HIOKI

INSTRUCTION MANUAL

For the 8420-51, 8421-51, 8422-51

Communications/ Wave Viewer

HIOKI E. E. CORPORATION

Contents

Introduction

- This manual describes communications and the Wave Viewer.
- The instrument is supplied with a instruction manual and quick start manual in addition to this manual. Please be sure to read both manuals.

Safety Notes

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

NOTE	Advisory items related to performance or correct operation of the instrument.

Other Symbols

❖	Indicates the reference.

Notation

- Unless otherwise specified, "Windows" represents Windows 95, 98, Me, Widows NT4.0, Windows 2000, or Windows XP.
- Dialogue box represents a Windows dialog box.
- Menus, commands, dialogs, buttons in a dialog, and other names on the screen and the keys are indicated in brackets.

Mouse Operation

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.
Drag	While holding down the left button of the mouse, move the mouse and then release the left button to deposit the chosen item in the desired position.
Activate	Click on a window on the screen to activate that window.

Communications 1

1.1 Communications Settings

The instruments include both RS-232C and LAN interfaces. This manual describes the connection methods and settings for the instruments. See the Application Disk (CD-R) for details of the communications commands. Descriptions of the commands are provided in both text and HTML format.
Use the following procedure to view the HTML format descriptions:

1. When you insert the CD-R into the CD-ROM drive, the opening page should appear automatically. If it does not appear, open the "index.htm" file with your Web browser.
2. Select the language to display (click the **English** icon).
3. Click [**INTERFACE MANUAL**].
4. Click the icon for your model.

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 (RS-232C + Modem)

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

Services Provided by Communication

Items	RS-232C	LAN (10BASE-T)	PPP (RS-232C + Modem)
Real-time measurement by 9334 LOGGER COMMUNICATOR (option) ❖ See Section 1.9.	No	Yes	Yes*1
Manual data acquisition by FTP server ❖ See Section 1.6.	No	Yes	Yes
Automatic data transfer by FTP client ❖ See Section 1.7.	No	Yes*5	Yes*5
Remote operation by HTTP server ❖ See Section 1.5.	No	Yes*4	Yes*4
Mail transfer by e-mail ❖ See Section 1.8.	No	Yes*5	Yes*2, *5
Measurement by creating a program using Visual Basic, etc. ❖ See the Interface Manual on the Application Disk (CD-R).	Yes*3	Yes*3	Yes*3

***1** Pay attention to telephone charges because the telephone remains connected during measurement.
Because the modem communication speed is limited, measurement may not be possible at speeds faster than a one-second recording interval.

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

***3** Data cannot be acquired in real time at speeds faster than a one-second recording interval. When a faster speed is required, use the 9334. Data may be acquired after completing measurement, however, even at speeds faster than a one-second recording interval.To create programs, see the Interface Manual on the Application Disk (CD-R).

***4** During measurement with the 9334 or using a program created in Visual Basic, for example, remote operation by a HTTP server is not possible.

***5** During measurement with the 9334, automatic data transfer by an FTP client and sending e-mail are not possible.

1.2 RS-232C Communications

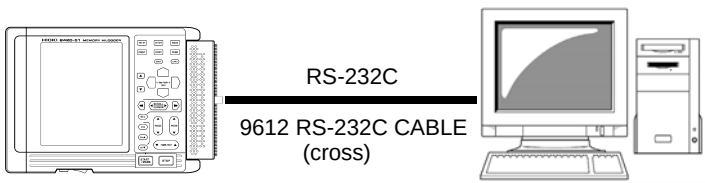
⚠CAUTION

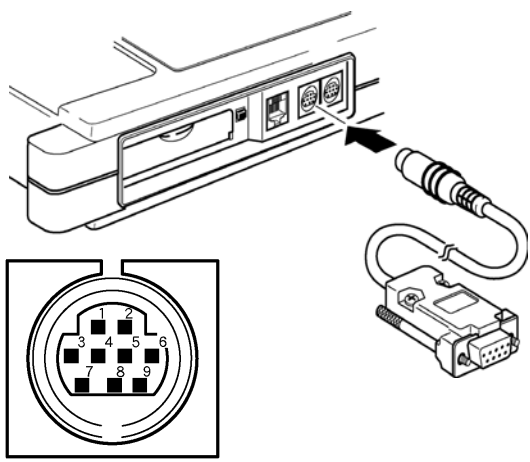
- The RS-232C interface is not isolated from the instrument chassis.
- Be aware that logic inputs and the RS-232C interface share common ground.
  - ❖ See the Instruction Manual See Section 12.1 "Connecting the 8993 DIGITAL I/O UNIT" (198 page.)
- The 9612 RS-232C CABLE and the instrument connectors should be mated carefully. Forcing the connectors together can damage the contacts.

When creating a program for measurement using Visual Basic or other programming language, see the Interface Manual on the Application Disk (CD-R).

1.2.1 RS-232C Connection

The RS-232C interface is provided as a standard feature in the instruments to support remote control of the instrument, as well as data transfer to and from a PC. The instrument and the 9612 RS-232C CABLE are connected as shown in the illustration. The 9612 cable has cross-connected wiring.

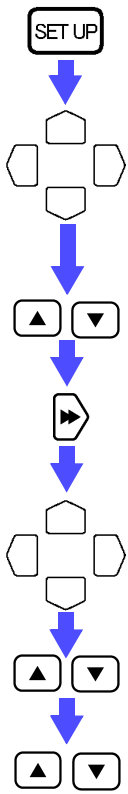




Pin No.		Circuit Designation	CCITT	EIA Symbol	JIS Symbol	Common
2	Receive Data	Receive Data	104	BB	RD	RxD
3	Send Data	Send Data	103	BA	SD	TxD
5	Signal ground or common return	Signal Ground	102	AB	SG	GND
7	Request to send	Request to Send	105	CA	RS	RTS
8	Clear to Send	Clear to Send	106	CB	CS	CTS

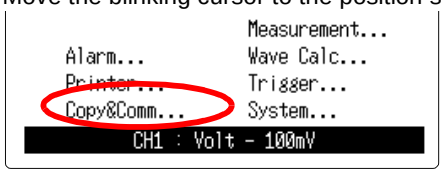
1.2.2 RS-232 Settings

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.



