Chapter 12 Installation and Pre-operation

12.1 Installation

12.1.1 Precautions for installation

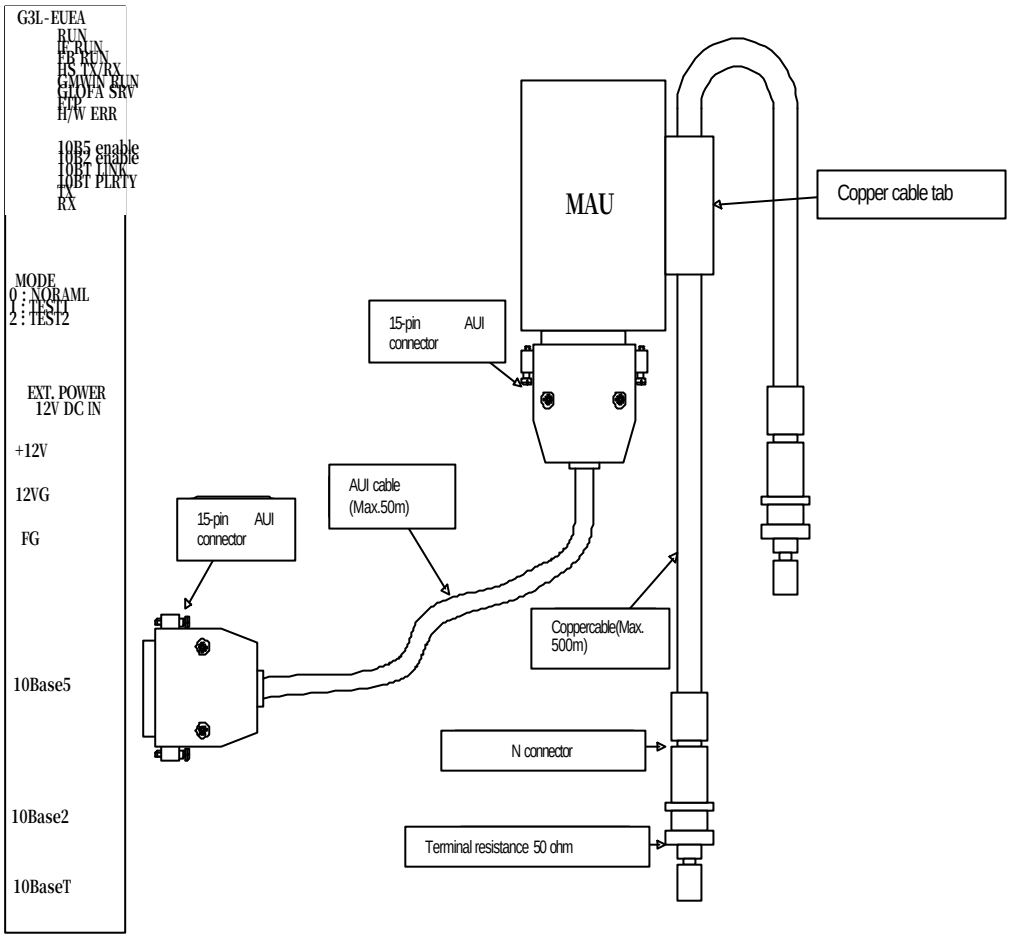
Max.4 Enet communication modules can be mountable on PLC basic base of GM1,GM2 orGM3.

1) Check basic factors as required for system configuration and select communication module as agreeable for the unit.
2) Select the cable to be used in this communication module(only one type among 10BASE5, 10BASE2 and 10BASE-T).
3) If thin cable(10B2) was selected for the communication module, select the jumper placed inside the module(Default:10B5 , 10B5 & 10B-T use default) to install on the base while PLC is powered Off.
4) 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 damaged.
5) All communication modules cannot be mounted on extended base but surely on basic base at the slot positioned nearest to CPU..
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) One type of cable among 10BASE5, 10BASE2 and 10BASE-T shall be used in this communication module
8) Hub and cable necessary for Ethernet communication shall be as specified.

12.1.2 Materials necessary for installation

Materials	10BASE5	10BASE2	10BASE-T
Copper cable (impedance50Ω)	With AUI	RG-58-A/U 3D-2V	N/A
AUI cable	Yellow Cable N connector (female) both ends	N/A BNC connector(male) both ends	N/A
Twist pair Cable(impedance100Ω)	N/A	N/A	4-pair twist pair (8-pole plug both ends)
Transceiver	Used	10BASE-2' s MAU needed if AUI used	10BASE-2' s MAU needed if AUI used
Terminal resistance(50Ω)	N connector(male)	BNC connector(male)	N/A
T connector	N/A	Used	N/A
Hub	N/A	N/A	Used

12.1.3 Installation of 10BASE5



[Figure 12.1.3] Installation of 10BASE5

Surely supply outer power (12V DC, consumption of 300mA or more) if 10BASE5 is to be used. Be careful that correct poles and voltage shall be used for outer power supply.

