Chapter 3 Product specification

3.1 General specification

[Table 3.1] describes the environmental, electric and mechanical specifications of this module.

[Table 3.1] General specification

No.	Item	Specification					Related specifications
1	Operating temp.	0℃ +55℃					
2	Storage temp.	-25℃ +70℃					
3	Operating moist	5 95%RH, non-condensing					
4	Storage moist	5 95%RH, non-condensing					
5	Vibration proof	For discontinuous vibration					
		Frequency	Acceleration	Amplitude	Number		IEC 61131-2
		10≤f< 57 Hz	-	0.075mm	Each 10 times in X,Y,Z directions		
		57≤f≤150 Hz	9.8 ㎨(1G)	-			
		For discontinuous vibration					
		Frequency	Acceleration	Amplitude			
		10≤f< 57 Hz	-	0.035mm			
		57≤f≤150 Hz	4.9 ㎨(0.5G)	-			
6	Impact proof	* Max. impact acceleration:147 ㎨(15G) * Authorized time :11 ㎳ * Pulse wave : Sign half-wave pulse (Each 3 times in X,Y,Z directions)					IEC 61131-2
7	Noise proof	Square wave impulse noise			±1,500V		Test spec. reference of LG Industrial Systems
		Static electric discharging			Voltage : 4kV(contact discharging)		IEC 61131-2,IEC 1000-4-2
		Radiation electromagnetic field noise			27 ~ 500MHz, 10 V/m		IEC 61131-2,IEC 1000-4-3
		Fast Transient / burst noise	Segment	Power module	Digital I/O (24V or more)	Digital I/O (below 24V) Analog I/O communication interface	IEC 61131-2, IEC 1000-4-4
			Voltage	2kV	1kV	0.25kV	
8	Ambient conditions	No corrosive gas or dust					
9	Operating height	2000m or less					
10	Pollution level	2 or less					
11	Cooling type	Natural air cooling					

Remark

[Note1] IEC(International Electrotechnical Commission): International non-governmental organization, which promote international cooperation, establish international standard, and administer valuation system to its suitableness for international standards of electric and electronic tech fields.

[Note2] Pollution level: An index indicating pollution level of the operating environment which decides insulation performance of the devices. For instance, Pollution level 2 indicates the state generally that only non-conductive pollution occurs. However, this state contains temporary conduction due to condensing.

3.2 Performance specifications

[Table 3.2] Performance specification

Item		Specification		Remark
Serial communication channel		RS-232C channel	RS-232C standards conformed	GM3/4/6/7
		RS-422/485 channel[Note1]	RS-422/485 standards conformed	GM3/4/6/7
Modem connection function		Remote communication[Note2] with external devices is available via public telephone line by connecting external modem to the module.		GM3/4/6/7
Operating mode (Operating mode can be set by operating switch for RS-232C /422 channels respe-ctively)		Dedicated mode	Supporting multi-drop / 1:1 communication with dedicated protocol of LG Industrial Systems	GM3/4/6/7
		GMWIN mode	PLC remote control is available through GMWIN connection function	GM3/4/6/7
		User defined mode	Operated by user defined protocol (for other company's interface)	GM3/4/6/7
		On-line mode Ver. 2.0	Set by software when editing frame without change of the mode switch	GM3/4/6
		Other company's Dedicated Mode Ver.2.0	Interface[Note3] with other companies such as Modbus and A.B DF1	GM3/4/6/7
Data type	Data Bit	7 or 8	With Frame Editor, basic parameter can be selected[Note4] / GM7 is set in GMWIN communication parameter.	GM3/4/6/7
	Stop Bit	1 or 2		
	Parity	Even/Odd/None		
Channel select		Stand-alone/interlocking channels can be selected by operating mode switch [Note5]		GM3/4/6
		Set in GMWIN communication parameter.		GM7
Synchronization type		Asynchronous type		GM3/4/6/7
Transmission speed (bps)		Any speed of 300/600/1200/2400/4800/9600/19200/38400/57600/ 76800bps can be selected [Note6]		GM3/4/6
		Any speed of 1200/2400/4800/9600/19200/38400/57600bps can be selected [Note6]		GM7
Station No. setting		Setting with Frame Editor(GM7 is set in GMWIN communication parameter) is available up to 32 stations from 0 to 31 (valid only if operating mode is in the dedicated mode or other company's dedicated mode)		GM3/4/6/7

