

Chapter 10 Installation and Testing operation

10.1 Installation and testing operation

4 types of Cnet I/F modules are available according to CPU types. An appropriate unit shall be selected for CPU type and applicable service. [Table 10.1] guides module selection in accordance with CPU types.

[Table 10.1] How to select appropriate module for CPU type ^[Note1]

CPU type	Module name	Number of channels	Supported specification	Max. number of units mountable ^[Note2]
GLOFA-GMR ^[Note3]	G3L-CUEA	2	RS-422	8 ^[Note4]
GLOFA-GM1	G3L-CUEA	2	RS-232C/RS-422	8
GLOFA-GM2	G3L-CUEA	2	RS-232C/RS-422	8
GLOFA-GM3	G3L-CUEA	2	RS-232C/RS-422	8
GLOFA-GM4	G4L-CUEA	2	RS-232C/RS-422	4
GLOFA-GM6	G6L-CUEB	1	RS-232C	4
	G6L-CUEB	1	RS-422	4
GLOFA-GM7 ^[Note5]	G7L-CUEB	1	RS-232C	1
	G7L-CUEC	1	RS-422	1

Remark

[Note1] Max. number of units mountable means all communication modules. If used with Fnet / Enet / Dnet I/F module, etc., the number of all communication modules is limited by [Table 10.1]. For example, max. 2 Cnet I/F modules only can be mounted on GM4 where 2 Fnet I/F modules have been installed in.

[Note2] If mounted on dual base, only RS-422 channel is available.

[Note3] Cnet can be mounted not on extended base but on I/O basic base only.

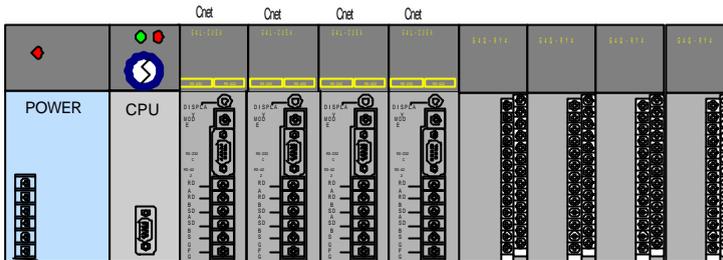
[Note4] Mountable on slot No.0~3 of dual extended 8-base up to 8 Cnet I/F modules including dual basic base.

[Note5] As for GM7 unit, 1 communication module can be mounted on via extension connector in addition to basic unit.
(Refer to user' s manual of GM7)

10.1.1 Mounting and installation

[Figure 10.1] shows an example case that max. 4 Cnet I/F modules are mounted on GM4 CPU. As shown in the figure, Cnet I/F module can be mounted on basic base only as nearest as possible to CPU for reliable communication. As for GMR dual-CPU, however, single-extended base is mountable on.

