HIOKI

INSTRUCTION MANUAL

For the 3145-20 NOISE HiLOGGER

Communications

Explains the communication functions which can be used via the LAN and RS-232C interfaces.

HIOKI E. E. CORPORATION

Contents

Introduction

The following instruction manuals are included with the 3145-20 NOISE HiLOGGER. Refer to them as they pertain to your usage of the instrument.

Manual		Content
1	Measurement Guide	**Read first.** Offers an introduction to the 3145-20's basic measuring method for first time users.
2	Instruction Manual	Contains explanation and instructions regarding the instrument's operating method and functions.

CD		Content
3	"DATA VIEWER for 3145" Instruction Manual	Contains information about PC software which can analyze the measurement data recorded by the instrument.
4	"Communications" Instruction Manual (this manual)	Explains the communication functions which can be used via the LAN and RS-232C interfaces.
5	"Communication Commands" Instruction Manual	Explains the commands for remote control of the instrument via the LAN and RS-232C interfaces.

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Notation

Symbols The following symbols in this manual indicate the relative importance of cautions and warnings.

⚠CAUTION	Indicates that incorrect operation presents a possibility of injury to the user or damage to the instrument.
NOTE	Indicates advisory items related to performance or correct operation of the instrument.

(⇒ p.)	Indicates the location of reference information.
	Indicates quick references for operation and remedies for troubleshooting.
*	Indicates that descriptive information is provided below.
[ ]	Menus, commands, dialogs, buttons in a dialog, and other names on the screen and the keys are indicated in brackets.
	Unless otherwise specified, “Windows” represents Windows 95, 98, Me, Widows NT, Windows 2000, or Windows XP.
	Dialog box represents a Windows dialog box.

Mouse Operations

Click	Press and quickly release the left button of the mouse.
Right-click	Press and quickly release the right button of the mouse.
Double click	Quickly click the left button of the mouse twice.

Overview

You can use the communication functions listed below through the RS-232C, LAN interface equipped as standard on the instrument. This manual explains how to connect the communications cable and the settings on the instrument.
In order to connect the instrument to a PC, prepare the sold separately 9612 RS-232C CABLE (for personal computer), 9721 RS-232C CABLE (for modem), and 9642 LAN CABLE.

Interface / Communications	RS-232C (⇒ p. 5)	10BASE-T LAN (⇒ p. 7)	PPP (⇒ p. 23)
Send communication commands from a PC to the instrument and take measurements (⇒ p. 31)	Available	Available	Available
Control the instrument from a PC through an HTTP server (⇒ p. 35)	--	Available*1	Available*1
Receive email on a PC when there's a warning (⇒ p. 45)	--	Available	Available*2
Take measurements with the instrument through an FTP server (⇒ p. 60)	--	Available	Available

*1 During measurement using a program created in Visual Basic, for example, remote operation by a HTTP server is not possible.

*2 Email may not be sent depending on your Internet service provider. In such case, send mail via the intra-network mail server using a LAN.

RS-232C

RS-232C is a serial interface standard established by the EIA (Electronic Industries Association) which specifies the interface between DTE (data terminal equipment) and DCE (data communications equipment). The instruments can send and receive remote control signals and data to a PC (personal computer) using a subset of this standard.

LAN

Local area networks (LANs) are systems that provide communications between PCs in a limited areas at particular locations, such as offices, factories and schools.
The Ethernet 10BASE-T interface provided in the instruments is a standard LAN connection interface that uses TCP/IP communications protocols. The 10BASE-T standard is defined by IEE 802.3i as having a transfer speed of 10 Mbps. Connections are made by twisted-pair cable, and are normally arranged in a star configuration around a hub. The maximum cable length between a terminal and the hub is 100 meters. The TCP/IP protocols are commonly used for LANs, as they are the basis for the Internet as well. The protocols are defined by RFC documents published on the Internet.

PPP

Connect a modem to the RS-232C interface for performing communication based on PPP (Point-to-Point Protocol) over public telephone networks via the modem in your PC.

Specifications

LAN Interface

- Compatible with IEEE802.3 Ethernet 10BASE-T DHCP, DNS
- Screen display, remote control via HTTP server
- Acquiring data from internal memory or PC card via FTP server
- Email notification delivered at time of alarm

RS-232C Interface

- Conforms with ETA RS-232C, mini DIN round 9-pin connector
- Communication function via PPP connection (functions similarly to LAN connection)

Interfaces

RS-232C Communications

Through RS-232C communications, you can send communication commands from the PC and perform remote control and send/receive data. (⇒ p. 31) For communications, set the instrument's Comm screen to the same settings as the PC to connect to.

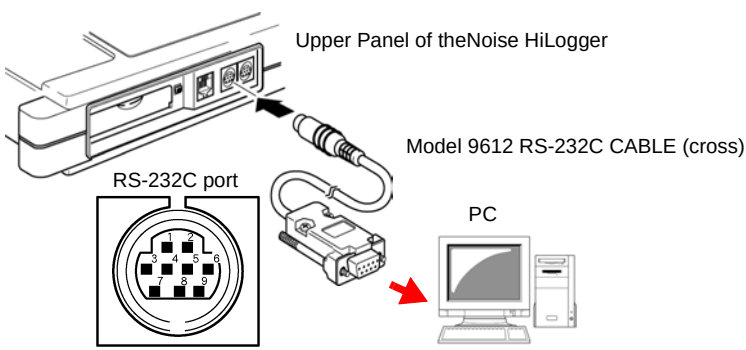
RS-232C Connection

⚠CAUTION The 9612 RS-232C CABLE and the instrument connectors should be mated carefully. Forcing the connectors together can damage the contacts.

NOTE The RS-232C interface is not isolated from the instrument chassis.

1. Connect the 9612 RS-232C CABLE to the instrument's RS-232C connection terminal.

2. Connect the RS-232C cable's connector to the PC.

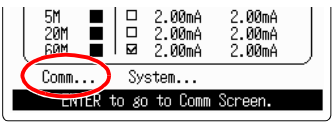


Pin No.		Circuit Designation	CCITT	EIA Symbol	JIS Symbol	Common
2	Receive Data	Receive Data	104	BB	RD	RxD
3	Send Data	Send Data	103	BA	SD	TxD
5	Signal ground or common return	Signal Ground	102	AB	SG	GND
7	Request to send	Request to Send	105	CA	RS	RTS
8	Clear to Send	Clear to Send	106	CB	CS	CTS

RS-232 Settings

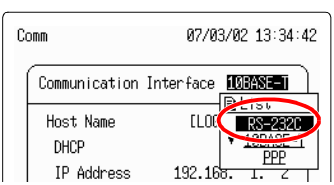
Remote control is provided by commands sent from the controlling PC. RS-232C settings are made on the instrument. These settings must match those on the PC to enable communications.

1. **Press SETUP and open the Status screen, and move the blinking cursor to [Comm] with ◁▽△▷.**



2. **Press ENTER and open the Comm screen.**

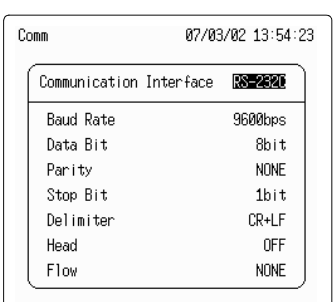
3. **Press ◁▽△▷ and move the blinking cursor to [Communication Interface], and open the selection window with ENTER.**



4. **Press △/▽ and select [RS-232C], and set with ENTER.**

To cancel, press CANCEL.

5. **Set each of the items continually.**



Items	Settings
Baud Rate	1200 bps/ 2400 bps/ 4800 bps/ 9600 bps/ 19200 bps
Data Bits	7 bit/ 8 bit
Parity	None/ Even/ Odd
Stop Bits	1 bit/ 2 bit
Delimiter	LF/ CR+LF
Header	OFF/ ON
Flow Control	None/ X-on/X-off/ Hardware

- If overrun or framing errors occur, reduce the communications speed.
- Do not attempt change settings while communications are underway.

10BASE-T LAN Communications

Through LAN communications, you can use the functions below.

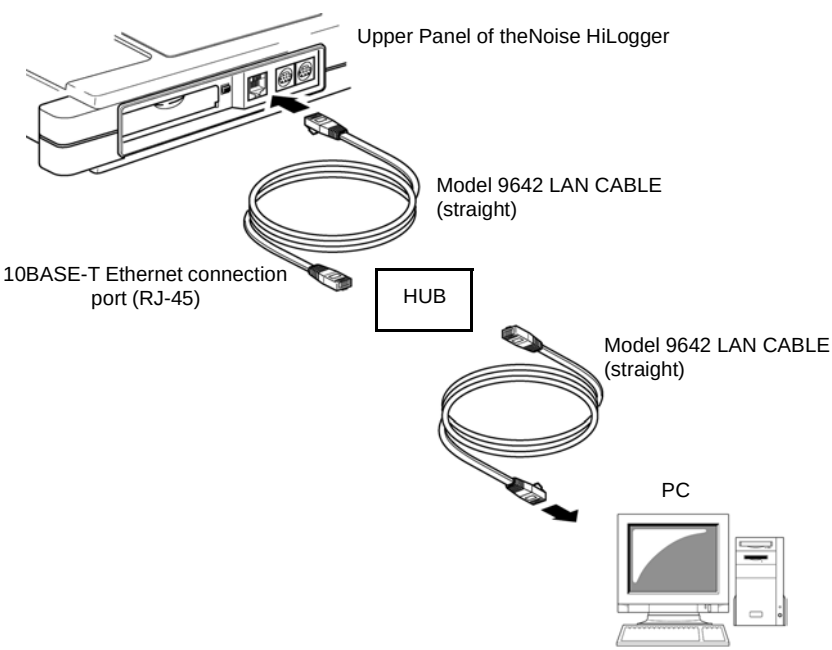
- "Take Measurements with Communication Commands"(⇒ p. 31)
- "Remote Measurement Using HTTP Server"(⇒ p. 35)
- "Receiving Email when there is a Warning"(⇒ p. 45)
- "Receiving Measurement Data from an FTP Server"(⇒ p. 60)

LAN Connections

When the instrument and a PC are connected through a hub

1. Connect the hub to the instrument's 10BASE-T LAN connection terminal with the 9642 LAN CABLE.

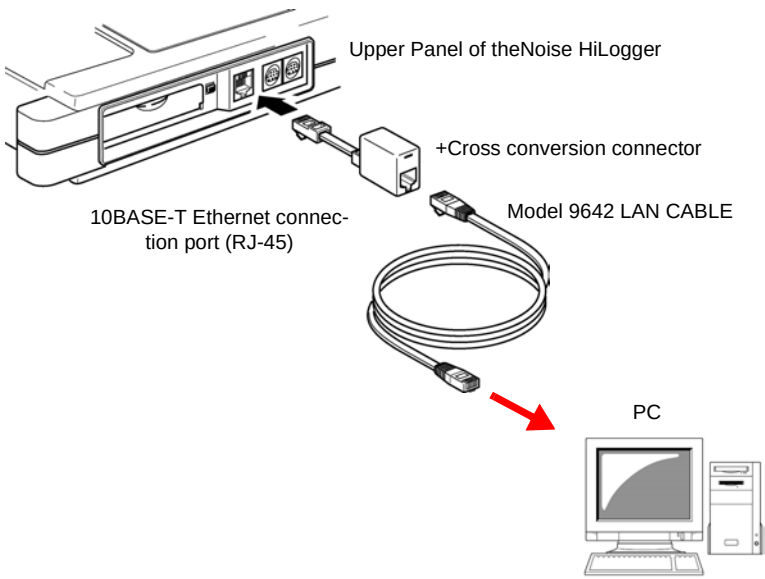
2. Connect the PC to the hub with another LAN cable.



When the instrument and a PC are connected one-to-one

The 9642 LAN CABLE is a straight cable. When the instrument and a PC are connected one-to-one, use the supplied cross-over adapter.

1. **Connect the cross-over adapter to the instrument's 10BASE-T LAN connection terminal.**
2. **Connect the 9642 LAN CABLE to the cross-over adapter.**
3. **Connect the LAN cable's connector to the PC.**

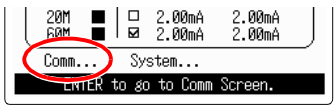


NOTE
- The instruments network settings must be correct in order to communicate with a PC via LAN.
- When connecting to an existing LAN, contact the network administrator for the appropriate settings.

LAN Settings

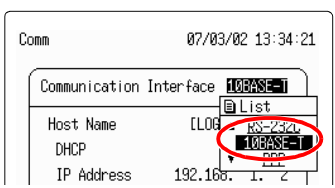
Following settings must match those on the PC to enable communications.

1. **Press SET UP and open the Status screen, and move the blinking cursor to [Comm] with ◇.**



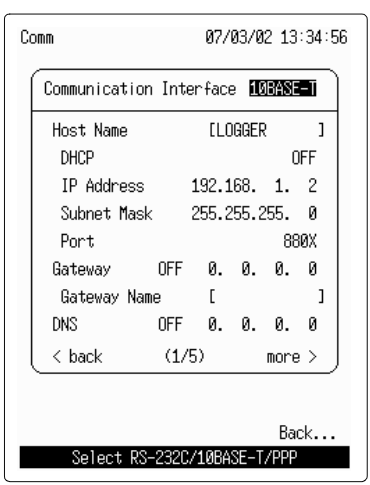
2. **Press ENTER and open the Comm screen.**

3. **Press ◇ and move the blinking cursor to [Communication Interface], and open the selection window with ENTER.**



4. **Press ◇/◇ and select [10BASE-T], and set with ENTER.**
To cancel, press CANCEL.

5. **Set each of the items continually.**



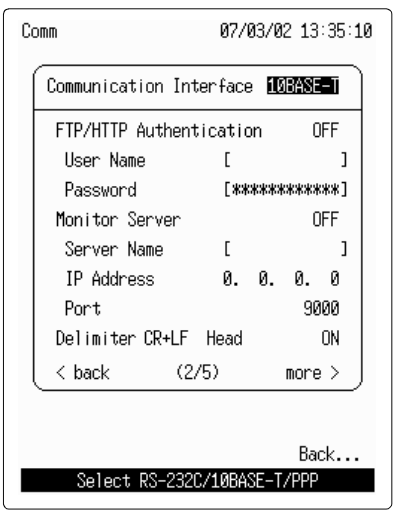
Items	Settings
Host Name	Up to 12 characters
DHCP	OFF/ ON
IP Address	?.?.?.? (? represents 0 to 255)
Subnet Mask	?.?.?.? (? represents 0 to 255)
Port	???X (? represents 0 to 9) Setting range: 100X to 999X
Gateway	OFF/ ON ?.?.?.? (? represents 0 to 255)
Gateway Name	Up to 32 characters
DNS	OFF/ ON ?.?.?.? (? represents 0 to 255)

"LAN Connection Examples"(⇒ p. 14)
"Communication Problems"(⇒ p. 16)
"LAN Setting Items"(⇒ p. 18)

6. **Press ◇ and move the blinking cursor to [more >], and open page 2/5 with ENTER .**

Or you can press SCROLL CURSOR to switch the pages.

Set each of the items.

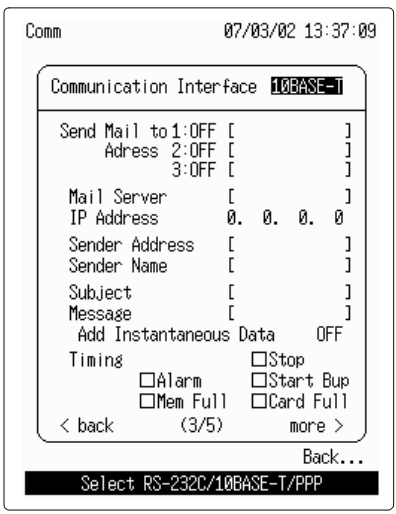


Items	Settings
FTP/HTTP Authentication	OFF/ ON
User Name	Up to 12 characters
Password	Up to 12 characters Each character is shown on the screen as an asterisk (*).
Monitor Server	OFF/ ON
Server Name	Up to 32 characters
IP Address	?.?.?.? (? represents 0 to 255)
Port	???? (? represents 0 to 9) Setting range: 1000 to 9999
Delimiter	LF/ CR+LF
Header	OFF/ ON

"Remote Measurement Using HTTP Server"(⇒ p. 35)
"Receiving Measurement Data from an FTP Server"(⇒ p. 60)

7. Press ◁△▷ and move the blinking cursor to [more >], and open page 3/5 with ENTER .

Set each of the items.

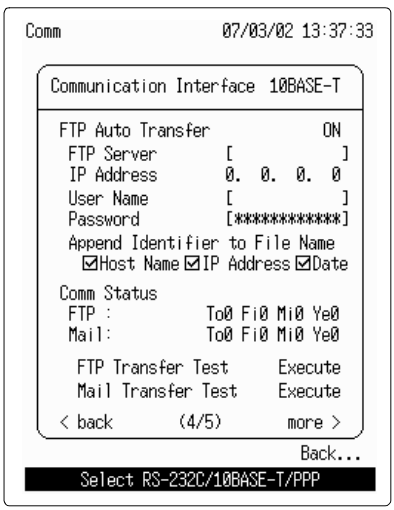


Items	Settings
Send Mail To (1 to 3)	OFF/ ON
Address (1 to 3)	Up to 32 characters
Mail Server	Up to 32 characters
Mail Server IP Address	?.?.?.? (? represents 0 to 255)
Sender Address	Up to 32 characters
Sender Name	Up to 32 characters
Subject	Up to 32 characters
Message	Up to 32 characters
Add Instantaneous Data	OFF/ ON
Send at Stop Trigger	OFF/ ON
Send at Alarm	OFF/ ON
Send at Start Backup	OFF/ ON
Send at Memory Full	OFF/ ON
Send at Card Full	OFF/ ON

"Receiving Email when there is a Warning"(⇒ p. 45)

8. **Press ◁△▷ and move the blinking cursor to [more >], and open page 4/5 with ENTER .**

Set each of the items.

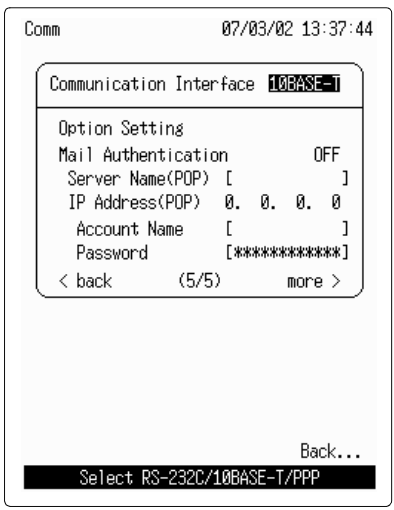


Items	Settings
FTP Auto Transfer	OFF/ ON
FTP Server	Up to 32 characters
FTP Server IP Address	?.?.?.? (? represents 0 to 255)
User Name	Up to 12 characters
Password	Up to 12 characters
Append Indentifier to File Name Host Name: IP Address: Date:	 Attach Host Name to file name to be sent. Attach IP address to file name to be sent. Attach time of day to file name to be sent.
(Communication Status, FTP)	Result of FTP data transfer Total number of items, Number of items sent, Number of items failed to send, and Number of items not yet sent
(Communication Status, Mail)	Result of mail transfer Total number of items, Number of items sent, Number of items failed to send, and Number of items not yet sent
(FTP Transfer Test)	Executing this test sends test data.
(Mail Transfer Test)	Executing this test sends test mail.

"Measurement Data to an FTP Server"(⇒ p. 52)

9. **Press ◁▽▷ and move the blinking cursor to [more >], and open page 5/5 with ENTER .**

Set each of the items.



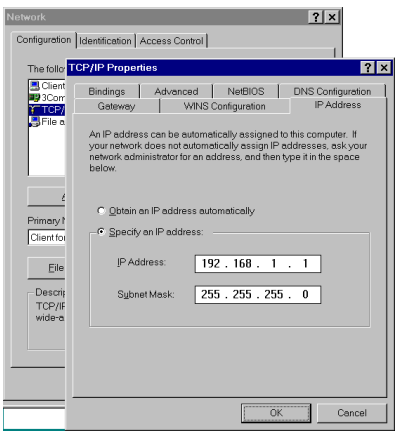
Items	Settings
Option Setting	
Mail Authentication	OFF/ ON
Server Name (POP)	Up to 32 characters
IP Address (POP)	?.?.?.? (? represents 0 to 255)
Account Name	Up to 32 characters
Password	Up to 32 characters

"Receiving Email when there is a Warning"(⇒ p. 45)

LAN Connection Examples

Connecting one PC and one instrument with a 9642 LAN CABLE.

Network Addresses : 192.168.1.0/24 (Private IP addresses)
Subnet Mask : 255.255.255.0
PC (The settings are made manually)
IP Address : 192.168.1.1
For a network as shown above, set the PC and the instrument's Comm screen as shown next.

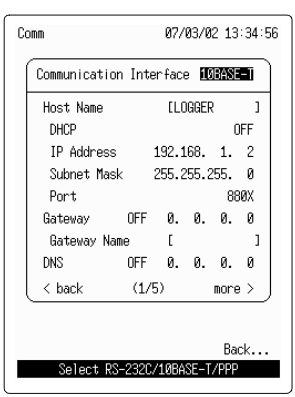


PC Settings

IP Address : 192.168.1.1

Subnet Mask: 255.255.255.0

The network settings on the PC are made in the **[Network]** dialog box. To get to this dialog box, double-click the **[Network]** icon in **[Control Panels]**.



Instrument Settings

Host Name : LOGGER
DHCP : OFF
IP Address : 192.168.1.2
Subnet Mask : 255.255.255.0
Port Number : 880X
Gateway : OFF
DNS : OFF

When connecting one PC and one instrument by the conversion connector of the 9642 LAN CABLE, the IP address can be specified arbitrarily, but there is no problem with using a private IP address.
Set the instrument as shown below, so that every instrument has a unique host name and IP address.

Connecting one PC to multiple instrument's in a HUB.

Use a straight cable to connect the PC to the HUB and to connect the instrument to the HUB.
When building a local network with no outside connections, it is recommended that private IP addresses be used for the IP addresses.
Make the same settings on the PC as shown left. Set the IP address manually.
Set the instrument as shown below, so that every instrument has a unique host name and IP address.

The first instrument (The settings are made manually)

Items	Settings
Host Name	LOGGER1
IP Address	192.168.1.2

The second instrument (The settings are made manually)

Items	Settings
Host Name	LOGGER2
IP Address	192.168.1.3

The third instrument (The settings are made manually)

Items	Settings
Host Name	LOGGER3
IP Address	192.168.1.4

Common settings

Items	Settings
DHCP	OFF
Subnet Mask	255.255.255.0
Gateway	OFF
Port Number	880X

Communication Problems

Have you completed the LAN setting before connection?

The LAN setting is initialized when all the settings for communications have been made. Be sure to complete this LAN setting before you connect the instrument to the network. When you edit the settings while the instrument is connected to the network, you may accidentally send illegal address information to the network. For example, you may select the same IP address as that of another instrument on the network.

Is the cable connected properly?

When you make one-to-one connection between the instrument and a PC, you must use a cross cable.
The short cable of the straight-cross converter supplied with the 9642 LAN CABLE is a cross cable. The connector is a straight male-female converter.
The cable might not be connected to the connector properly. Remove the cable and then connect it again.

Have you set the IP address of the PC correctly?

