

DATA SHEET

LS Programmable Logic Controller Pnet(Profibus-DP) I/F Module

Smart I/O

GPL-TR2B
GPL-TR4B
GPL-DT4B
GPL-D22C
GPL-D24C
GPL-DT4C
GPL-TR2C
GPL-TR4C
GPL-RY2C



- When using LSIS equipment, thoroughly read this datasheet and associated manuals introduced in this datasheet. Also pay careful attention to safety and handle the module properly.
- Store this datasheet in a safe place so that you can take it out and read it whenever necessary.

LSIS

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LS constantly endeavors to improve our products so that information in this datasheet is subject to change without notice.

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10310000448 Ver 3.2

■ Safety Precautions

- ▶ Safety Precautions is for using the product safely and correctly in order to prevent the accidents and danger, so please go by them.
- ▶ The precautions explained here only apply to this module. For safety precautions on the PLC system, refer to User's manual.
- ▶ The precautions are divided into 2 sections, 'Warning' and 'Caution'. Each of the meanings is represented as follows.

Warning If you violate instructions, it can cause death, fatal injury or a considerable loss of property

Caution If you violate instructions, it can cause a slight injury or a slight loss of products

- ▶ The symbols which are indicated in the PLC and User's Manual mean as follows.
- ! This symbol means paying attention because of danger of injury, fire, or malfunction
- ⚡ This symbol means paying attention because of danger of electric shock.

- ▶ Store this datasheet in a safe place so that you can take it out and read it whenever necessary. Always forward it to the end user
- Handling Precautions
- ▶ Don't drop or make impact.
- ▶ Don't detach PCB from case. It may cause problem.
- ▶ When wiring, let no foreign material go into the module. If it goes into the module, remove it.
- ▶ Don't detach the module from slot while power is on

Warning

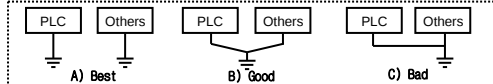
- ▶ Do not contact the terminals while the power is applied.
Risk of electric shock and malfunction.
- ▶ Protect the product from being gone into by foreign metallic matter.
Risk of fire, electric shock and malfunction.
- ▶ Risk of fire, electric shock and malfunction.
Risk of injury and fire by explosion and ignition.

Caution

- ▶ Be sure to check the rated voltage and terminal arrangement for the module before wiring work.
Risk of electric shock, fire and malfunction.
- ▶ Tighten the screw of terminal block with the specified torque range.
If the terminal screw is loose, it can cause fire and electric shock.
- ▶ Use the PLC in an environment that meets the general specifications contained in this datasheet.
Risk of electrical shock, fire, erroneous operation and deterioration of the PLC.
- ▶ Be sure that external load does not exceed the rating of output module.
Risk of fire and erroneous operation.
- ▶ Do not use the PLC in the environment of direct vibration
Risk of electrical shock, fire and erroneous operation.
- ▶ Do not disassemble, repair or modify the PLC.
Risk of electrical shock, fire and erroneous operation
- ▶ When disposing of PLC and battery, treat it as industrial waste.
Risk of poisonous pollution or explosion.

■ Precautions for use

- ▶ Do not install other places except PLC controlled place.
- ▶ Make sure that the FG terminal is grounded with class 3 grounding which is dedicated to the PLC. Otherwise, it can cause disorder or malfunction of PLC



- ▶ Connect expansion connector correctly when expansion module is needed.
- ▶ Do not detach PCB from the case of the module and do not modify the module.
- ▶ Turn off power when attaching or detaching module.
- ▶ Cellular phone or walkie-talkie should be farther than 30cm from the PLC.
- ▶ Input signal and communication line should be farther than 10cm from a high-tension and a power line in order not to be affected by noise and magnetic field.

Related Manual

Read this data sheet carefully prior to any operation, mounting, installation or start-up of the product.