Display the Status Screen.

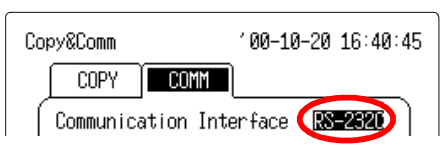
Move the blinking cursor to the position shown.



Display the Copy&Comm Screen.

Display the Comm Window.

Move the blinking cursor to the position shown.



Select "**RS-232C**" for the Communications Interface.

Select each settings.

Items	Settings
Baud Rate	1200 to 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

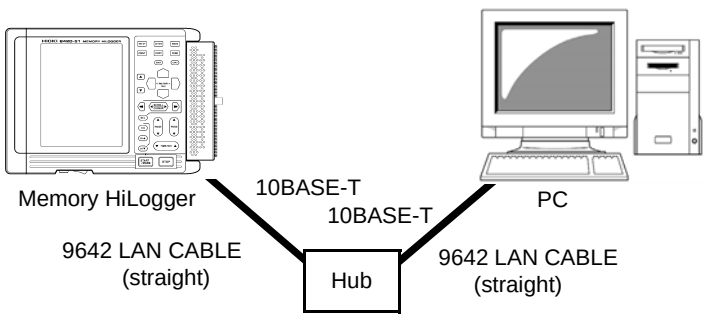
NOTE

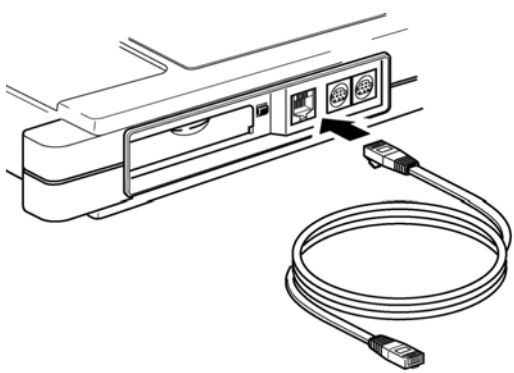
- If overrun or framing errors occur, reduce the communications speed.
- Do not attempt change settings while communications are underway.

1.3 10BASE-T LAN Communications

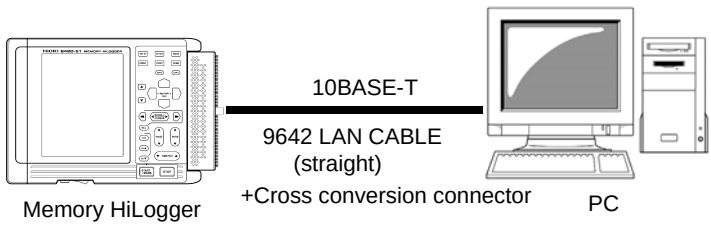
1.3.1 LAN Connections

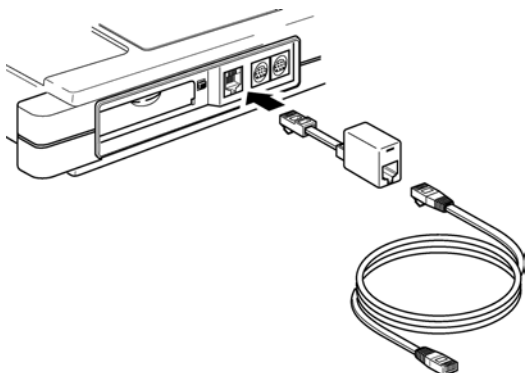
Connect the 9642 LAN CABLE to the instrument.





The 9642 LAN CABLE has straight-through wiring, so if connecting the instrument directly to a PC, use the supplied cross-over adapter.



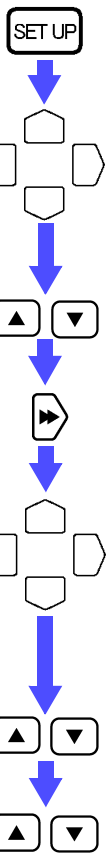


NOTE

- 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.

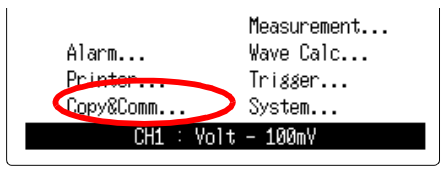
1.3.2 LAN Settings

LAN settings are made on the instrument.



Display the Status Screen.

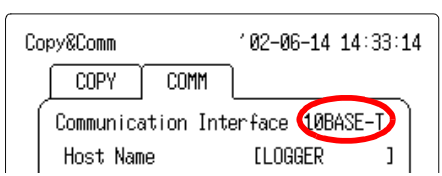
Move the blinking cursor to the position shown.



Display the Copy&Comm Screen.

Display the Comm Window.

Move the blinking cursor to the position shown.



Select "**10BASE-T**" for the Communications Interface.

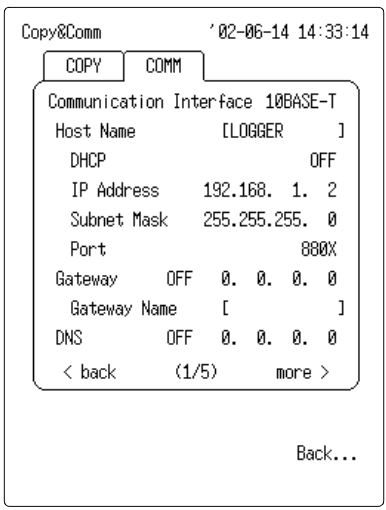
Select each settings.

NOTE

Switching Between the Five Setting Screens

Press the SCROLL CURSOR button or move the blinking cursor to "**< back**" or "**more >**" position, then press the ▲/▼ button to go to another screen.

