	
Dedicated					
C Mas	ster 📃 Read	Status of Slave	e PLC List		
C Slav	ve				
Modbus			Slave module	e(GM7) high :	speed link
C Mas	ster Tr	ansmission m [.]	ode network type	settina.	
C Slav	ve			eetg.	
User defined			Parameter se	etting in regis	tration list
C Mas	ster		after selecting	FIELDBUS sl	ave.
C Slav	ve				
FIELDBUS					
C Mas	ster		List		
Slav	ve				
	1		1		
	OK Ca	incel	Help		

FIELDBUS
Entry list
No. Receive Area Size Transmit Size
Generate the high speed link
modification window to decignate
the sending/receiving area by
selecting this bar of no.0.
Delete Edit
Close Help

• High speed link parameter setting to GM4 master station

• Sending/receiving parameter setting to GM4 Station 0

High Speed Link Item Edit	Receiving area is the area
Mode	receiving from master(GM4)
C Send	area to slave(GM7) and designate
C Receive	the sending area as the area to
C Receive	send from slave(GM7) to
	master(GM4).
Area Address S	Size(Byte)
Receive area: C %MW © %QW 0.0.0	64
Transmitarea: ⓒ %MW O %IW O %QW 0	64
OK Cancel	Help

FIELDBUS						×
No.	Receive Area	Size	Transm	iit Size		
0 %	QW0.0.0	64	%MVV0	64		
			Delete		Edit	
				Close	н	elp

• Slave module 'high speed link' setting completion screen

3) SyCon setting for high speed link communication

 Master, slave SyCon s 	setting	Master module setting,				
SyCon - [Unnamed1]	Slave modu name, Static	<u>Iools Window H</u> le setting, each on no. setting	n module			
DP Provide Subs		Master1 Station address DP Master	0 COM-DPM / PKV20-DPM			
		Slave1 Station address DP Slave	1 G7L-PBEA			

Master Setting

Parameter to user interface Startup behavior after system initi Automatic release of the com Controlled release of the com User program monitoring Watchdog time	<u>OK</u> <u>C</u> ancel	
Parameter to process data interface Addressing mode	Handshake of the process data Bus synchronous, device controlled Buffered, device controlled No consistence, uncontrolled Buffered, host controlled Bus synchronous, host controlled Buffered, extended host controlled	
Hardware parameter © 2 kB dual-port memory © 8 k	B dual-port memory 🖸 16 kB dual-port memory	

Slave Configuration

Settings — Slave Configuration selection (Input 64 byte, Output 64 byte) I/O size should be the same as high speed link setting size in GMWIN.

Slave	Config	guration											×
Ge De De	neral vice script	G ion [3	i7L-PBEA Slave1				S	itation add	dress	1		[<u>O</u> K
Max Max Max Max	Activ Enat leng leng leng leng	vate devic ble watch th of in-/ th of input th of out ber of m	e in actual idog contro 'output data ut data out data odules	configu 1 128 64 64 2	ration Byte Byte Byte	GSD file Length Length Length Numbe	e of in- of inp of ou er of m	GM7_7 /output da out data tput data nodules	777,GSD ata 1	28 By 64 By 64 By 2	te te te	- Assig Statio Masti	Parameter Data, PV1 Settings Ined master a address 0 er1
Mod 12 16 20 32 64	ule byte byte byte byte byte	output output output output output	(0x2B) (0x2F)	Inputs	0utputs 12 16 20 32 64	In/Out	Ider 0x2F 0x2F 0x80 0x80 0x80	tifier), 0x13), 0x1F), 0x3F				O/C Actua Statio Slave 1/C	COM-DPM / PKV20-DPI I slave n address 1 1 i7L-PBEA
\$10 1 2	t Idx 1 1	Module 64 byt 64 byt	Symbol Modulel Module2	Type IB	I Addr. O	I Len. 64	Type QB	0 Addr.	0 Len. 64				<u>Append Module</u> <u>Remove Module</u> Insert Module Predefined <u>M</u> odules Symbolic Names

Device Assignment

Settings –	→ De	evice Assig	Inment		COM por	selection —	→ OK
Device Assignmen	t CIF Serial Driv	/er					×
_ Driver Descriptio	on ————————————————————————————————————						(
Device Driver	CIF Serial D	river					
Board Selection							<u>C</u> ancel
	Name	Туре	Version	Date	Error		
COM 1	DPM	COM-DPM	V01, 151	06,11,00	0	Connect COM 1	
COM	port windov	v			-20	Connect COM 2	
	,				-20	Connect COM 3	
COM 4					0	Connect COM 4	

- COM port selection : After selecting Connect COM1 or Connect COM2, if the window appears on the left COM1,COM2, select the window and then select OK.

Download

Online -----> Download

In case of Error, check the Configuration cable and connector.

Download Station Address 0		
1		
Data base Length of data base	Unnamed1 2088	
Error	0	
0		440

• Communication opening verification

Online ——	Start Communication — Start Debug Mode								
SyCon - (Unname Eile Edit View	d1] Insert <u>O</u> nline <u>S</u> ettings <u>T</u> ools <u>W</u> indow <u>H</u> elp								
	Master1 Station address 0 DP Master COM-DPM / PKV20-DPM								
	Slave 1 Station address 1 DP Slave G7L-PBEA								
Point									
1) The	size of Sending area and receiving area is total I/O contact number created in								
GM	WIN.								
Whe	en setting GM7 slave in SyCon, the I/O contact number in slave setting should								
be t	he same as high speed link setting size of GMWIN program.								
2) G4L	-POEA TEA and GM7-PBEA TEA are created in order and when setting the								
301	* Sending area · %MW0								
	* Receiving area : % QW0.4.0								
	* Sending area size : 64 bytes								
	* Receiving area size : 64 bytes,								
	* %MW0 data -> output to GM7 Slave module								
	* GM7 Slave module input -> saved in % QW0.4.0.								
3) Whe	en using GM7 as slave, set GMWIN program in advance and open the								
com	munication by SyCon.								

6.2.2 Smart I/O Pnet master slave communication in GMWIN

Example 2

Communication module(Station 0) G4L-PUEA is installed in GM4 base slot and Smart I/O module(GPL-TR2A, GPL-D22A, GPL-RY2A) is installed as slave. This is the program example for sending/receiving the data from Station 0 (master) to Station 1(GPL-TR2A), Station 2(GPL-D22A), Station 3(GPL-RY2A).(Refer to I/O configuration map.)