Item	Specification		Remark
Transmission distance	RS-232C : Max. 15m(extendible by using modem) RS-422 : Max. 500m		GM3/4/6/7
Diagnosis function	Loop-Back diagnosis / Indication of operation status with 16 LEDs during operation (with 8 LEDs for GM6)		GM3/4/6
Current Consumption	G3L-CUEA	160mA or less	
	G4L-CUEA	160mA or less	
	G6L-CUEB	160mA or less	
	G6L-CUEC	160mA or less	
	G7L-CUEB	100mA or less	
	G7L-CUEC	100mA or less	
Weight	G3L-CUEA	375g	
	G4L-CUEA	211g	
	G6L-CUEB	94g	
	G6L-CUEC	102g	
	G7L-CUEB	195g	
	G7L-CUEC	193g	

Remark

[Note1] With Frame Editor, RS-422 channel of GM3/4/6 can be selected from RS-422 or RS-485. In case of GM7, auto-setting is performed by the wiring of communication module on basic unit.

[Note2] In case of connecting channel RS-232C to modem, the modem connection is selected in setting menu of RS-232C communication type of Frame Editor. (G6L-CUEC is unavailable)

[Note3] Regardless of Version, only Modbus interface function is supported for GM7.

[Note4] Transmission spec. can be set according to each of RS-232C and RS-422 in case of the operating mode of the stand-alone channel.

[Note5] Channel selection is set between operating mode by channel and stand-alone/interlocking channel by the operating mode switch. Change of channel mode is impossible during operation.

[Note6] 76,800bps is provided in RS-422 or RS-485, and can be used in Cnet I/F module Ver. 1.3 or later.

3.3 Cable specifications

When using communication channel, RS-422 or RS-485, twisted pair cable for RS-422 shall be used in consideration of communication distance and speed. [Table 3.3] describes recommended specifications of cable. Also when using other cable than recommended, the cable conformed to characteristics in [Table 3.3] shall be used.

- ❑ Item : Low Capacitance LAN Interface Cable
- ❑ Type : LIREV-AMESB
- ❑ Size : 2P X 22AWG(D/0.254 TA)
- ❑ Manufacturer : LG Cable Co., Ltd

[Table 3.3] Specifications of twisted pair cable

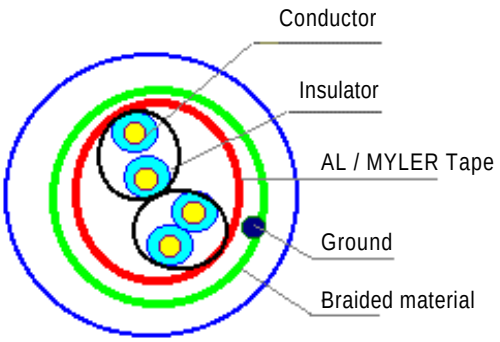
1) Electric characteristics

Test item	Unit	Characteristics	Test conditions
Conductor resistance	Ω / km	59 or less	Normal temp.
Withstanding voltage(DC)	V/1min	Withstands for 1 min. at 500V	In air
Insulation resistance	MΩ - km	1,000 or more	Normal temp
Static electricity capacity	Pf / M	45 or less	1kHz
Characteristics impedance	Ω	120 ± 12	10MHz

2) Characteristics of appearance

Item			Solid cable	Stranded cable
Conductor	Core number	Pair	2	2
	Size	AWG	22	22
	Composition	No. / mm	1 / 0.64	7 / 0.254
	Outer dia.	mm	0.64	0.76
Insulator	Thickness	mm	0.55	0.55
	Outer dia.	mm	1.64	1.76