[Figure 10.1] Mounting on GM4 CPU

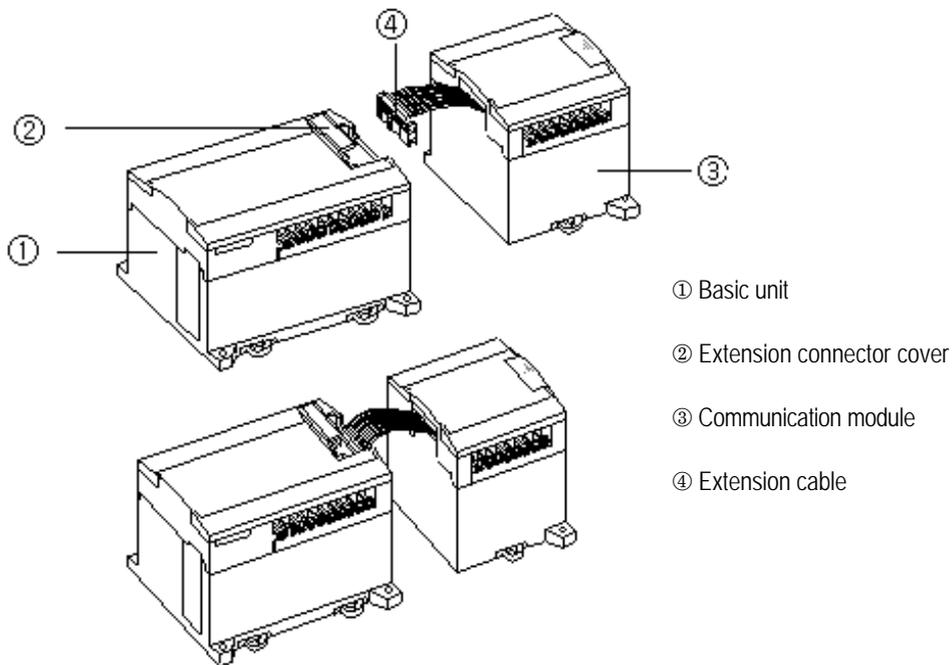


Installation sequence is as follows.

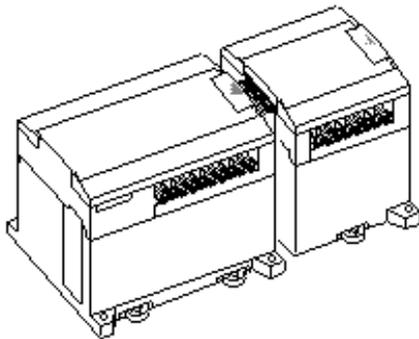
- 1) Prepare basic system configuration required for system configuration
- 2) Prior to installation work of this communication module, let PLC kept as powered off.
- 3) Check for any foreign substance on the base connector where module is to be mounted on prior to installation of the communication module and verify if any connector pin of this module is bent or damaged.
- 4) Communication module except for dual CPU cannot be mounted on extended base, but surely be mounted on basic base at the slot positioned nearest to CPU.
- 5) Max. number of units mountable per CPU is 8, which shall be mounted as specified in [Table 10.1].
- 6) With communication cable not connected, insert the protuberant at bottom of the module correctly into the groove of the base board and then apply force enough until the upper is engaged completely in locking device of the base board. If the locking device is not tightly engaged in, error may occur to interfacing with CPU.
- 7) Set operation mode as desired through the switch in front of communication module. Refer to general specification for operation mode.
- 8) Tighten up the connection cable of electric module with cable connecting screw until connected firmly.
- 9) After communication cable is connected, supply power and check LED operation status if normal or not. If normal, download and execute frame and program through frame definition and GMWIN. (User defined mode)

10.1.1.1 Installation of Gm7 series

- 1) As GM7 is provided basically with DIN (Rail width of 35mm) railing hook in addition to basic unit and extended module, DIN rail inlet is available.
- 2) Connection of Gm7 series with basic unit is as described below.
 - A) Open extension connector cover of the basic unit.
 - B) Insert connector of communication module into extension connector of the basic unit.

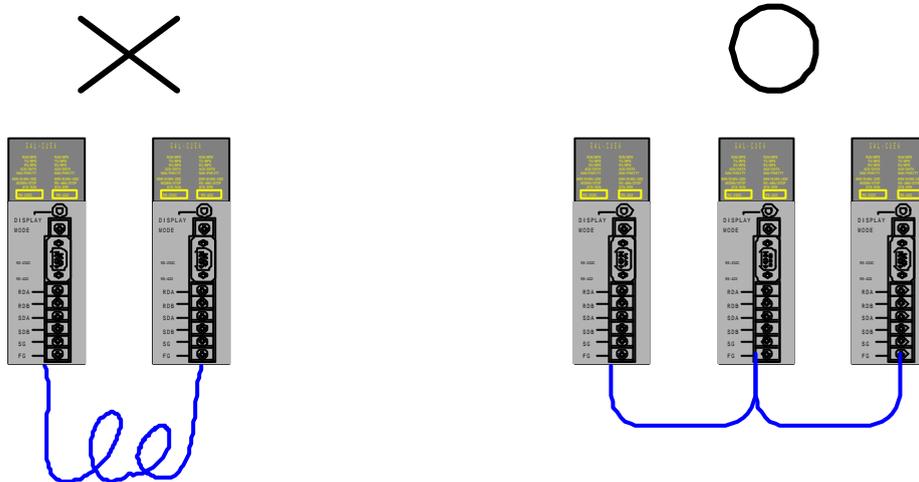


- C) Insert connector of communication module into extension connector of the basic unit.