GM4 master (Station 0, Pnet slot 0)



Station 1 GPL-TR2A

Station 2 GPL-D22A

Station 3 GPL-RY2A

• I/O configuration map

Sending/rec	eiving configuration	Reading area	Saving area	Size(byte)
GM4(Station 0)	Sending: Station 1 & 3	%MW0	-	4
(master)	Receiving: Station 2	-	%QW0.2.0	2
GPL-TR2A (Station 1)	Receiving:GM4 Station 0	%MW0	-	2
GPL-D22A (Station 2)	Sending:GM4 Station 0	-	%QW0.2.0	2
GPL-RY2A (Station 3)	Receiving:GM4 Station 0	%MW1	-	2

1) SyCon setting for high speed link communication

 Master, slave SyCon setting 	Ć	
		Master module selection,
		Station no. selection.
👉 SyCon - [emi.pb]		
	<u>Toois w</u> indow	Helb
		Slave module selection, each module
		name and Station no. selection.
DP	Master1	
A809	Station address DP Master	0 COM-DPM / PKV20-DPM
GENERAL	Slave1	
	Station address DP Slave	1 GPL-TR2A
FINERAL	Slave2	
DENERAL	Station address DP Slave	2 GPL-DC22A
	D22A	
	Slave3	
GENERAL	Station address DP Slave	3 GPL-RY2A

Master Setting

Settings — Master Settings selection (set as basic value in LGIS SyCon.)

DP Master Settings	×
Parameter to user interface Startup behavior after system initialisation C Automatic release of the communication by the device Controlled release of the communication by the application program User program monitoring Watchdog time 1000 ms	<u> Q</u> K <u>C</u> ancel
Parameter to process data interface Addressing mode Byte addresses Word addresses Storage format (word module) Big Endian (MSB-LSB) Little Endian (LSB-MSB)	
Hardware parameter © 2 kB dual-port memory © 8 kB dual-port memory © 16 kB dual-port memory	

Slave Configuration

Settings -----> Slave Configuration selection

The basic I/O score is designated in Smart I/O GSD file.

											×
iPL-TR2A Slave1				S	Station add	dress	1			Cancel	
ce in actual idog control /output data ut data put data iodules	configur 2 0 2 1	ration Byte Byte Byte	GSD file Length Length Length Numbe	e of in- of inp of out r of m	GPL_TI /output da ut data tput data todules	R2A, GSI ata	2 0 2 1	Byte Byte Byte	- Assig Static Mast	Parameter Data DPV1 Settings ned master n address 0 er0	
yte In	Inputs	Outputs 2 Byte	In/Out	Ider 0x21	tifier ., 0x00			×	Actua Static Slave	COM-DPM / PKV20-DPI - al slave on address 1 of PL-TR2A -	
Symbol Modulel	Туре	I Addr.	I Len.	Type QB	0 Addr. 0	0 Len. 2				Append Module Bernove Module Insert Module Predefined Modules	
	iPL-TR2A Slave1 ce in actual idog control dougted tata odules it data odules it data odules it data it data odules it data it data odules it data it data it data odules it data it data	iPL-TR2A Slave1 ce in actual configur dog control /output data 2 ut data 0 put data 2 odules 1 Inputs 3yte In Symbol Type Module1 Indule1	iPL-TR2A Slave1 ce in actual configuration dog control /output data 2 Byte ut data 0 Byte put data 2 Byte odules 1 Inputs Outputs 3yte In 2 Byte 3yte In 2 Byte Byte Symbol Type I Addr. Modulel 2 1 Modulel 2 1 Modulel 2 1 Module 2	iPL-TR2A Slave1 te in actual configuration dog control GSD fil /output data 2 Byte Length ut data 0 Byte Length output data 2 Byte Length odules 1 Numbe Inputs Outputs In/Out Byte In 2 Byte In/Out Byte In 2 Byte In/Out Symbol Type I Addr. I Len. Module1 I Inout I Len.	iPL-TR2A S Slave1 ce in actual configuration idog control GSD file ooutput data 2 Byte Length of in- ut data 0 Byte Length of output ut data 2 Byte Length of output odules 1 Number of m Inputs Outputs In/Out Idem 3yte In 2 Byte 0x21 A DATE NOT 1 DATE NOT 1 Symbol Type I Addr. I Len. Type Module1 0 0 Symbol 1 Dype I Addr. I Len. Opp	iPL-TR2A Station add Slave1 te in actual configuration idog control GSD file GPL_TI output data 2 Byte Length of in-/output data ut data 0 Byte Length of onput data put data 2 Byte Length of output data output data 2 Byte Length of output data Number of modules 1 Number of modules 1 Symbol I Addr. I Len. Type 0 Addr. Module1 0	iPL-TR2A Station address Slave1 ce in actual configuration idog control GSD file GPL_TR2A,GSI /ootput data 2 Byte Length of in-/output data ut data 0 Byte Length of output data ut data 2 Byte Length of output data ut data 2 Byte Length of output data odules 1 Number of modules Inputs Outputs In/out Identifier Byte In 2 Byte Ox21, 0x00 Imputs Outputs In Imput Imput Symbol Type I Addr. I Len. Type Output Symbol Type I Addr. I Len. Imput Imput Module1 Imput Imput Imput Imput Imput Imput Imput Imput Imput Imput Imput Imput Imput Imput Imput Imput Imput Imput Imput Imput Imput Imput Imput <t< td=""><td>iPL-TR2A Station address I Slave1 </td><td>iPL-TR2A Station address I Slave1 </td><td>iPL-TR2A Station address Slave1 ce in actual configuration idog control GSD file GPL_TR2A,GSD Output data 2 Byte Length of in-/output data 2 Byte ut data 0 Byte Length of input data 0 Byte Assig output data 2 Byte Length of output data 2 Byte Assig odules 1 Number of modules 1 Mast 0/0/0 Actua Syste Inputs Outputs In/Out Identifier 0/0/0 Actua Syste Inputs Outputs In/Out Identifier 0/0/0 Actua Syste Inputs Outputs In/Out Identifier 0/0/0 Actua Symbol Type I Addr. I Len. Type 0 Addr. 0 Len. 1/0/0 Symbol Type I Addr. I Len. In/0 In/0</td><td>iPL-TR2A Station address I Slave1 </td></t<>	iPL-TR2A Station address I Slave1	iPL-TR2A Station address I Slave1	iPL-TR2A Station address Slave1 ce in actual configuration idog control GSD file GPL_TR2A,GSD Output data 2 Byte Length of in-/output data 2 Byte ut data 0 Byte Length of input data 0 Byte Assig output data 2 Byte Length of output data 2 Byte Assig odules 1 Number of modules 1 Mast 0/0/0 Actua Syste Inputs Outputs In/Out Identifier 0/0/0 Actua Syste Inputs Outputs In/Out Identifier 0/0/0 Actua Syste Inputs Outputs In/Out Identifier 0/0/0 Actua Symbol Type I Addr. I Len. Type 0 Addr. 0 Len. 1/0/0 Symbol Type I Addr. I Len. In/0 In/0	iPL-TR2A Station address I Slave1

