# Chapter 9 GMWIN Communication

9.1 Introduction

This function is for programming, download of user program, program debugging, monitoring, etc in network system where PLCs are connected with each other via Ethernet by remote control without moving the physical connection status of GMWIN. Especially, convenient for easy access to each device from a place without repositioning when network-connected devices are separated far. GMWIN communication service function creates the following Logical Path to attain its purpose.
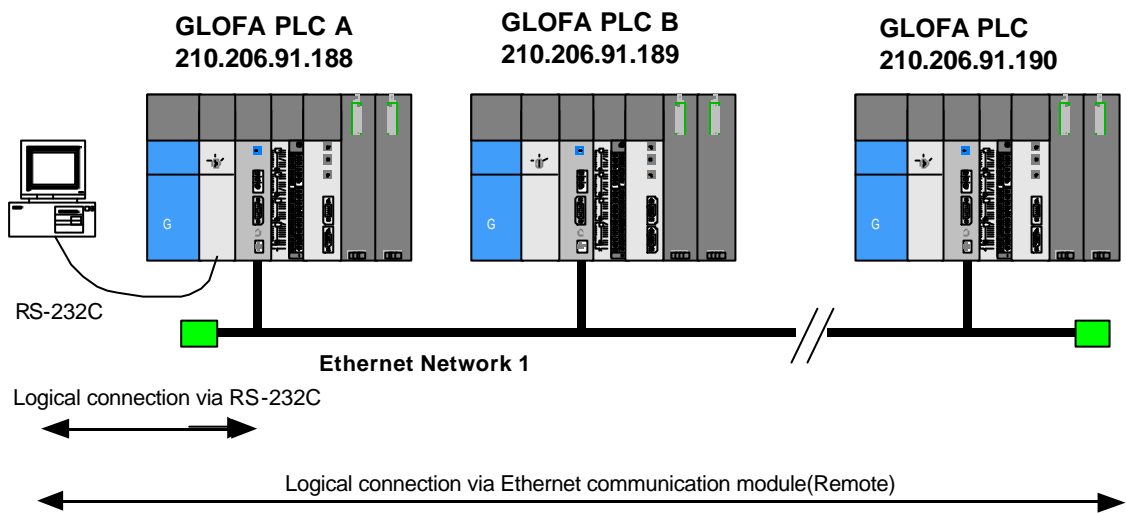
[Figure 9.1(A)] Ethernet Network System

A network is supposed where RS-232C cable is connected to PLC #1 station, and PLC #1, PLC #2 and PLC #N are connected with each other via Ethernet in GMWIN of [Figure 9.1(A)]. To access the contents of PLC #1 station in the figure above, access the contents of local-connected PLC #1 station in GMWIN's online menu. Disconnect PLC #1 station through the menu to access the contents of PLC #N station after the access. Select PLC #N(Station No. : N, PLC #1's Enet slot : 2) from remote connection in the next online menu for logical connection by RS-232C and Ethernet. This status as processed identically to connection with RS-232C cable as moved to PLC #N station is available to execute all functions of programming, download, debugging and monitoring as in PLC #1.

Also, if Ethernet module is installed on PC where GMWIN is operating as connected with the identical network to PLC, 1st remote connection with PLC is available via Ethernet without local connection via RS-232C.

With the communication service of GMWIN, easy access to PLC position even if hard to reach is available from other PLC without repositioning to the remote PLC, which is useful for re-programming after installed.