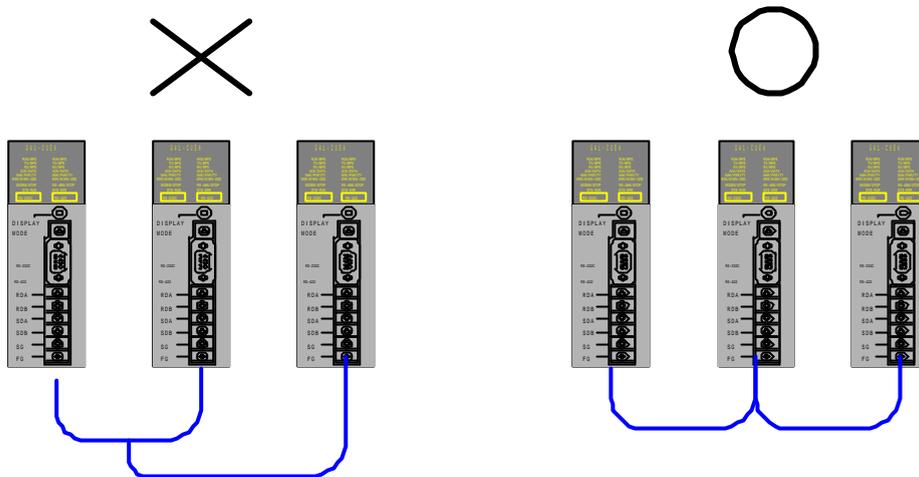


10.1.2 Cautions during system configuration

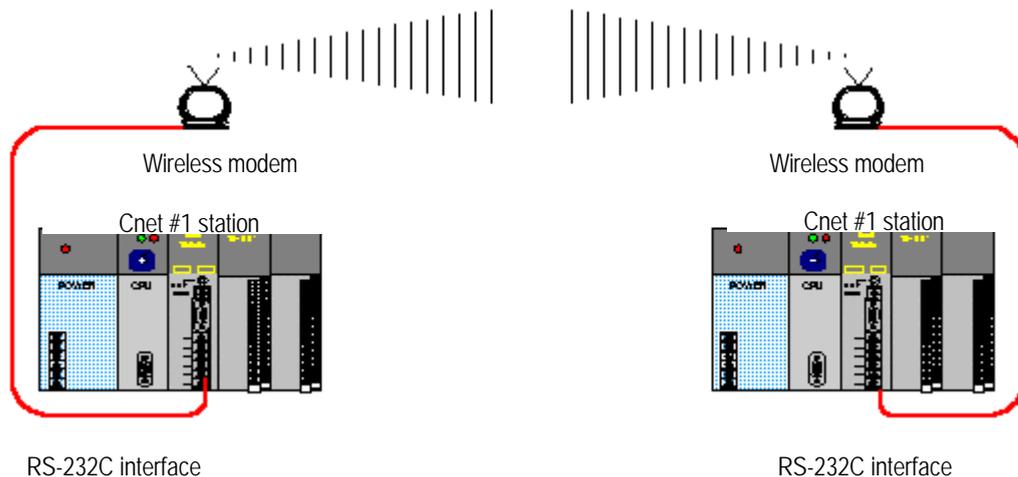
- 1) Correctly select which operation mode may be used by user for Cnet I/F module service, and let operation mode set accordingly. Beware, if the operation mode is incorrectly set, operation failure may occur!
- 2) Set station No. for the channels used in dedicated communication mode. Cnet I/F modules of identical station No. shall not be applied in one network for RS-422/485 communication system in dedicated communication mode. If repeated station No. is applied for RS-422 communication, normal communication is not allowed as in error.
- 3) Use the communication cable as specified only. If not, serious error may occur to communication.
- 4) Check communication cable if disconnected or shorted prior to installation.
- 5) Tighten up communication cable connector until connected firmly. If cable connection is unstable, serious error may occur to communication
- 6) RS-422/485 cables must be connected correctly for TX/RX. If several stations are connected, TX and RX shall be connected with each other between the first 2 stations, and TX to TX, RX to RX shall be connected between other stations than those.(RS-422 communication)
- 7) If in RS-485 communication, TX and RX of Cnet I/F module is to be connected with each other. Refer to Chapter 3 in the manual for details.
- 8) If communication cable is twisted as shown below or connected incorrectly, communication error may occur.