• Device Assignment

Settings -		Device Ass	ignmen	t ——	COM p	oort selection -	→ OK
Device Assignment	t CIF Serial D	river					×
_ Driver Description	on ————————————————————————————————————						(
Device Driver	CIF Serial	Driver					
- Board Selection							<u>C</u> ancel
	Name	Туре	Version	Date	Error		
COM 1	DPM	СОМ-ДРМ	V01, 151	06,11,00	0	Connect COM 1	
COM 2					-20	Connect COM 2	
🗖 СОМ З					-20	Connect COM <u>3</u>	
COM 4					0	Connect COM <u>4</u>	

- COM port selection : After selecting Connect COM1 or Connect COM2, if the small window appears on the left COM1,COM2, select the window and then press OK.

Download

Online — Download

In case of Error, check the Configuration cable and connector.

Download Station Address 0		
1		
Data base Length of data base	Unnamed1 2088	
Error	0	
0		440

• Communication opening verification

Online	Start Commu	unication —	Start Debug Mode
SyCon - [Unnamed1] Elle Edit View Insert Elle Edit View Insert Elle Edit View Insert Elle Edit View Insert Elle Edit View Insert	<u>O</u> nline <u>S</u> ettings <u>i</u>	<u>T</u> ools <u>₩</u> indow <u>H</u> e	lp
DP L		Master0 Station address DP Master	0 COM-DPM / PKV20-DPM
	General Diag	Slave1 Station address DP Slave	1 GPL-TR2A
	GENERAL Diag	Slave2 Station ad DP Slave D22A	2 GPL-DC22A
	GENERAL Diag	Slave3 Station address DP Slave	3 GPL-RY2A

If the communication between master and slave is opened normally, the connection line between master and slave is green-colored and if not opened, the line is red-colored.
 (If the red colored line is displayed, check the communication cable and connector.)

Point

1)	The I/O contact size of sending area and receiving area should be set as the
	same as that of KGLWIN program and SyCon.
	When selecting Smart I/O module in SyCon, the sending/receiving area size of
	each module shall be set automatically.(available to verify in Slave Setting
	window.)
2)	G4L-PUEA 1EA and GPL-TR2A(16points), GPL-D22A(16points), GPL-RY2A
	(16points) are created in order and when setting the sending area
	as %MW0, receiving area as %MW100,
	* Sending area : %MW0
	* Receiving area : %QW0.2.0
	* Sending area size : 4 bytes(total output contact number)
	* Receiving area size : 2 bytes(total input contact number)
	* %MW0 data -> output to GPL-TR2A
	* %MW1 data -> output to GPL-RY2A
	* GPL-D22A input -> saved in %QW0.2.0
3)	It doesn't matter which one is set in advance between GMWIN program and
	SyCon.

- 2) High speed link parameter setting in GM4(Station 0)
 - Master module GMWIN program

🚬 gmwin - c:\\gmwin 4\\source\\gm4 pnet_smartio\\noname00,src *						
<u>Project Program Edit View Compile Online</u>	Debug Tools Window Help					
]※순일 ※순명 ※ 종 🗉 💷 🍇	〃 ┃ 그 그 ໍ ๒ ६ × ぬ ┡ ೫ ४ ₊ ║ ■ ■ ₽ ₽ ■ - + ◈ 凿 ← → 雪 등 ∈					
PLC Type : GM4, gm4 pnet_smartio,prj	ki c:\#gmwin 4\#source\#gm4 pnet_smartio\#noname00, src +					
CONFIGURATION(PLC) : UNNAMED	Variable Name Data Type Memory Allocat Initial Value Variable Kind Used Comm					
Direct variable Comments : 0 variable(s)						
RESOURCE GLOBALS : 0 variabl	Row 0					
INSTU: c:₩gmwin 4₩source₩ INSTU: c:₩gmwin 4₩source₩ INSTU: c:₩gmwin 4₩source₩ INSTU: c:₩gmwin 4₩source₩	Row 1 -TIS EN ENC EN ENC EN ENC					
	Row 2 KKK IN OUT KKK KKK INI OUT XMWO KKK INI OUT XMWI					
	Row 3 1 N					
	Row 4					
	Row 5					
	Row 6					
	Row 7					
	Row 8					
	Row 9					
	Row 10					
	Row 11					
■\$ Project → Param 11 Library	i 🚯 noname00					

• Master module 'link information' setting

				Master mod	lule high speed
High Speed Link1				link network	type setting.
Link set				Installed slot	t no.
Network type.	GLOFAFREI			7 /	
Slot: 0	Self station No.:	0		Edit	
Entry list					
No. Type	Send/Receive	Read Area	Store Area	Size	
0 1 2 3 4 5 6 7 8 9 10					
	Delet	e C	opy	Edit	
			Close	Help	

High Speed1Link Set	×
Network type	
C GLOFA Fnet	
C GLOFA Mnet	Cancel
C GLOFA Enet	Help
C GLOFA Ednet Network	
C GLOFA Ednet Cable	
C GLOFA Dnet	
GLOFA Pnet	
O GLOFA FEnet	GLOFA Pnet selection,
C GLOFA FDEnet	Select slot no. of the
C GLOFA Rnet	Pnet master module
	installed base.
Slot No.: 0	
Self-sta No.:	

igh Speed Link1	\mathbf{X}
- Link set	
Network type: GLOFA Pnet	
Slot: 0 Self station No.:	
Edit	
- Entry list	
No. Receive Area Size Transmit Size	
Select this bar of slot no.0 and generate the high speed link modification window for sending/receiving area selection.	
Delete Edit	
Close Help	

• Sending/receiving parameter setting by SmartI/O (Station 1, 2 & 3) slave

	Size should be the same as
High Speed Link Item Edit	total I/O size set in when SyCon
Mode	communication opening.
C Send C Receive	
A	ddress Size(Byte)
Receive area: C %MW @ %QW 0.2	.0 2
Transmitarea: • %MVV C %IVV C %QVV 0	4
ОКСа	incel Help
Select the receiving area as the	e area receiving from
slave(GPL-D22A) area to ma	ister(GM4) and the
sending area as the area to sen	d from master(GM4)
to slave(GPL-TR2A,GPL-RY2A)	.)