Name	Code
GLOFA-GMWIN Programming software	10310000318
GLOFA-GMWIN Instruction & Programming	10310000377
GLOFA-GM/MASTER-K Smart I/O User's manual	10310000353
GLOFA-GM Pnet I/F Module User's Manual	10310000334
KGLWIN(Programming software)	10310000345
MASTER-K Instruction & Programming	10310000346
XG5000 Programming software	10310000512
XGK/XGB Instruction & Programming	10310000510
XGK/XGB Instruction & Programming	10310000833
XGK CPU series	10310000508
XGI CPU series	10310000832
XGB Hardware	10310000893
XGB Hardware (IEC)	10310000981
XGT Pnet I/F Module User's Manual	10310000636
Smart I/O user manual	10310000353

Revision History

Publication	Version	Description
2003.07	V1.0	The first edition
2005.06	V1.1	Head office address and Group CI changed
2009.08	V2.0	Branch address changed
2011.05	V3.0	KOREAN/ENGLISH data sheet integrated CI Changed
2013.11	V3.1	Terminal block screwing torque added Domain of Homepage changed
2014.04	V3.2	Terminal block drawing edited.

1. General Specifications

No	Item	Specification	Standard
1	Operating temperature	0 ~ 55 °C	-
2	Storage temperature	-25 ~ 70 °C	-
3	Operating humidity	5 ~ 95%RH, non-condensing	-
4	Storage humidity	5 ~ 95%RH, non-condensing	-
5	Vibration resistance	For discontinuous vibration Frequency 10sf ~ 57 Hz Acceleration 9.8ms ² (1G) Amplitude 0.075 mm For continuous vibration Frequency 10sf ~ 57 Hz Acceleration - Amplitude 0.035 mm 57sf ~ 150 Hz 4.9ms ² (0.5G) -	10 times in each direction for X, Y, Z IEC61131-2
6	Shocks resistance	• Max. impact acceleration : 147 ms ² (15G) • Authorized time : 11ms • Pulse wave : Sign half-wave pulse (Each 3 times in X,Y,Z directions)	IEC61131-2
7	Noise resistance	Square wave impulse noise AC: ±1,500V DC: ±900V Electrostatic discharge Voltage: 4kV (Contact discharge) Radiated electromagnetic field noise 80 ~ 1,000 MHz, 10 V/m	LSIS standard IEC61131-2 IEC61000-4-2 IEC61131-2 IEC61000-4-3 IEC61131-2 IEC61000-4-4
8	Ambient conditions	No corrosive gas or dust	-
9	Operating height	2000m or less	-
10	Pollution degree	2 or less	-
11	Cooling type	Natural air cooling	-

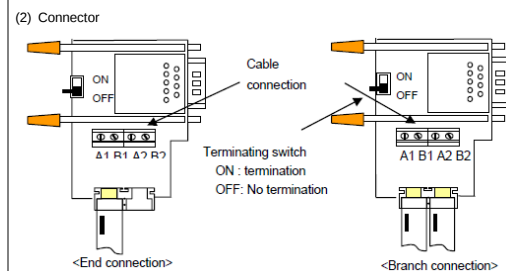
2. Performance Specifications

Items	Performance spec.
Transmission spec.	Standard EN50170 / DIN 19245
	Interface RS-485(Electric)
	Media Access POLL
	Topologie BUS Type
	Encoding Method NRZ
	Cable type Twisted Pair Shielded Cable
	Comm. Distance 1200m(9.6k ~ 187.5 kbps)
	400m(500kbps)
	200m(1.5Mbps)
	Max. Node number 99
Basic spec	Max. Node number (per segment) 32
	Max. I/O Data Input : 4Byte / Output : 4Byte
	External current consumption(mA) GPL-D22C : 70 / GPL-D24C : 85 GPL-DT4B/C : 100 / GPL-TR2B/C : 85 GPL-TR4B/C : 115 / GPL-RY2C : 160
	Weight(g) GPL-D22C : 188 / GPL-D24C : 286 GPL-DT4 B/C : 254/284 /GPL-TR2 B/C : 160/189 GPL-TR4 B/C : 255/285 / GPL-RY2C : 332