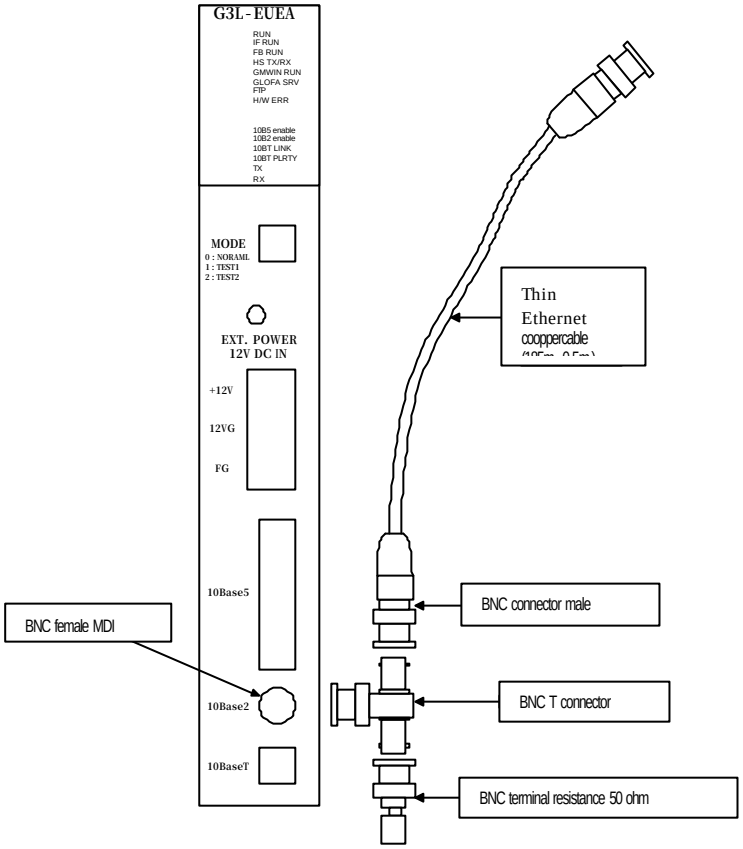
FG as of Class 3 connection shall be connected inside the board. If communication is abnormal due to FG connection inside the board, noise seems inducted in FG line. Remove the cause of noise or do not connect with FG of this communication module.

Remark

Note1) The cable shall be installed min. 50 mm away from high current line such as power line, etc.

Note2) Contact an expert for terminal work, manufacture and installation of cable.

12.1.4 Installation of 10BASE2



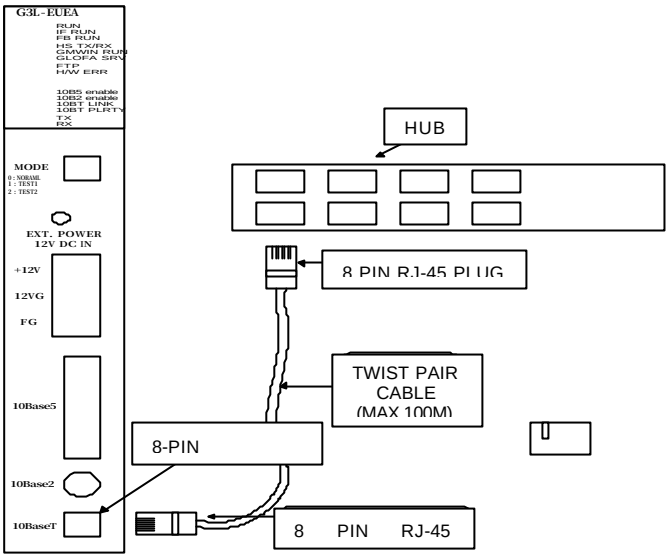
[Figure 12.1.4] Installation of 10BASE2

Use copper cable in RG-58/3D-2V for 10BASE2. For circuit divergence, use BNC T connector to connect with several stations. Connect terminal resistance of 50Ω with network terminal.

Remark

Note1) The cable shall be installed min. 50 mm away from high current line such as power line, etc.
Note2) Contact an expert for terminal work, manufacture and installation of cable.

12.1.5 Installation of 10BASE-T



[Figure 12.1.5] Installation of 10BASE-T

Max. segment length of 10BASE-T is 100m(between this module and the hub). Generally the straight cable is used which is made as twisted with TD and RD inside. If only 2 communication modules are connected 1 to 1, the cross cable type shall be applied.