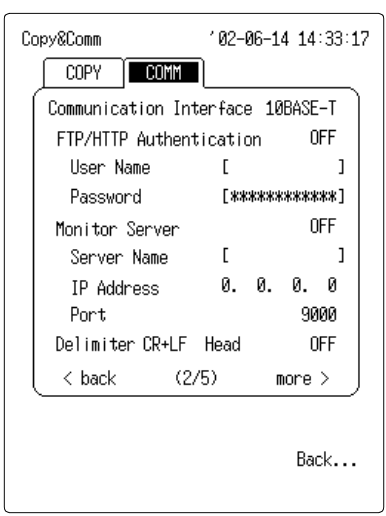
Comm Window (10BASE-T 1/5)



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)

❖ See Section 1.3.3, Section 1.3.4, and Section 1.3.5.

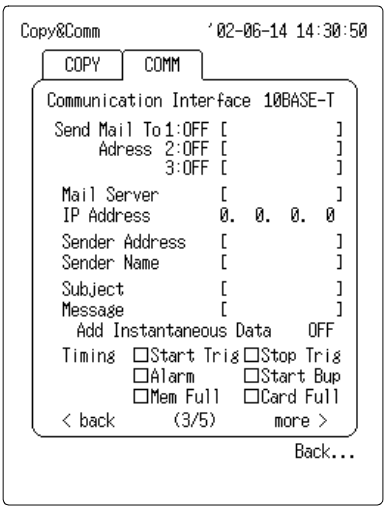
Comm Window (10BASE-T 2/5)



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

❖ See Section 1.5, Section 1.6, and Section 1.9.

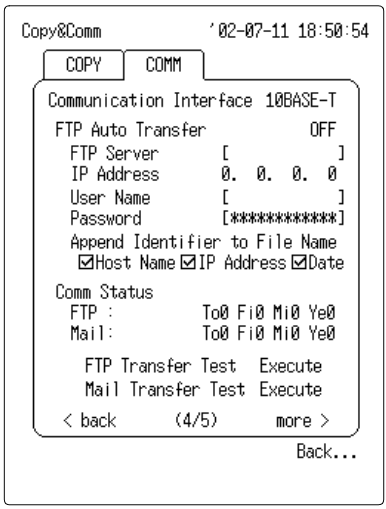
Comm Window (10BASE-T 3/5)



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
Start Trigger	OFF/ ON
Stop Trigger	OFF/ ON
Alarm	OFF/ ON
Start Backup	OFF/ ON
Memory Full	OFF/ ON
Card Full	OFF/ ON

❖ See Section 1.8.

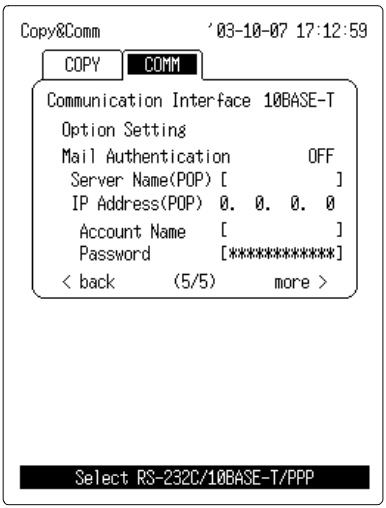
Comm Window (10BASE-T 4/5)



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.

❖ See Section 1.7.

Comm Window (10BASE-T 5/5)



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

❖ See Section 1.8.

1.3.3 LAN Connection Examples

Example 1 ▶▶ **Connecting one PC and one Instrument with a 9642 LAN CABLE.**

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.

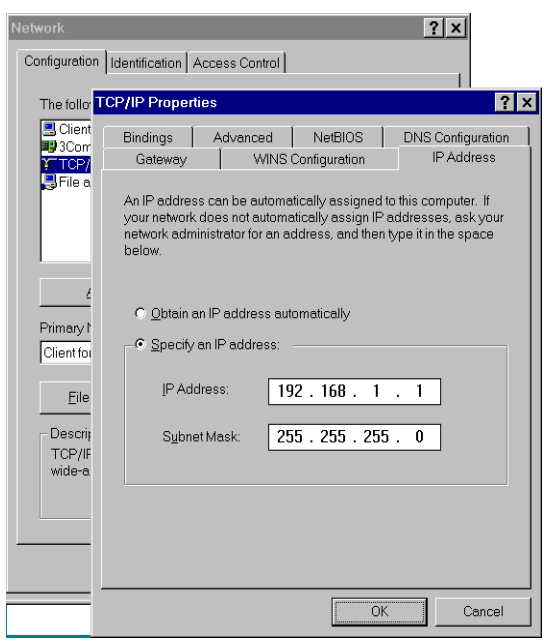
The following example assumes the network structure shown below.

Network Addresses	192.168.1.0/24 (Private IP addresses)
Subnet Mask	255.255.255.0

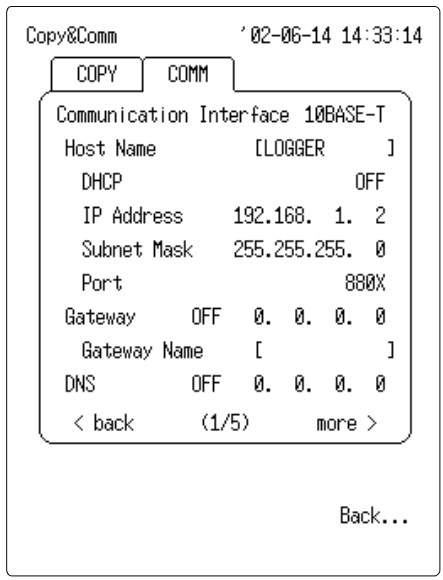
PC (The settings are made manually)

IP Address	192.168.1.1

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**.]



Set the instrument as shown below, so that every instrument has a unique host name and IP address.



This 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

Example 2 ▶▶

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 those in Example 1. 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)

Host Name	LOGGER1
IP Address	192.168.1.2

The second instrument (The settings are made manually)

Host Name	LOGGER2
IP Address	192.168.1.3

The third instrument (The settings are made manually)

Host Name	LOGGER3
IP Address	192.168.1.4

Common settings

DHCP	OFF
Subnet Mask	255.255.255.0
Gateway	OFF
Port Number	880X

1.3.4 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 device 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.