9.2 GMWIN Connection

All PLCs connected via GLOFA network is available for connection by GMWIN communication service each other. GMWIN remote connection is composed of remote 1 and 2 connection as described below.
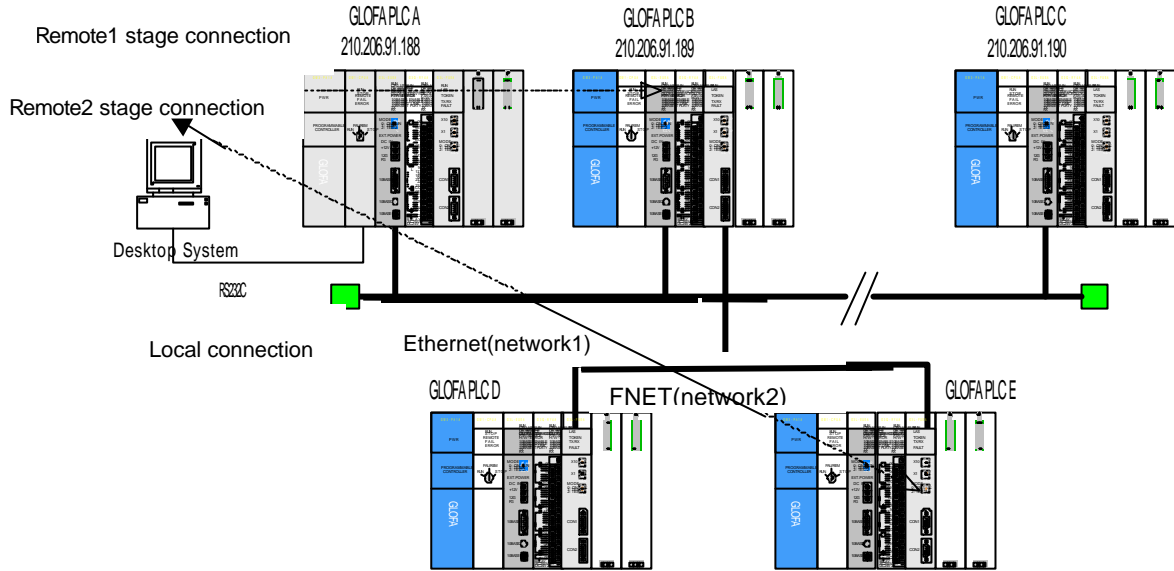

[Figure 9.2(A)] GMWIN remote connection

[Figure 9.2(A)] shows a connection example of remote 1 stage (PLC B) and 2 stage (PLC E) in the system composed of two networks.