High Speed	l Link1					×
Link set-						
Netwo	ork type:	GLOFA Pnet				
Slot:	0	Self station No.:				
					Edit	
Entry list						
No.	Receive Area	Size	Transmit	Size		
0 %	6QW0.2.0	2	%MV/0	4		
		Dele	te		Edit	
				Close	Help	

• Master module 'high speed link 1' setting completion screen

Point

Communication between LGIS Pnet I/F master and other manufacturer's slave

- 1) The basic communication method is the same as the communication example between LGIS and LGIS.
- 2) Select the station of slave module as the external switch of other manufacturer's slave module.
- 3) When preparing GMWIN program, designate the I/O size of other manufacturer's module when setting high speed link parameter.
- 4) When opening the communication in SyCon, seek GSD file of other manufacturer's module and designate it as slave, and match the station number designated by external switch of slave module with slave station number when creating with SyCon.
- 5) The size of I/O score created in SyCon should be matched with GMWIN program high speed link parameter setting and size of GMWIN program.
- 6) When using other manufacturer's remote module, it is required to carry out by the same mode as the communication example between LGIS and LGIS, apply GSD file of the module used when created with SyCon, and designate the same I/O contact size of the used module for SyCon and GMWIN program.

6.2.3 Pnet master slave communication in KGLWIN

Example 3

Communication module (Station 0) G4L-PUEA is installed in K300S base slot 0, communication module G7L-PBEA in K80S, respectively. This is the program for sending/receiving the data from Station 0(master) to Station 1(slave). (Refer to I/O configuration map.)

K300S master (Station 0, Pnet slot 0)



K80S slave (Station 1, G7L-PBEA)



• I/O configuration map

Sending/receiving configuration		Reading area	Saving area	Size(byte)
K300S(Station 0)	Sending:K80S Station 1	P004	-	2
(master)	Receiving:K80S Station 1	-	P002	2
K80S(Station 1)	Sending:K300S Station 0	P009	-	2
(slave)	Receiving:K300S Station 0	-	P004	2

1) High speed link parameter setting in K300S (Station 0)

• Master module KGLWIN program (K300S)

KGL_WIN for Windows - [Program [K R Project File Edit Tool View Online	3005 Profi_K805.PRJ]] : Debug Window Help		_ & ×
🍈 🔓 📞 🛛 🏝 🖨 🛛 🕉	▝▖▖▎▙▙▙▙ ▓▓▓▏▓▝▆▝▋▓▏▊▖▌▕▘▝₹		
K3005 Profi_K805.PRJ [K3005A]			
Parameter	0 F0012	SET POO40	-
🖵 🗐 Monikor	2	ROLP POO4	3-
	6 F0010 NOV	P004 P005]-
	12	END]-
	x		 ▶

• Master module 'link information' setting

Parameter — Ink selection (select one from 4 links)

1 KCL WIN for Windows - [Davamater [V300C Dva8] V80C DD 111										
要 Project File Edit Online Debug Window Help										
🔅 🗗 📮 🄅 🖧 📑 🚭 %		i 🖉 ኛ 💷 🔮 🔀 🖶 🗄	. ? №							
	Basic Interrupt 1/0	Link1 Link2 Link3	Link4							
🖃 🔛 K3005 Profi_K805.PRJ [K3005A]			<u>,</u>							
Program	Latch Area	Timer Boundary	Computer communication							
📋 Parameter	L: 🗮 - 🗱	100 msec T: 000 - 191	Station Number :							
📋 Varia e/Comment	М: **** - ***	10 msec T: 192 - 255	Baud Rate :							
📋 Mor	100 msec T: 144 - 191	Watchdog Time: 20 * 10msec	Master Slave Time Dut: 0 x10ms							
	10 msec T: 240 . 255	PLC Operation Mode	Read Slave PLC State							
Parameter setting	C: 192 . 255	Operation Error	Setting Slot of External Interrupt :							
	D: 3500 - 4500	Output during Debugging								
	S: 80 - 99	Remote Access Control	Y							

• High speed link network type setting

Parameter [K3005 Profi_K805.PRJ] _ 🗆 🗵 Basic Interrupt I/O Link2 Link3 Link4 Link1 Link: Enabl Self Station No: 🛛 💌 Base: 🛛 💌 Slot: 🖉 💌 Type: Pnet 💌 From Area To Area No Size Link Enable setting, Select base, slot, communication Select no.0 and type. (select Pnet) generate the parameter modification window. Receiving area is the area receiving from slave(K80S) area to master(K300S) and, designate Sending/receiving parameter setting to K80S Station 1 the sending area as the area to send from master(K300S) to Edit Parameter slave(K80S). Area 2 P002 From : Size(Byte): (P,M,L,K,T,C,D,S ??) When setting I/O size in P004 Size(Byte): To: 2 SyCon, set the same size (P,M,L,K,T,C,D,S ??) as high speed link setting. 0K Cancel Help

• Master module 'high speed link1' setting completion screen

Basic Interrupt I/O Link1 Link2	Link3 Link4
Link: Enabl 💌 Self Station No: 0 💌 Base: 0 💌 Slo	it: 0 💌 Type: Pnet 💌
No From Area Size To Area	Size
0 P002 2 P004	2

2) High speed link parameter setting in K80S (Station 1)

Project File Edit Tool View Online Debug Window Help Image: Constraint of the state	
Image: Constraint of the state of the s	
Program	
Parameter A Parameter A	
I variable/C vent F0094	
Moster 10 100 1009	
6 END	
Parameter setting	
raianielei selling	
]