[Figure 3.1] Structural drawing

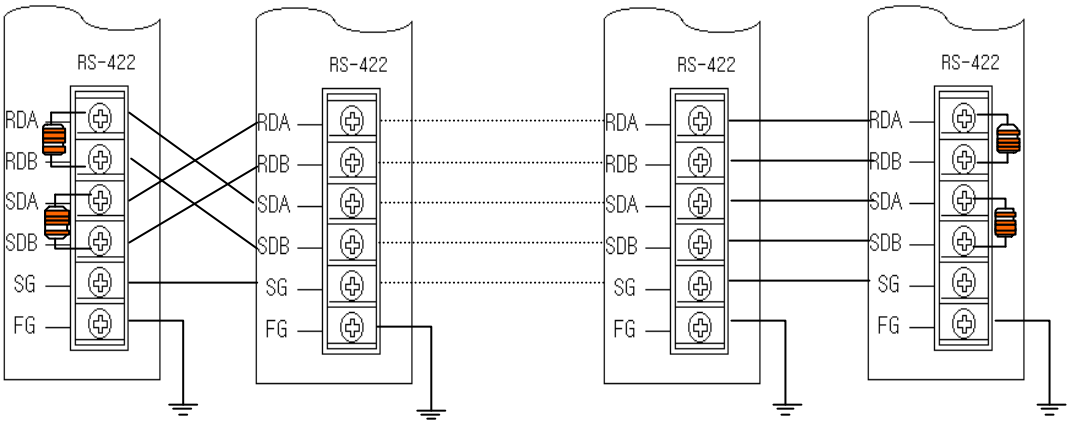


3.4 Terminating resistance

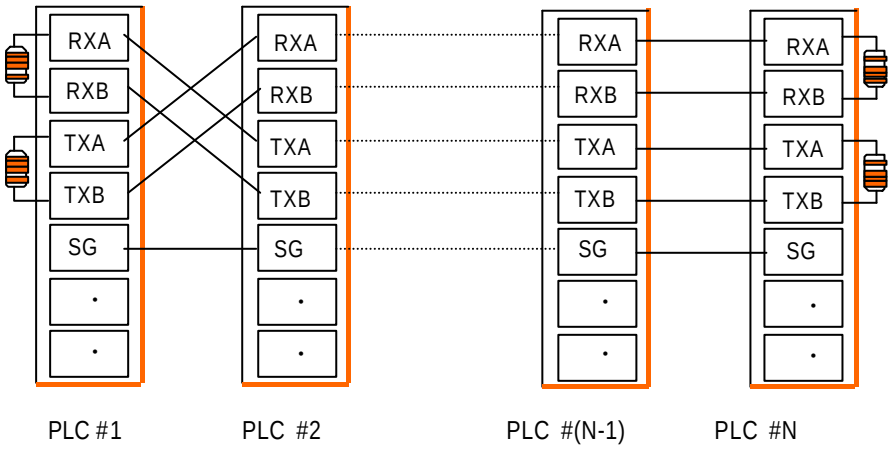
For communication via RS-422 channel, terminating resistance from external must be connected. Terminating resistance has the function to prevent distortion of signal by reflected wave of cable for long-distance communication, and the same resistance (1/2W) as characteristic impedance of cable must be connected to terminal of network.
When using the recommended cable in 3.3, connect terminating resistance of 120Ω to both ends of cable. Also when using other cable than recommended, the same resistance (1/2W) as characteristic impedance of cable must be connected to both ends of cable.