9.2.1 Remote1 stage connection (If RS-232C cable used)

For Remote1 stage connection, GMWIN shall be in offline status. Select project option menu bar, to display the following option dialog box from Option, where to select connection option tab.
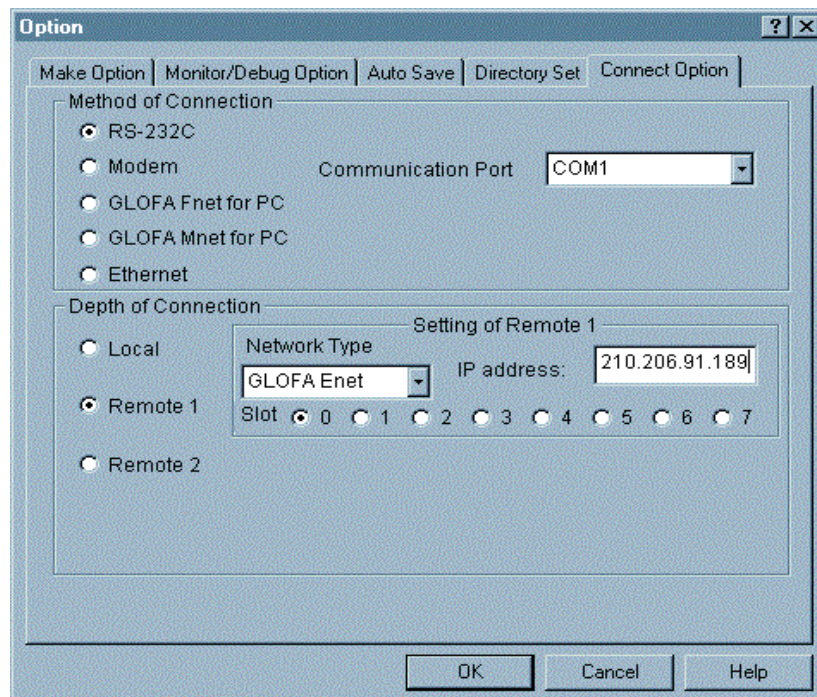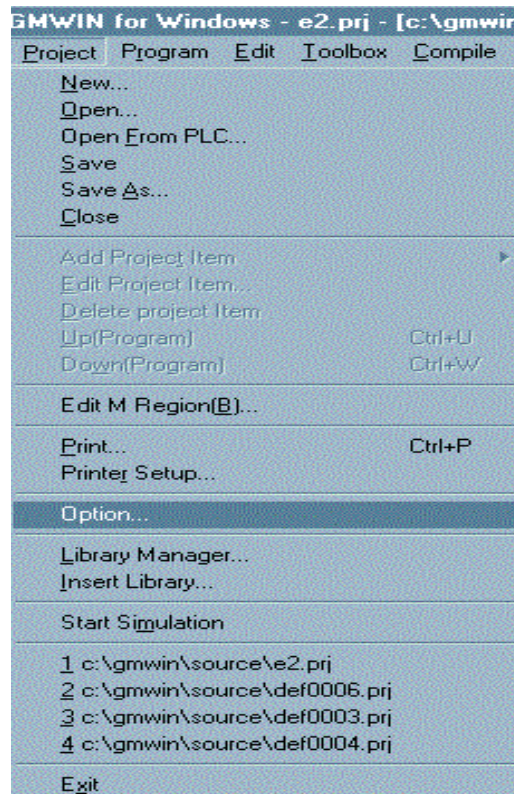
Setting of connection type It is for setting of local connection type. Local connection is applied with RS-232C in [Figure 9.2(A)]. Select the port used in PC for a communication port. The case with Ethernet will be described in the next section. Refer to user manual of each communication module for the case with other connection types.
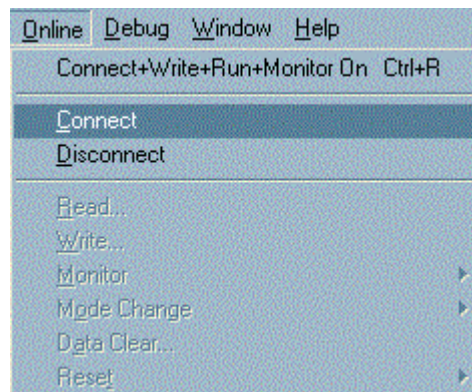
Setting of Connection stage Decide PLC Connection stage of local, remote 1 or remote 2 stage. Select remote 1 stage.

Setting of network type Select network type to be connected at first stage among GLOFA Mnet, Fnet, Cnet, Fdnet and Enet. GLOFA Enet is to be selected because remote 1 stage connection is with Enet in [Figure 9.2(A)].
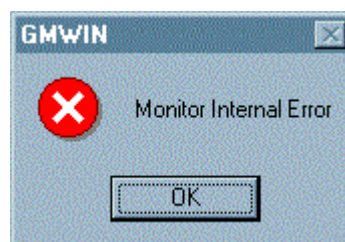
Setting of station No. Select Enet module's IP address installed on other PLC which will be connected at remote 1 stage in network 1. Use IP address, 210.206.91.189 in [Figure 9.2(A)].

Slot It indicates the position of communication module connected to network 1 in local PLC connected via RS-232C. Slect No.0 in [Figure 9.2(A)] as Enet installed on PLC A is on slot No.0.

Now select OK and then Connect from online menu.

Online	Debug	Window	Help
Connect+Write+Run+Monitor On			Ctrl+R
Connect			
Disconnect			
Read...			
Write...			
Monitor			▶
Mode Change			▶
Data Clear...			
Reset			▶

The messages as below may be displayed if connection failed.