- 9) Cable bifurcation for RS-422 communication is not allowable.



- 10) If remote communication cable is connected, keep the cable away from power line or conductible noise, or let it sheltered if necessary.
- 11) For connection with Cnet I/F module on rotative or mobile body, previously check communication cable if possibly disconnected due to repetitive motion. And if danger of disconnection is ever expected, let system configured to allow communication via optical modem or wireless modem. The figure below shows system configuration via RF modem.



- 12) If in modem communication, connect Cnet module with modem via modem connection cable and then with dedicated line or public line.
- 13) If LED operation is not normal, refer to Chapter 11 Troubleshooting in this manual to inspect the cause and take action based on action items. If yet not normal, contact service station.

10.1.3 Testing operation

This describes the preparations to be confirmed before and after the testing operation.

1) Check items until testing operation is started

Checking items prior to testing operation of communication module, are introduced below.

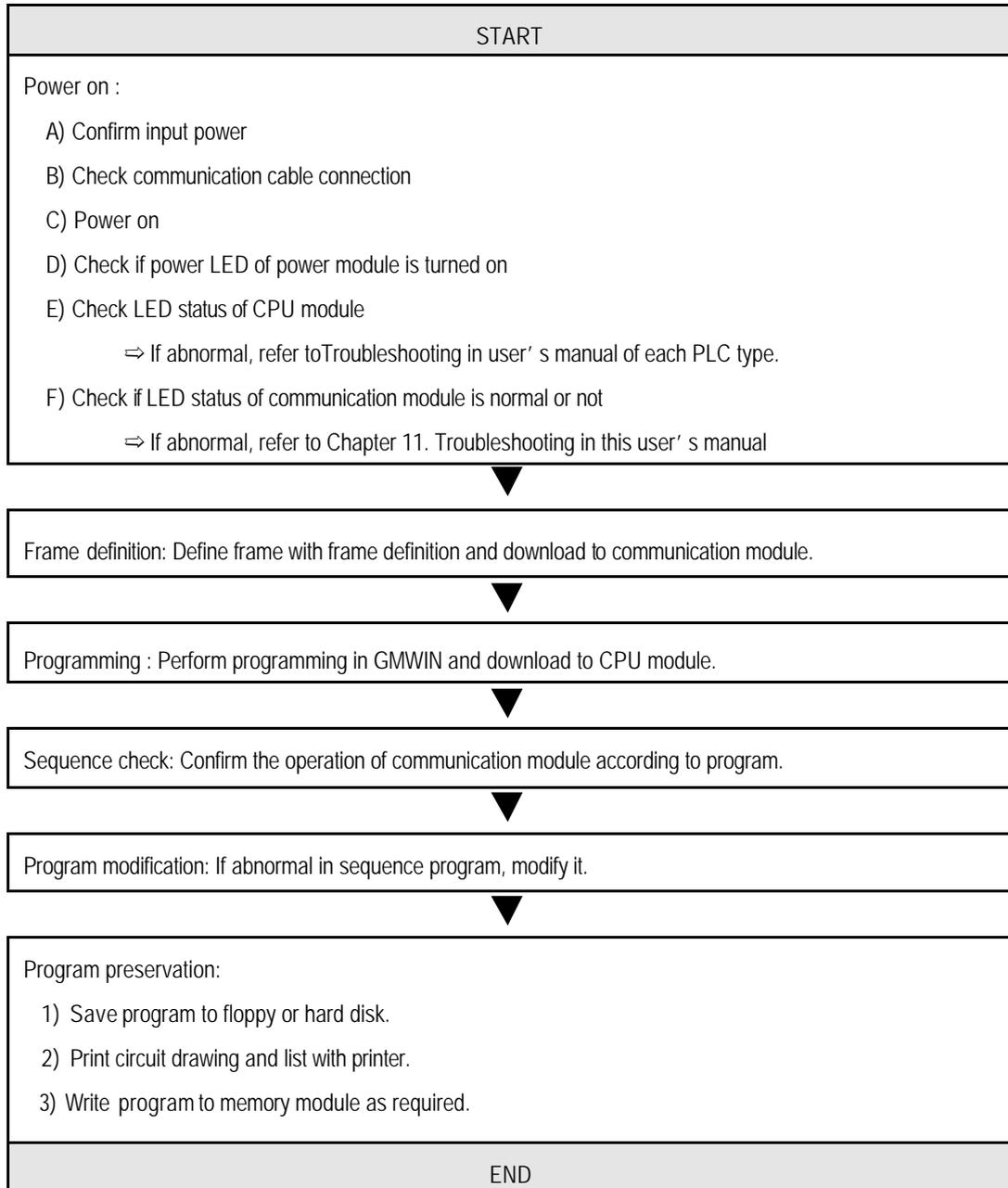
[Table 10.2] Check items for testing operation