Choose **[Run]** from the Start menu. Type **[winipcfg]** (Windows95/98/Me) or **[ifconfig /all]** (Windows NT/2000/XP) and click **[Enter]**. Doing so will enable you to get the IP address of the PC's network interface, subnet mask, and gateway address.

When the IP address setting is not correct

1. Choose **[Settings]-[Control Panels]** from the Start menu.
2. Double-click the **[Network]** icon to get the **[Network Properties]** dialog box.
3. Edit the IP address setting.

Can the instrument communicate with the PC?

If the IP addresses of the instrument and the PC are correct, check to see whether the instrument receives signals from the PC using the ping protocol.

Windows95/98/Me

Choose **[Programs]-[MS-DOS Prompt]** from the Start menu.

WindowsNT/2000/XP

Choose **[Programs-Accessories]-[Command Prompt]** from the Start menu.

When the cursor starts blinking, type **[ping < IP address of the host you want to check >].**

If the IP address can be obtained from DNS by providing the host name, you can type in the host name instead of the IP address.
For example, if the IP address of the instrument is 192.168.1.2, type **[ping 192.168.1.2]** and press Enter. If the screen display is as shown below, the instrument and the PC are communicating properly. "Time" represents how long it took for the instrument and the PC to communicate.

Pinging 192.168.1.2 with 32 bytes of data:
Reply from 192.168.1.2: bytes=32 time<10ms TTL=32
Reply from 192.168.1.2: bytes=32 time<10ms TTL=32
Reply from 192.168.1.2: bytes=32 time<10ms TTL=32
Reply from 192.168.1.2: bytes=32 time=1ms TTL=32

If the screen display is as shown above, the instrument and the PC are not communicating properly. Check the cable connection again.
Pinging 192.168.1.2 with 32 bytes of data:
Reply from 192.168.1.2: Host is down.
Reply from 192.168.1.2: Host is down.
Reply from 192.168.1.2: Host is down.
Reply from 192.168.1.2: Host is down.

LAN Setting Items

Host name and IP address settings

To connect the instrument to a LAN network, you need to set the host name of the instrument, IP address, subnet mask, port number, and gateway.

When connecting to an existing network, the specification items must first be assigned by the network system manager (department manager). Make sure they never overlap with another machine.
You will ne-ed to obtain the following from your network administrator.

Host Name _____ (up to 12 characters)
DHCP server (yes or no)
IP Addresses *1 ___.___.___.___
Subnet Mask *1 ___.___.___.___
Port No. (When the default, 8800-8809, cannot be used.)
(Specify the first three of four decimalcolumns, and 0 to 9 in the first column is used and reserved by this machine.)
___X
Gateway *2 (yes or no)
Gateway IP addresses (There is a Gateway.) *2
___.___.___.___
DNS server *3 (yes or no)
DNS server IP address (There is a DNS server.) *3
___.___.___.___

*1: Skip setting if you use DHCP.
*2: Skip setting if you can obtain gateway information with DHCP.
*3: Skip setting if you can obtain DNS information with DHCP.

Host name

This is the name of the instrument in the network. It must be distinct from the addresses of all other instruments in the network.

DHCP (Dynamic Host Configuration Protocol)

Each instrument has to have a unique IP address to connect to a network. If the number of instruments connecting to a network increases, it will become quite difficult to manually assign a unique IP address to each instrument.
To avoid this difficulty, DHCP (Dynamic Host Configuration Protocol) is now widely used. DHCP is a protocol for assigning dynamic IP addresses to instruments on a network.

With a DHCP server on the network, when the server is enabled, IP addresses, subnet masks, and other network settings will be automatically assigned to the instruments.

The **[Obtain an IP address automatically]** option in **[TCP/IP]-[IP Address of Network]** dialog box in Windows 95/98/Me/2000 uses DHCP.

IP address

The TCP/IP protocol used by this instrument for LAN communications uses IP addresses to identify each instrument. Version 4 (IPv4) standard IP addresses consist of 32-bit numerical values, normally indicated as four decimal octets (8-bit values) separated by decimals, such as 192.168.1.1.
Set an IP address distinct from the addresses of other instruments on the network, as with the host name.
When DHCP is enabled, an IP address will be automatically assigned.

Subnet mask

An IP address consists of the network address and the host address. The network address identifies the network (subnet) that the instrument is on. The host address identifies the instrument.
To specify the division between the network address and the host address, an identifier called a subnet mask is used. A subnet mask is represented by a 32-bit number. The bits for the network address are set to 1 and the bits for the host address are set to 0.

For example, if the first 24 bits show the network address and the remaining 8 bits show the host address, the network will be shown as follows.
11111111 11111111 11111111 00000000
This is represented by a hexadecimal number (0xffffff00) or, as with an IP address, by a number with decimals (255.255.255.0).
When a net mask is combined with an IP address, it is shown as 192.168.1.1/24. The number 24 after the slash shows that the net mask is made up of 24 bits, i.e., 255.255.255.0.
Set the same subnet mask for all the instruments on a subnet.
When DHCP is enabled, a subnet mask will be automatically assigned.

IP address assignment

Each instrument must have a unique IP address, as controlled by the RIR (Regional Internet Registry).
IP address assignment is controlled by the NIC (Network Information Center) of each country. You have to apply for assignment of an IP address from your country's NIC.

Besides the IP addresses and global IP addresses controlled by the NIC, the following addresses are defined as private IP addresses in the RFC1597.
10. 0.0. 0/8 10. 0.0.0 to 10.255.255.255
172. 16.0.0/12 172. 16.0.0 to 172. 31.255.255
192.168.0.0/16 192.168.0.0 to 192.168.255.255
You can use these private IP addresses freely. However, you cannot connect to the Internet directly with these addresses.
Select a private IP address when you make a one-to-one connection between the instrument and a PC using a cross cable or when you build a closed network using the HUB only. If, however, all the bits of the host address are 0, the address will be used as a network address showing the subnetwork. If all the bits of the host address are 1, the address will be used as a broadcast address showing all the hosts on the subnetwork. In these cases, the address cannot be used as the IP address of the instrument.

For example, if the network is 192.168.1.0/24, the address 192.168.1.255 shows all the instruments connected to the subnet of 192.168.1.0. On this subnet, you can use a total of 254 IP addresses between 192.168.1.1 and 192.168.1.254; the addresses 192.168.1.0 and 192.168.1.255 would be excluded.

Port number

With the TCP/IP protocol used by this instrument, connections can be made separately for every application. These connections will be distinguished by port number. The instrument is set to use 8800-8809 as the default setting.
8802 (The instrument is the server.): controlled by communications commands.
8803 to 8809: reserved

The settings above do not need editing, unless use of some port numbers is restricted for security reasons if or some port numbers cannot be used on the PC. You can edit the left three digits only. The rightmost digit (0 to 9) is used by or reserved for the instrument.

Gateway

A gateway is a instrument that connects different networks.
To communicate with a instrument on a network with a different address, you have to set the IP address of the instrument as the gateway. Set the same gateway for all instruments on the same subnet.
When you communicate only with the instruments on the same subnet (for example, if you connect the instrument to a PC only), select OFF.
When DNS is enabled and if the IP address is not 0.0.0.0, use that IP address. If the IP address is 0.0.0.0, obtain the IP address corresponding to the name of the gateway from DNS. When you set the name of the gateway, use the fully qualified domain name (FQDN), such as "dns.hioki.co.jp." If you use the host name only, like "dns," you may not get the IP address from DNS.
When DHCP is ON and you have obtained gateway information from the DHCP, this information is given priority.

DNS (Domain Name System)

With the TCP/IP protocol, each individual instrument is identified by the IP address. The addresses consist of a series of numbers and they are not easy to remember. To simplify, a text-based host name is used instead of an IP address. On a network, host names and IP addresses have to be converted from one to the other. There are two systems to perform such conversion; DNS and WINS. This instrument uses the DNS system.
When DNS is on a network, with DNS turned ON and the IP address of the DNS server specified, you can specify the instrument with which you want to communicate using its text name.
When DHCP is ON and you have obtained DNS information from DHCP, this information is given priority.

Delimiter, Header

Set the delimiter and header when you use the "Control by communications" commands.
In the default setting, character string commands are transmitted through the TCP protocol connection to port No.8802 of the instrument.
For details of the commands, see the Interface Manual on the Application Disk (CD).

The delimiter sets a new line for the command response. The instrument accepts both LF and CR+LF from a PC.
"Header" sets whether a header is added to the command response.

PPP (RS-232C + Modem) Communications

Through PPP communications, you can use the functions below over a public telephone networks between the instrument and the PC.

- "Take Measurements with Communication Commands"(⇒ p. 31)
- "Remote Measurement Using HTTP Server"(⇒ p. 35)
- "Receiving Email when there is a Warning"(⇒ p. 45)
- "Receiving Measurement Data from an FTP Server"(⇒ p. 60)

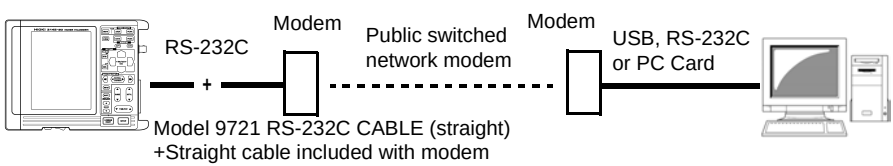
RS-232C Cable Connection

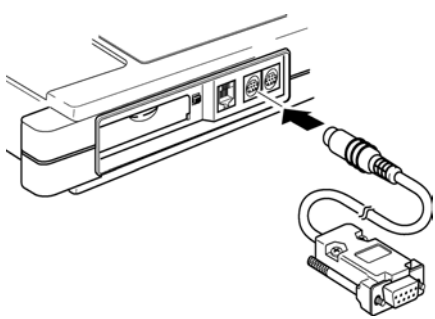
1. Connect the 9721 RS-232C CABLE to the instrument's RS-232C connection terminal.

2. Connect the 9642 LAN CABLE's connector to the modem.

3. Connect the modem to the PC with the RS-232C cable.

(You can also use USB cable or a PC card)





Model 9721 RS-232C CABLE

Recommended Modems

The instrument uses public switched network.

(AT Command)

Instrument side	None
PC side	AT&D0S0=2&W0

(Telephone Number)

Instrument side	?????????? (telephone number)
PC side	?????????? (telephone number)

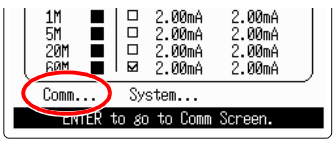
- When using a modem connected to a private branch exchange (PBX) or TA, you may not be able to hear the dial tone (i.e., sound you hear after picking up the telephone receiver). In that case, suffix "X3" to the AT command.

- When making a call from an extension to an outside line, or to dial a number after dialing 0, enter "0," (zero and a comma) before the telephone number as in "0, ??????????." This keeps the phone waiting a certain time.

PPP Settings

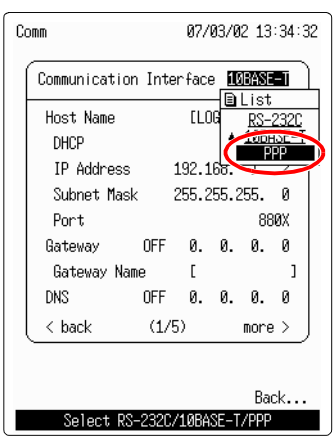
Following settings must match those on the PC to enable communications.

1. **Press SET UP and open the Status screen, and move the blinking cursor to [Comm] with ◇.**



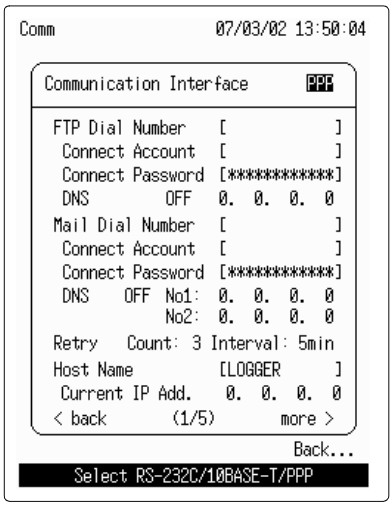
2. **Press ENTER and open the Comm screen.**

3. **Press ◇ and move the blinking cursor to [Communication Interface], and open the selection window with ENTER.**



4. **Press ◇/◇ and select [PPP], and set with ENTER.**
To cancel, press CANCEL.

5. Set each of the items continually.



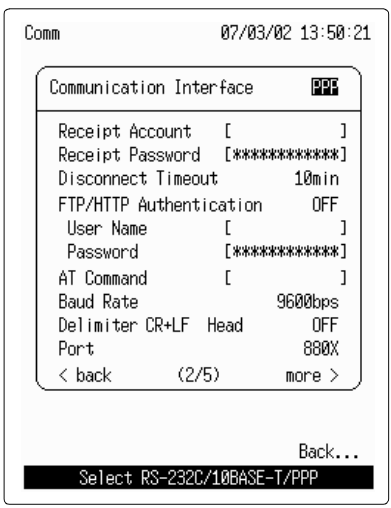
Items	Settings
FTP Dial Number	0123456789
Connect Account	Up to 32 characters
Connect Password	Up to 32 characters
DNS	OFF/ ON
IP Address	?.?.?.? (? represents 0 to 255)
Mail Dial Number	0123456789
Connect Account	Up to 32 characters
Connect Password	Up to 32 characters
DNS	OFF/ ON
IP Address, No. 1	?.?.?.? (? represents 0 to 255)
IP Address, No. 2	?.?.?.? (? represents 0 to 255)
Retry Count	?? (? represents 0 to 9) Setting range: 0 to 10 times
Retry Interval	?? (? represents 0 to 9) Setting range: 0 to 10 minutes
Host Name	Up to 12 characters
Current IP Address	?.?.?.? (? represents 0 to 255)

"Receiving Email when there is a Warning"(⇒ p. 45)
"Measurement Data to an FTP Server"(⇒ p. 52)

6. **Press ◁△▷ and move the blinking cursor to [more >], and open page 2/5 with ENTER .**

Or you can press SCROLL CURSOR to switch the pages.

Set each of the items.

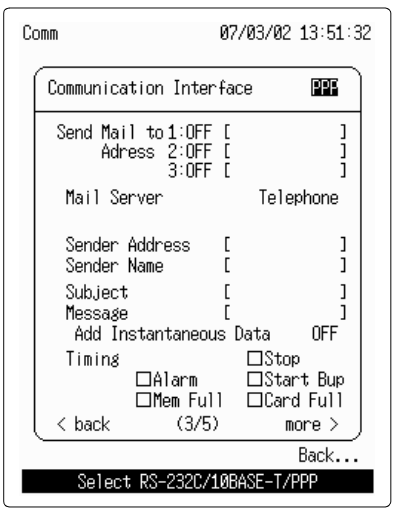


Items	Settings
Receipt Account	Up to 12 characters
Receipt Password	Up to 12 characters
Disconnect Timeout	?? (? represents 0 to 9) Setting range: 0 to 10 minutes
FTP/HTTP Authentication	OFF/ ON
User Name	Up to 12 characters
Password	Up to 12 characters
AT Command	Up to 20 characters
Baud Rate	1200 bps, 2400 bps, 4800 bps, 9600 bps, 19200 bps
Delimiter	CR/ LF+CR
Header	OFF/ ON
Port	???? (? represents 0 to 9) Setting range: 100X to 999X

"Remote Measurement Using HTTP Server"(⇒ p. 35)
"Receiving Measurement Data from an FTP Server"(⇒ p. 60)
Set the transmission speed to 19200 bps.

7. Press ◁△▷ and move the blinking cursor to [more >], and open page 3/5 with ENTER .

Set each of the items.

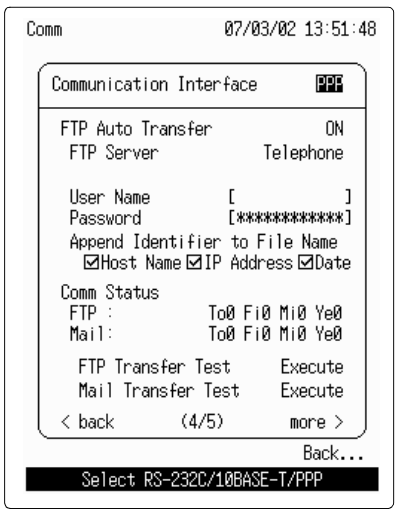


Items	Settings
Send Mail To (1 to 3)	OFF/ ON
Address (1 to 3)	Up to 32 characters
Mail Server	Telephone, IP address, and server name
Mail Server Name	Up to 12 characters
Mail Server IP Address	?.?.?.? (? represents 0 to 255)
Sender Address	Up to 32 characters
Sender Name	Up to 32 characters
Subject	Up to 32 characters
Message	Up to 32 characters
Add Instantaneous Data	OFF/ ON
Send at Stop Trigger	OFF/ ON
Send at Alarm	OFF/ ON
Send at Start Backup	OFF/ ON
Send at Memory Full	OFF/ ON
Send at Card Full	OFF/ ON

"Receiving Email when there is a Warning"(⇒ p. 45)

8. **Press ◁△▷ and move the blinking cursor to [more >], and open page 4/5 with ENTER.**

Set each of the items.

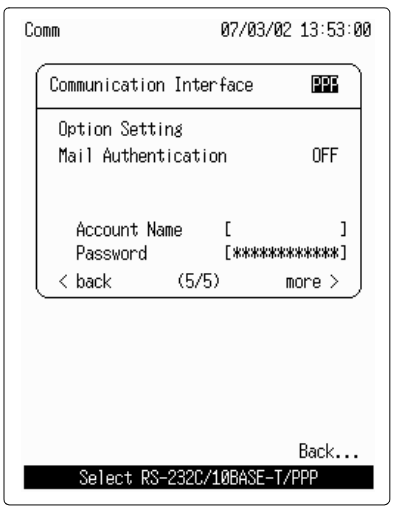


Items	Settings
FTP Auto Transfer	OFF/ ON
FTP Server	Telephone, IP address, and server name
FTP Server Name	Up to 12 characters
FTP Server IP Address	?.?.?.? (? represents 0 to 255)
User Name	Up to 12 characters
Password	Up to 12 characters
Append Identifier to File Name Host Name: IP Address: Time:	 Attach host name to file name to be sent. Attach IP address to file name to be sent. Attach time of day to file name to be sent.
(Communication Status, FTP)	Result of FTP data transfer Total number of items, Number of items sent, Number of items failed to send, and Number of items not yet sent
(Communication Status, Mail)	Result of mail transfer Total number of items, Number of items sent, Number of items failed to send, and Number of items not yet sent
(FTP Transfer Test)	Executing this test sends test data.
(Mail Transfer Test)	Executing this test sends test mail.

"Measurement Data to an FTP Server"(⇒ p. 52)

9. **Press and move the blinking cursor to [more >], and open page 5/5 with ENTER.**

Set each of the items.



Items	Settings
Option Setting	
Mail Authentication	OFF/ ON
Server Name (POP)	Up to 32 characters
Server IP Address (POP)	?.?.?.? (? represents 0 to 255)
Account Name	Up to 32 characters
Password	Up to 32 characters

"Receiving Email when there is a Warning"(⇒ p. 45)

Communication Functions

Take Measurements with Communication Commands

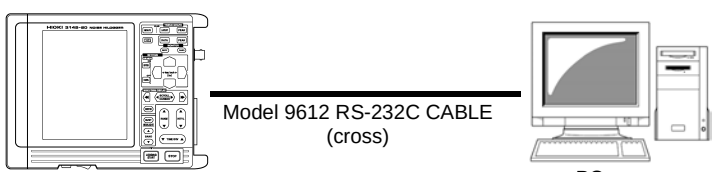
You can send commands to the instrument from a PC with a program created in Visual Basic and take measurements. For details about the communication commands, see the supplied application disk (CD). The explanation of the communication commands is saved in the HTML format.

Communication Preparation

Make preparations before starting communications.

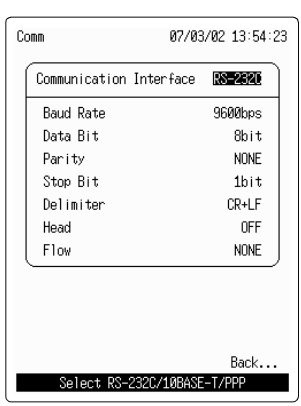
When using RS-232C

1. **Connect the PC and the instrument with the 9612 RS-232C CABLE. (⇒ p. 5)**
2. **Set the instrument's Comm screen. (⇒ p. 9)**



Example of Comm screen settings

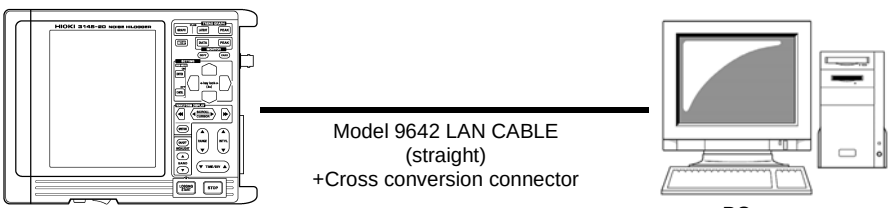
Comm screen



When using 10BASE-T LAN

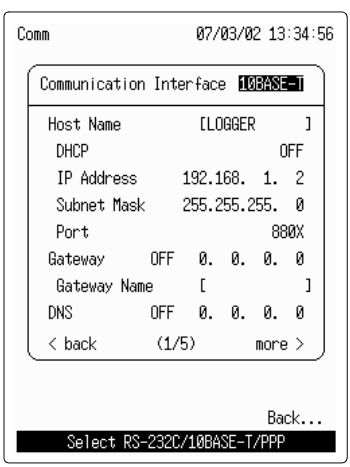
1. Connect the PC and the instrument with the 9642 LAN CABLE. (⇒ p. 7)

2. Set the instrument's Comm screen. (⇒ p. 9)



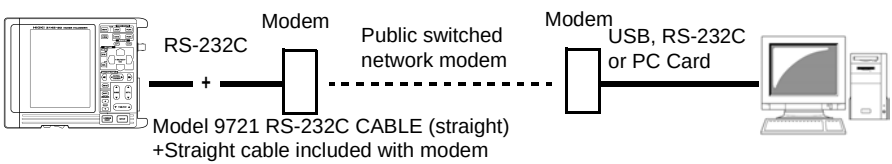
Example of Comm screen settings

Comm screen (10BASE-T 1/5)



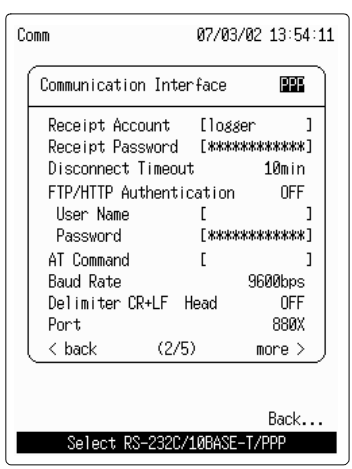
When using PPP

1. **Connect the modem and the instrument with the 9721 RS-232C CABLE. (⇒ p. 23)**
2. **Connect the modem to the PC with the RS-232C cable.**
   (You can also use USB cable or a PC card)
3. **Set the instrument's Comm screen. (⇒ p. 25)**
4. **Set communications on the PC. (⇒ p. 77)**



Example of Comm screen settings

Comm screen (10BASE-T 2/5)



Sending Communication Commands

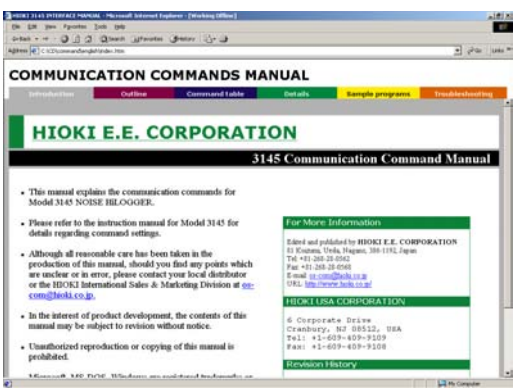
Create a program with Visual Basic and send commands to the instrument.