1) How to connect terminating resistance during RS-422 connection

❑ GM3/4/6 unit

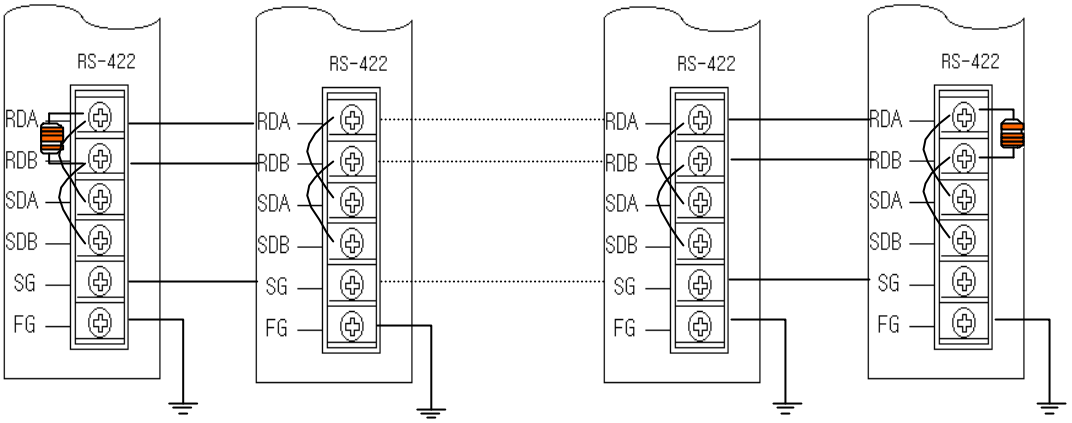


❑ GM7 unit



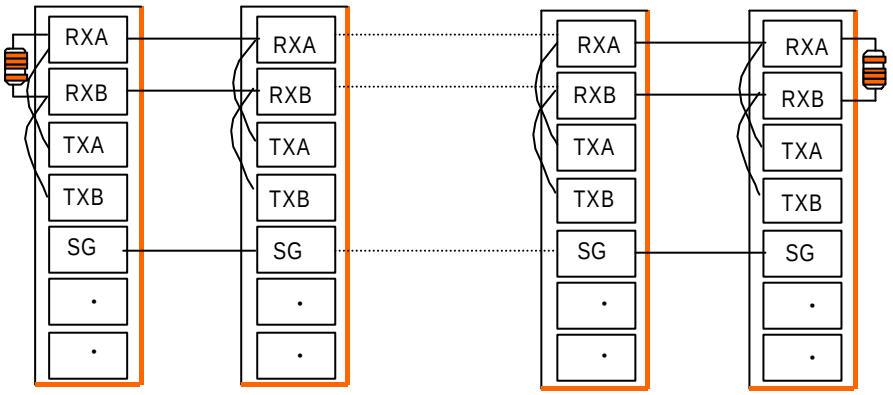
2) How to connect terminating resistance during RS-485 connection