Check item	Contents
Basic module mounting	<ul style="list-style-type: none">- Is the applied voltage of power module as in its specification?- Is the battery of CPU module connected?- Is entire basic module mounted desirably? <p>⇒ Refer to user' s manual of each PLC type.</p>
Communication cable connection (only if cable is connected)	<ul style="list-style-type: none">- Is the connection status of communication cable normal?- Is each cable connected in open loop type? <p>⇒ Refer to 10.1.2 Cautions during system configuration.</p>
Module mounting	<ul style="list-style-type: none">- Is the mounting status of communication module on basic base normal? <p>⇒ Refer to 10.1.1 Mounting and installation.</p>
Switch setting	<ul style="list-style-type: none">- Is the mode switch set correct?- Is the frame defined as set correct?

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2) Sequence of testing operation

Next is the sequence starting from PLC installation completed to testing operation.



10.2 Maintenance and Check

To keep this communication module always as optimized, perform daily and regular check.

10.2.1 Daily check

Daily check to perform is as described as below.

[Table 10.3] Daily check items

Check item	Check contents	Criteria	Action to take	
Cable connection status	Cable loosened	Shall not be loosened	Tighten cable	
Module connection status	Module tightening screw loosened	Shall not be loosened	Tighten module screw	
LED display	System operation LED (7: SYS-RUN)	Dimly On checked	Abnormal if Off or flashing brightly -while interfacing with CPU	See Appendix
	Channel operation LED (0: RS-232C RUN 8: RS-422/485 RUN)	On checked	Only if channel active LED lights On, data is normally sent/received (If Off, communication stopped)	See Appendix
	Communication error LED (5: RS-232C ERR 13: RS-422/485 ERR)	Off checked	Abnormal if flashing (parameter setting or cable abnormal)	See Appendix
	TX/RX LED (1/2: RS-232C TX/RX 9/10:RS-422/485 TX/RX)	Flash checked	Abnormal if Off (hardware of module abnormal)	See Appendix
	System error LED (15:SYS-ERROR)	Off checked	System abnormal if flashing	See Appendix

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10.2.2 Regular check

Check the below items for 1~2 times half-yearly and take actions as below if required.

[Table 10.4] Regular check items

Check item		How to check	Criteria	Action to take
Ambient conditions	Ambient temperature		0~55	Adjust as specified in general spec. (If used in panel, as based on ambient criteria in panel)
	Ambient moisture	Measure with thermometer/hygrometer	5~95%RH	
	Ambient pollution	Measure corrosive gas	No corrosive gas allowed	
Module status	Loosening , shaking	Move communication module	As mounted firmly	Tighten screw
	Dust, foreign matters	By the naked eye	Shall not be attached	
Connection status	Terminal screw loosened	Tighten with driver	Shall not be loosened	Tighten
	Compressed terminal close	By the naked eye	As distanced suitable	Correct
	Connector loosened	By the naked eye	Shall not be loosened	Tighten connector locking screw
Power voltage check		Measure voltage between AC 110/220V terminals	AC 85~132V AC 170~264V	Modify power supply