GMWIN

❌ Monitor Internal Error

OK

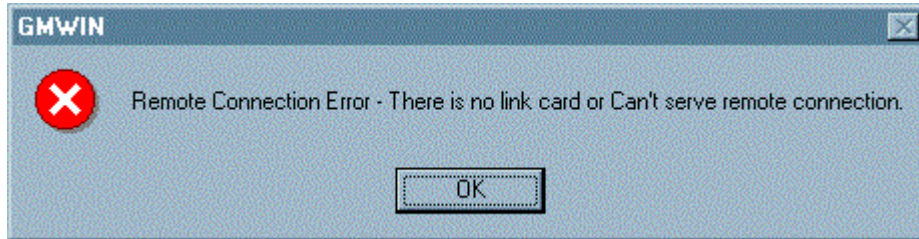(Error on communication line or internal protocol)
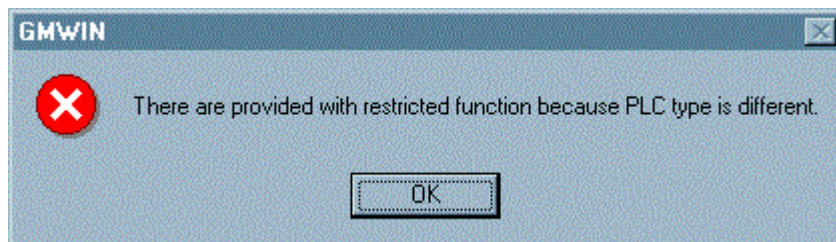
(Error on setting values if unsuitable for remote connection (Project/Option/Connection option))

The following message is displayed if CPU type between the 1 stage connected PLC and presently open project is different from each other, which means limited functions available from online menu.


Remote 1 stage connection-completed status is the logical connection status identical to the local connection with RS-232C cable as moved, where all of online menu is available. (Except that CPU type between PLC and presently open project is disagreeable)

Select Disconnect from online menu to let it disconnected after work accomplished at remote 1 stage connection status.
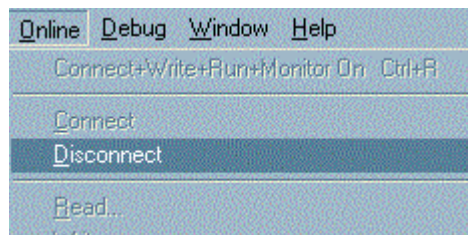

The following OK message will be displayed differently from local connection.
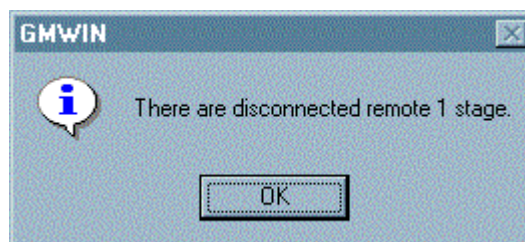
9.2.2 Remote 2 stage connection (If RS-232C cable used)

Select Project/Option/Connection stage from Connection option/remote 2 stage for remote 2 stage connection. [Figure 9.2(A)] shows a connection example with PLC E's Fnet module via PLC B station's Enet module in remote 2 stage connection.

Select remote 2 stage from Project/Option/Connection stage from Connection option to display the following dialog box.
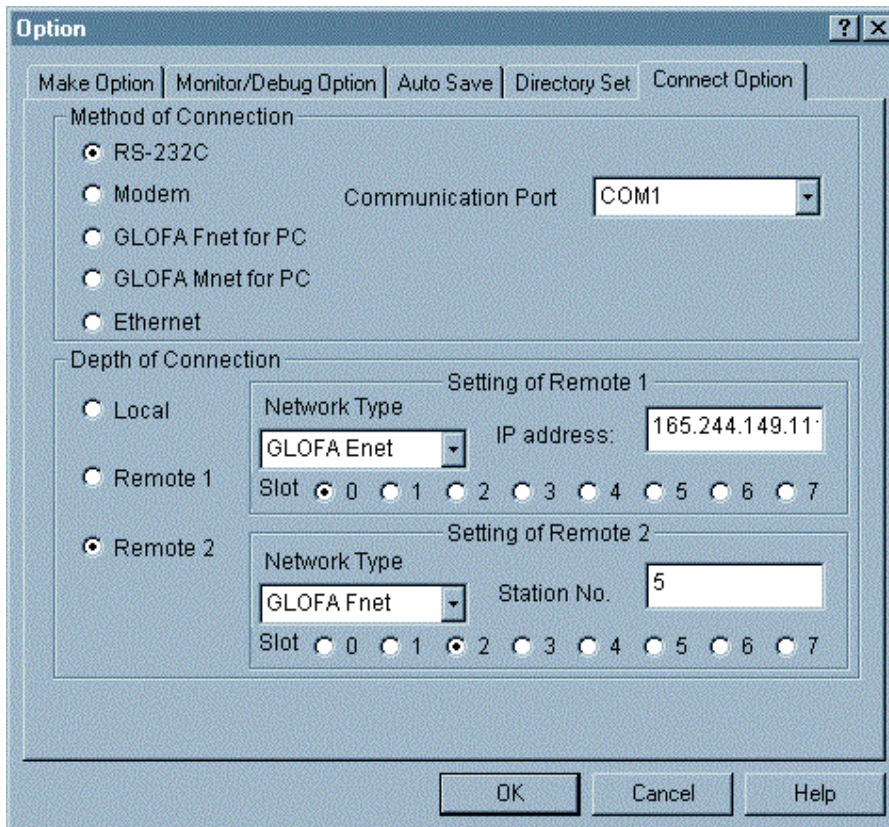
Remote 2 stage only will be described below as the others are the same in the dialog box above.