1.3.5 LAN Settings

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 decimal columns, and 0 to 9 in the first column is used and reserved by this machine.)	
	___X
Default 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 devices in the network.

DHCP (Dynamic Host Configuration Protocol)

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

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 device. 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 devices 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 device is on. The host address identifies the device.
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 devices on a subnet.
When DHCP is enabled, a subnet mask will be automatically assigned.

IP Address Assignment

Each device 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 device.

For example, if the network is 192.168.1.0/24, the address 192.168.1.255 shows all the devices 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.

8800 (The instrument is the server.)	: using the 9334 LOGGER COMMUNICATOR
8801 (The instrument is the client.)	: using the 9334 LOGGER COMMUNICATOR
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 device that connects different networks.
To communicate with a device on a network with a different address, you have to set the IP address of the device as the gateway. Set the same gateway for all devices on the same subnet.
When you communicate only with the devices 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 device 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 device 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.

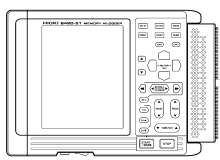
❖ For details of the commands, see the Interface Manual on the Application Disk (CD-R).

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.

1.4 PPP (RS-232C + Modem) Communications

1.4.1 RS-232C and Modem Connection

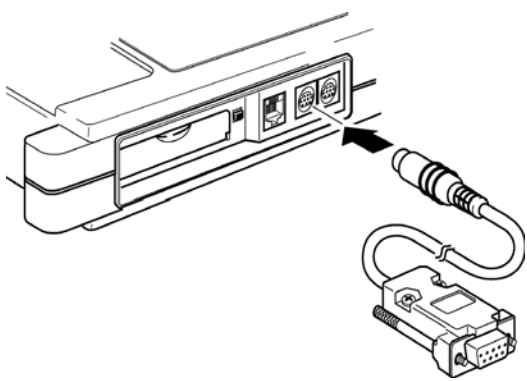
Use an RS-232C cable to connect this instrument and a modem so that measurement can be performed on PCs (with connected modems) at remote locations.
Connect the main instrument and 9721 RS-232C CABLE as shown below. The 9721 RS-232C CABLE is a straight cable used for modems.



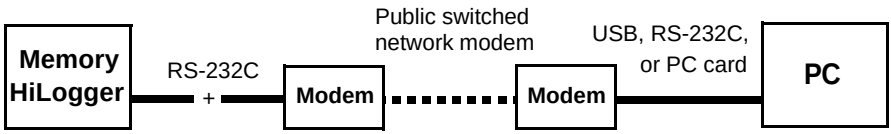
Memory HiLogger

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

Modem

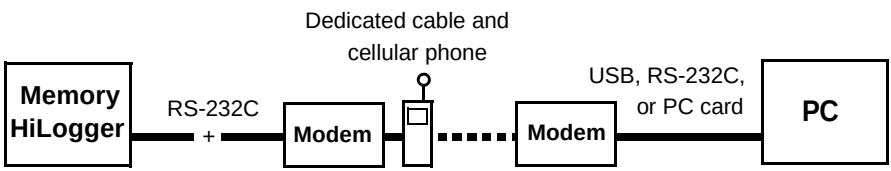


When the instrument and PC both use public switched network



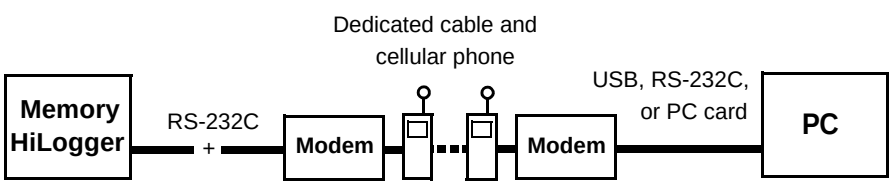
9721 RS-232C CABLE (straight)
+Straight cable included with modem

When the instrument uses cellular phone and PC uses public switched network



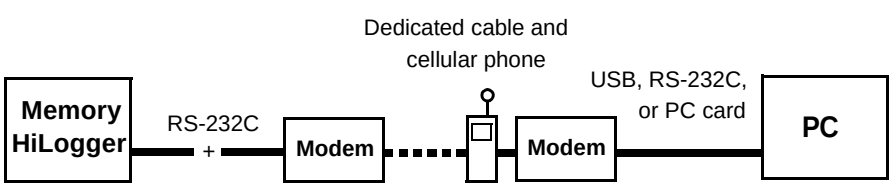
9721 RS-232C CABLE (straight)
+Straight cable included with modem

When the instrument and PC both use cellular phone



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

When the instrument uses public switched network and PC uses cellular phone



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

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.

Any type of modem (e.g., RS-232C, USB, PC card) can be used on the PC side when using a public switched network or cellular phone, provided that it is compatible with your PC.

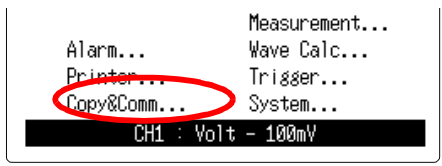
1.4.2 PPP (RS-232C + Modem) Settings

PPP communication settings are made on the instrument.

SET UP

Display the Status Screen.

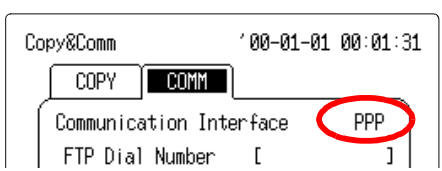
Move the blinking cursor to the position shown.



Display the Copy&Comm Screen.

Display the Comm Window.

Move the blinking cursor to the position shown.



Select "**PPP**" for the Communications Interface.

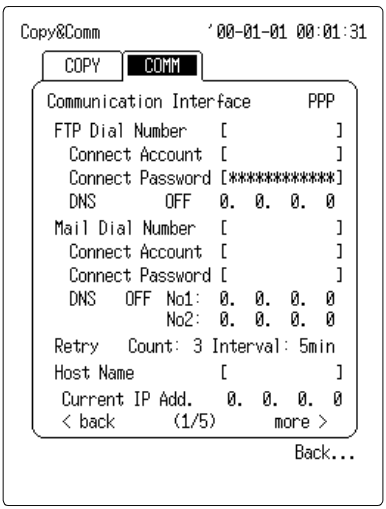
Select each settings.