3. Cable Specifications

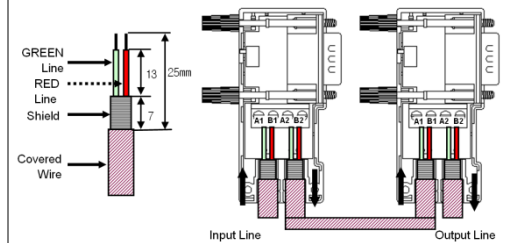
- (1) Belden Network Cable
 - (a) Type : Network Components
 - (b) Protocol : FMS-DP-PA
 - (c) Certification : No
 - (d) Order No. : 3077F, 3079A

Item	22	Twinax
AWG	22	
Type	BC-Bare Copper	
Insulation Method	PE-Polyethylene	
Insulation Thickness	0.035 (Inch)	
Shield	Aluminum Foil-Polyester Tape/Braid Shield	
Capacity	8500pF/ft	
Characteristic Impedance	150Ω	
Core	2 Core	



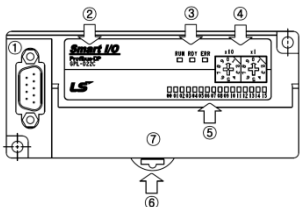
4. Wiring of communication cable

- (1) Wiring and Termination
 - (a) Please connect a GREEN line to A1,A2 and a RED line to B1,B2 in general. In addition, Shield is connected to the clamp of connector.
 - (b) Please use cable of over 80% shield density.
 - (c) Please ensure that you have terminated both ends of each segment.
 - (d) If there are more than One segment, it is necessary that you should terminate every segment.

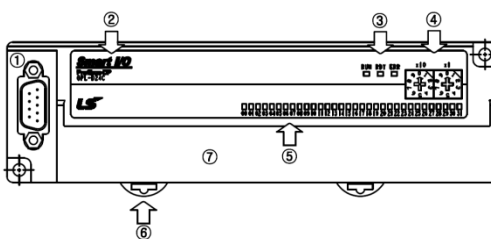


5. Parts Name and Descriptions

(1) GPL-D22C/TR2B/TR2C



(2) GPL-D24C/DT4B/DT4C/TR4B/TR4C/RV2C



① Connector	Connector for connecting with communication module
9-PIN Plug	9-pin female connector for Pnet

② Part name display section	Display the Part name of Smart I/O
GPL-D22C	DC Input 16
GPL-D24C	DC Input 32
GPL-DT4B/DT4C	DC Input 16/TR Output 16
GPL-TR2B/TR2C	TR Output 16
GPL-TR4B/TR4C	TR Output 32
GPL-RV2C	RELAY Output 16

③ Communication LED	Display the status of communication module
RUN	Display the status of power
RDY	Displays the communication status of Comm. Module
ERR	Displays the abnormal err of comm. module

④ Station Switch	0 ~ 99 (0:Reserved)
×10	Set 10 digit of station number
×1	Set 1 digit of station number

⑤ LED display section	Display the ON/OFF status of module
LED(0-15, 0-31)	Display the ON/OFF status of module

⑥ HOOK	HOOK
HOOK	Hook for mounting on DIN Rail

⑦ Screwing Part	Screwing Torque
Terminal block screw	Screw tightening 3.7 kgf above Screw loosening 3.7 kgf above