1. **Insert the supplied CD into the CD-ROM drive.**

2. **The main screen will open automatically. Click [English] for the display language.**
If the main screen does not open automatically, open **[index.htm]** with a web browser.

3. **Click [Communication Commands Manual] .**

4. **The communication commands manual will open.**



5. **Create a program and execute it.**

Remote Measurement Using HTTP Server

The HTTP server function allows you to set up this instrument, acquire data, and monitor the screen by using a general WWW browser like Internal Explorer without having to install dedicated application software in your PC.
You can control the instrument from a PC through this HTTP server. Using the HTTP server function, you can start and stop measurements, display the current measurement value, retrieve the internal memory data, retrieve data via FTP, set comments, and perform remote control.

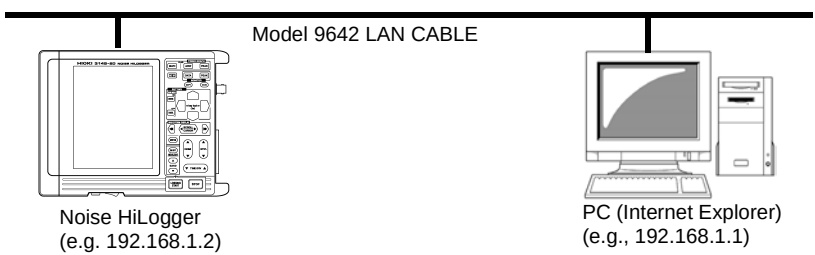
Communication Preparation

Make preparations before starting communications.

When using 10BASE-T LAN

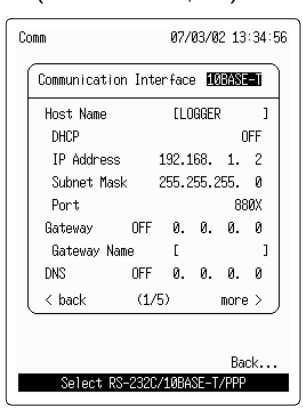
1. Connect the PC and the instrument with the 9642 LAN CABLE. (⇒ p. 7)

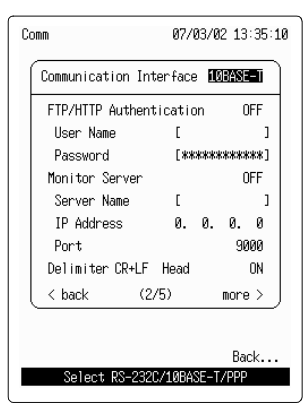
2. Set the instrument's Comm screen. (⇒ p. 9)



Example of Comm screen settings

Comm screen (10BASE-T 1/5, 2/5)





When using PPP

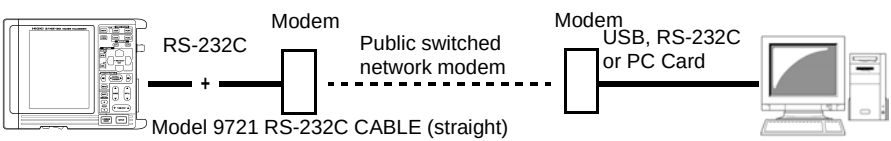
1. Connect the modem and the instrument with the 9721 RS-232C CABLE.
(⇒ p. 23)

2. Connect the modem to the PC with the RS-232C cable.
(You can also use USB cable or a PC card)

3. Set the instrument's Comm screen. (⇒ p. 25)

4. Set the modem on the PC.
Consult the instruction manual supplied with each modem.

5. Set the dial-up settings on the PC. (⇒ p. 77)



Model 9721 RS-232C CABLE (straight)
+Straight cable included with modem

Example of Comm screen settings

Comm screen (PPP 2/5)

Receipt Account : Set the user name (e.g., logger) to be entered at PC dial-up connection.
Refer to "Answer Calls on the Instrument from the PC"(⇒ p. 77).

Receipt Password : Set the password (e.g., logger) to be entered at PC dial-up connection.
Refer to "Answer Calls on the Instrument from the PC"(⇒ p. 77).

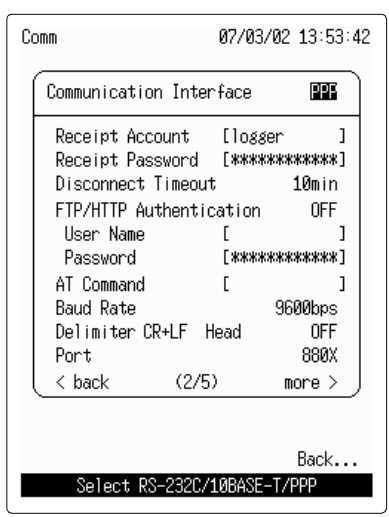
Disconnect Timeout :
When no communication is performed, the instrument waits the time set here before disconnecting.

AT Command : If necessary, the AT command can be specified for the modem as an option.
Refer to "PPP (RS-232C + Modem) Communications"(⇒ p. 23).

Commands : Consult the instruction manual supplied with each modem.

Port, Delimiter, Header:
Specify the port number used by this instrument.
Refer to "LAN Settings"(⇒ p. 9).

Baud Rate : (Slow down if you cannot communicate.)



Control with the Web Browser

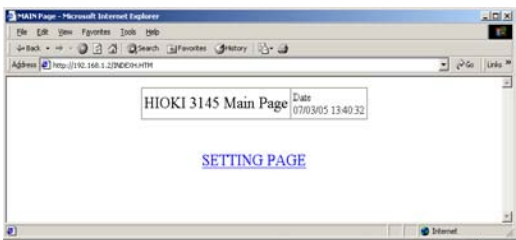
You can display the main page on the PC's web browser and control the instrument.

Displaying the Main Page

1. Launch Internet Explorer.

2. Enter the instrument's address in the address bar and the 3145 Main Page will be displayed.

(Enter http://192.168.1.2 here)



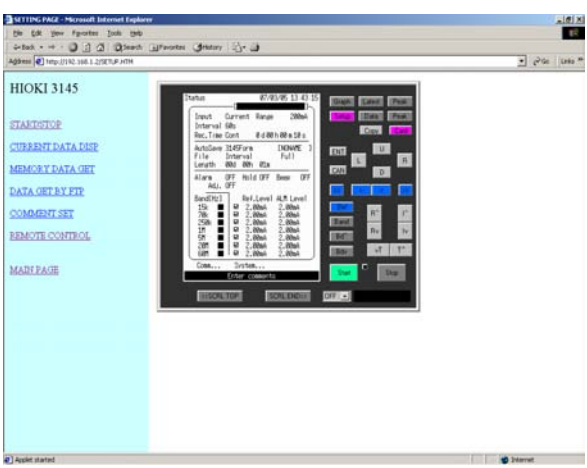
3. Click [SETTING PAGE].

(When connected via a modem using PPP communications, the address is like http://192.168.55.2)

4. If [FTP/HTTP Authentication] is [ON] on the instrument's Comm screen, you are asked for your user name and password.

Enter your user name and password, and click **[Set]**.

5. The instrument's screen will be displayed in the web browser as-is.



- Keys can be pressed in the same panel layout as in this instrument.
- You can select the screen refresh rate.
- When the screen is refreshed, the rate at which the start LED goes on and off is also updated.
- Click inside the screen to move the blinking cursor without using the up/down and left/right arrow keys.

If the HTTP screen does not appear

Choose **[Tools] - [Internet Options]** on the Internet Explorer tool bar and click on the **[Advanced]** tab. Check the box for **[Use HTTP1.1]** and remove the check from the box for **[Use HTTP1.1 through proxy connections].** if it is checked. Also, choose the **[Connections]** tab of **[Internet Options]**, click on the **[LAN Settings]** button, and remove the check from the box for **[Use a proxy server]** if it is checked.

If the HTTP screen appears but the remote control screen does not

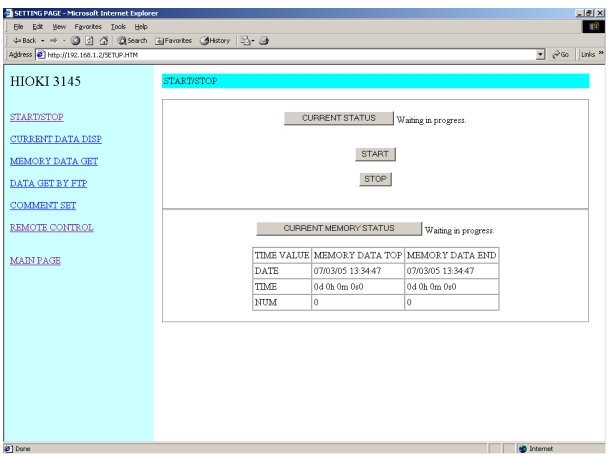
Choose **[Tools] - [Internet Options]** on the Internet Explorer tool bar and click on the **[Security]** tab. Choose **[Internet]** and click on the **[Customize Level]** button. Scroll down to **[Java permissions]** and choose a permission level to enable Java. If Java is not installed, reinstall Internet Explorer with Java included.

NOTE

- To ensure that HTTP will not be inadvertently accessed by any third party, we recommend limiting connections by user name and password on the instrument Comm screen.
- Internet Explorer version 4 or later is supported.
  Netscape Navigator can also be used, but in such case, part of the browser screen may be unable to operate normally.
- Using a program created in Visual Basic, for example, remote operation by a HTTP server is not possible.

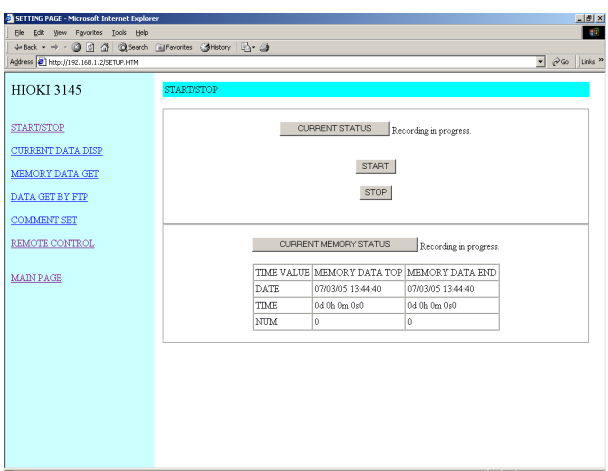
Starting and stopping measurement

1. **Click [START/STOP] on the settings screen. The screen below will be displayed.**



2. **Click [START]. The instrument's logging measurement will start.**

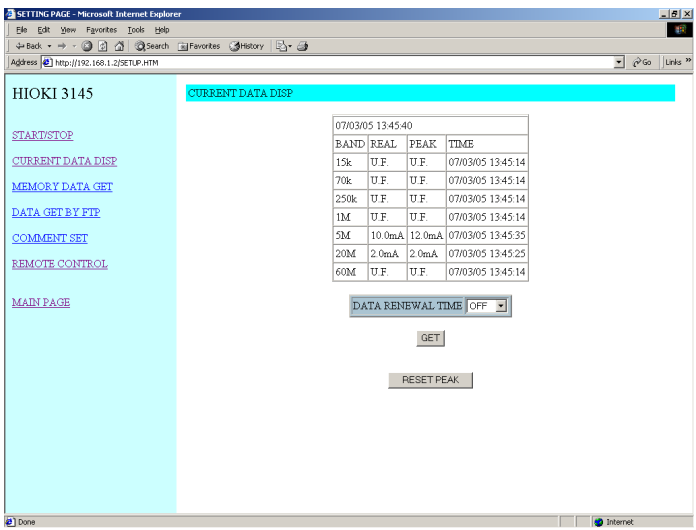
You can check the current measurement status on the browser.



3. **Click [STOP] to stop the measurements.**

Current value display

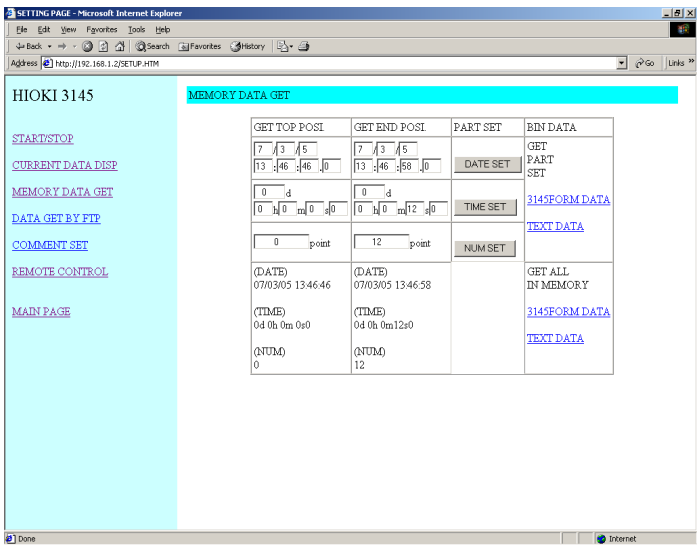
1. **Click [CURRENT DATA DISP] on the settings screen. The screen below will be displayed.**



2. **To change the screen's renewal rate, set with [DATA RENEWAL TIME].**

Acquiring data from memory

1. **Click [MEMORY DATA GET] on the settings screen. The screen below will be displayed.**



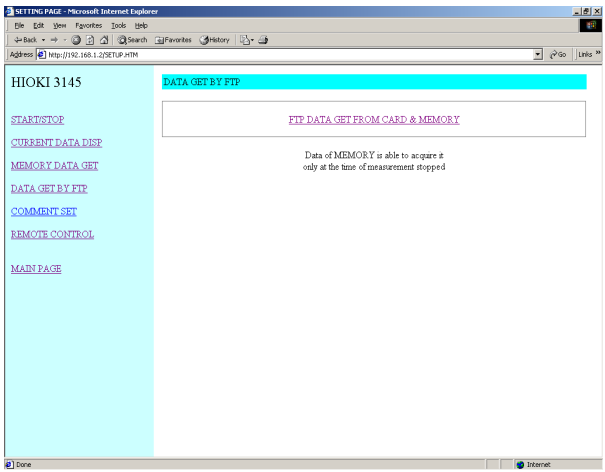
2. **Specify and retrieve a range of data saved in the internal memory during the instrument measurement.**

You can also retrieve all of the data.
Click **[3145 FORM DATA]** to retrieve binary data; click **[Get Text]** to retrieve text data.

NOTE If you cannot save data by clicking on **[3145 FORM DATA]**, right click **[3145 FORM DATA]** and from the menu execute **[Save Target As]**. If you cannot save the text data, perform in the same way.

Data acquisition using FTP

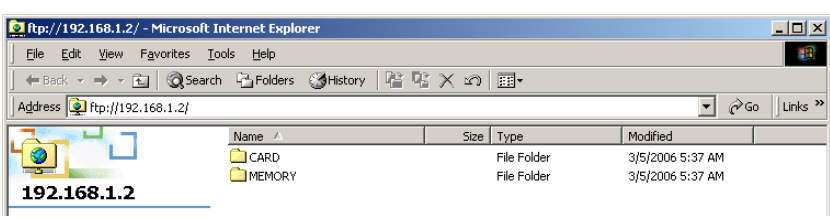
1. **Click [DATA GET BY FTP] on the settings screen. The screen below will be displayed.**



2. **Click [FTP DATA GET FROM CARD & MEMORY]. You can retrieve the instrument's PC card files and the data containing measurements in internal memory from the web using FTP.**

3. **If [FTP/HTTP Authentication] is [ON] on the instrument's Comm screen, you are asked for your user name and password. Enter your user name and password and click [Set] .**

See also " Receiving Measurement Data from an FTP Server" (⇒ p. 60).

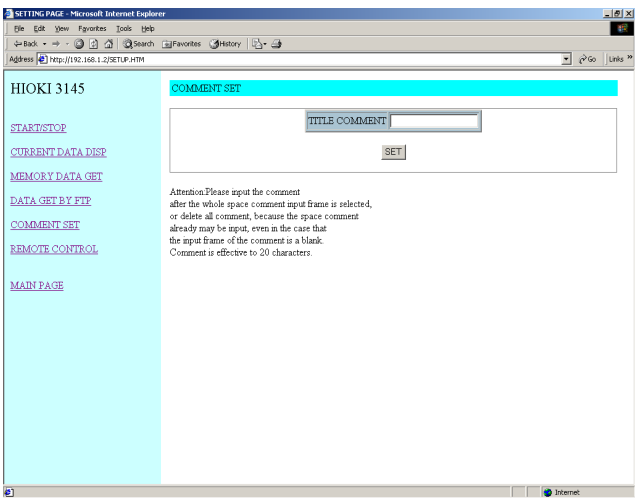


NOTE

- During measurements, you cannot retrieve measurement data in internal memory. You can retrieve them after stopping measurement.
- We recommend that you set the user name and password on the instrument's Comm screen to restrict connections to the instrument so that a third party does not accidentally delete your files. When multiple PCs frequently access the instrument, set **[FTP/HTTP Authentication]** to OFF.

Comment settings

1. **Click [COMMENT SET] on the settings screen. The screen below will be displayed.**



2. **Set the instrument's comments.**

Receiving Email when there is a Warning

You can receive an email on a remote/networked PC or on your mobile phone through an SMTP mail server when the measurement value exceeds the reference warning value and the instrument is in the warning state. You can also receive an email in other situations such as when measurements stop, when recovering from a power outage, when internal memory is full, and when the PC card is full. You can register up to 3 addresses to receive email.

NOTE

- If warnings are frequently generated you may receive not a few emails. In order to avoid this, set warning retention to **[ON]** on the settings screen so that you can receive only the first warning for each warning channel.
- Email can be sent during logging measurements only. During monitor measurements, email will not be sent even in the warning output state.

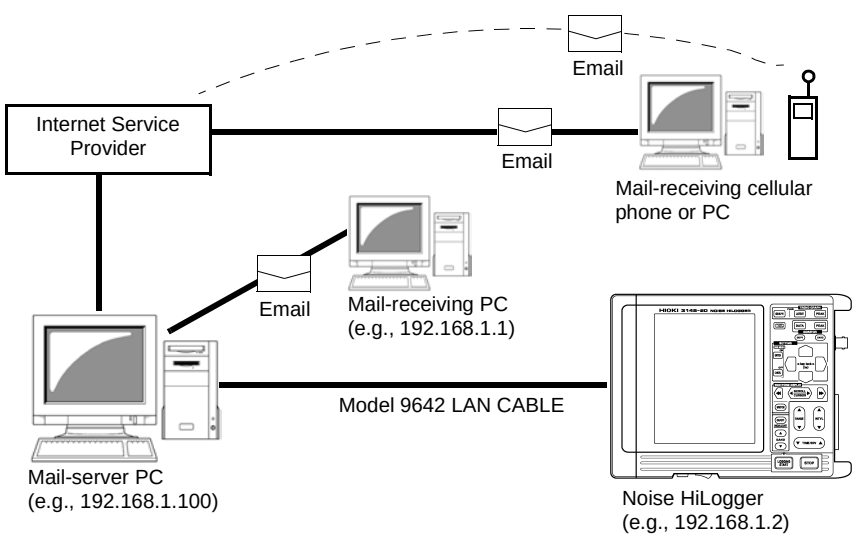
Communication Preparation

Make preparations before starting communications.

When using 10BASE-T LAN

1. Connect the PC and the instrument with the 9642 LAN CABLE. (⇒ p. 7)

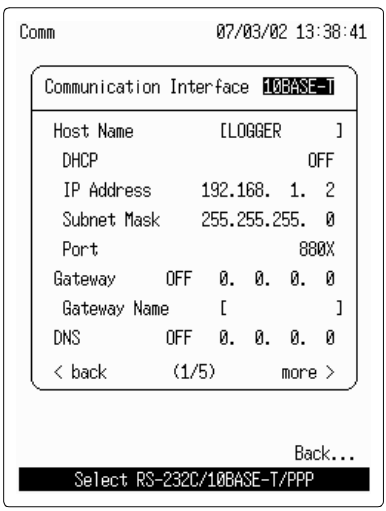
2. Set the instrument's Comm screen. (⇒ p. 9)



Example of Comm screen settings

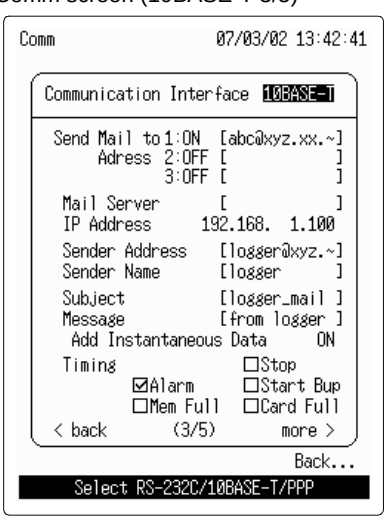
For sending email from this instrument ("logger@xyz.xx.xx" to "abc@xyz.xx.xx") via SMTP mail server 192.168.1.100 at start trigger occurrence

Comm screen (10BASE-T 1/5)



IP address: 192.168.1.2

Comm screen (10BASE-T 3/5)



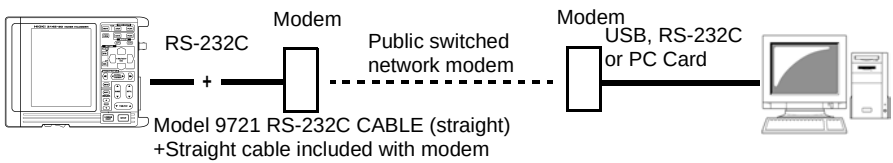
Send Mail To 1	ON Address 1 abc@xyz.xx.xx
Send Mail To 2	OFF Address 2
Send Mail To 3	OFF Address 3
Mail Server	
IP Address	192.168.1.100 (Set the SMTP mail server.)
Sender Address	logger@xyz.xx.xx
Sender Name	logger
Subject	logger_mail
Message	Mail from logger
Timing	ON
Stop Trigger	OFF
Alarm	OFF
Start Backup	OFF
Memory Full	OFF
Card Full	OFF

When Using PPP

1. Connect the modem and the instrument with the 9721 RS-232C CABLE.
(⇒ p. 23)

2. Connect the modem to the PC with the RS-232C cable.
(You can also use USB cable or a PC card)

3. Set the instrument's Comm screen. (⇒ p. 25)



Example of Comm screen settings

Comm screen (PPP 1/5)
Set the mail server name and mail server IP address as shown below. Other settings are the same as when communicating via a LAN.
When sending to the Internet service provider, you normally need to specify the server name.

"Telephone" Specify the PC at the Telephone.

"IP Address" Specify the server by IP.

"Server Name" Specify the server by host name. (DNS is required.)

Mail Dial Number : Set the telephone number of the Internet service provider to which mail is connected or the telephone number on the PC side.

Connect Account : Set the user name of the Internet service provider or user name (e.g., logger) to be entered in the PC's remote access server (i.e., Incoming Connections, dial-up server.)
Refer to " Answer Calls on the Instrument from the PC" (⇒ p. 77).