• Slave module 'link information' setting

Parameter ------ communication selection

	Select 'communication enable'
Farameter [Profibus_K805.PRJ]	
Basic Interrupt Comm. PID(TUN) PJD	Pulse Out Analog
Communication : Enable	Protocol and Mode
- Communication Method	Timeout in Master Mode: 500 ms
Station Number:	Dedicated
Baud Bate : 19200 V Data Bit : V	O Master 🗖 Read Status of Slave PLC List
	O Slave
Communication Channel	Modbus
© RS232C Null Modern or RS422/485	C Master Transmission Mode: ASCII
C RS232C Modem(Dedicated Line) Init Command :	User Defined
C RS232C Dial-up Modern	O Master
	O Slave
Slave module(K80S) high speed link	
network type setting. After selecting	FIELDBUS
	O Master List
-ILDBUS slave, parameter setting in	
registration list.	

dicated Entry List						×	
No	Station No	size	from Area	Size			
0	Select t high sp designa	his bar of beed link te the send	f no. 0 and g modification ding/receiving	generate the window to area.			
			ok (Edit	Help	1	
Edit Paramet	ving param	eter settir	ng to K300S	Station 0	Receiving receiving slave(K8 sending a the data aster(K30	g area is g from maste 0S) and de area as the a from sla 00S).	the area er(K300S) to esignate the area to send ve(K80S) to
From	: p004		Size(By	te]: 2			
(F	P, M ,L,K,T,C,D,	S ??)					
To : (p009 P,M,L,K,T,C,D	,S ??]	Size(By	te): 2			
	ОК	C	ancel	Help			

• High speed link parameter setting to K300S master station

Dedicated	×
Entry List	
No Station No size from Area Size	
0 P004 2 P009 2	
Edit	
OK Cancel Help	

• Slave module 'high speed link' setting completion screen

3) SyCon setting for high speed link communication



Master Setting

Settings — Master Settings selection (set as basic value in LGIS SyCon.)

DP Master Settings	×							
Parameter to user interface Startup behavior after system initialisation C Automatic release of the communication by the device C Controlled release of the communication by the application program User program monitoring Watchdog time 1000 ms								
 Parameter to process data interface Addressing mode Byte addresses Word addresses Storage format (word module) Big Endian (MSB-LSB) Little Endian (LSB-MSB) 								
Hardware parameter © 2 kB dual-port memory © 8 kB dual-port memory © 16 kB dual-port memory								

Slave Configuration

Slave	e Confi	gura	ation												×
G	eneral evice		GL	OFA GM7				S	itation ad	dress	[1]	<u>0</u> K	
D	escrip	tion	SI	ave1										<u>C</u> ancel	
F F	Z Acti Z Ena	vate ble r	device watchd	e in actual log contro	configu I	ration	GSD file	e	LGIS71	00, GSI	D			Parameter Data,	
Ma Ma Ma	x, leng x, leng x, leng x, nun	ith a ith a ith a ith a	if in-/o if input if outpu of moi	utput data data ıt data dules	128 64 64 2	Byte Byte Byte	Length Length Length Numbe	of in- of inp of out r of m	/output d ut data put data iodules	ata	4 2 2 2	Byte Byte Byte	- Assi Stati Masi	DPV1 Settings gned master on address 0 ter0	
Mo	dule				Inputs	Outputs	In/Out	Ider	tifier					COM-PB / PKV20-PB 🔻	1
20	byte	inp	out		20			0x40	, 0x13					· · · · ·	-
32	byte	inp	out		32			0x40	, OxlF	_			- Actu	al slave	
64	byte	inp	out		64			0x40	, Ox3F	_			Statio	on address i	
1	byte	out	put	(0x20)		l Byte		0x20)	_			Slave	91	_
2	byte	out	put	(0x21)		2 Byte		0x21		_		•	170	GLOFA GM7 📃 💌	
<u></u>	1			10-001		0 0-4		020	,						- 1
S1	ot Idx	Mo	dule	Symbol	Type	I Addr.	I Len.	Type	0 Addr.	0 Le	n.		<u> </u>	Append Module	
1	1	2	byte	Modulel	IB	0	2				_			Bornouo Modulo	
2	1	2	byte	Module2	:			QB	0	2	_				
											_			Insert Module	
														Predefined <u>M</u> odules	
													-	Symbolic Names	

• Device Assignment

Settings — Device Assignment — COM port designation –	→ OK
Device Assignment CIF Serial Driver	X
Device Driver CIF Serial Driver Board Selection	<u>C</u> ancel
COM 1 DPM COM-DPM V01,151 06,11,00 0 Connect COM 1 Connect COM 2 Connect COM 2 Connect COM 2 Connect COM 2 Connect COM 2	
COM port window F20 Connect COM 2 COM COM port window F20 Connect COM 3	
COM 4 Connect COM 4	

- COM port selection : After selecting Connect COM1 or Connect COM2, if the window appears on the left COM1,COM2, select the window and then select OK.

Download

Online -----> Download

In case of Error, check the Configuration cable and connector.

Download Station Address 0		
Data base Length of data base —	Unnamed1 2088	
Error	U	440



Point	
1)	The size of sending area and receiving area is total I/O contact number created in
	KGLWIN.
	When setting K80S Slave in SyCon, the I/O contact number in Slave Setting should
	be the same as high speed link setting size of KGLWIN program.
2)	G4L-PUEA 1EA and GM7-PBEA 1EA are created in order and when setting
	the sending area of master as P004, receiving area as P002,
	* Sending area : P004
	* Receiving area : P002
	* Sending area size : 2 bytes
	* Receiving area size : 2 bytes
	* P004의 data -> output to K80S Slave module
	* K80S Slave module input -> saved in P002
3)	When using K80S as slave, set KGLWIN program in advance and open the
	communication by SyCon.

• Communication opening verification

6.2.4 Pnet master slave communication in Smart I/O

Example 4

Communication module(Station 0) G4L-PUEA is installed in Master-K base slot, Smart I/O module(GPL-TR2A, GPL-D22A, GPL-RY2A) as slave, respectively. This is the program example for sending/receiving the data from Station 0 (master) to Station 1(GPL-TR2A), Station 2(GPL-D22A), Station 3(GPL-RY2A). (Refer to I/O configuration map.)