NOTE

Switching Between the Five Setting Screens

Press the SCROLL CURSOR button or move the blinking cursor to "**< back**" or "**more >**" position, then press the ▲/▼ button to go to another screen.

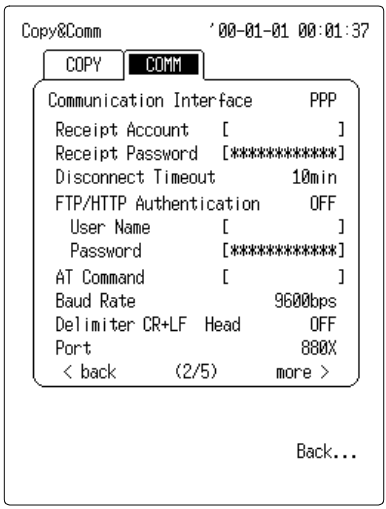
Comm Window (PPP 1/5)



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)

❖ See Section 1.7 and Section 1.8.

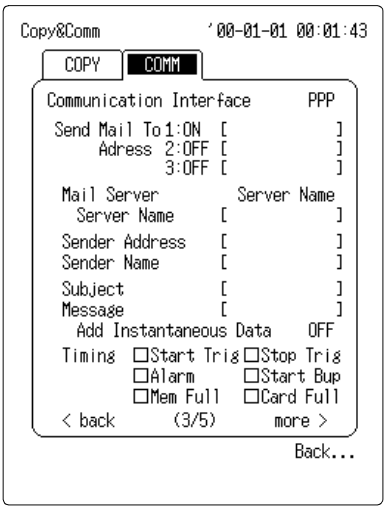
Comm Window (PPP 2/5)



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 to 19200 bps
Delimiter	CR/ LF+CR
Header	OFF/ ON
Port	???? (? represents 0 to 9) Setting range: 100X to 999X

❖ See Section 1.5 and Section 1.6.

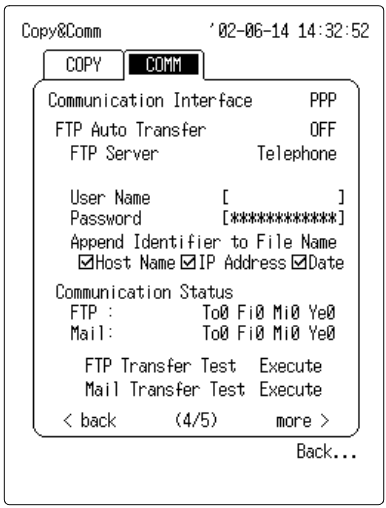
Comm Window (PPP 3/5)



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 Instanta-neous Data	OFF/ ON
Send at Start Trigger	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

❖ See Section 1.8.

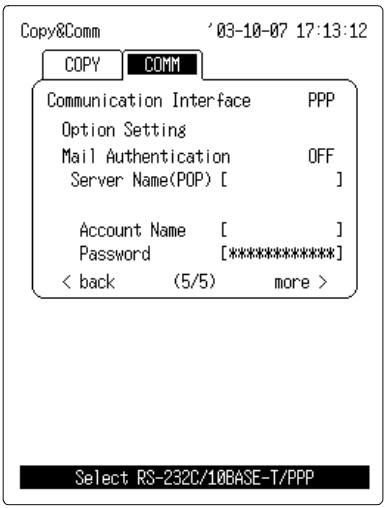
Comm Window (PPP 4/5)



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.

❖ See Section 1.7.

Comm Window (PPP 5/5)



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

❖ See Section 1.8.

1.5 Remote Measurement Using HTTP Server

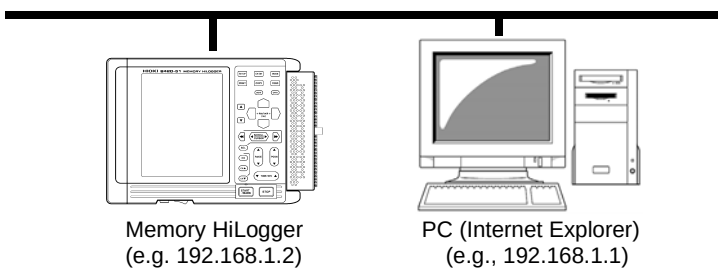
The HTTP server function allows you to set up this instrument, acquire data, and monitor the screen by using a general WWW browser like Internal Explorer without having to install dedicated application software in your PC.

1.5.1 HTTP Communication via 10BASE-T LAN

1. Set parameters for the LAN on the instrument and on the PC.
   ❖ See Section 1.3.1 to Section 1.3.5.

2. Set parameters for communications on the instrument.
   ❖ See Section 1.5.1.

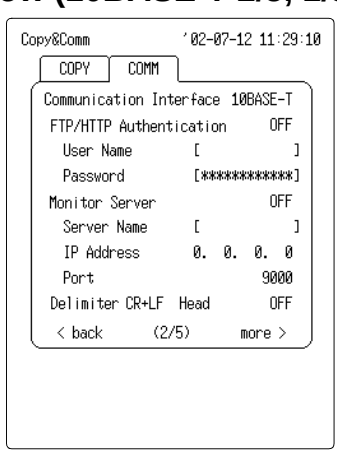
3. Operate the HTTP server on the PC.
   ❖ See Section 1.5.3 to Section 1.5.9.