Connect Password : Set the password of the Internet service provider or password (e.g., logger) to be entered in the PC's remote access server (i.e., Incoming Connections, dial-up server.)
Refer to " Calling from the Instrument to PC" (⇒ p. 97).

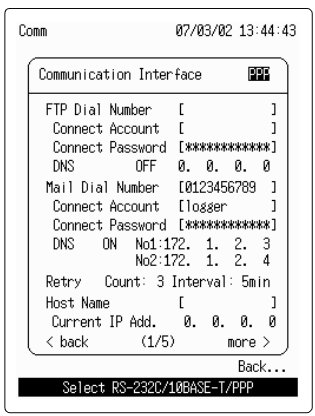
DNS : To use the DNS at the connected destination, select ON for this item.

IP Address of DNS : To use the DNS at the connected destination, set the IP address of the DNS. (For one DNS, set its IP address at No. 1; for two DNSs, set their IP addresses at No. 1 and No. 2.)

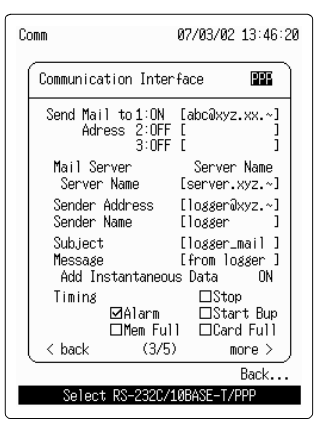
Retry Count, Retry Interval:
If the call cannot be connected, the number is redialed (after waiting the specified retry interval) as many times as specified by the retry count.

AT Command : If necessary, the AT command can be specified for the modem as an option. Refer to " PPP Settings" (⇒ p. 25).
See the Instruction Manual of your modem.

Baud Rate : (Slow down if you cannot communicate.)



Comm screen (PPP 3/5)

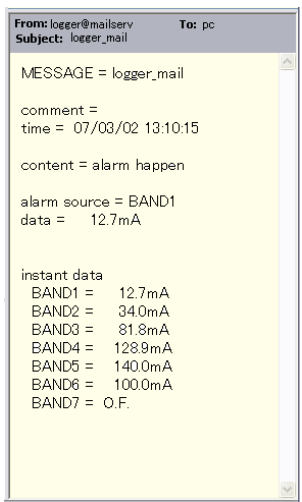


When the DNS is enabled, use the specified IP address other than 0.0.0.0. If the specified IP address is 0.0.0.0, use the IP address obtained by referring to the DNS by its server name. At that time, specify the server name in full domain as "server.xyz.xx.xx." A server name like "server" cannot be used to refer to the DNS.

Receiving Warning Email

Start the instrument's measurements. In the warning state you will receive an email via the mail server.

Example of received email



Mail communication status

(Comm screen 4/5)

The status of mail transfer (including the total number of items, number of items sent, number of items failed to send, and number of items not yet sent) is displayed.

Communication status

Mail To 10 Fi 7 Mi 1 Ye 2

(Among the ten items of mail, seven have already been sent, one could not be sent, and two have yet to be sent because transfer is currently underway. "Mi 2" indicated instead of "Ye 2" means that two items have not been sent because transfer was interrupted by the STOP button. "Wa 2" indicated instead of "Ye 2" means that there are two items remaining to be sent, and awaiting retry. At the "Mail" item, press the ▲/▼ buttons to send the interrupted and remaining-to-be-sent mail.)

Mail transfer test

(Comm screen 4/5)

Executing the mail transfer test sends test mail.

If the test mail cannot be sent, check whether the settings you made are correct.

The mail transfer time required when sending mail via PPP at 9600 bps is about 100 bytes * 8 bits/9600 bps = just under one second.

(Moreover, additional time is required before and after sending mail; about 30 seconds to make a call and about 30 seconds to disconnect.)

The mail transfer time required when sending mail via LAN is about 100 bytes * 8 bits/10 Mbps = just under one second.

NOTE If more than 100 items of mail yet to be sent have accumulated (such as when PPP calls cannot be connected), the oldest mail yet to be sent is assumed to have failed and will not be sent. At startup, all mail yet to be sent is cleared.

Email transmission requiring email authentication

(Comm screen 5/5)

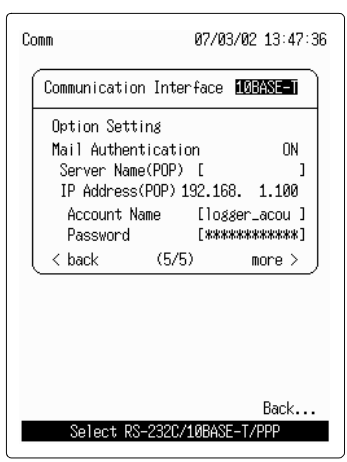
To send an email, you must access an SMTP server. However, SMTP servers do not carry out authentication. To prevent abuse, some Internet service providers use a security measure called "POP before SMTP" for which you must undergo mail authentication at the mail-receiving server (POP server) prior to sending an mail from the SMTP server. When POP before SMTP is used, set up mail authentication (POP) as shown below.

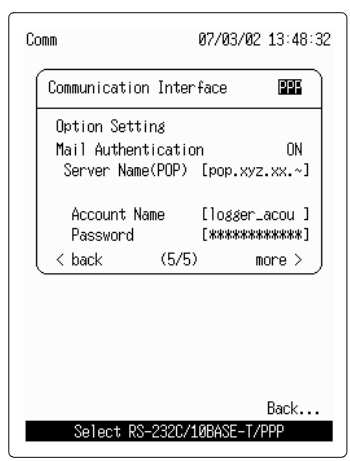
1. Choose ON in mail authentication (POP).

2. Specify the server name (POP) or IP address (POP) as below.

Server name : Specify the receiving server (POP server) using the host name. (DNS is necessary.)
(IP address : Specify the receiving server (POP server) using the IP.)
Account name : Mail account name of the receiving server (POP server)
Password : Mail password of the receiving server (POP server)

Comm screen (10BASE-T 5/5, PPP 5/5)





Measurement Data to an FTP Server

FTP (File Transfer Protocol) is a protocol for transferring files in a network. While the instrument is taking measurements, it can automatically transfer binary files automatically saved to the PC card to a PC with an FTP server. The data transfer is possible when both the PC is on the network and in a remote location.
In this situation, set automatic saving to **[3145 Form]** on the instrument's Status screen. To regularly save/send data, set the save mode to **[Interval]** or **[Ref. Time]**. If you want to continue saving/sending data even when the PC card becomes full, set the save mode to **[Delete]**.
For details refer to the instruction manual.

FTP Server

You can use Windows' FTP server. For the FTP server, set the user name and password for the instrument and register it. For details see the Windows' FTP server help. You can use other FTP servers as well, such as the free TinyFTPDaemon. To perform automatic data sending by FTP client, the IP address of the PC on which the FTP server is running must be specified.

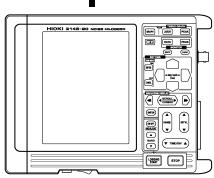
Communication Preparation

Make preparations before starting communications.

When using 10BASE-T LAN

1. **Connect the PC and the instrument with the 9642 LAN CABLE. (⇒ p. 7)**
2. **Set the FTP server on the PC. (⇒ p. 64)**
3. **Set the instrument's Comm screen. (⇒ p. 9)**
4. **Set automatic saving on the instrument.**
   Check if a PC card has been inserted. For details refer to the instruction manual.

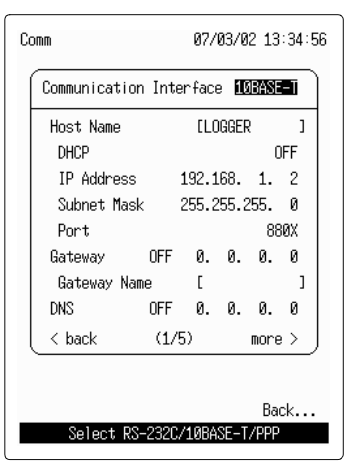
Model 9642 LAN CABLE



Noise HiLogger
(e.g., 192.168.1.2)

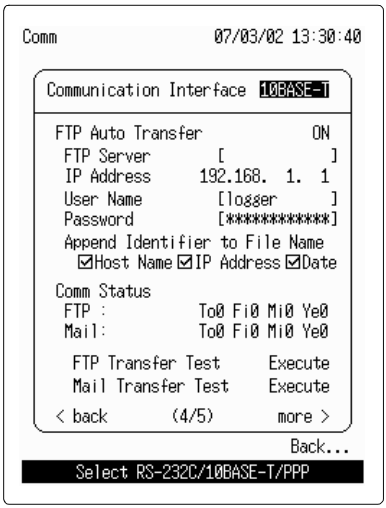
FTP server PC
(e.g., 192.168.1.1)

Example of Comm screen settings
(When sending data to FTP server 192.168.1.1)
Comm screen (10BASE-T 1/5)



Host Name : LOGGER
IP Address : 192.168.1.2

Comm screen (10BASE-T 4/5)



FTP Auto Transfer : ON
FTP Server
IP Address
: 192.168.1.1 (Set the PC on which the FTP server operates.)
User Name : logger (User name of this instrument registered in FTP server on PC side.)
Password : logger (Password of this instrument registered in FTP server on PC side.)
Append Identifier to File Name
Host Name : Attach host name to file name to be sent.
(Set on Comm screen 1/5)
IP Address : Attach IP address to file name to be sent.
(Set on Comm screen 1/5)
Date : Attach send start time to file name to be sent.

For example, when using host name = LOGGER, IP address = 192.168.1.2, time = '02-03-04 05:06:07, and automatically saved file name = AUTO0001.MEM, the host name, IP address, and time are all selected, then the file name is LOGGER_192-168-1-2_020304-050607_AUTO0001.MEM. When using multiple instruments, this helps to identify a specific instrument.

When using PPP

1. Connect the modem and the instrument with the 9721 RS-232C CABLE.
(⇒ p. 23)

2. Connect the modem to the PC with the RS-232C cable.
(You can also use USB cable or a PC card)

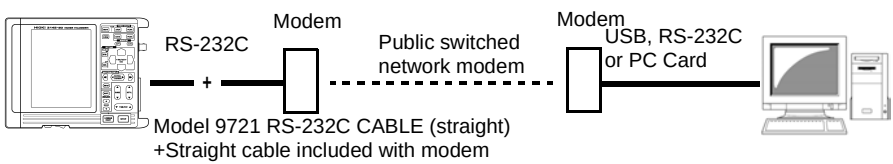
3. Set the modem on the PC.
Consult the instruction manual supplied with each modem.

4. Set the FTP server on the PC. (⇒ p. 64)

5. Set the remote access server on the PC. (⇒ p. 97)

6. Set the instrument's Comm screen. (⇒ p. 25)

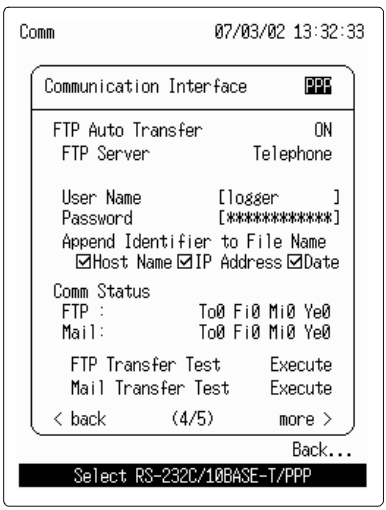
7. Set automatic saving on the instrument.
Check if a PC card has been inserted.
For details refer to the instruction manual.



Example of Comm screen settings

Comm screen (PPP 1/5, 4/5, 2/5)

Comm screen (PPP 4/5)

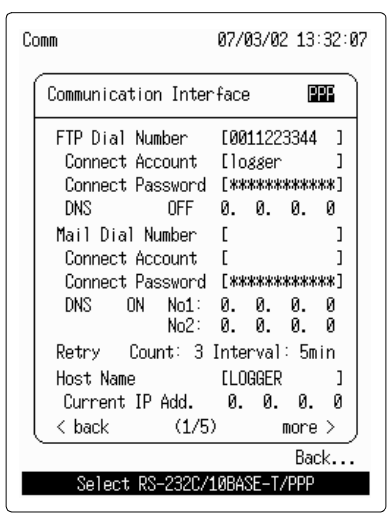


Set the FTP server name and FTP server IP address as shown below. Other settings are the same as when communicating via a LAN.

Specify the PC on which the FTP server operates.
To send to the PC, normally set "Telephone."
"Telephone" Specify the PC at the Telephone.
"IP Address" Specify the server by IP.
"Server Name" Specify the server by host name. (DNS is required.)

Comm screen (PPP 1/5)

FTP Dial Number : Set the telephone number on the PC side at the connected destination.
Connect Account : Set the user name (e.g., logger) to be entered in the PC's remote access server (i.e., remote access server, dial-up server.)
See "Calling from the Instrument to PC"(⇒ p. 97)
Connect Password : Set the password (e.g., logger) to be entered in the PC's remote access server (i.e., remote access server, dial-up server.)
See "Calling from the Instrument to PC"(⇒ p. 97)
DNS : To use the DNS at the connected destination, select ON for this item.
IP address of DNS : To use the DNS at the connected destination, set the IP address of the DNS.
Retry Count, Retry Interval:
If the call cannot be connected, the number is redialed (after waiting the specified retry interval) as many times as specified by the retry count.
AT Command : If necessary, the AT command can be specified for the modem as an option. See "PPP Settings"(⇒ p. 25).
Command : See the Instruction Manual of your modem.
Baud Rate : (Slow down if you cannot communicate.)



When the DNS is enabled, use the specified IP address other than 0.0.0.0. If the specified IP address is 0.0.0.0, use the IP address obtained by referring to the DNS by its server name. At that time, specify the server name in full domain as "server.xyz.xx.xx." A server name like "server" cannot be used to refer to the DNS.

Automatic Data Transfer

1. **Start measurements.**

2. **The automatically saved files on the PC card will be automatically sent to the FTP server on the PC.**

FTP communication status

(Comm screen 4/5)

The status of FTP communication (including the total number of items, number of items sent, number of items failed to send, and number of items not yet sent) is displayed.

Communication status

FTP To 10 Fi 7 Mi 1 Ye 2

(Among the ten items of FTP data, seven have already been sent, one could not be sent, and two have yet to be sent because transfer is currently underway. "St 2" indicated instead of "Ye 2" means that two items have not been sent because transfer was interrupted by the STOP button. "Wa 2" indicated instead of "Ye 2" means that there are two items remaining to be sent, and awaiting retry. At the "FTP" item, press the ▲/▼ buttons to send the interrupted and remaining-to-be-sent data.)

FTP data transfer test

(Comm screen 4/5)

Executing the FTP data transfer test sends a file named FTP_TEST.TXT.
If the test file cannot be sent, check whether the settings you made are correct.

NOTE If more than 100 items of FTP data yet to be sent have accumulated (such as when PPP calls cannot be connected), the oldest FTP data yet to be sent is assumed to have failed and will not be sent. At startup, all FTP data yet to be sent is cleared.

Data transfer time

When data are measured for one hour at one-second intervals, for example, the file size is
(3600 data * 2 bytes * 11 channels + header 13000) = 90K bytes. Therefore, the transfer time via PPP at 19200 bps is 90K bytes * 8 bits/19200 bps = app. 38 seconds. When taking the time needed to create data on the main instrument side into account, however, the actual transfer time is a little 2 minutes. (Moreover, additional time is required before and after data transfer; about 30 seconds to make a call and about 30 seconds to disconnect.)
The transfer time via LAN is 90K bytes * 8 bits/10 Mbps = 0.1 second. When taking the time needed to create data on the main instrument side into account, however, the actual transfer time is a little under three seconds. "FTP Server Settings"(⇒ p. 64)

Receiving Measurement Data from an FTP Server

FTP (File Transfer Protocol) is a protocol used for transferring files on a network.
This instrument has an FTP server. You can download memory waveforms of this instrument and PC card files into the PC using the FTP client running on the PC.

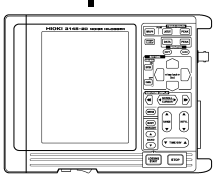
Communication Preparation

When using 10BASE-T LAN

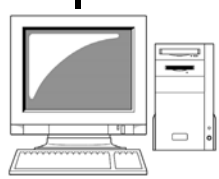
1. **Connect the PC and the instrument with the 9642 LAN CABLE. (⇒ p. 7)**

2. **Set the instrument's Comm screen. (⇒ p. 9)**

Model 9642 LAN CABLE

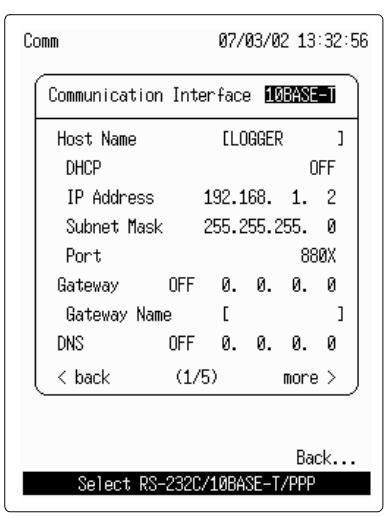


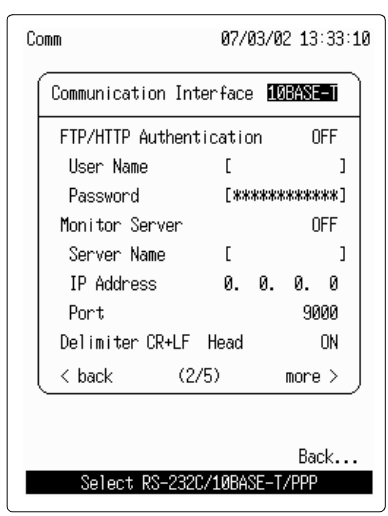
Noise HiLogger
(e.g., 192.168.1.2)



PC
ÅiInternet ExplorerÅj
(e.g., 192.168.1.1)

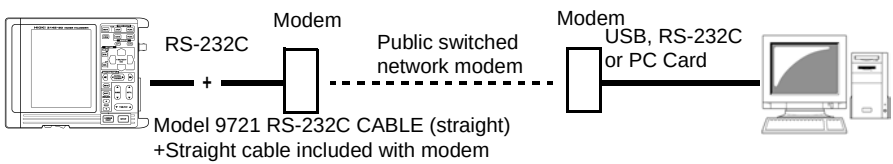
Comm screen (10BASE-T 2/5, 1/5)





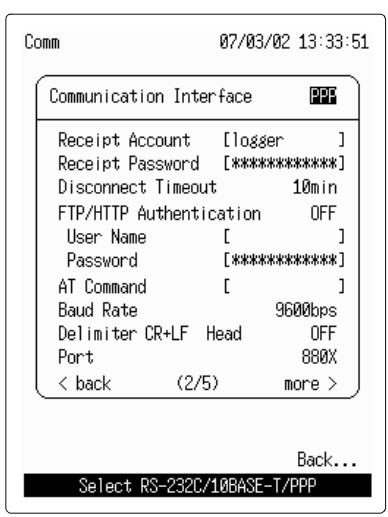
When using PPP

1. **Connect the modem and the instrument with the 9721 RS-232C CABLE. (⇒ p. 23)**
2. **Connect the modem to the PC with the RS-232C cable.**
   (You can also use USB cable or a PC card)
3. **Set the modem on the PC.**
   Consult the instruction manual supplied with each modem.
4. **Set the dial-up settings on the PC. (⇒ p. 77)**
5. **Set the instrument's Comm screen. (⇒ p. 25)**



Example of Comm screen settings

Comm screen (PPP 2/5)



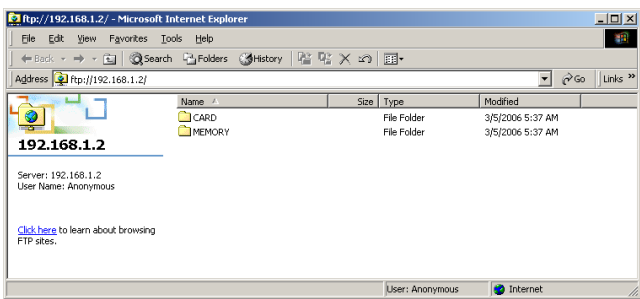
Data Download

There are many different FTP clients for Windows, and in the standard OS install, there is the ftp command which is run at the DOS prompt.

1. **Launch Internet Explorer.**

2. **Input the instrument's address in the address bar.**

(Enter ftp://192.168.1.2 here. Enter ftp://192.168.55.2 during PPP communication)
The screen below will be displayed.



3. **Copy the measurement data in the [MEMORY] folder.**

If there is SETUP.SET and measurement data, there are MEMORY.MEM and MEMORY.TXT files, and they can be downloaded to the PC.

4. **Copy the data in the [CARD] folder.**

By downloading the files in the MEMORY directory, you can retrieve the instrument's measurement data and setting data in file format.
In the CARD directory, the files on the PC card can be retrieved as-is.

FTP Authentication

FTP authentication of this instrument is set to "Anonymous." Any instrument on the network is allowed to access the FTP server.
If you want to restrict access to the FTP server, set FTP/HTTP authentication to ON and enter the username and password.
We recommend that connection be restricted through the use of a username and password, to prevent an unauthorized person from accidentally accessing and deleting the files.

NOTE

- The FTP server of the instrument allows only one connection at a time. More than one PC cannot access the server simultaneously.
- If no command is sent from a PC for more than one minute after connecting to the FTP server, the FTP may disconnect the PC. Reconnect the FTP.
- If connection cannot be reestablished, wait about one minute, then try again.
- The FTP client can only read files during real-time save, automatic save, manual save, file delete, directory create/delete, name edit, or format operations.
- If data is being written to the PC card using the FTP at the start of automatic saving or calculation-data saving, FTP operation will be interrupted to save data.
- If the instrument ends measurement during data transmission using the FTP, transmission may be interrupted to save data.
- Be sure to disconnect the PC from the FTP before replacing the PC card.
- Although the PC card on this instrument can be accessed from outside using FTP, do not access the card from FTP or the main instrument, or simultaneously manipulate files from telnet, etc. Such operation may lead to unexpected results.
- With Internet Explorer, the refresh date of files may not match those of the main instrument.
- With Internet Explorer, temporary internet files may retain data from their previous access, so the previous data may be obtained instead of the newest data. If the instrument data has been updated, reload Internet Explorer and then access it via FTP.

FTP Server Settings

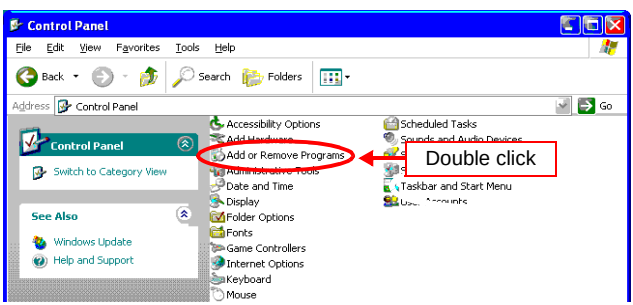
When interacting with the instrument and data through an FTP server, setup an FTP server on the PC.

WindowsXP Professional

Windows XP Home Edition does not include an FTP server; use the free software "War FTP Daemon" or other third party software instead.