K300S master (Station 0, Pnet 0slot)



Station 1 GPL-TR2A

Station 2 GPL-D22A

Station 3 GPL-RY2A

• I/O configuration map

Sending/rece	eiving configuration	Reading area	Saving area	Size(byte)	
K300S(Station 0)	Sending: Station 1 & 3	P004	-	4	
(master)	Receiving: Station 2	-	M000	2	
GPL-TR2A	Receiving: K300S	D004		0	
(Station 1)	Station 0	P004	-	2	
GPL-D22A	Sending: K300S Station		MOOO	2	
(Station 2)	0	-	MUUUU	2	
GPL-RY2A	Receiving: K300S	DOOF		0	
(Station 3)	Station 0	F 005	-	Z	

1) High speed link parameter setting in K300S(Station 0)

• Master, slave SyCon setting		Master module setting station no. setting
Elle Edit View Insert Online	<u>Tools W</u> indow <u>H</u>	Slave module setting, Each module name, station no. setting
	Master1 Station address DP Master	0 COM-DPM / PKV20-DPM
GENERAL	Slave1 Station address DP Slave	1 GPL-TR2A
GENERAL	Slave2 Statio DP SI D22A	2 GPL-DC22A
GENERAL	Slave3 Station address DP Slave	3 GPL-RY2A

~

Master Setting

Settings — Master Settings selection (set as basic value in LGIS SyCon.)

DP Master Settings	×			
Parameter to user interface Startup behavior after system initialisation O Automatic release of the communication by the device O Controlled release of the communication by the application program	<u>O</u> K <u>C</u> ancel			
User program monitoring Watchdog time 1000 ms				
Parameter to process data interface Addressing mode • Byte addresses • Word addresses Storage format (word module) • Big Endian (MSB-LSB) • Little Endian (LSB-MSB)				
Hardware parameter © 2 kB dual-port memory © 8 kB dual-port memory © 16 kB dual-port memory				

Slave Configuration

Settings -----> Slave Configuration selection

Basic I/O score is set in SmartI/O GSD file.

Slave Configuration	n							×
General Device	GPL-TR2A				Station ad	dress	1	<u>OK</u>
Description	Slave1							<u>C</u> ancel
IZ Activate de IZ Enable wa	evice in actua Itchdog contro	l configur Il	ation	GSD file	e GPL_T	R2A, GSE)	Parameter Data
Max, length of i Max, length of i Max, length of o Max, number o	n-/output data nput data output data ⁱ modules	a 2 0 2 1	Byte Byte Byte	Length Length Length Numbe	of in-/output d of input data of output data r of modules	ata	2 Byte 0 Byte 2 Byte 1	DPV1 Settings Assigned master Station address 0 Master0
Module		Inputs	Outputs	In/Out	Identifier		<u> </u>	0 / COM-DPM / PKV20-DPI
2 Byte Out, 1	J Byte In		2 Byte		0x21, 0x00		-	Actual slave Station address 1 Slave1 1 / GPL-TR2A
Slot Idx Modu	le Symbol	Type	I Addr.	I Len.	Type O Addr.	0 Len.		Append Module
0 1 2 By	te Modulej				QB 0	2		
Device Assig	nment							

Settings — Device Assign	ment — COM port selection	► OK
Device Assignment CIF Serial Driver		×
Driver Description		(
Device Driver CIF Serial Driver		
- Board Selection		<u>C</u> ancel
Name Type V	/ersion Date Error	
	V01.151 06,11,00 0 Connect COM 1	
COM port window	-20 Connect COM <u>2</u>	
	Connect COM 3	
COM 4	0 Connect COM <u>4</u>	

- COM port selection : After selecting Connect COM1 or Connect COM2, if the window appears in the left side COM1,COM2, select the window and then select OK.
Download

Online -----> Download

In case of Error, check Configuration cable and connector.

Download Station Address 0		
A		
Data base Length of data base	Unnamed1 2088	
Error	0	
0		440

• Communication opening verification

Online> Start Communication> Start Debug Mode							
SyCon - [Unnamed1] Image: Edit View Insert Online Settings Tools Window Help Image: Image: Edit View Insert Online Settings Tools Window Help Image: Image: Image: Edit View Insert Online Settings Tools Window Help Image:							
DP 大王		Master0 Station address DP Master	0 COM-DPM / PKV20-DPM				
	General Diag	Slave1 Station address DP Slave	1 GPL-TR2A				
	General Diag	Slave2 Station a Station DP Slave D22A	2 GPL-DC22A				
	General Diag	Slave3 Station address DP Slave	3 GPL-RY2A				

- If the communication between master and slave is opened normally, the connection line between master and slave is green-colored and if not opened, the line is red-colored.

(If the red-colored line is displayed, check the communication cable and connector.)

Point

1)	The I/O contact size of sending area and receiving area should be set as the
	same as that of KGLWIN program and SyCon.
	When selecting Smart I/O module in SyCon, the sending/receiving area size of
	each module shall be set automatically. (available to verify in Slave Setting
	window.)
2)	G4L-PUEA 1EA and GPL-TR2A(16points), GPL-D22A(16points), GPL-RY2A
	(16points) are created in order and when setting the sending area as P004,
	receiving area as M000,
	* Sending area : P004
	* Receiving area : M000
	* Sending area size : 4 bytes(total output contact number)
	* Receiving area size : 2 bytes(total input contact number)
	* P004 data -> output to GPL-TR2A
	* P005 data -> output to GPL-RY2A
	* GPL-D22A input -> saved in M000.
3)	It doesn't matter which one is set in advance between GMWIN program and
	SyCon.

- 2) High speed link parameter setting in K300S(Station 0)
 - Master module KGLWIN program

A KCL WIN for Windows - Program [Pro	ofibus Consistin DD 11	
Project File Edit Tool View Online D	Jebug Window Help	
🔆 🖆 📮 🍈 🖆 📲 🖨 🛛 🕹	66 Litti \$\$7 \$ @ 2 8 9 1 ? ¥	
Profibus_SmartIO.PRJ [K3005A]	[™] Program [Profibus_Smart10.PR]] [™] □ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆	
📋 Parameter		_
📋 Variable/Comment	0 F0012 SET P0040	
	2 ROLP P004	
	6 1000 HoV P004 P005	

• Master module 'link information' setting



• Sending/receiving parameter setting to Smart I/O(Station 1,2station, 3station) slave

操KGL_WIN for Windows - Parameter [Profibus_SmartIO.PRJ]	Select link 1,
Project Eile Edit Online Debug Window Help	Sending/receiving device setting
Profibus_SmartIO.PRJ [K3005A] Profibus_SmartIO.PRJ [K3005A] Program Parameter Variable/Comment Monitor	Sending/receiving device setting R3 Link1 Link2 Link3 Link4 Base: 0 Slot 0 Type: Pret To Area Size

	(The receiving area is the area receiving
		from slave(GPL-D22A) area to master
Edit Parameter		(K300S), and designate the sending
		area to send the data from master
Area		(K300S) to slave(GPL-TR2A,GPL-RY2A).
From : M000	Size(Byte):	2
(P,M,L,K,T,C,D,S ??)		
To : P004	Size(Byte):	4
(P,M,L,K,T,C,D,S ??)		Size should be the same as
		total I/O size set in SyCon
ОК	Cancel He	elp communication opening.