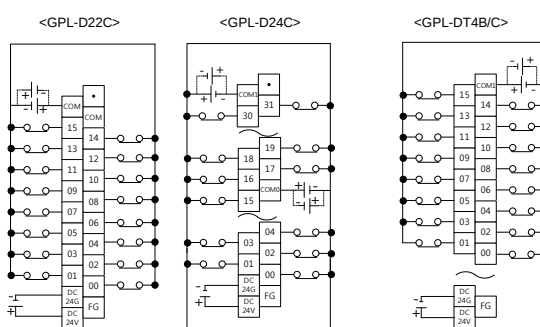
⑧ Terminal Block	In/Output terminal & Power input
GPL-D22C / GPL-D24C	0 ~ 15 Input terminal(GPL-D22C)
	0 ~ 31 Input terminal(GPL-D24C)
	COM Common(16 points/COM)(GPL-D22C)
	COM0/COM1 Common(16 points/COM)(GPL-D24C)
	FG Frame Ground
	DC 24V +24VDC Input terminal
GPL-DT4B / GPL-DT4C	DC 24G -24VDC Input terminal
	0 ~ 15/0 ~ 15 Input/Output terminal
	COM/COM1 Common(16 points/COM)
	FG Frame Ground
GPL-TR2B/C / GPL-TR4B/C	24V +24VDC Input terminal
	DC 24G -24VDC Input terminal
	0 ~ 15 Output terminal(GPL-TR2B/TR2C)
	0 ~ 31 Output terminal(GPL-TR4B/TR4C)
GPL-RY2C	COM Common(16 points/COM)(GPL-TR2B/C)
	COM0/COM1 Common(16 points/COM)(GPL-TR4B/C)
	FG Frame Ground
	24V +24VDC Input terminal
GPL-RY2C	24G -24VDC Input terminal
	0 ~ 15 Output terminals
GPL-RY2C	COMA-COMD Common(8 points/COM)
	FG Frame Ground
GPL-RY2C	DC 24V +24VDC Input terminal
	DC 24G -24VDC Input terminal

6. Specification of Input/Output Module

(1) GPL-D22C/D24C/DT4B/DT4C(Input)

Specifications	GPL-D22C	GPL-D24C	GPL-DT4B/C
Number of input points	16 points	32 points	16 points
Rated Input Current	B 7 mA C/C1 5 mA		
Operating Voltage Range	DC 20.4~28.8V(ripple: less than 5%)		
ON Voltage	DC 19V or less		
OFF Voltage	DC 6V or less		
Response Time	OFF → ON 0~3ms or less ON → OFF 0~3ms or less		
Common Terminal	16 points/COM		
Operating indicator	LED turns on at ON state of input		
External connections	Terminal block connector(M3 × 6 screws)		
Insulation Method	Photo Coupler		

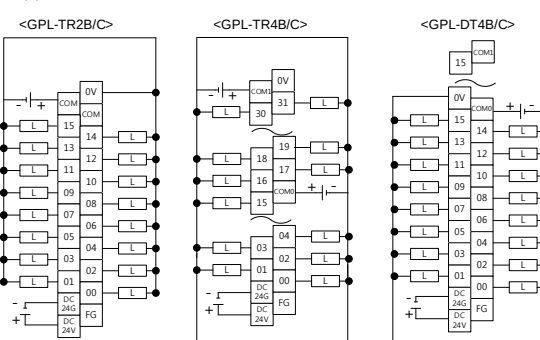
(a) External Connection



(2) GPL-TR2B/TR4B/DT4B/TR2C/TR4C/DT4C(Output)

Specifications	GPL-TR2B/C	GPL-TR4B/C	GPL-DT4B/C
Number of output points	16 points	32 points	16 points
Rated load voltage	DC 24V		
Max. load current	0.5A/point, 3A/COM		
OFF leakage current	0.1mA or less		
Max. inrush current	4A/10ms or less		
Maximum voltage drop at ON circuit	DC 1.0V or less		
External Power supply	Voltage DC 24V ± 10%(ripple voltage : 4Vp-p or less) Current 30mA(TYP. All points On)		
Response Time	OFF → ON 1ms or less ON → OFF 1ms or less		
Common Method	16 points/COM		
Operating Indicator	LED turns on at ON state of output		
External connections	Terminal block connector (M3 × 6 screws)		
Insulation method	Photo coupler		