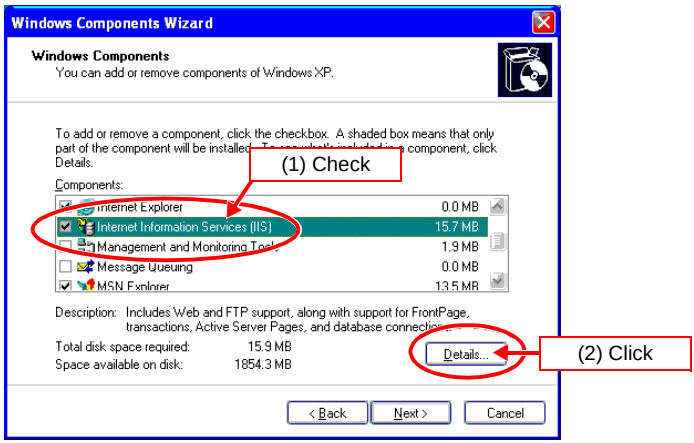
FTP Service Setup

1. **On [Control Panel] on the Windows start menu, double click [Add/Remove Programs].**

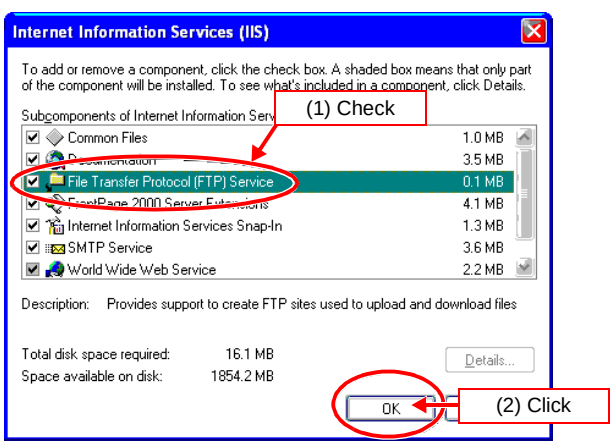


2. **Choose [Add/Remove Windows Components].**

3. **Choose [Internet Information Services (IIS)] then [Details].**

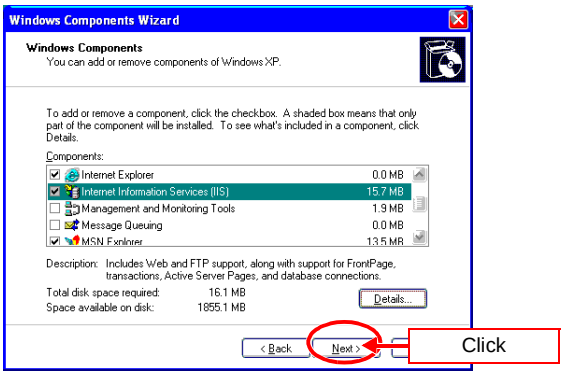


4. **Select the [File Transfer Protocol (FTP) Service] check box and click [OK].**



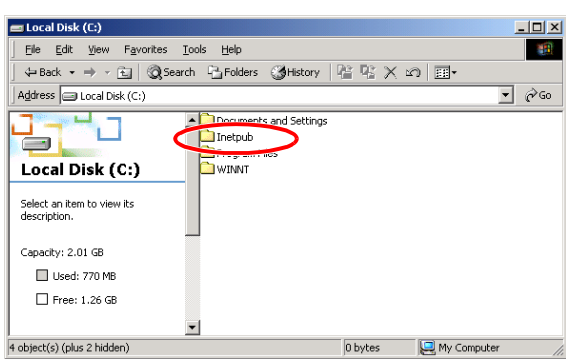
5. **Click [Next].**

(You will be asked for the Windows XP CD.)



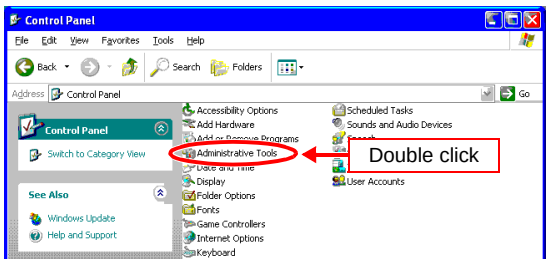
6. **Click [Finish].**

7. **A directory named [InetPub] is created when installation is completed.**

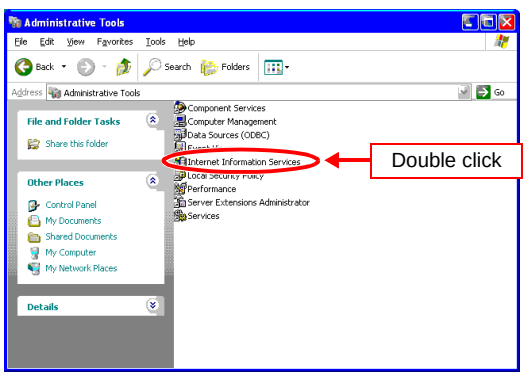


FTP Site Settings

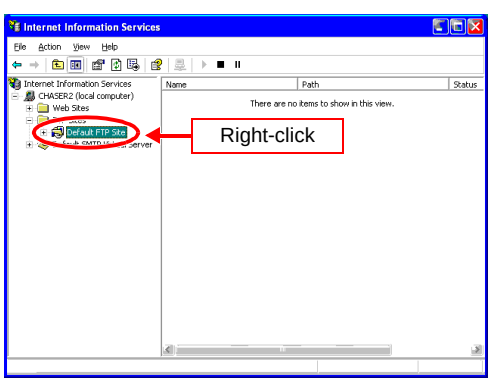
1. **Choose [Administrative Tools] in [Control Panel].**



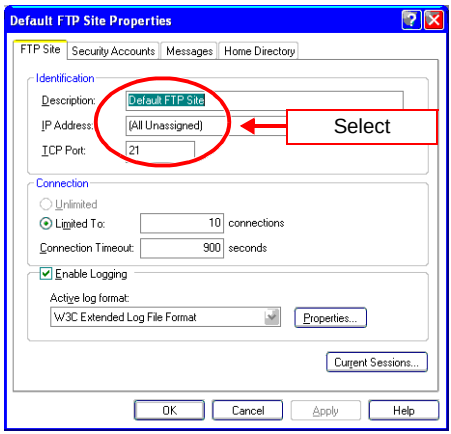
2. **Choose [Internet Information Services].**



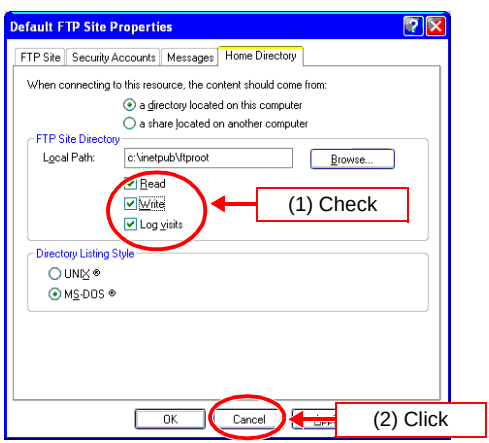
3. **Choose [Default FTP Site] and right-click to select [Property].**



4. **Select [(All Unassigned)] for IP Address.**

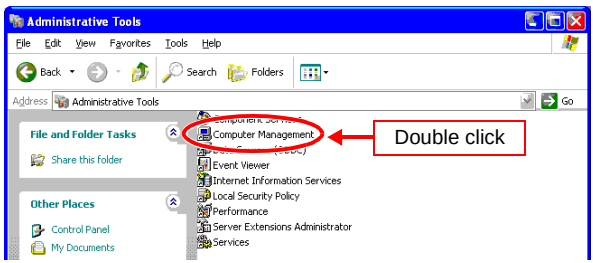


5. **Select the [Read], [Write], and [Log visits] check boxes for Home Directory, then click [OK].**

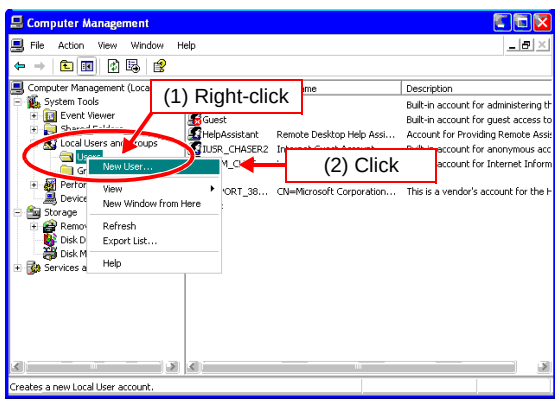


User Registration

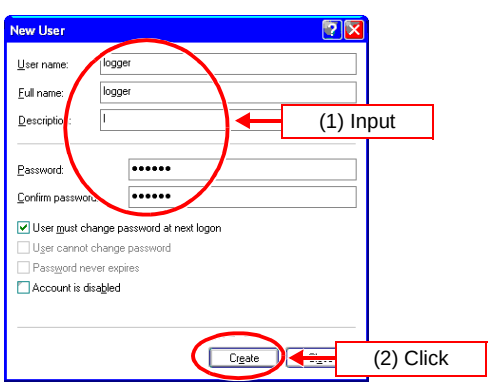
1. **Choose [Computer Management] in [Administrative Tools].**



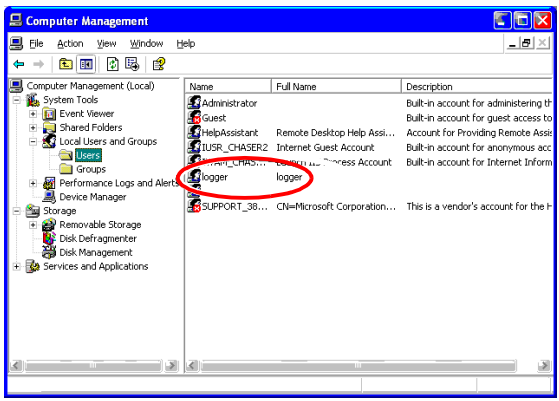
2. **Choose [Users] in [Local User and Group] and right-click to select [New User].**



3. **Enter User name, Full name, Password, and Password reentry for confirmation (e.g., logger), and then choose [Create].**



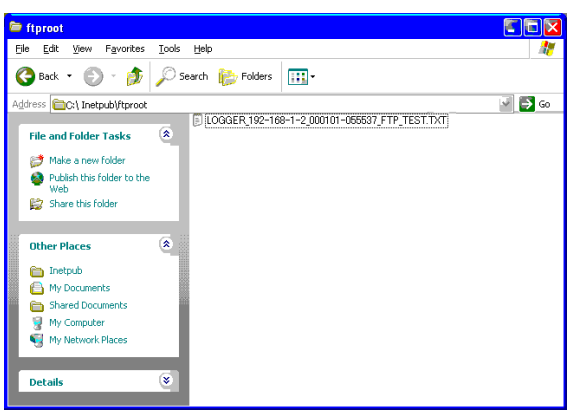
4. **The user [logger] you created is then registered.**



FTP server setup on Windows is complete with the above steps.

5. **Execute the FTP data transfer test from this instrument (192.168.1.2) to the PC (192.168.1.1) using the "logger" user name and "logger" password.**

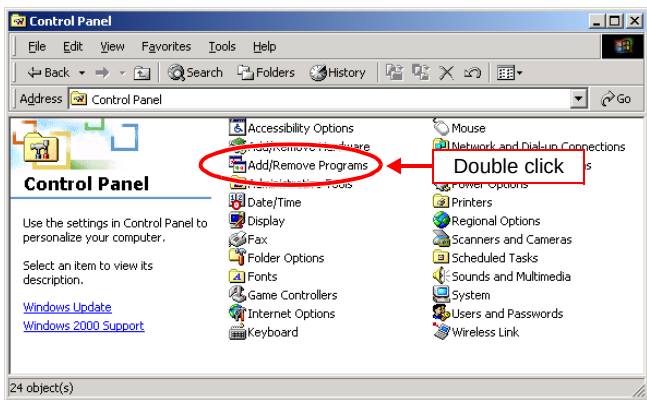
6. **The test file (e.g., LOGGER_192-168-1-2_000101-055537_FTP_TEST.TXT) is then sent to [C:\Intpub\ftproot].**



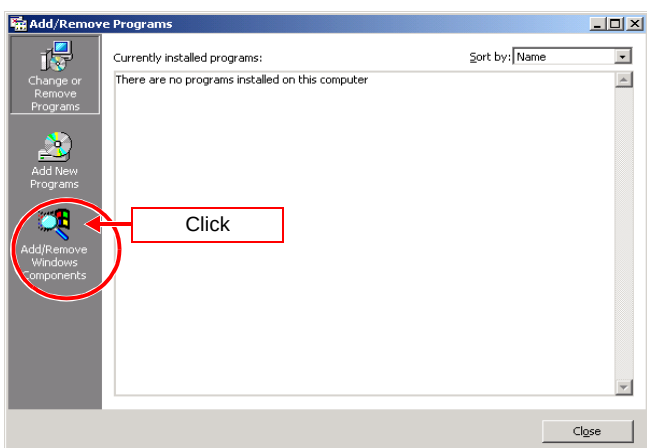
Windows2000

FTP Service Setup

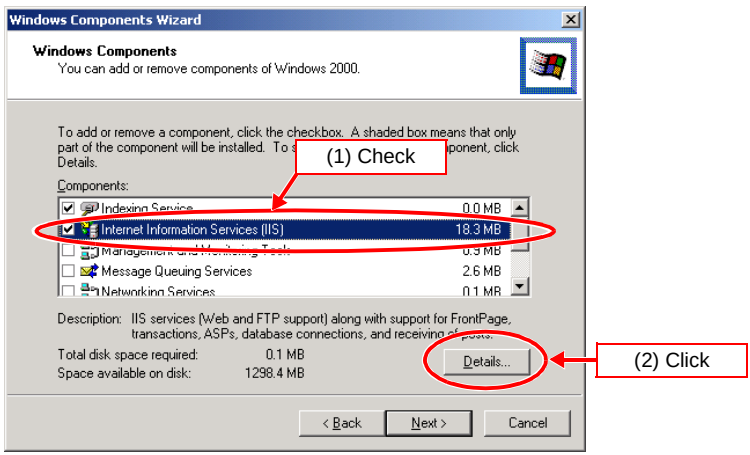
1. **On [Control Panel] on the Windows start menu, double click [Add/Remove Programs].**



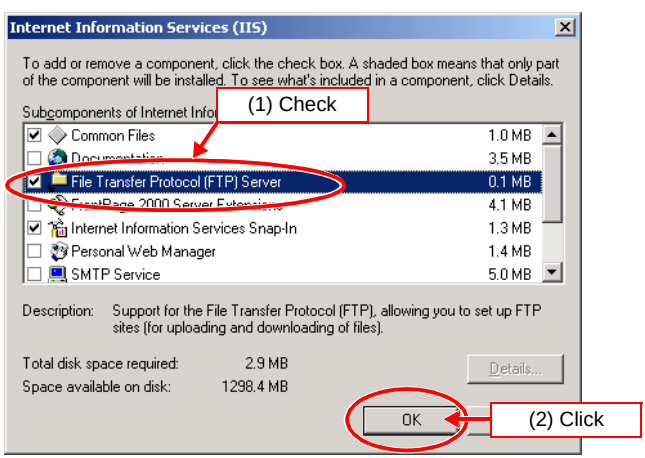
2. **Choose [Add/Remove Windows Components].**



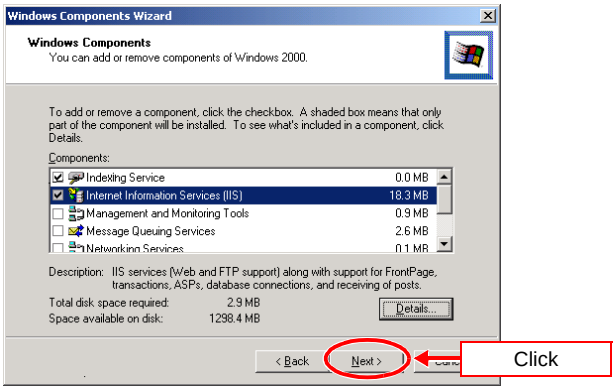
3. **Choose [Internet Information Services (IIS)] then [Details].**



4. **Select the [File Transfer Protocol (FTP) Server] check box and click [OK].**

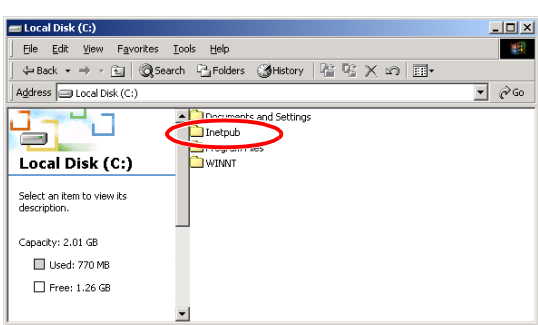


5. Click **[Next]**.



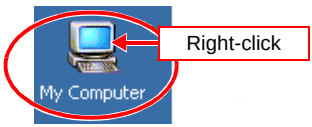
6. Click **[Finish]**.

7. A directory named **[InetPub]** is created when installation is completed.

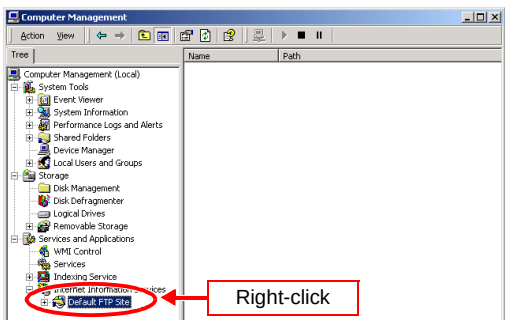


FTP Site Settings

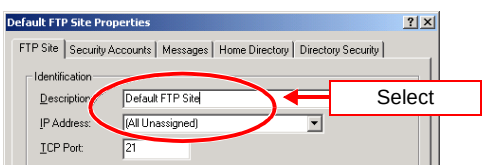
1. **Choose [My Computer] and right-click to select [manage].**



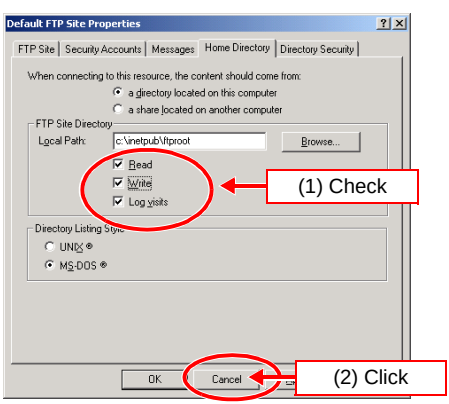
2. **Choose [Default FTP Site] for [Service and Applications]-[Internet Information Services], then right-click to select [Property].**



3. **Select [(All Unassigned)] for IP Address.**

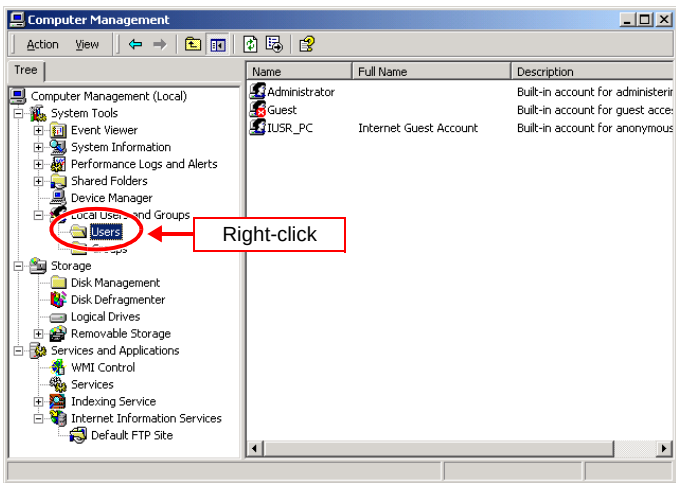


4. **Select the [Read], [Write], and [Log visits] check boxes for Home Directory, then click [OK].**

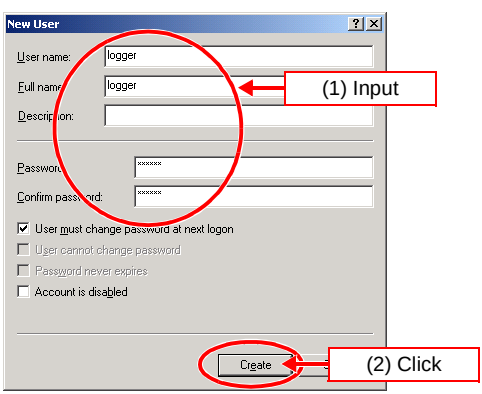


User Registration

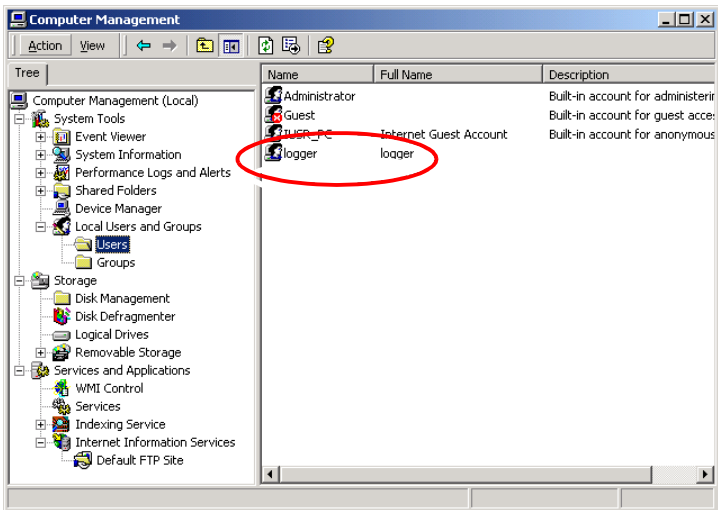
1. **Choose [Users] in [Local User and Group] and right-click to select [New User].**



2. **Enter User name, Full name, Password, and Password reentry for confirmation (e.g., logger), and then choose [Create].**



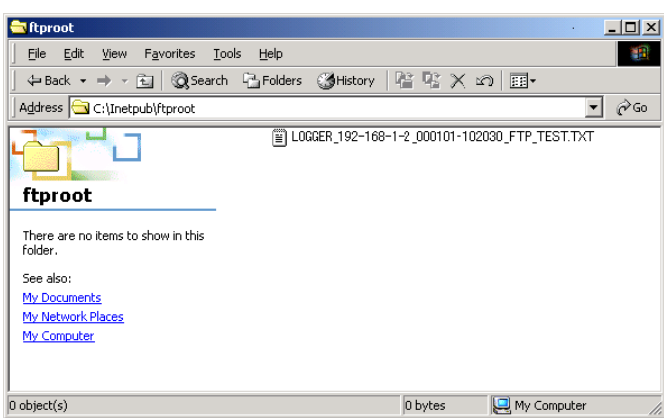
3. **The user [logger] you created is then registered.**



FTP server setup on Windows is complete with the above steps.

4. **Execute the FTP data transfer test from this instrument (192.168.1.2) to the PC (192.168.1.1) using the "logger" user name and "logger" password.**

5. **The test file (e.g., LOGGER_192-168-1-2_000101-055537_FTP_TEST.** TXT) is then sent to **[C:\Intpub\ftproot].**



PC Settings during PPP Communication

Answer Calls on the Instrument from the PC

The connecting IP address when a telephone message is being received is 192.168.55.2 for this instrument, and 192.168.55.1 for the PC.
"Current IP Address" indicates the IP address actually assigned to this instrument.