Setting of network type Select network type to be connected at remote 2 stage among GLOFA
Mnet, Fnet, Enet and Fdnet. Network types of remote 1 stage connection and remote 2
stage connection bear no relation to each other. GLOFA Enet is to be selected because
remote 1 stage stage connection is with Enet in [Figure 9.2(A)]. Since remote 2 stage
connection is by Fnet in [Figure 9.2(A)], remote 2 stage connection shall be by GLOFA
Fnet.

Setting of station No. Use the station No. of the module installed on PLC which will be connected at
Remote 2 stage in network 2 for remote 2 stage. In this case of [Figure 9.2(A)], use 5 for
remote 2 stage as the connection will be performed with module station No. 5 of PLC E.

Setting of slot No. Set **the position of the module installed on self-station PLC(PLC B)** which is remote 2 stage-connected in network 2 to the slot No. Select slot No.0 in the case of [Figure 9.2(A)] as it is installed on slot No.0 of PLC B and the station No. of Fnet module is 3.

Remote 2 stage connection-completed status as above is the logical connection status identical to the connection with RS-232C cable as moved to PLC E, where all of online menu is available. Select Disconnect from the following menu to let it disconnected after work accomplished at remote 2 stage connection status.
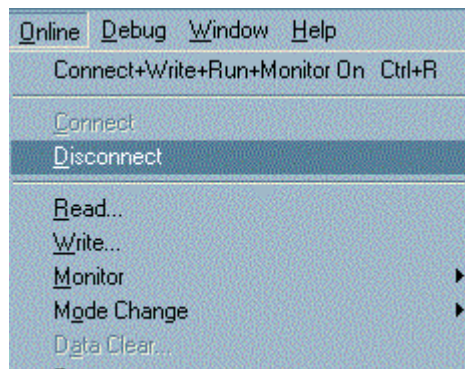
### 9.2.3 Remote 1 stage connection directly from PC connected with Ethernet

Remote 1 stage connection is available via Ethernet without connecting RS-232C with PLC CPU if PC where GMWIN is operating is connected with PLC and network.
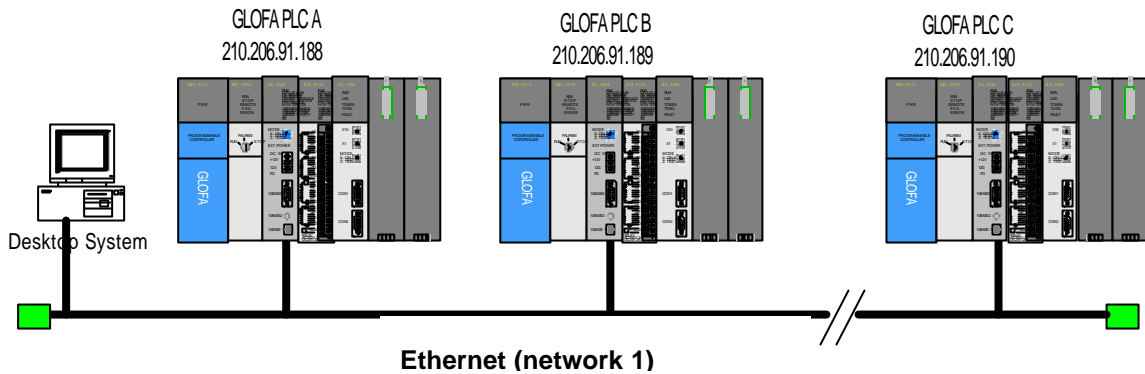
Ethernet (network 1)