- This is the example of setting the sending area (4byte for P004), receiving area (2byte for M000).
- Master module 'high speed link 1' setting completion screen

💑 KGL_WIN for Windows - Parameter [P	rofibus_SmartIO.PRJ]	
Project File Edit Online Debug Window	v <u>H</u> elp	
<u>`</u> ``	66121212 5 7705099	
Profibus_SmartIO.PRJ [K3005A]	Basic Interrupt I/O I ink1 Link2 Link3 Link4	
📋 Program		
📋 Parameter		
	0 M000 2 P004 4	
■ Marchan		

CHAPTER 7 DIAGNOSIS FUNCTION

7.1 LED

Master station : indicates 'run' by 5 LED.



Classification	State	Meaning			
On		Normal communication			
RUN	Blink	Parameter error			
	Off	Communication stop			
	On	Normal module			
READY Blink		Abnormal Hardware/Software			
	Off	Abnormal Hardware			
On		Communication line error			
ERNON	Off	No error in communication line			
	On	Token secured			
Off		Yield token to other master			
	On/Off	PLC body and interface abnormal			
	Blink	PLC body and interface normal			

Slave station : indicates 'run' by 4 LEDs.



G7L-PBEA

Classification	State	Meaning		
	On	Normal communication		
RUN	Off	Parameter error or communication stop		
EPPOP On		Abnormal hardware/software		
ERROR	Off	Normal module		
On/Off		Abnormal software		
Blin		Normal software		
On/Off		Abnormal PLC body and interface		
	Blink	Normal PLC body and interface		

Table 7.2 slave LED status indication

CHAPTER 8 INSTALLATION AND STARTUP

8.1 Installation

8.1.1 Notices in installation

- It is available to install max. 4 Pnet communication module in GM1, GM2, GM3, K1000S PLC main base.
- It is available to install max. 2 Pnet communication module in GM4, K300S PLC main base.
 (available to install max. 4 of GM4 CPUB type, max. 8 of GM4 CPUC type.)
- It is available to install max. 2 Pnet communication module in GM6 PLC main base.
- It is available to install max. 1 Pnet communication module in GM7, K80S, K120S PLC main base.
- 1) Check the necessary basic elements for configuration and select the proper communication module.
- 2) Select the cable to be used for communication module.
- 3) When installing this communication module, check if there is a foreign material in the base connector to install or if the connector pin of module is damaged.
- 4) This communication module should be installed in the base in the state that PLC power is not applied.
- 5) All communication module can not be installed in the extended base and is required to select the slot position close to CPU in the main base to install.
- 6) When installing this module, insert the protruded part of module in the base groove correctly in the state not connecting the communication cable and apply the sufficient force until the upper side is locked completely with lock device of the base. If the lock device is not locked, it may cause the error in the interface with CPU.

8.1.2 Cable installation

For Profibus cable, the Shielded Twisted Pair Cable should be used. Table 8.1 and Table 8.2 shows cable specification and max. transmission distance according to speed and cable type.

Cable characteristic	Туре А	Туре В		
Impedance	135 – 165 Ω	100 – 130 Ω		
	(f= 3 to 20 MHz)	(f > 100 KHz)		
Capacity	< 30 pF/m	< 60 pF/m		
Resistance	< 110 Ω/Km	-		
Conductor Area	>= 0.34 mm ² (22 AWG)	>= 0.22 mm ² (24 AWG)		

Table 8.1 Cable Specifcation

Baud rate (kbit/s)	9.6	19.2	93.75	187.5	500	1500	3000	6000	12000
Cable Type A	1200	1200	1200	1000	400	200	100	100	100
Cable Type B	1200	1200	1200	600	200	70	-	-	-

Table 8.2 Transmission distance according to Cable and Speed

Note) For Transmission distance, assuming that max. signal attenuation is 6dB.

1) General notices

- Termination treatment of vertical section is needed.
- In case that the distance is far between stations, it is possible to extend the segment through repeater. (max. 9 repeater, 10 segment), available to connect 32 stations per segment (incl. repeater), max. 126 stations.(Repeater does not have station no.). The extended segment having no station is available.
- Generally, connect the red cable to no.3 pin TXD/RXD-positive and the green cable to no.8 pin TXD/RXD-negative. Shield shall be connected to the housing of connector.
- Use the cable that shield density is more than 80%.
- The ends of cable shield should be grounded.
- If the ground potential difference between stations is big, a great amount of current may flow through the shield. In this case, install the cable to make the ground potential difference equal separately.
 - For high speed more than 1.5MBps, special cares should be taken.
- Use the special connector having the inductor inside.
- Spur Line is not allowed to use.
- In case of 12Mbps, keep the distance more than 1m between stations.

2) Termination treatment

- Each segment should do the termination treatment for both ends. If there are several segments, it is required to do the termination treatment for each segment.
- 3 resistances are necessary for termination.
- If possible, install the master at the end of one side.



Figure 8.1 Vertical section treatment

8.2 Startup

Each segment should be connected by vertical resistance. If there is no vertical resistance, it may cause the error in communication. After connecting the communication cable, apply the power and observe the LED active state and if it is normal action, download the relevant program to PLC by GMWIN and execute the program.

8.2.1 Notices in system configuration

- High speed link station no. of all other station including this module should be different. If connected with overlapping station no., it may cause the error in communication which results in preventing the normal communication.
- 2) Use the communication cable with the designated specification. If used the cable except the designated one, it may cause the serious obstacle in communication.
- 3) Before installing communication cable, check if the cable is disconnected or cutoff.
- 4) Tighten the communication cable connector strongly to fix the cable connection tightly. If cable connection is not stable, it may cause the serious obstacle in communication.
- 5) In case of connecting communication cable in long distance, the cable in wiring should be far from the power line or inductive noise.
- 6) If LED is not active normally, check the trouble cause by referring to 'CHAPTER 9, Trouble shooting' of this user's manual and if the trouble continues to happen, please contact to A/S center.