❑ GM3/4/6 unit



PLC #1 PLC #2 PLC #(N-1) PLC #N

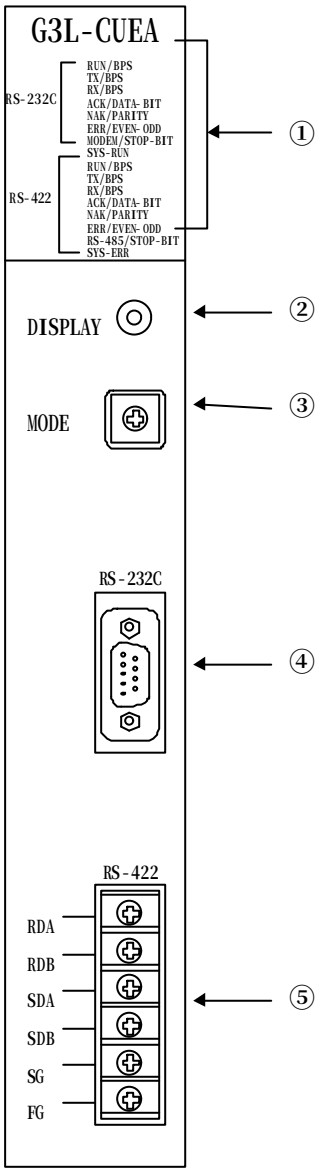
❑ GM7 unit



PLC #1 PLC #2 PLC #(N-1) PLC #N

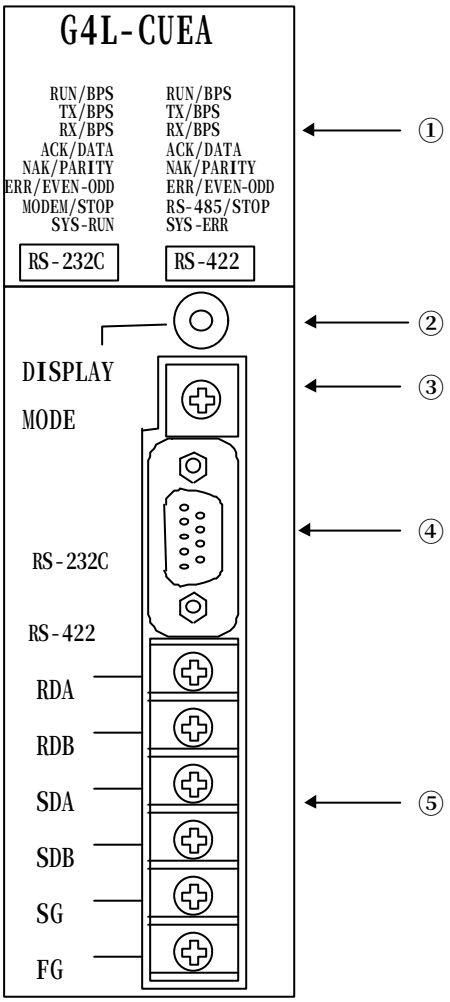
3.5 Structure

3.5.1 Part names of G3L-CUEA



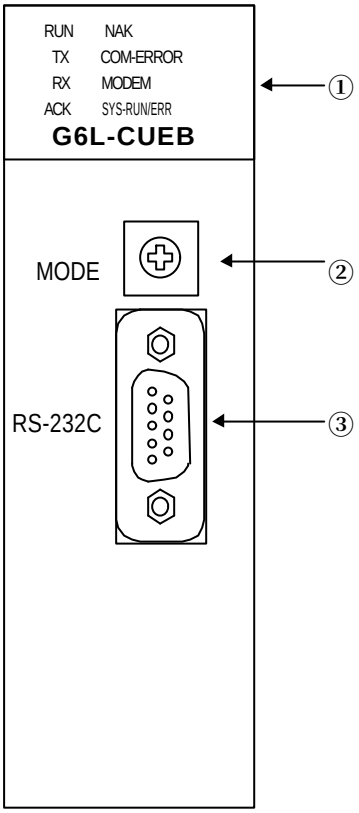
No.	Name	Contents
①	LED displaying section	Indication of operating status of G3L-CUEA (see Appendix A)
②	Display switch	Switch for indication of parameter and station number (see Appendix A)
③	Mode switch	Setting of operation mode (see 4.1)
④	RS-232C Connector	RS-232C connector for connection with external devices
⑤	RS-422/485 Connector	RS- 422/485 connector for connection with external devices

3.5.2 Part names of G4L-CUEA



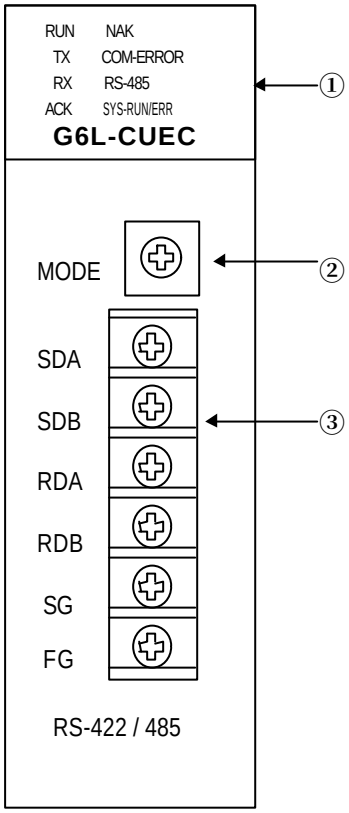
No.	Name	Contents
①	LED displaying section	Indication of operating status of G4L-CUEA (see Appendix A)
②	Display switch	Switch for indication of parameter and station number (see Appendix A)
③	Mode switch	Setting of operation mode (see 4.1)
④	RS-232C Connector	RS-232C connector for connection with external devices
⑤	RS-422/485 Connector	RS- 422/485 connector for connection with external devices