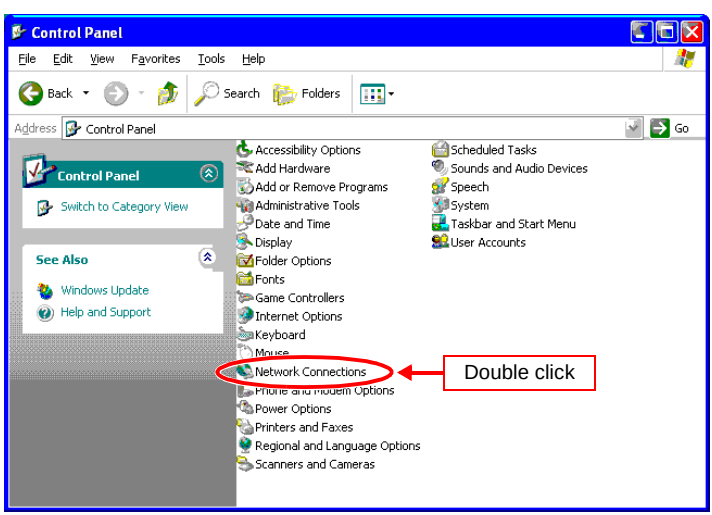
Before dialing a number from the PC to this instrument, make sure that dial-up connections have been set up on the PC side. Dial-Up Networking is included with Windows, so refer to Windows HELP.

For details on how to add a modem to Windows, refer to the user's manual supplied with your modem.

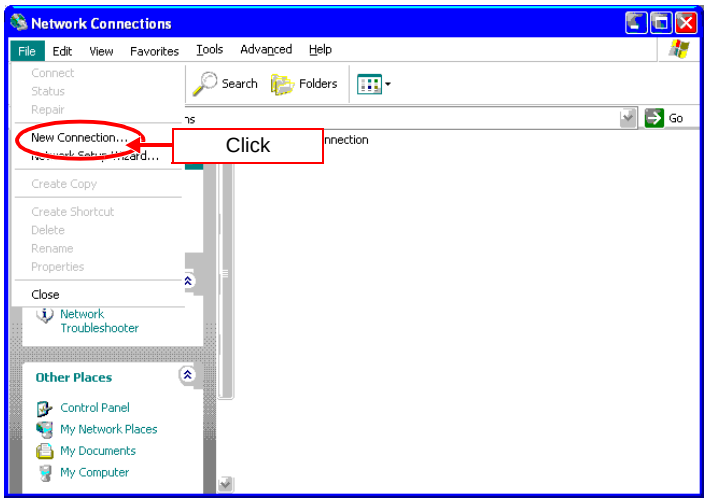
WindowsXP

Create a New Network

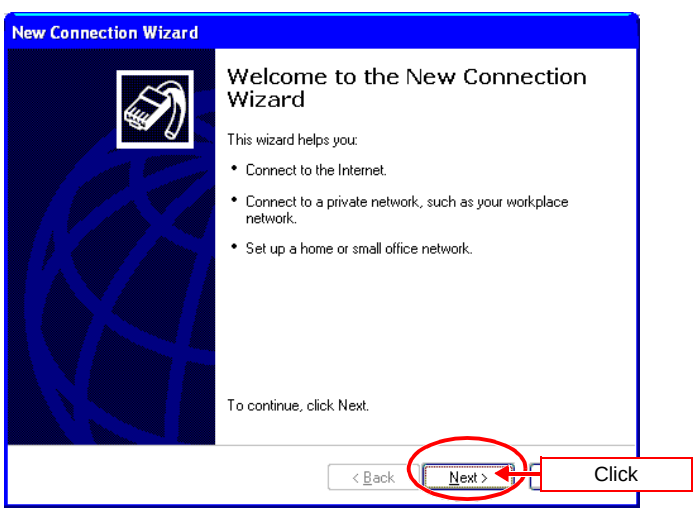
1. On [Control Panel] on the Windows start menu, double click [Network Connections].



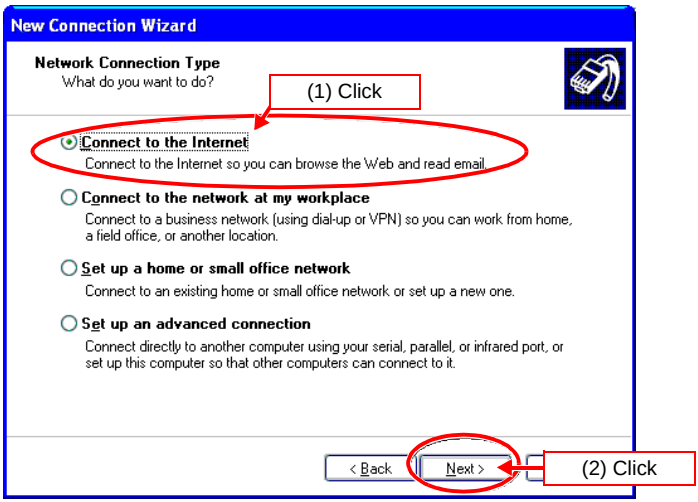
2. **Choose [File] - [New Connection].**



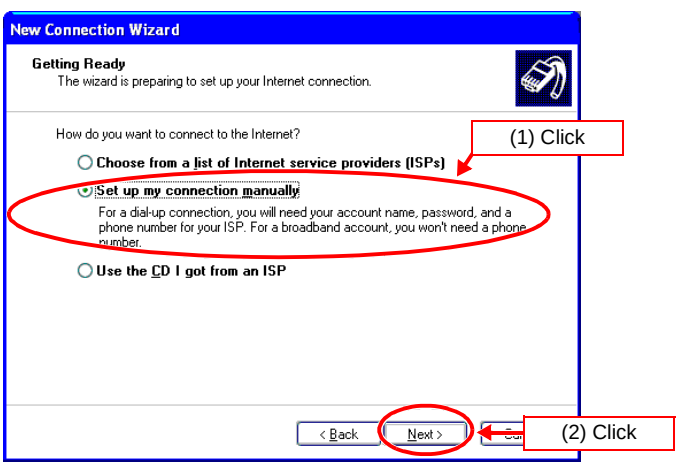
3. **Click [Next].**



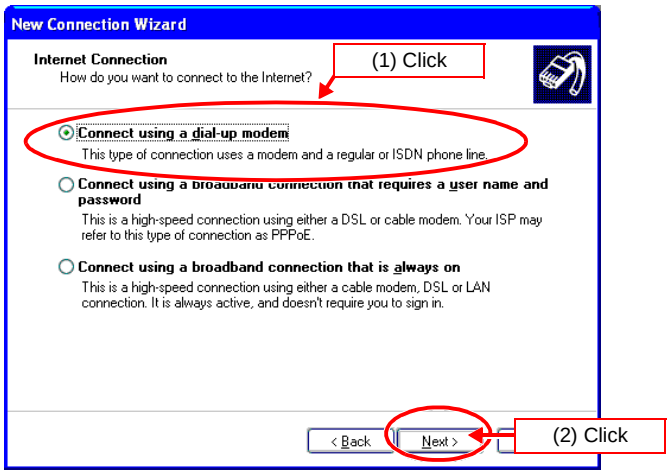
4. **Select [Connect to the Internet] and click [Next].**



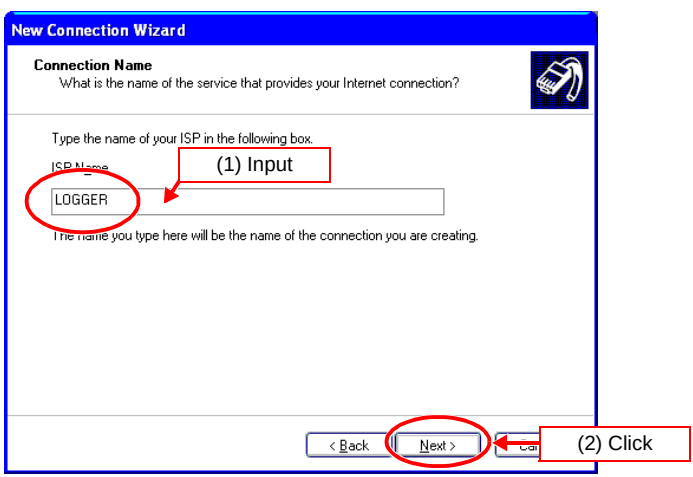
5. **Select [Set up my connection manually] and click [Next].**



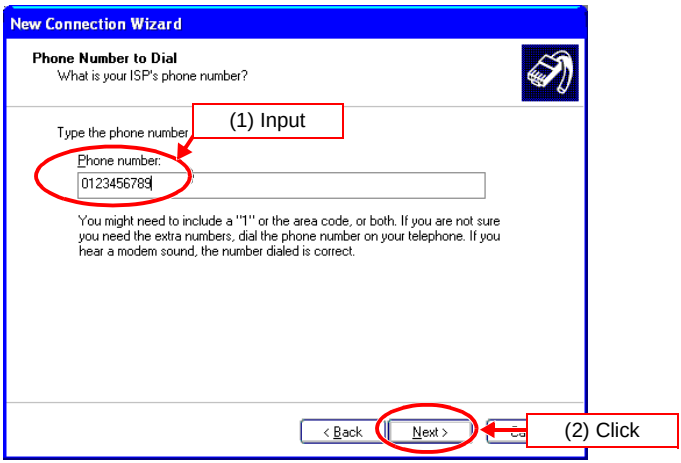
6. **Select [Connect using a dial-up modem] and click [Next].**



7. **Set the ISP Name (e.g., LOGGER) and click [Next].**



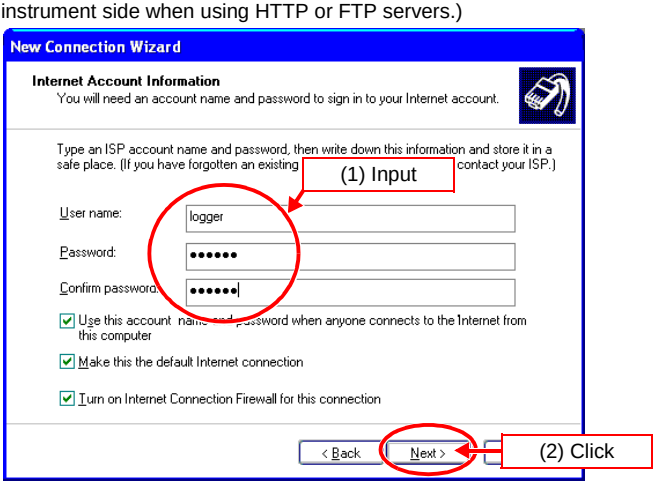
8. **Set the telephone (Phone number) and and click [Next].**



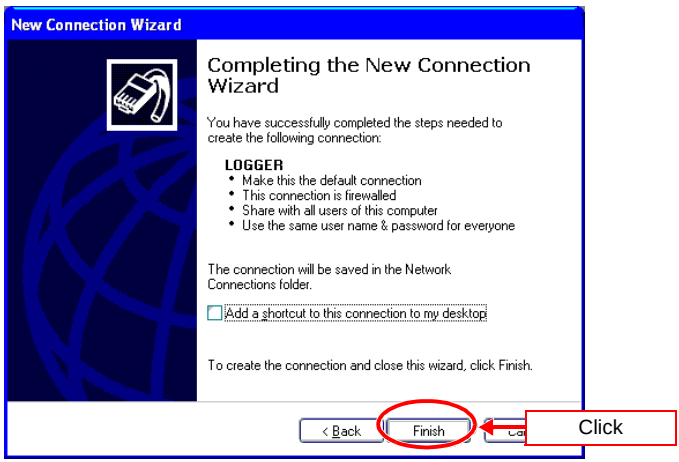
9. **Set the telephone (Phone number) and and click [Next].**

10. **Set the user name (e.g., logger) and password (e.g., logger), then click [Next].**

(Same as receiving user name (Receipt Account) and password (Receipt Password) on this instrument side when using HTTP or FTP servers.)

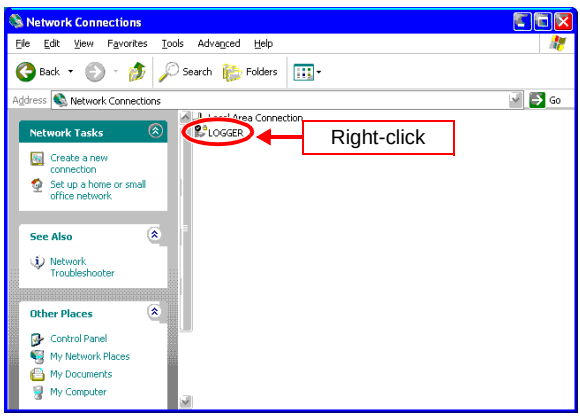


11. Click **[Finish]**.

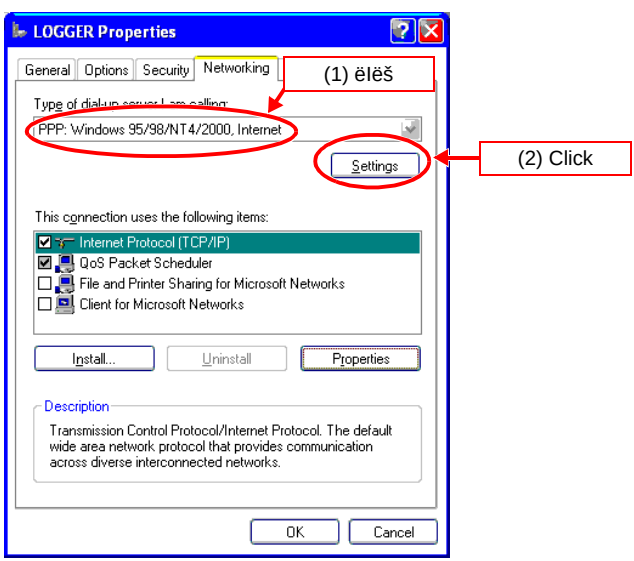


Network Settings

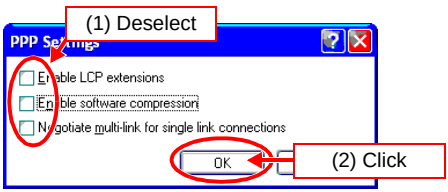
1. **Select the connection you've just created from [Network Connections] and right-click to select [Property].**



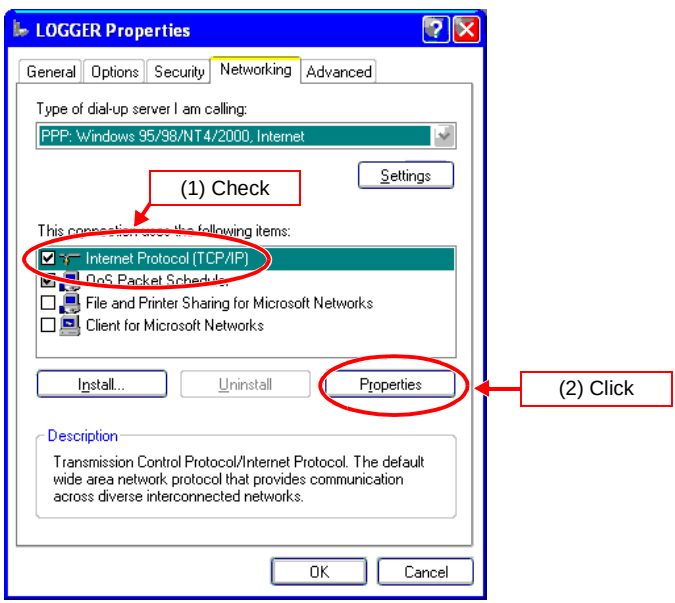
2. **Click the [Networking] tab, choose [PPP: Windows 95, 98, NT4/2000, Internet], and click on [Settings].**



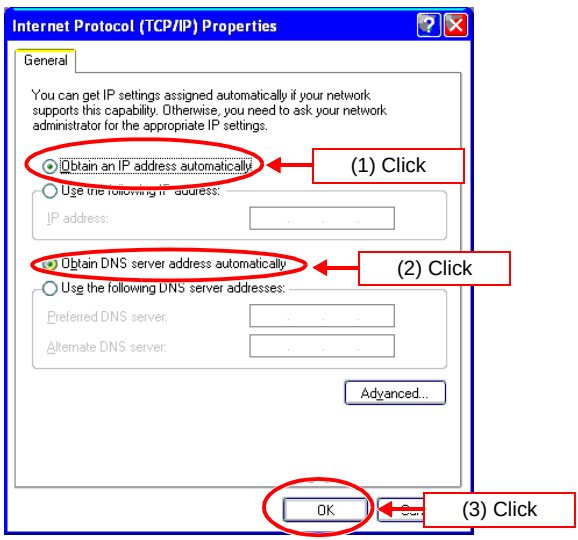
3. **Deselect all check boxes for [PPP Settings] and click [OK].**



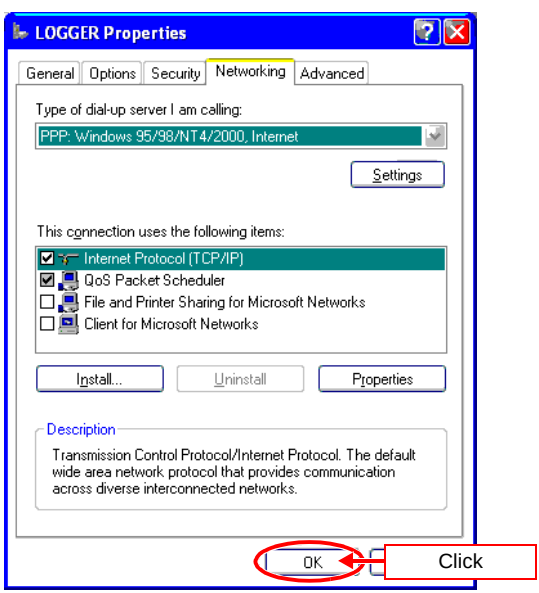
4. **Select [Internet Protocol (TCP/IP)] then [Properties].**



5. **Select [Obtain an IP address automatically] and [Obtain DNS server address automatically], then click [OK].**

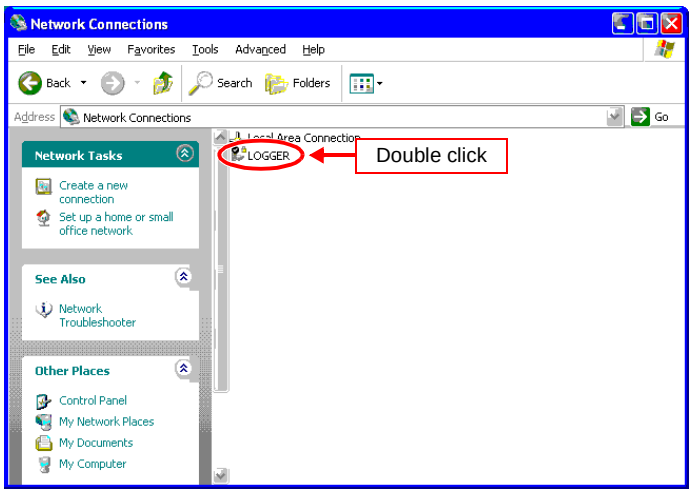


6. **Click [OK].**



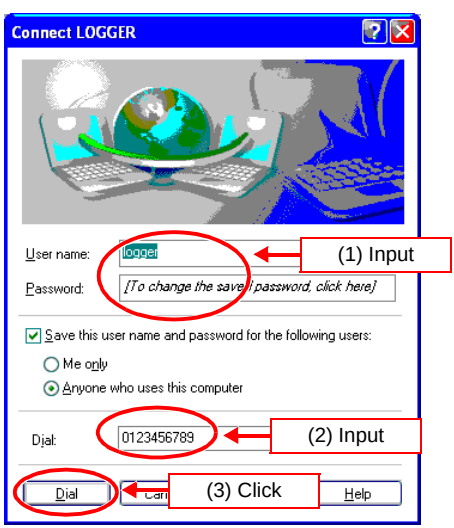
Dial-up Connection (Dialing)

1. **Go to [Control Panel]-[Network Connections] and double click the connection you have just created.**



2. **Enter User name and Password (e.g., logger) and then enter the telephone number in the [Dial] field.**

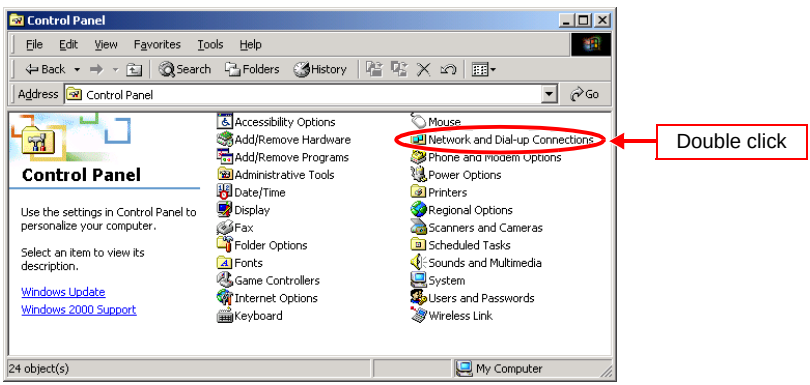
Click on the **[Dial]**, and the dial-up process will begin.
(Use the same user name (Receipt Account) and password (Receipt Password) as on the HTTP server, FTP server.)