8.2.2 Checklist before Startup

Here describes the items to be checked before startup of communication module.

1) Communication module to be installed in PLC

Checklist	Description	
Basic S/W installation and	- Check if GMWIN installation and action is good.	
checking	- Check if frame editor installation and action is good.	
Communication cable connection	- Check if the connection communication cable and tab condition	
(only in case of connecting the	is good.	
cable)	- Check if the connection of each cable is open loop type.	
Module installation	- Check if the communication module is installed in the main base	
	correctly.	
Switch checking	- Check if action mode switch is 0:RUN (switch value 0).	

2) Startup procedure

Here describes the procedure from completion of PLC installation to startup.



8.3 Maintenance & Checking

8.3.1 Daily Checking

The following table shows the check details to be carried out daily.

Checking items		Description	Judgment criteria	Action	
Cable connection state		Cable loosening	No loosening	Tighten the cable	
Terminal connection state		Screw loosening	No loosening	Tighten the terminal screw	
		Approach between compressing terminal	Proper interval	Correction	
	RUN	'ON' check	ON (OFF is abnormal)		
READY ERROR Master LED STATUS LINK-IF	READY	'ON' check	ON (OFF is abnormal)		
	ERROR	'OFF' check	OFF (ON is abnormal)		
	STATUS		Only one of all network		
		Generally, 'ON' check	master module should be		
			'ON'.		
		Plink	Blink (ON or OFF is		
	DIIIK	abnormal)			
Slave LED LINK-	RUN	'ON' check	ON (OFF is abnormal)		
	ERROR	'OFF' check	OFF (ON is abnormal)		
	STATUS	Diala	Blink (ON or OFF is		
		DIITIK	abnormal)		
	LINK-IF	Plink	Blink (ON or OFF is		
		DIIIIK	abnormal)		

Table 8.3 Daily checking items

8.3.2 Regular Checking

Check the following items once or twice within 6 months and take necessary actions as follows :

Checking items		Checking method	Judgment criteria	Action	
Surrounding environment	Temperature	Measured by	0~55 ℃	Adjust acc. to	
	Humidity	thermometer/humidifier	5~95 %RH	general spec.	
	Pollution	Measure the corrosive gas	No corrosive gas	(Ex: environment standard inside control panel if using it inside control panel)	
Module state	Loosening,	Move the communication	Strong		
	shaking	module.	attachment	Screw tightening	
	Dust, foreign materials	Visual examination	No attachment		
Connection state	Terminal screw loosening	Tightening by the driver	No loosening	Tightening	
	Approach of compressed terminal	Visual examination	Proper interval	Correction	
	Connector loosening	Visual examination	No loosening	Connector fixing screw tightening	
Power voltage check		Measure the voltage between AC 110/220V terminal	AC 85~132VAC 170~264V	Change the supply power.	

Table 8.4 Regular checking items

CHAPTER 9 TROUBLE SHOOTING

Here describes a variety of error occurring during system operation, the causes, the detection methods and actions.

9.1 Basic procedure of Trouble shooting

In order to increase the reliability of system, it is important to use the reliable device and at the same time, the important thing is how fast to take the actions by any ways in case of error occurrence.

The most important thing to operate the system promptly, is to detect the trouble occurrence cause and take the actions immediately. The basic items to be considered in such trouble shooting are as follows :

1) Checking by the naked eyes

Check the following items by the naked eyes.

- Machinery active state (stop state, active state)
- Power apply state
- I/O device state
- Wiring condition (I/O cable, extended or communication cable)
- After checking the display status of each indicators (RUN LED, READY LED, ERROR LED, STATUS LED, LINK-IF LED), connect the peripheral device to check the PLC active state or program contents.
- 2) Trouble detection

Observe how the trouble is changed by the following operation.

• Place the key switch on STOP mode and turn the power ON/OFF.

3) Range limitation

Estimate what is the trouble cause by using the above method among the following causes :

- PLC itself ? Or external cause ?
- I/O section ? Or others ?
- PLC program ?

Here describes the error type or the actions for the detection method and error code, by dividing it per phenomena.

9.1.1 Hardware Error



9.1.2 Interface Error



9.1.3 Network Error





9.1.4 CPU and Interface Error during Operation



9.1.5 High speed link parameter error



9.1.6 High speed link operation error



9.1.7 GMWIN/KGLWIN Communication Time Out



9.1.8 GMWIN/KGLWIN Internal Communication Error

CHAPTER 10 EXTERNAL DIMENSION

1) G3L-PUEA/B, G4L-PUEA/B

Dimension Unit : mm



Class	G3L-PUEA/B	G4L-PUEA/B	
А	118	107	
В	130.5	121.5	
С	35	35	
D	250	135	

D

2) G6L-PUEA/B

Dimension Unit : mm



3) G7L-PBEA

П

Dimension Unit : mm



0

73

WARRANTY

1. Warranty Period

The warranty period for the purchased product is 18 months from the manufactured date.

2. Warranty Range

For the troubles occurred during the warranty period on the above, a partial replacement or repair available. But the following cases are excluded from the warranty range.

- (1) Troubles by improper condition, environment or treatment other than those described in the user's manual
- (2) Troubles by the cause from other manufacturer's product
- (3) In case of modification or repair out of the LGIS or the branches designated by LGIS
- (4) In case of using the method other than the original method.
- (5) Troubles by the unexpected reason in the level of science technology at the time of project release.
- (6) In case that LGIS is not responsible for (such as nature disaster, fire etc.)
- 3. As this warranty means the warranty only for PLC unit body, it is required to use the product, considering the safety in case of system configuration or product application.

- Training ■ HQ : 9F East LG Twin Bldg. 20, Yoido-dong, Youngdungpo-LGIS Institute TEL:(043)268-2631~2 FAX:(043)268-• gu, Seoul, Korea (150-721) 2633~4 Seoul training center TEL:1544-2080 FAX:(02)3660-7021 • Internet Technology consulting
 - http://www.lgis.com (English)

The specification of this product is subject to change for the quality improvement without prior notice.

10310000334