3.5.3 Part names of G6L-CUEB



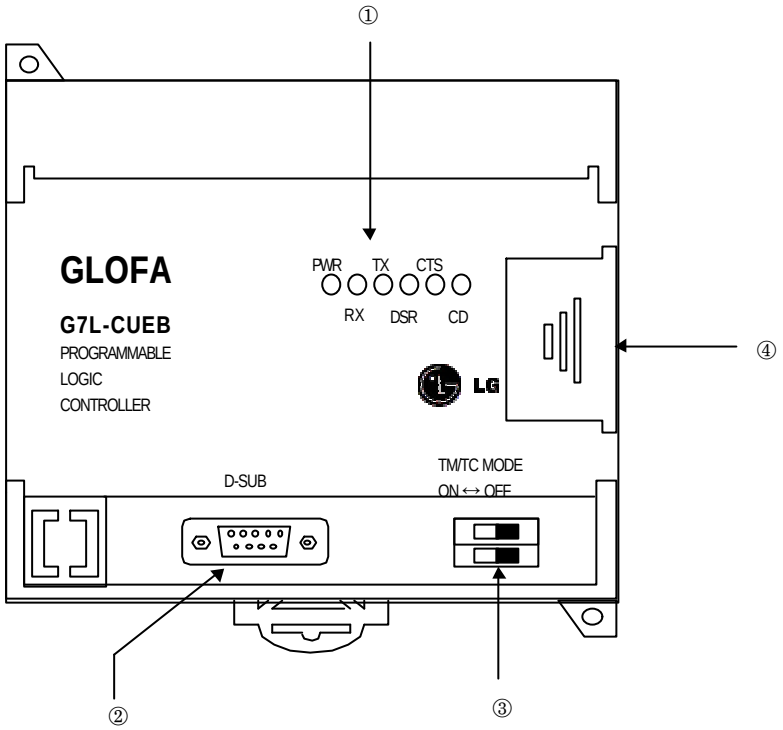
No.	Name	Contents
①	LED displaying section	Indication of operating status of G6L-CUEB (see Appendix A)
②	Mode switch	Setting of operation mode (see 4.1)
③	RS-232C Connector	Connector for connection with external devices

3.5.4 Part names of G6L-CUEC



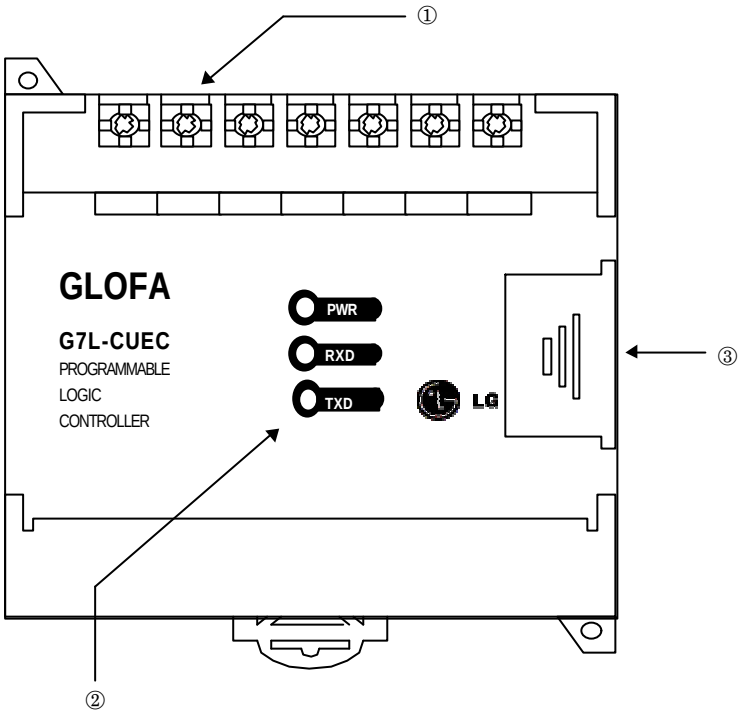
No.	Name	Contents
①	LED displaying section	Indication of operating status of G6L-CUEC (see Appendix A)
②	Mode switch	Setting of operation mode (see 4.1)
③	RS-422/485 Connector	Connectors for connection with external devices

3.5.5 Part names of G7L-CUEB



No.	Name	Contents
①	LED displaying section	See LED display.
②	RS-232C connector	Connectors for connection with external devices
③	Mode switch	For selecting of TM/TC operation
④	For extended connector	Connectors for connection with digital I/O module and special module

3.5.6 Part names of G7L-CUEC



No.	Name	Contents
①	RS-422/485 interface	Connectors for connection with external devices
②	LED displaying section	See LED display.
③	For extended connector	Connectors for connection with digital I/O module and special module