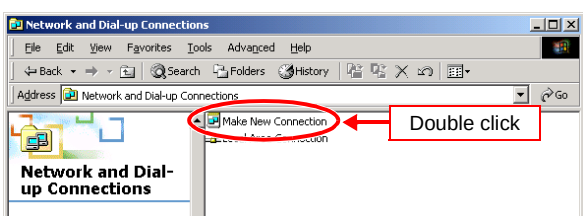
Windows2000

Create a New Network

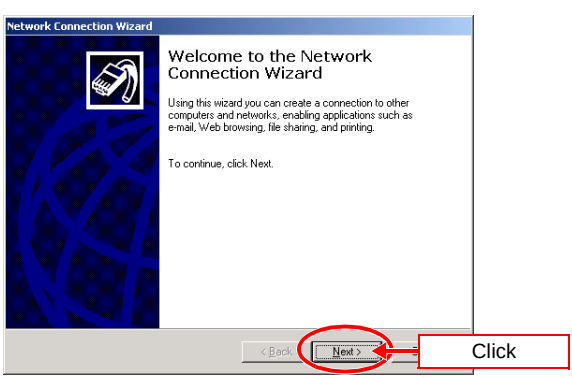
1. **Go to [Control Panel]-[Network and Dial-up Connections] and double click the connection you have just created.**



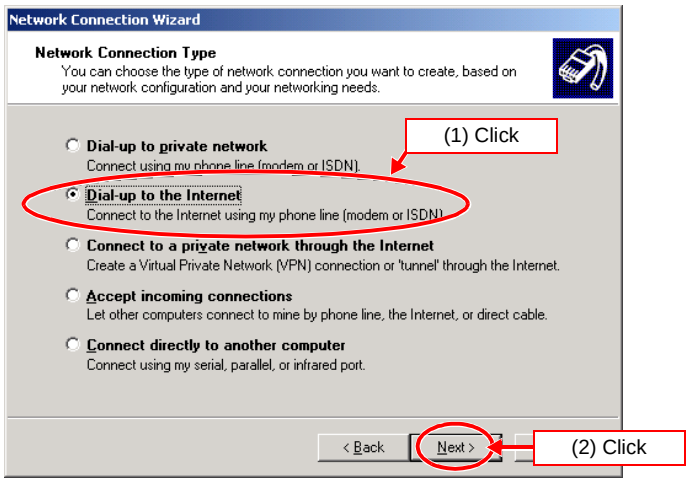
2. **Choose [Make New Connection].**



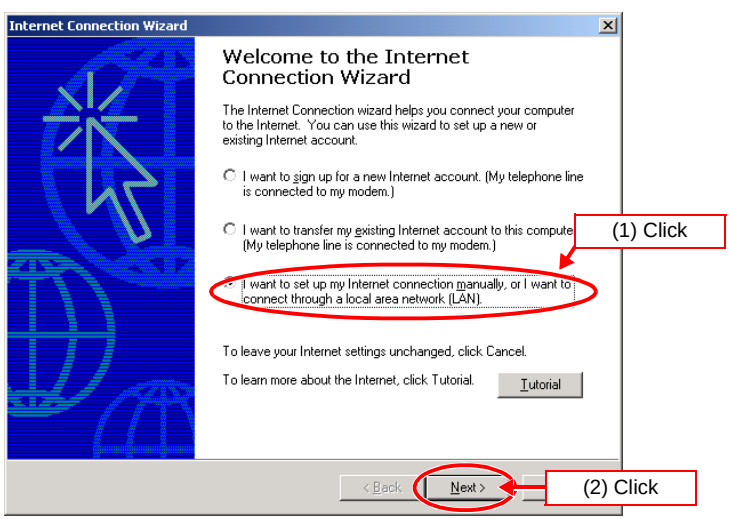
3. **Click [Next].**



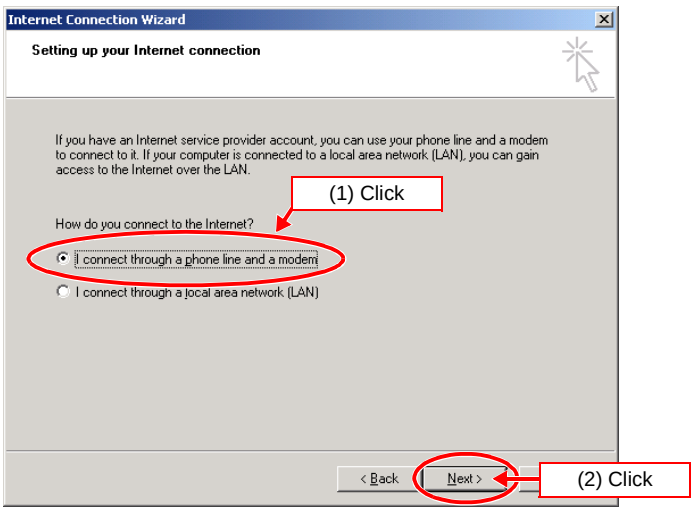
4. **Select [Dial-up to the Internet] and click [Next].**



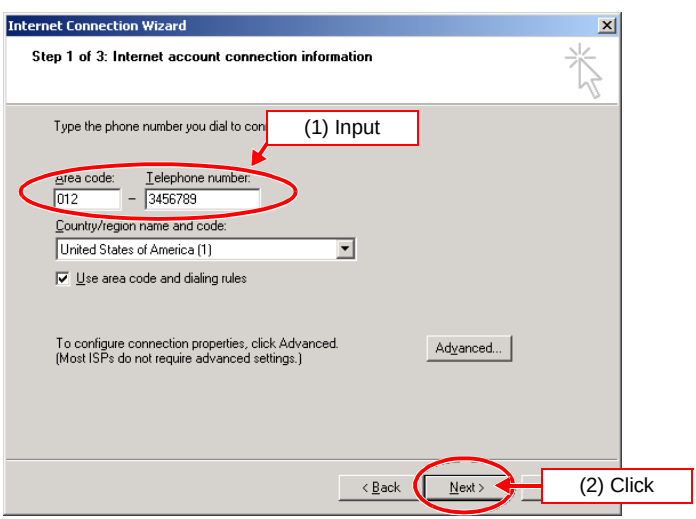
5. **Select [I want to set up my Internet connection manually, or I want to connect through a local area network(LAN)] and click [Next].**



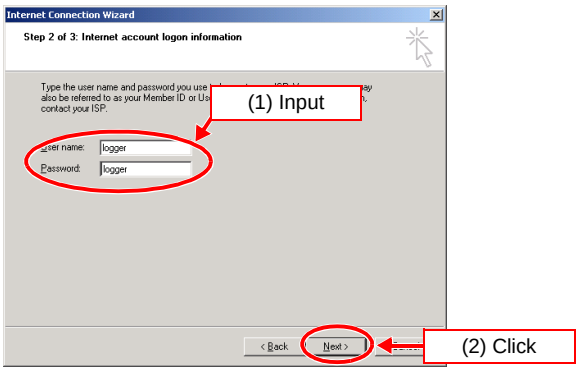
6. **Select [I connect through a phone line and a modem] and click [Next].**



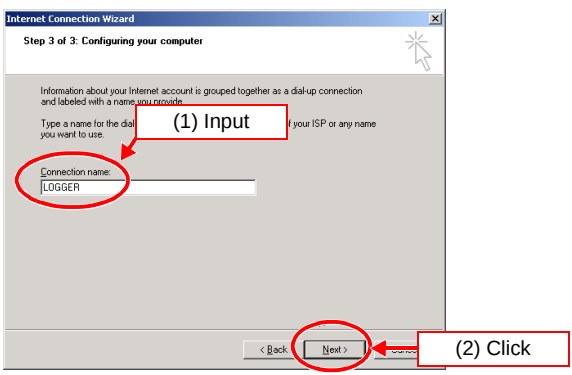
7. **Set the telephone number and click [Next].**



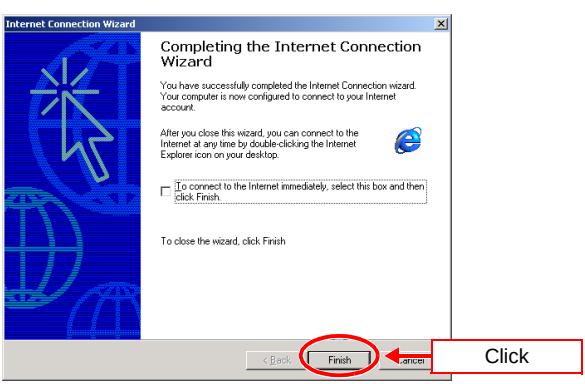
8. **Set the user name (e.g., logger) and password (e.g., logger), then click [Next].**
(Same as receiving user name (Receipt Account) and password (Receipt Password) on this instrument side when using HTTP or FTP servers.)



9. **Set the connection name (e.g., LOGGER) and click [Next].**

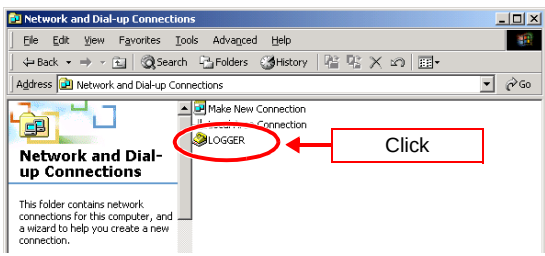


10. **Click [Finish].**

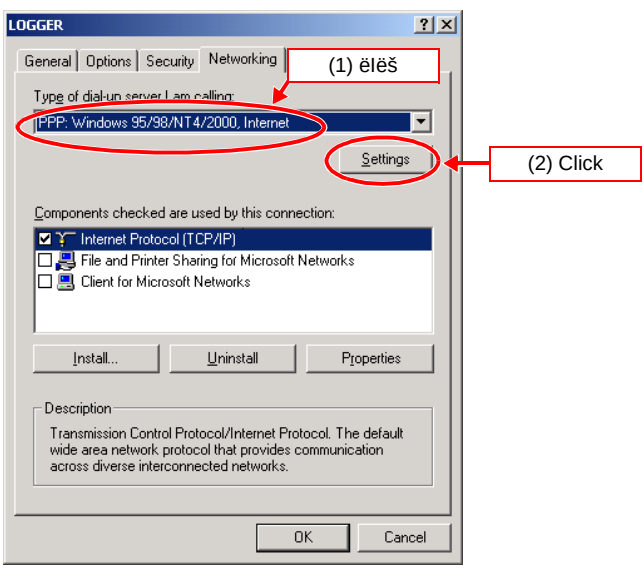


Network Settings

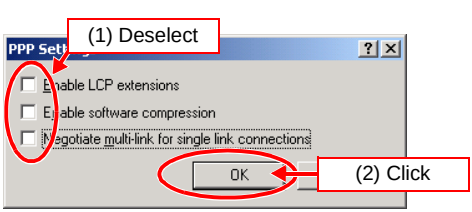
1. **Select the connection you've just created from [Network and Dial-up Connection] and right-click to select [Property] .**



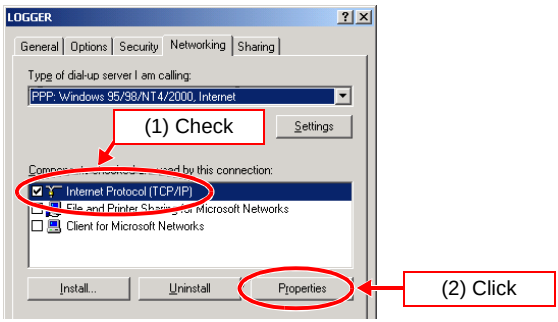
2. **Select [PPP:Windows95,98,NT4/2000,Internet] in [Networking], then [Settings].**



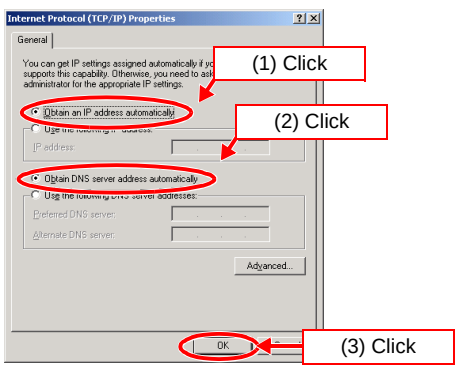
3. **Deselect all check boxes for [PPP Settings] and click [OK].**



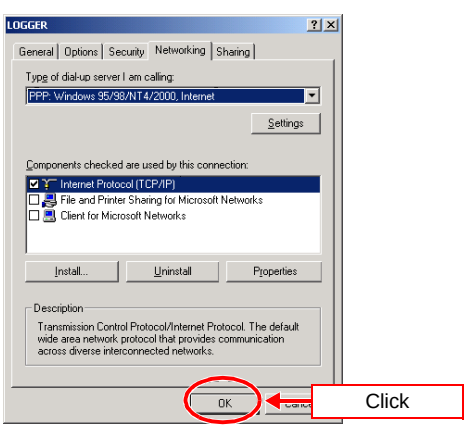
4. **Select [Internet Protocol (TCP/IP)] then [Properties].**



5. **Select [Obtain an IP address automatically] and [Obtain DNS server address automatically], then click [OK].**

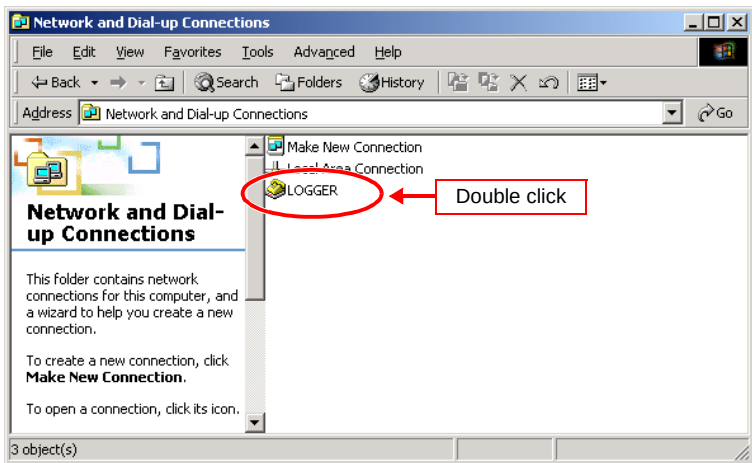


6. **Click [OK].**



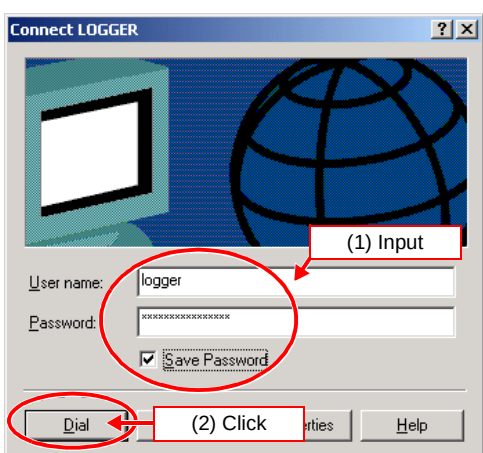
Dial-up Connection (Dialing)

1. **Go to [Control Panel]-[Network Connections] and double click the connection you have just created.**



2. **Enter the user name (e.g., logger), password (e.g., logger), and telephone number. Then select the connection to make a dial-up connection.**

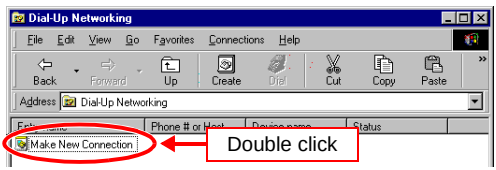
(Same as receiving user name (Receipt Account) and password (Receipt Password) on this instrument side when using HTTP or FTP servers.)



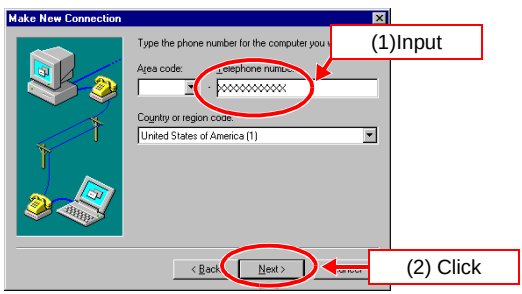
Windows98, WindowsMe

Create a New Network

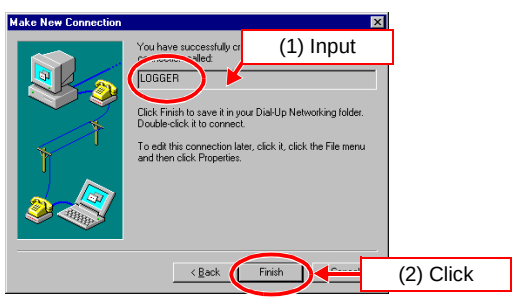
1. **Choose [My Computer]-[Dial-Up Networking], then [Make New Connection].**



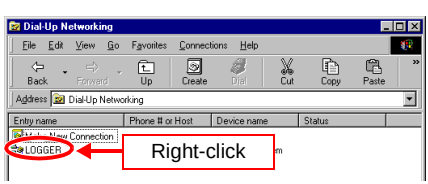
2. **Set the telephone number and click [Next].**



3. **Set the name and click [Finish].**

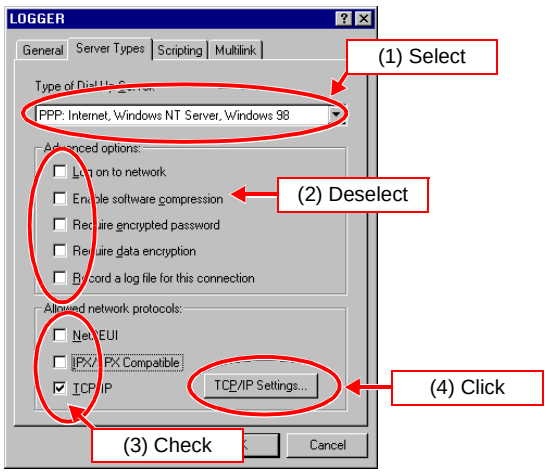


4. **From [Dial-Up Networking], select the connection you've just created and right-click to select [Property].**

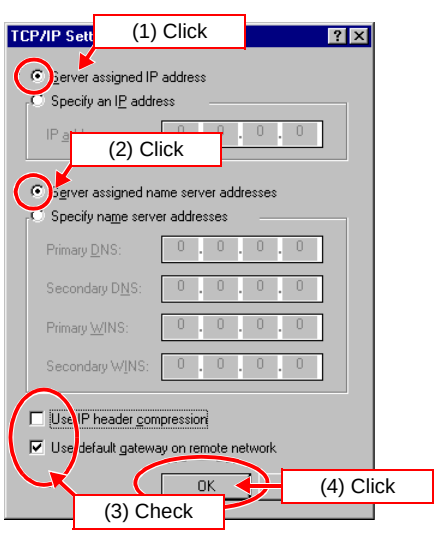


5. **Click the [Server Types] tab and set the [Type of Dial Up Server] to [PPP: Internet, Windows NT Server, Windows 98].**

Remove the checkmarks from all **[Advanced options]** boxes.
In the **[Allowed network protocols]** boxes, only check the box for **[TCP/IP]**, then click the **[TCP/IP Settings]**.

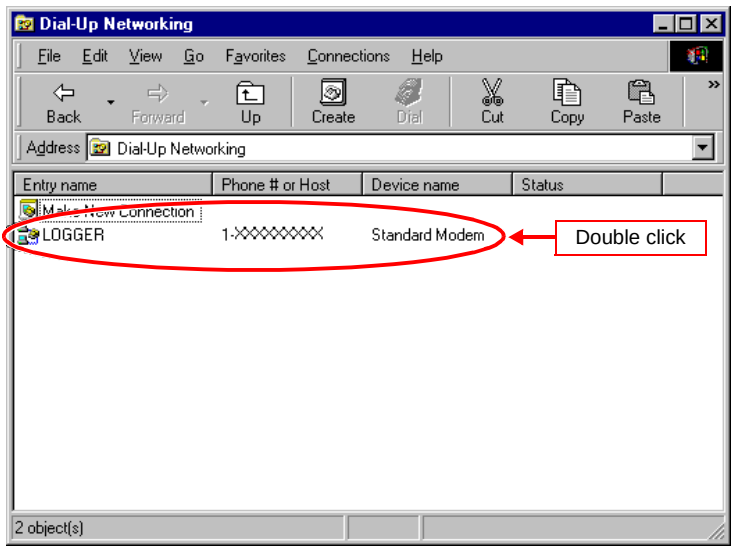


6. **Select the [Server assigned IP address] and [Server assigned name server address] check boxes, then select the [Use default gateway on remote network] check box and click [OK].**



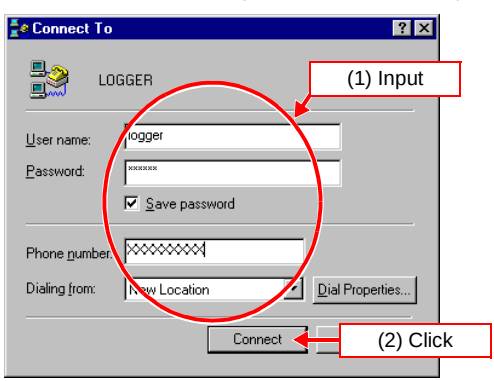
Dial-up Connection (Dialing)

1. **Choose [My Computer] - [Dial-Up Networking], then the connection you've just created.**



2. **Enter the user name (e.g., logger), password (e.g., logger), and telephone number. Then select [Connect] to make a dial-up connection.**

(Same as receiving user name (Receipt Account) and password (Receipt Password) on this instrument side when using HTTP or FTP servers.)



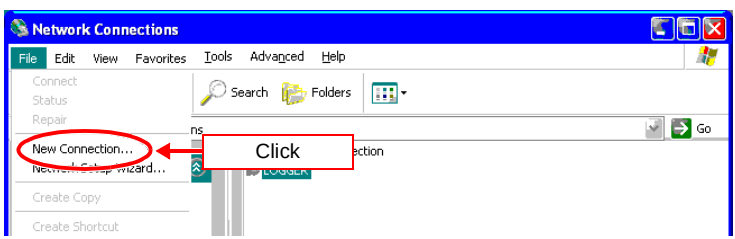
Calling from the Instrument to PC

The IP address normally assigned when originating a call is 192.168.55.2 for this instrument, and 192.168.55.1 for the PC, although the address may vary depending on settings made on the PC side.
"Current IP Address" indicates the IP address actually assigned to this instrument.
When dialing a number from this instrument to the PC, the remote access server (dial-up server) must be up and running before the call can be terminated on the PC side. The remote access server is included with Windows, so refer to Windows HELP.
For PPP in this instrument, unsigned PAP is used for authentication.