Pin No.	Sign	Straight cable between Hub & Module	1:1 cross cable
1	TD+	1 —1	1 —3
2	TD-	2 —2	2 —6
3	RD+	3 —3	3 —1
6	RD-	6 —6	6 —2
4, 5, 7, 8	N/A		

Remark

Note1) Since 10 BASE-T cable structure is week in external noise, the cable of No.1 & 2 which are TD+ & TD- and No.3 & 6 which are RD+ & RD shall be twisted respectively to be strong against noise.

Note2) Hub power shall be with countermeasures against noise as separated from PLC power.

Note3) The cable shall be installed min. 50 mm away from high current line such as power line, etc.

Note4) Contact an expert for terminal work, manufacture and installation of cable.

12.2. Pre-Operation

Terminals of 10BASE5 and 10BASE2 cable shall be surely connected in terminal resistance. If there is no terminal resistance, communication error may occur. Check LED operation status if operation is normal as powered on after communication cable is connected. If normal, download the applicable program to PLC via GMWIN so to execute the program.

12.2.1 Precautions for system configuration

1) IP addresses shall be surely different from each other including this module. If connected via the repeated addresses, communication error may occur leading to communication trouble. HS link station No. of all stations also shall be different from each other to use HS_Link service.
2) In case of normal communication operation, mode switch shall be surely set to RUN mode. If this module's mode switch is set to TEST mode as powered at the status that other stations connected with the network perform communication, serious error may occur on communication of the other stations.
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) If remote communication cable is connected, keep the cable far away from power line or conductible noise.
7) Since the copper cable is not flexible, it is to be diverged min. 30cm away from the connector in communication module. If the cable is bent at a right angle or transformed compulsorily, cable disconnection or connector damage in communication module will be caused.
8) If LED operation is abnormal, refer to Chapter 9 Troubleshooting to check for causes and take actions against. Contact Service center if error occurs as before.

12.2.2 Checklist prior to pre-operation

Check items are described below prior to pre-operation of communication module.

1) Communication module on PLC

Check items	Description
Installation and inspection of Basic S/W	- Is installation and operation of GMWIN normal? - Is installation and operation of frame editor normal?
Communication cable connection (If cable is connected)	- Is connection and tab status of communication cable normal? - Is each cable connected in open loop type?
Module mounting	- Is the communication module installed correctly on basic base?
Switch setting	- Is the operation mode switch set to 0:RUN(switch value: 0)?

2) Pre-operation sequence

It shows the sequence starting from PLC installation completed to pre-operation.

Start

Power on :

1) Confirm input power
2) Check communication cable connection
3) Power on.
4) Check if power LED of power module is turned on
5) Check LED status of CPU module
   ⇨ If abnormal, refer to Troubleshooting in user manual of each PLC model.
6) Check if LED status of communication module is normal or not
   ⇨ If abnormal, refer to Chapter 9. Troubleshooting in this user manual.
7) Set system parameters correctly so to download.

▼

Programming : Perform programming in GMWIN and write to CPU module.

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Sequence check : Confirm the operation of communication module according to program

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Program modification : If abnormal in sequence program, modify it.

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Program preservation:

1) Save program to floppy or hard disk.
2) Print circuit drawing and list with printer.
3) Save program to memory module as required.

End

12.3 Repair and Check

12.3.1 Daily check

Daily check to perform is as described as below.

Check item		Check contents	Criteria	Action
Cable connection status		Cable loosened	Shall not be loosened	Tighten cable
Terminal connection status		Terminal screw loosened	Shall not be loosened	Tighten terminal screw
		Compressed terminals adjacent to each other	As distanced suitably	Modify
LED	RUN	On checked	On (Off means error)	See Appendix A1
	CPU I/F RUN	On checked	On (Off means error)	
	FB-SERVICE	Flickering checked during function block service	Flickering	
	HS-SERVICE	Flickering checked during function block service	Flickering	
	H/W ERROR	Off checked	Off (On or Flickering means error)	
	10BASE5 ENABLE	On if 10BASE5 selected	On	
	10BASE2 ENABLE	On if 10BASE2 selected	On	
	10BASE-T LINK	On if 10BASE-T cable installed	On	
	10BASE-T PLRTY	On if 10BASE-T is wired correctly	On (Surely On if 10BASE-T used	
	TX	Flickering at TX	Flickering	
	RX	Flickering at RX	Flickering	

[Table 12.3.1] Daily check items

12.3.2 Regular check

Check the following items for 1~2 times every 6 months and take actions as required.

Check item		How to check	Criteria	Action to take
Ambient conditions	Ambient temperature	Measure with thermometer/ hygrometer	0~55℃	Adjust as specified in general spec. (If used in panel, as based on ambient criteria in panel)
	Ambient moisture		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 terminals close	By the naked eye	As distanced suitably	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

[Table 12.3.2] Regular check items