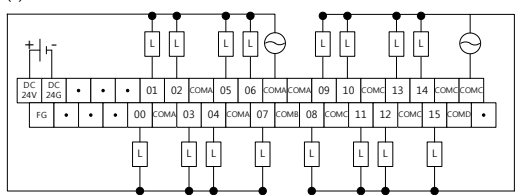
(a) External Connection



(3) GPL-RY2C

Specification	GPL-RY2C
Number of output points	16 points
Rated load voltage/current	DC24V/AC220V, 2A(Cosφ=1)/point 5A/COM
Minimum load voltage/current	DC 5V/1mA
Minimum load voltage/Maximum switching frequency	AC 250V DC 110V, 1,200 times/hour
Response Time	OFF → ON 10ms or less ON → OFF 12ms or less Mechanical 20 million times or more
Service Life	Rated load voltage/current 100,000 times or more AC 200V/1.5A, AC 240V/1A(Cosφ=0.7) 100,000 times or more AC 200V/1A, AC 240V/0.5A(Cosφ=0.35) 100,000 times or more DC 24V/1A, DC 100V/0.1A(L/R=7ms) 100,000 times or more
Common Method	8 points/COM
Operating Indicator	LED turns on at ON state of output
External connections	Terminal block connector(M3 × 6 screws)

(a) External Connection



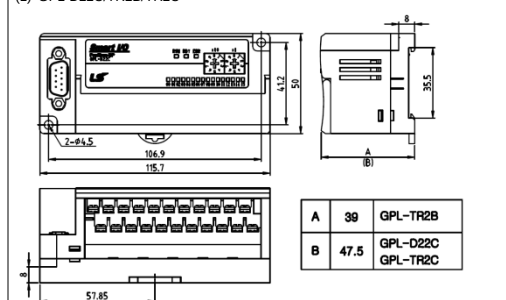
* Internally, The COMA and COMC are wired each other.

7. Precaution on installation

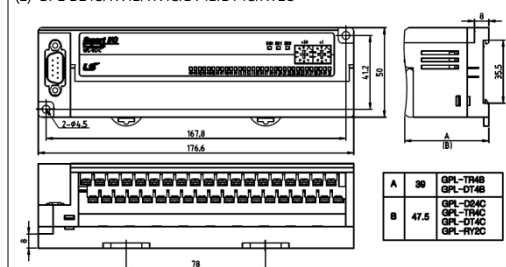
- (1) When setting up the network, be sure not to duplicate the station number. If there is any duplicated station number, the communication will not be established.
- (2) Use cable complied with specification of this data sheet. Otherwise, it can cause serious communication error.
- (3) Make sure that communication cable connector fastened firmly. Otherwise, it can cause serious communication error.
- (4) Improper cable connection (snarled cable, redundant connection, etc) can cause communication error.
- (5) Do not place communication cable near power cable or inductive noise source.
- (6) Change of station number will not take effect before power is re-applied.

8. Dimension (mm)

(1) GPL-D22C/TR2B/TR2C



(2) GPL-D24C/TR4B/TR4C/DT4B/DT4C/RV2C



9. Warranty

- (1) Warranty period
LSIS provides an 18-month-warranty from the date of the production.
- (2) Warranty conditions
For troubles within the warranty period, LSIS will replace the entire PLC or repair the troubled parts free of charge except the following cases.
 - (a) The troubles caused by improper condition, environment or treatment except the instructions of LSIS.
 - (b) The troubles caused by external devices.
 - (c) The troubles caused by remodeling or repairing based on the user's own discretion.
 - (d) The troubles caused by improper usage of the product.
 - (e) The troubles caused by the reason which exceeded the expectation from science and technology level when LSIS manufactured the product.
 - (f) The troubles caused by natural disaster.
- (3) This warranty is limited to the PLC itself only. It is not valid for the whole system which the PLC is attached to.