[Figure 9.2.3(A)] Remote 1 stage connection directly from PC

[Figure 9.2.3(A)] shows the connection between PC and PLC via Ethernet, where connection to all PLCs on the network is available without RS-232C used in GMWIN. In this case local connection is omissible and remote 1 stage connection is performed with all PLCs.

Select Project/Option/Connection option and change the setting as specified in the dialog box below to perform remote 1 stage connection directly via Ethernet.
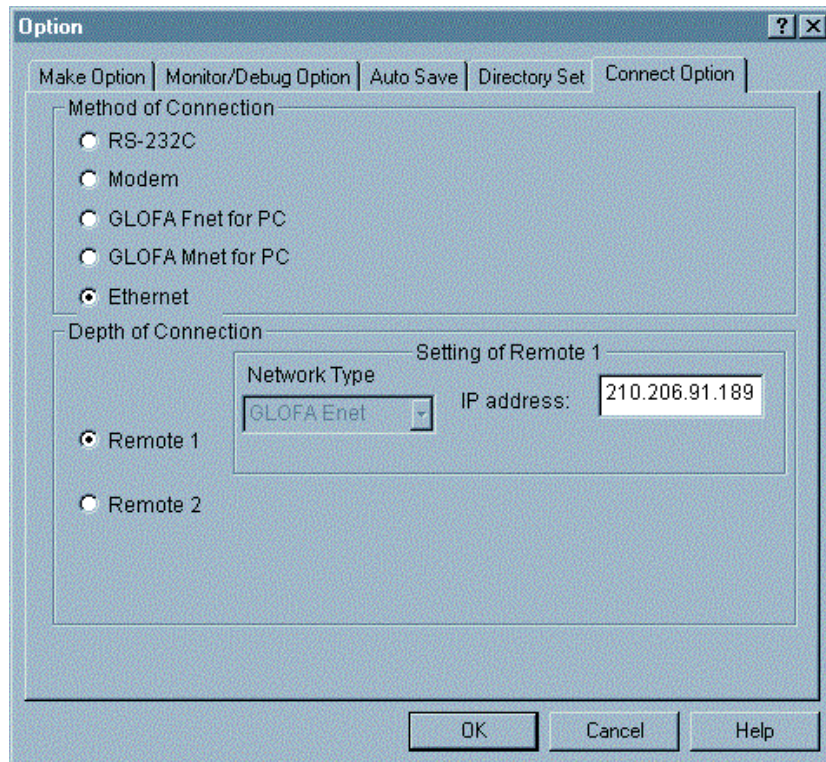
Setting of connection type   Select an applicable type for connection. In the case of [Figure
  9.2.3(A)], select Ethernet because the connection is performed directly via Ethernet
 without application of RS-232C.

Setting of Connection stage Decide PLC Connection stage of remote 1 or remote 2.
  Select remote 1 stage in this case.

Setting of IP address   Set IP address of Enet module to connect to. Use IP address,
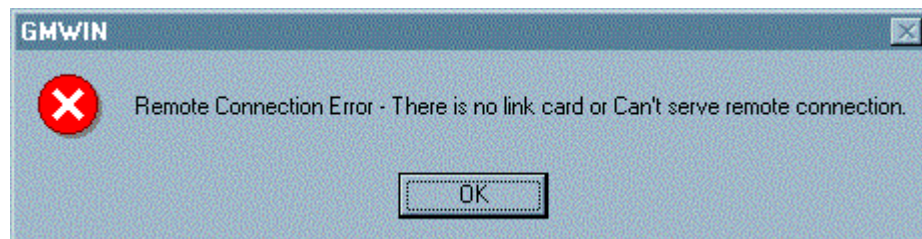 150.150.42.248 to connect to PLC B in [Figure 9.2.3(A)].