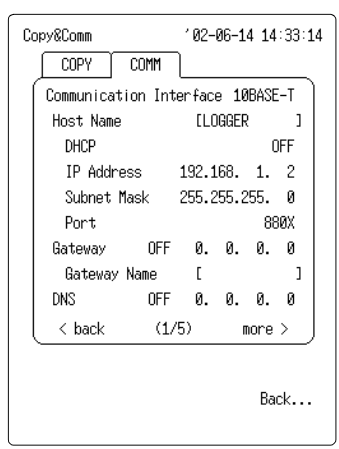


Memory HiLogger
(e.g. 192.168.1.2)

PC (Internet Explorer)
(e.g., 192.168.1.1)

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





1.5.2 HTTP Communication via PPP (RS-232C + Modem)

1. Set parameters for the PPP on the instrument and on the PC.
   ❖ See Section 1.4.1 and Section 1.4.2.

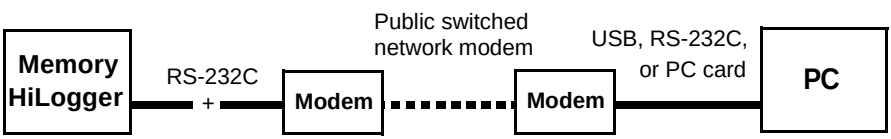
2. Set parameters for communications on the instrument.
   ❖ See Section 1.5.2.

3. Configure the modem on the PC.
   ❖ See the Instruction Manual of your modem.

4. Set dialup information on the PC.
   ❖ See Section 1.10.1 to Section 1.10.7.

5. Operate the HTTP server on the PC.
   ❖ See Section 1.5.3 to Section 1.5.9.

(In addition to public switched networks and cellular phones can be used.)



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

Comm Window (PPP 2/5)

1. Receipt Account:
   Set the user name (e.g., logger) to be entered at PC dial-up connection.
   ❖ See Section 1.10.1 "Calling from PC to the Instrument" (74 page.)

2. Receipt Password:
   Set the password (e.g., logger) to be entered at PC dial-up connection.
   ❖ See Section 1.10.1 "Calling from PC to the Instrument" (74 page.)

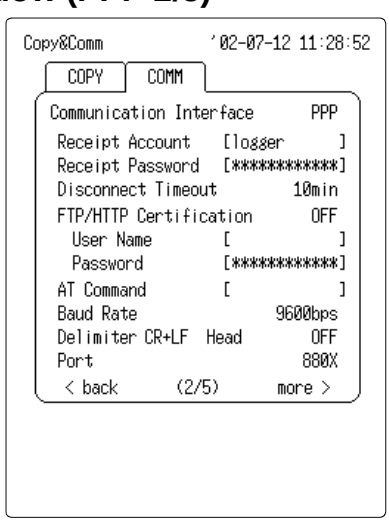
3. Disconnect Timeout:
   When no communication is performed, the instrument waits the time set here before disconnecting.

4. AT Command:
   If necessary, the AT command can be specified for the modem as an option.
   When cellular phones are used, for example, the command for specifying data communication may be necessary.
   ❖ See Section 1.4 "PPP (RS-232C + Modem) Communications" (24 page.)
   ❖ For details of the commands, see the Instruction Manual of your modem.

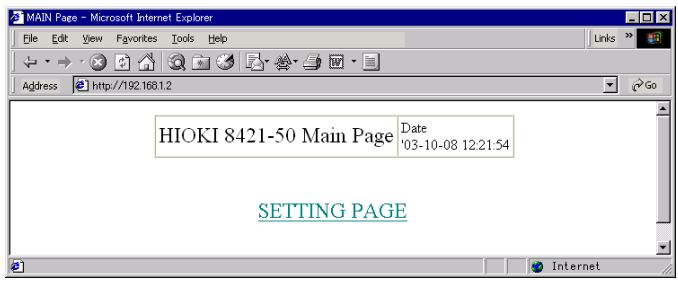
5. Port, Delimiter, Header:
   Specify the port number used by this instrument.
   ❖ See Section 1.3.5 "LAN Settings" (20 page.)

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

Comm Window (PPP 2/5)



1.5.3 Main Page



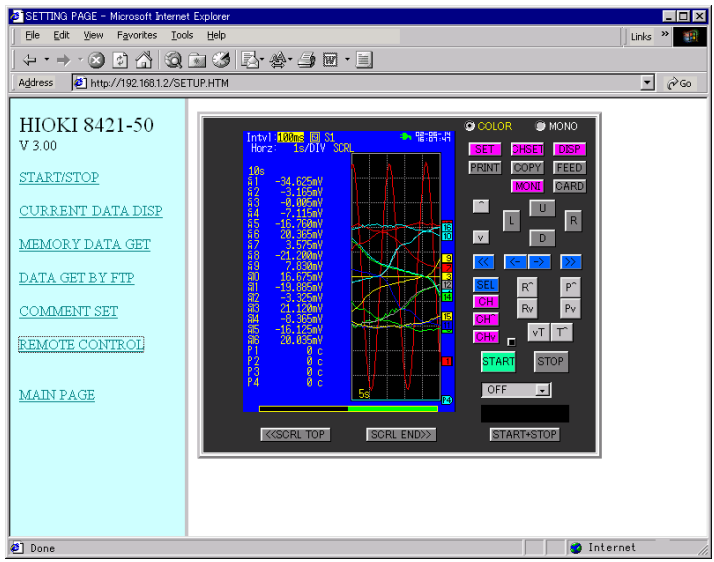
To display the main page, launch Internet Explorer and enter the instrument address in the address column as http://192.168.1.2. Click [**SETTING PAGE**.]
(When connected in PPP via a modem, the address will be like http://192.168.55.2.) When FTP/HTTP authentication on the instrument communication interface screen is turned on, you will be prompted for the user name and password. Enter both, then press the [**SET**] button.
(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 communication interface screen.)

NOTE

- 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.
- If all of the HTTP screen does not appear, see the 1.3.4 "Communication Problems" (page 18.)
- 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.

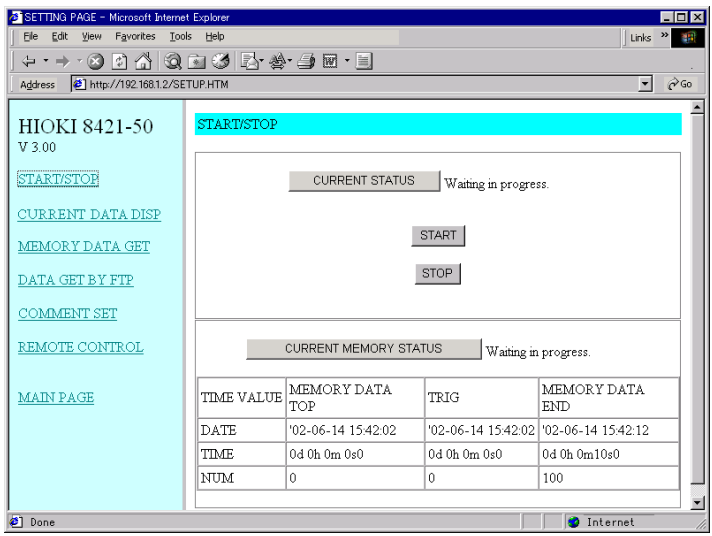
During measurement with the 9334 LOGGER COMMUNICATOR or using a program created in Visual Basic, for example, remote operation by a HTTP server is not possible.