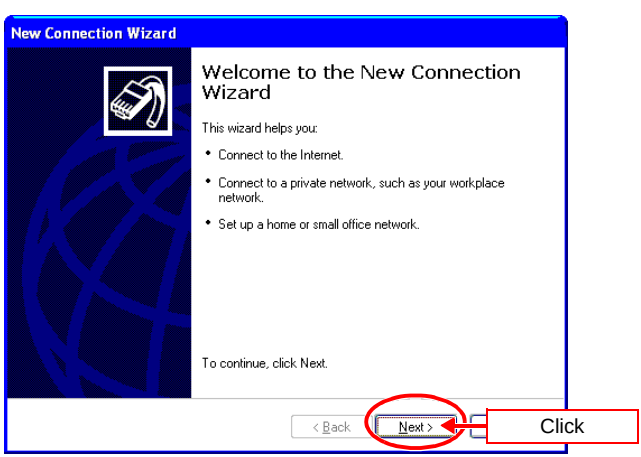
WindowsXP

Incoming Connection Settings (Remote Access Server)

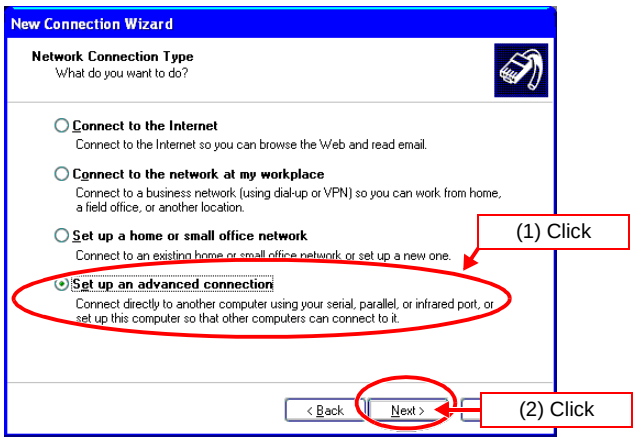
1. **Go to [Control Panel] - [Network Connections] and choose [New Connection].**



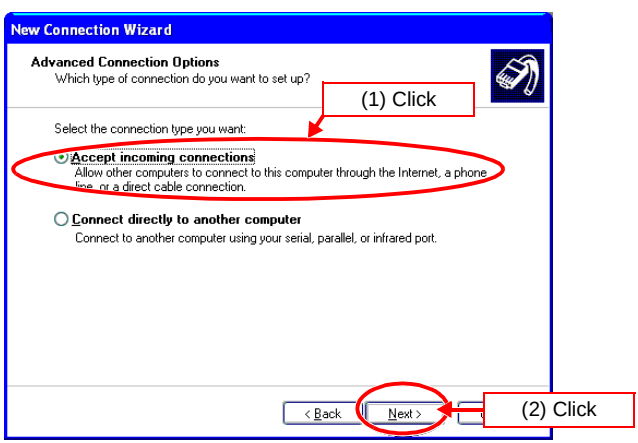
2. **Click [Next].**



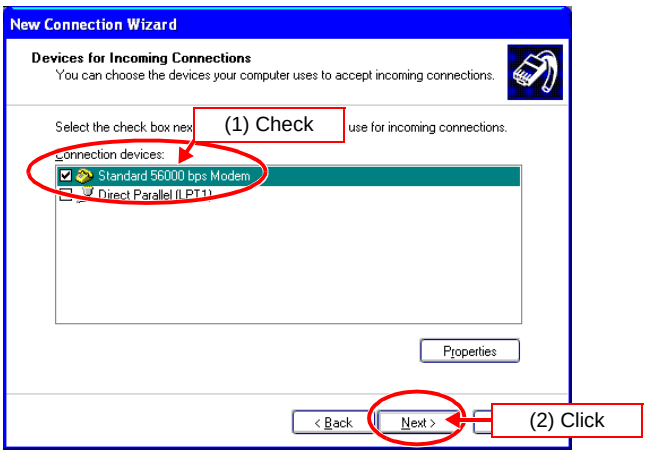
3. **Select [Set up an advanced connection] and click [Next].**



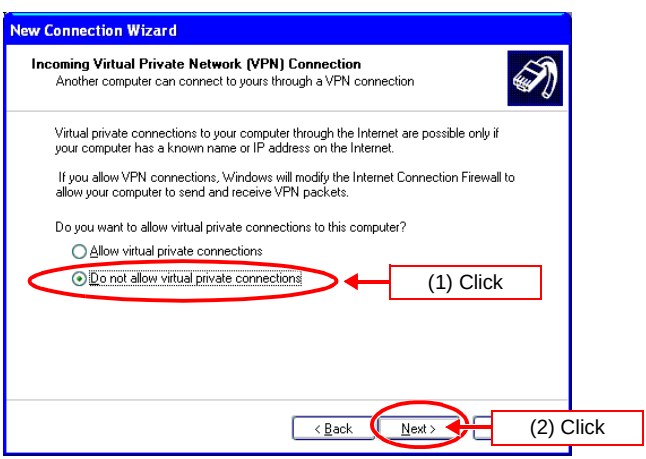
4. **Select [Accept incoming connections] and click [Next].**



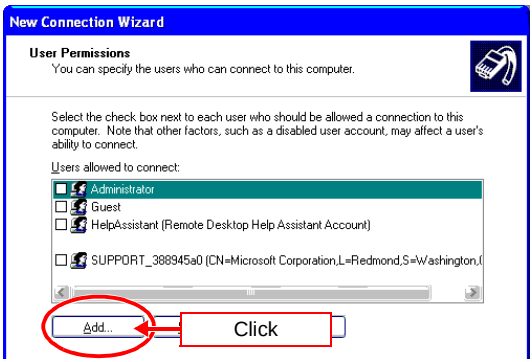
5. **Select the modem set up in your PC and click [Next].**



6. **Select [Do not allow virtual private connections] and click [Next].**

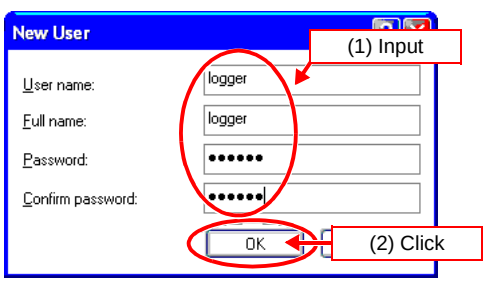


7. **Select [Add].**

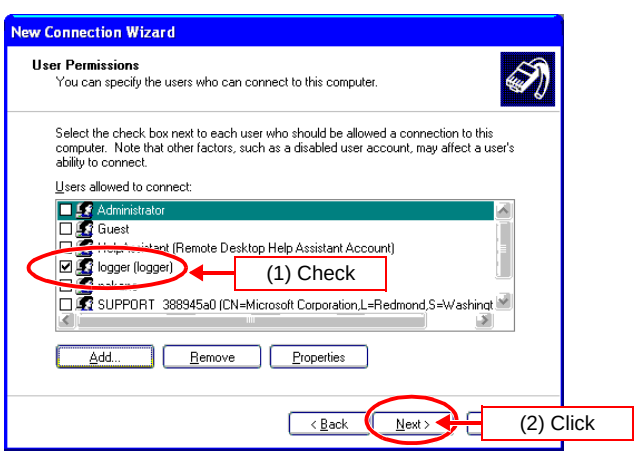


8. **Enter the user name (e.g., logger), full name (e.g., logger), and password (e.g., logger). Confirm the password by entering "logger", for example, then click [OK].**

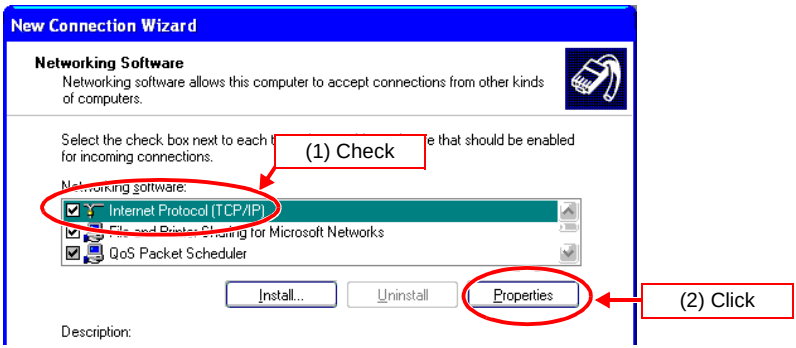
(Connect Password) on this instrument side when sending FTP data.)



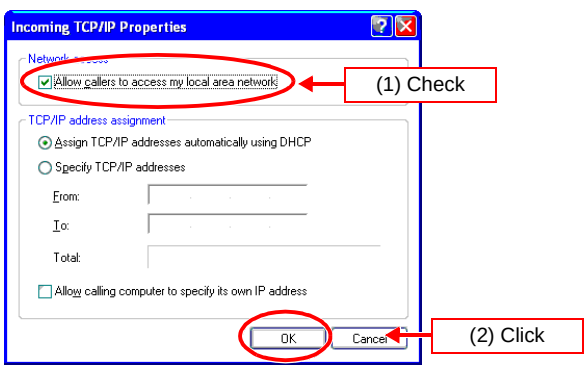
9. **Select the [logger] added and click [Next].**



10. **Select [Internet Protocol (RCP/IP)] and then [Properties].**



11. **Select [Allow callers to access my local area network] and click [OK].**

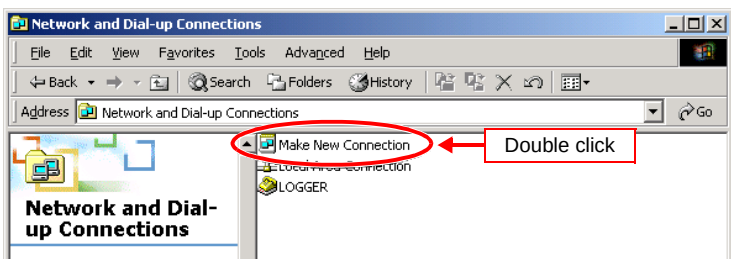


12. **Click [Finish].**

Windows2000

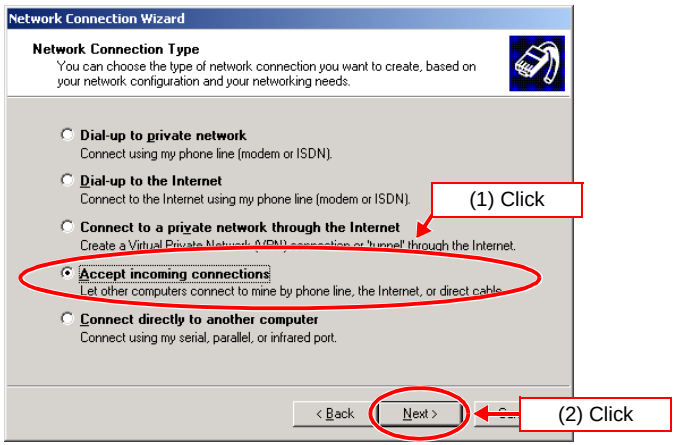
Incoming Connection Settings (Remote Access Server)

1. **Go to [Control Panel]-[Network and Dial-up Connections] and choose [Make New Connection].**

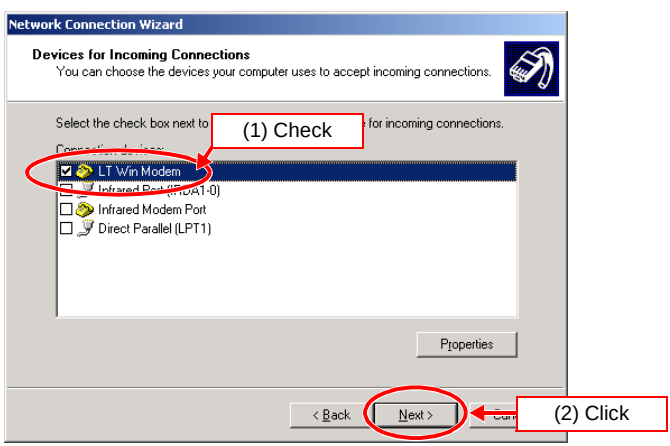


2. **Click [Next].**

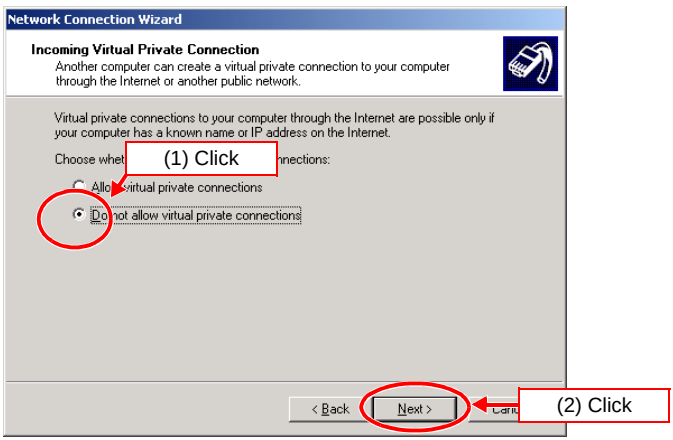
3. **Select [Accept incoming connections] and click [Next].**



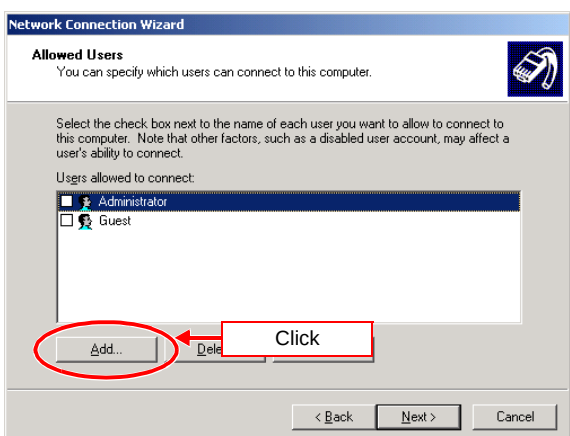
4. **Select the modem set up in your PC and click [Next].**



5. **Select [Do not allow virtual private connections] and click [Next].**

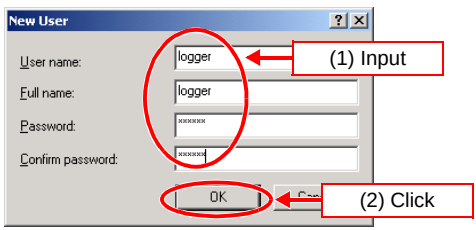


6. **Select [Add].**

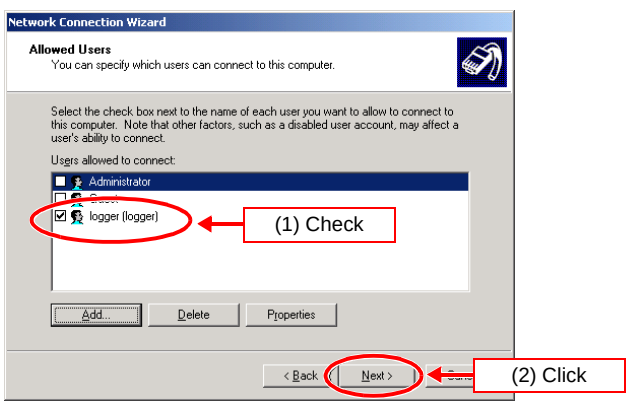


7. **Enter the user name (e.g., logger), full name (e.g., logger), and password (e.g., logger).**

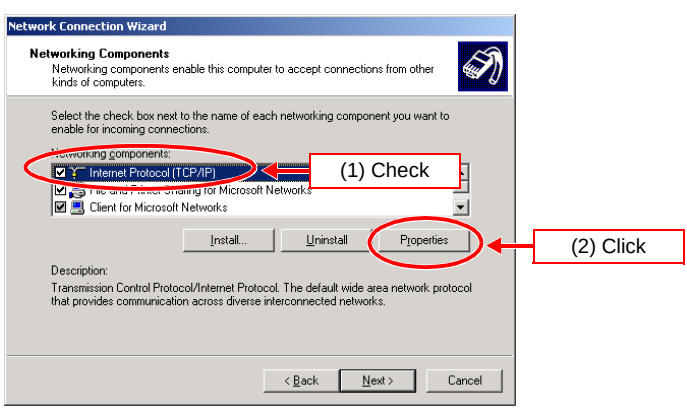
Confirm the password by entering "logger," for example, then click **[OK]**.
(Same as calling user name (Connect Account) and password (Connect Password) on this instrument side when sending FTP data.)



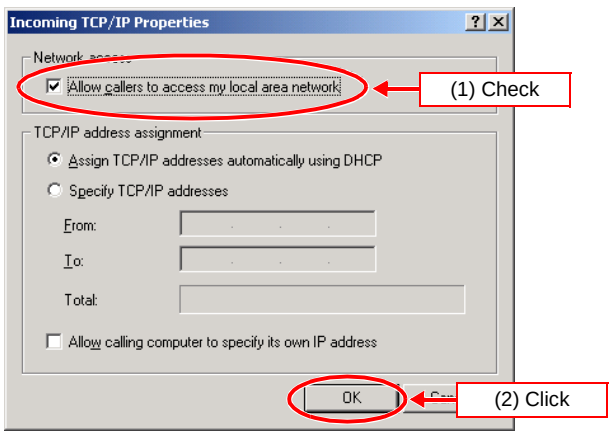
8. **Select the [logger] added and click [Next].**



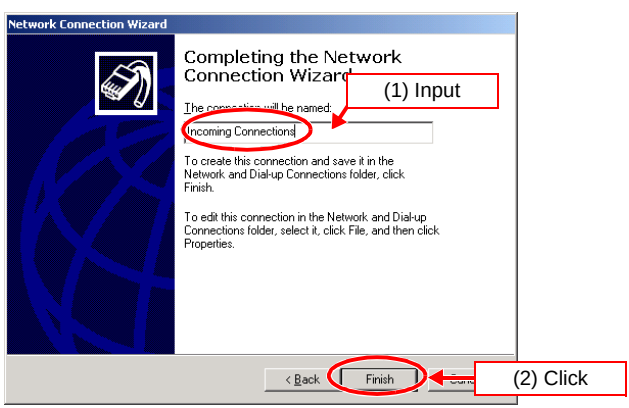
9. **Select [Internet Protocol (RCP/IP)] and then [Properties].**



10. **Select the [Allow callers access my local area network] check box, then click [OK].**



11. **Set [Incoming Connections] for the [The connection will be named] and click [Finish].**

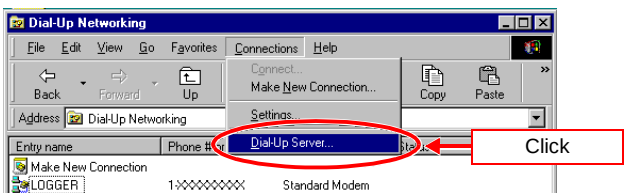


Windows98, WindowsMe

Incoming Connection Settings (Remote Access Server)

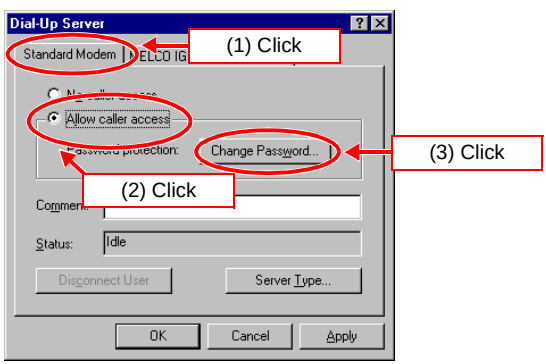
1. **From [Connections] in [My Computer] - [Dial-Up Networking], choose [Dial-Up Server].**

(If no choices for dial-up servers are available here, first install the dial-up server as described later.)



2. **Select the modem set up in your PC and select [Allow caller access] and [Change Password].**

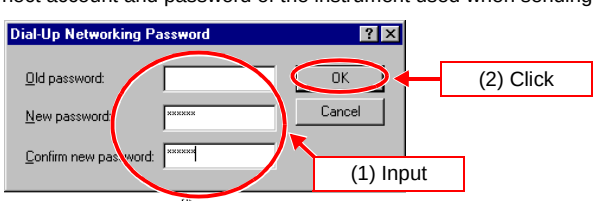
(If no choices for changing the password are available here, first limit shared level access as described later.)



3. **Enter a password in the New password and Confirm new password areas (e.g., logger). Click [OK].**

Leave **[Old password]** blank.

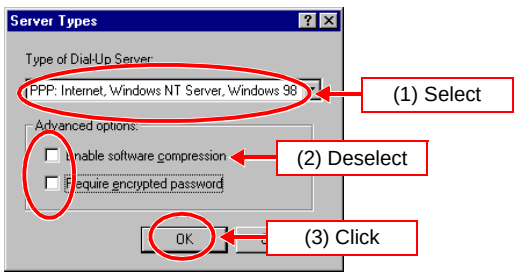
(Use the same username (Connect Account) and password (Connect Password) as the connect account and password of the instrument used when sending FTP data.)



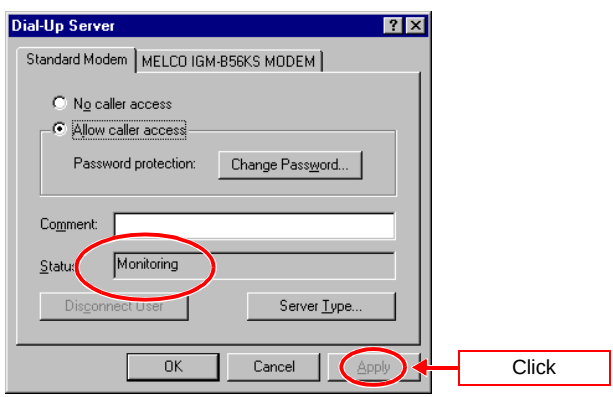
4. **Choose [Dial-up Server] and click the [Server Types] tab.**

5. **Set the [Type of Dial Up Server] to [PPP: Internet, Windows NT Server, Windows 98].**

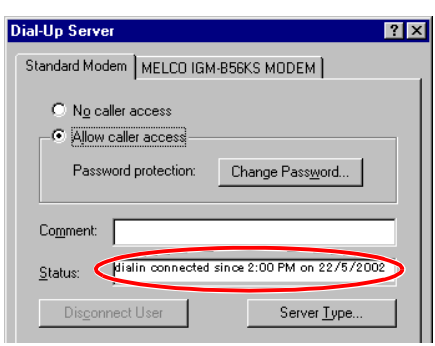
Remove the checkmarks from all **[Advanced options]** boxes, then click **[OK]**.



6. **Click the [Apply]; [Status] will change to "Monitoring."**



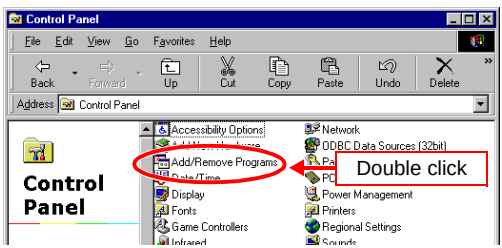
7. **When a call is received, [Status] will change to "Connected."**



Install the Dial-up Server

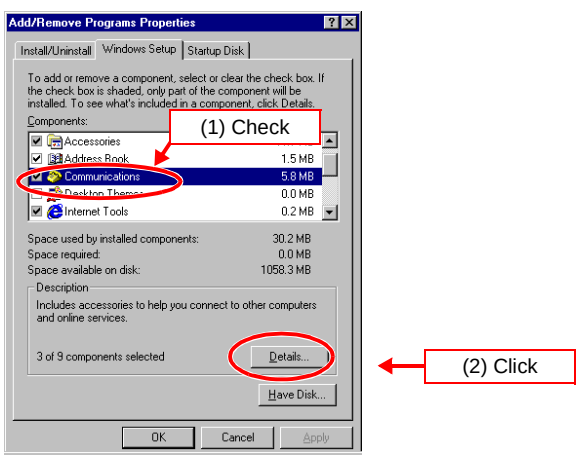
1. **Prepare the Windows 98/Me CD and insert it in the CD drive. Leave it inserted.**

2. **[My Computer]-[Control Panel], select [Add/Remove Programs].**

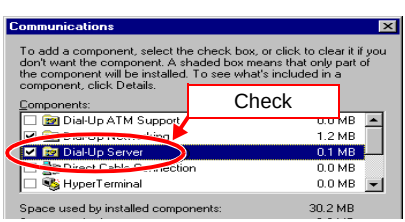


3. **Click the [Windows Setup] tab.**

Check the box for **[Communications]** and click the **[Detail]**.

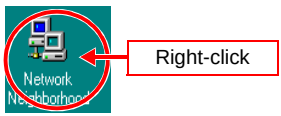


4. **Select [Dial-Up Server] and click [OK].**

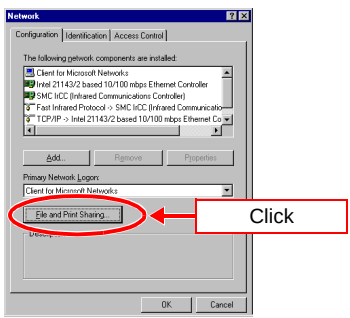


Limiting Shared Level Access

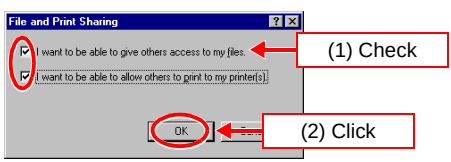
1. **Right-click the [Network Neighborhood] icon and choose [Properties].**



2. **Click the [Configuration] tab, then the [File and Print Sharing].**

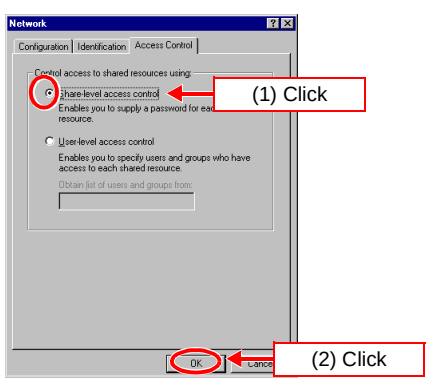


3. **Check the boxes for [I want to be able to give others access to my files] and [I want to be able to give others access to my printer], then click [OK].**



4. **Click the [Access Control] tab.**

Check the radio button for **[Share-level access control]** and click **[OK].**



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