The rest procedures are the same as with RS-232C. Now select OK and then Connect from online
menu.
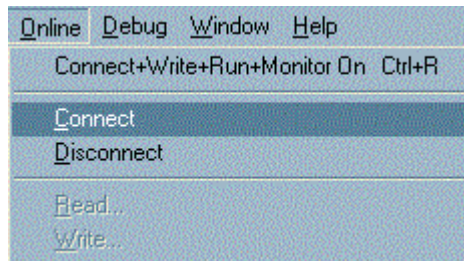
The messages as below may be displayed if connection failed.
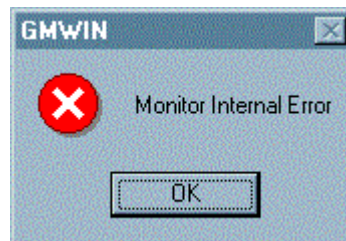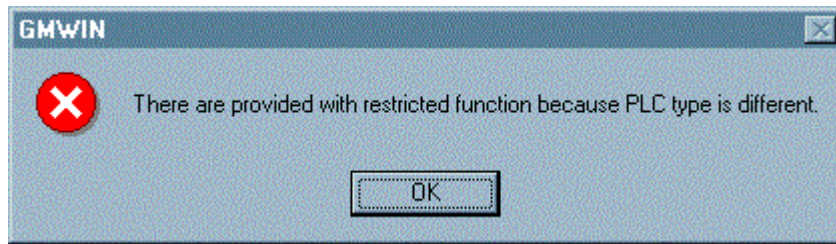

(Error on communication line or internal protocol)

(Error on setting values if unsuitable for remote connection(Projrct/Option/Connection option))

The following message is displayed if CPU type between the 1st connected PLC and presently open
project is different from each other, which means limited functions available from online menu.

Remote 1 stage connection-completed status is the logical connection status identical to the local connection with RS-232C cable as moved, where all of online menu is available. (Except that CPU type between PLC and presently open project is disagreeable)

Select Disconnect from online menu to let it disconnected after work accomplished at remote 1 stage connection status.
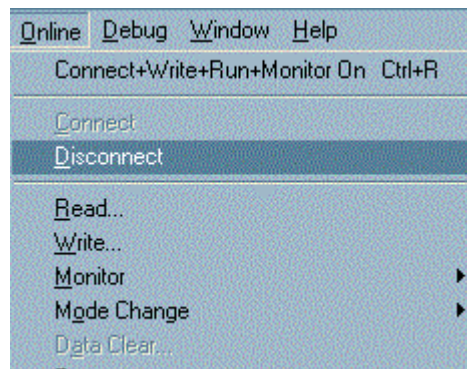
The following OK message will be displayed differently from local connection.
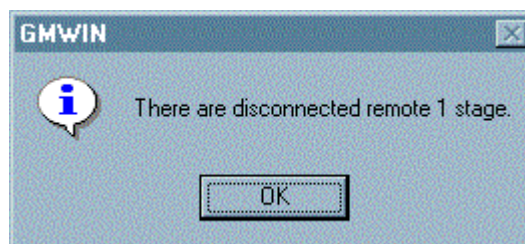
The table below shows connection relationship available between the device (client) which requests connection and the device (server) which performs connection as requested with RS-232C cable connected in GMWIN communication service of GLOFA PLC network.