1.5.4 Remote Operation (REMOTE CONTROL)



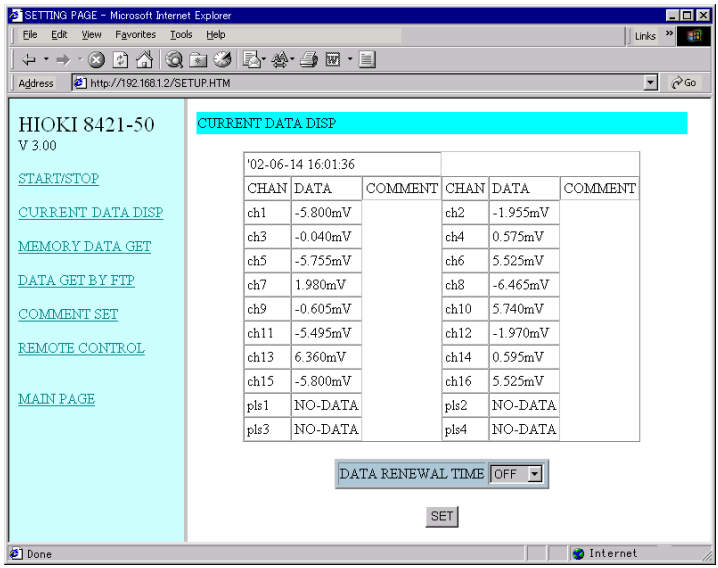
- The screen displayed on this instrument appears in the WWW browser directly as is.
- Keys can be pressed in the same panel layout as in this instrument.
- You can select between monochrome and color display, and select the screen refresh rate. (When monochrome is selected, the screen on the main instrument momentarily becomes monochrome.)
- 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.

1.5.5 Starting and Stopping Measurement (START/STOP)



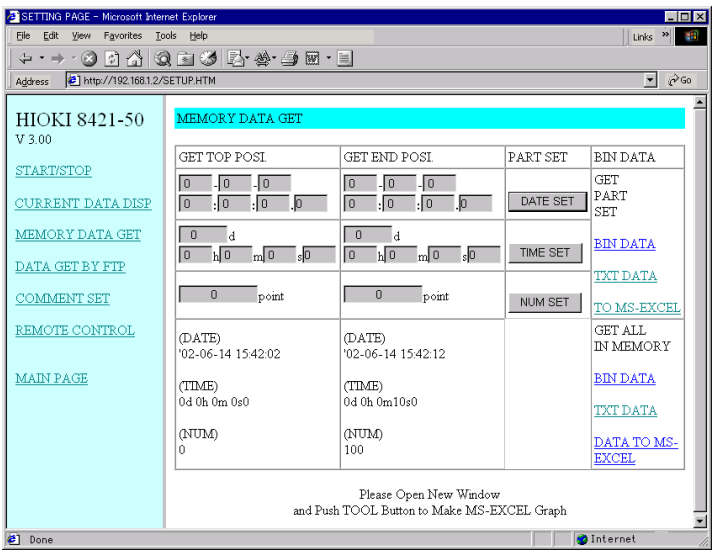
- Measurement can be started or stopped under control from the WWW browser.
- The current measurement status can be displayed.

1.5.6 Current Value Display (CURRENT DATA DISP)



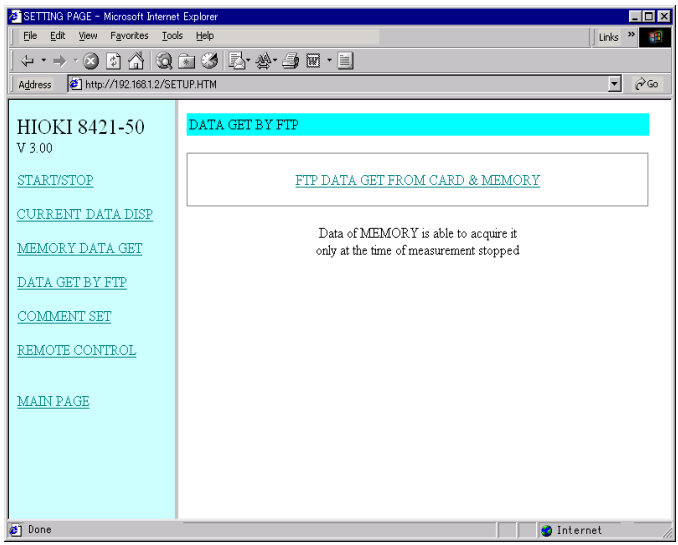
- The data currently being measured with this instrument can be numerically displayed.
- While this instrument is conducting measurement, the data on each channel acquired at every recording interval can be monitored.
- Even when this instrument is idle (i.e., measurement stopped), the instantaneous data entered on each channel can be monitored.
- The screen refresh rate can be selected.

1.5.7 Acquiring Data from Memory (MEMORY DATA GET)



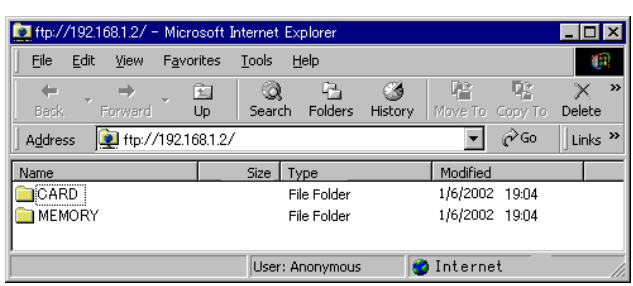
- While conducting measurement or after stopping measurement, the measured data captured in internal memory of this instrument can be acquired from a browser after specifying the range of data. It is possible to obtain all data in memory.
- You can select binary or text data.
- In addition, this data can be transferred to Microsoft Excel to freely create graphs from the data as desired.