Server / Client	PC-module (GMWIN)	GM1	GM2	GM3	GM4	GM5	GM3 remote I/O	GM4 remote I/O
PC(GMWIN)	✕	❍	❍	❍	❍	❍	❍	❍
GM1	✕	❍	❍	❍	❍	❍	❍	❍
GM2	✕	❍	❍	❍	❍	❍	❍	❍
GM3	✕	❍	❍	❍	❍	❍	❍	❍
GM4	✕	❍	❍	❍	❍	❍	❍	❍
GM5	✕	❍	❍	❍	❍	❍	❍	❍
GM3 remote I/O	✕	✕	✕	✕	✕	✕	✕	✕
GM4 remote I/O	✕	✕	✕	✕	✕	✕	✕	✕

[Table 9.2.3(A)] Relationship between GMWIN client and server functions

9.2.4 Remote 2 stage connection directly from PC connected with Ethernet

Remote 2 stage connection is available via Ethernet if PC where GMWIN is operating is connected with PLC and network in the case of [Figure 9.2(A)]. The procedures are the same as in remote 1 stage connection and setting example of connection option is as follows.
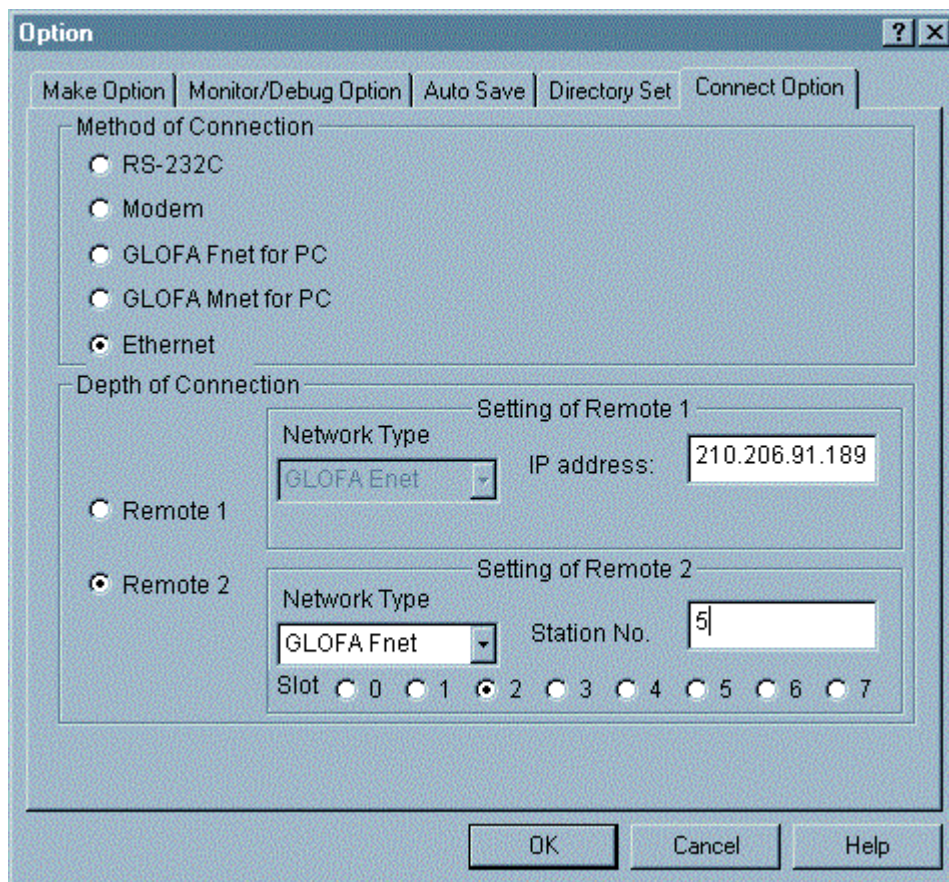
1) The following menus are not available if presently open project and remote 1 & 2 stage connected CPU are not agreed with each other in GMWIN.

> **Precautions for GMWIN Remote stage 1 & 2 connected operation**

    A) Write program and each parameter
    B) Read program and each parameter
    C) Monitor
    D) Flash memory
    E) Set link enabled
    F) I/O information
    G) Compulsory I/O information
    H) I/O SKIP

2) Execute remote connection with applicable project open of the station to connect to for GMWIN programming at remote 1 & 2 connection.

3) Remote connection is available up to Remote 2 stage only.