1.5.8 Data Acquisition Using FTP (DATA GET BY FTP)

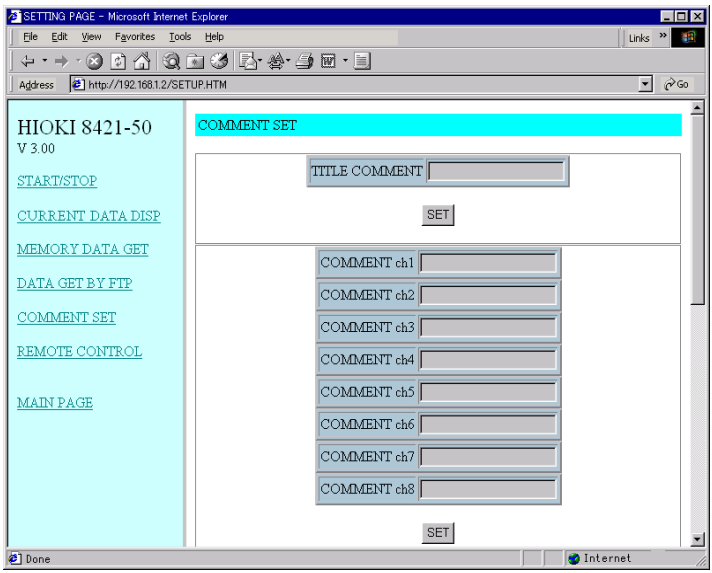


- The measured data captured on the PC card file or in internal memory of this instrument can be acquired from a WWW browser by using FTP.
- While conducting measurement, you cannot acquire the measured data from internal memory. Wait until measurement stops before acquiring the measured data.
- For details, see 1.6 "Downloading Data to a PC via FTP Server" (page 43.).

When FTP/HTTP authentication on the instrument communication interface screen is turned on, you will be prompted for the user name and password. Enter both, then press the [**SET**] button.
(To ensure that files will not be inadvertently deleted by any third party, we recommend limiting connections by user name and password on the instrument communication interface screen.)



1.5.9 Comment Settings (COMMENT SET)



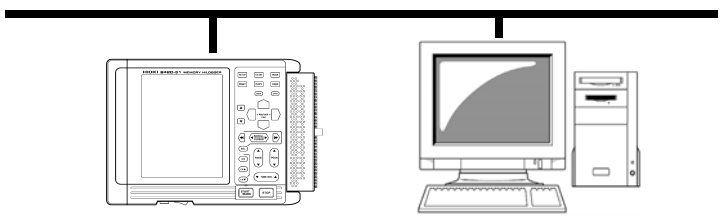
Comments on each channel of this instrument can be easily set from a WWW browser.

1.6 Downloading Data to a PC via 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.

1.6.1 Using the FTP Server via 10BASE-T LAN

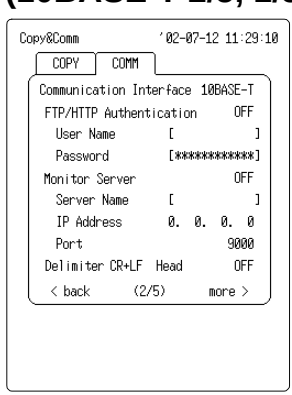
1. Set parameters for the LAN on the instrument and on the PC.
   ❖ See Section 1.3.1 to Section 1.3.5.
2. Set parameters for communications on the instrument.
   ❖ See Section 1.6.1.
3. Operate the FTP on the PC.
   ❖ See Section 1.6.3 and Section 1.6.4.

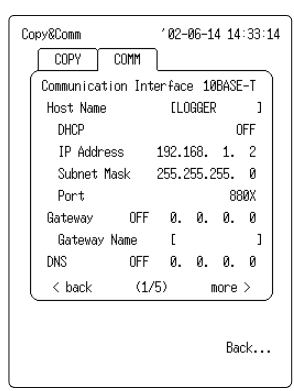


Memory HiLogger
(e.g., 192.168.1.2)

PC (Internet Explorer)
(e.g., 192.168.1.1)

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





1.6.2 Using the FTP Server via PPP (RS-232C + Modem)

1. Set parameters for the PPP on the instrument and on the PC.
   ❖ See Section 1.4.1 and Section 1.4.2.

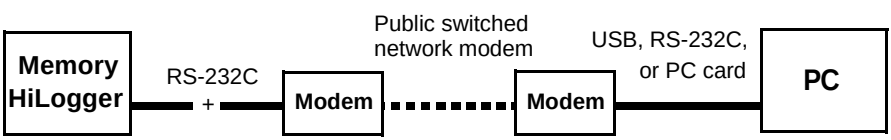
2. Set parameters for communications on the instrument.
   ❖ See Section 1.5.2 and Section 1.6.2.

3. Configure the modem on the PC.
   ❖ See the Instruction Manual of your modem.

4. Set dialup information on the PC.
   ❖ Section 1.10.1 to Section 1.10.7.

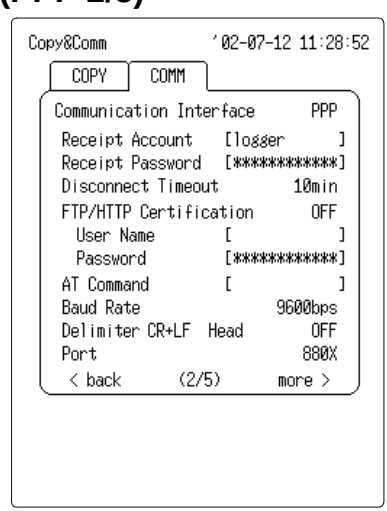
5. Operate the FTP on the PC.
   ❖ Section 1.6.3 and Section 1.6.4.

(In addition to public switched networks and cellular phones can be used.)



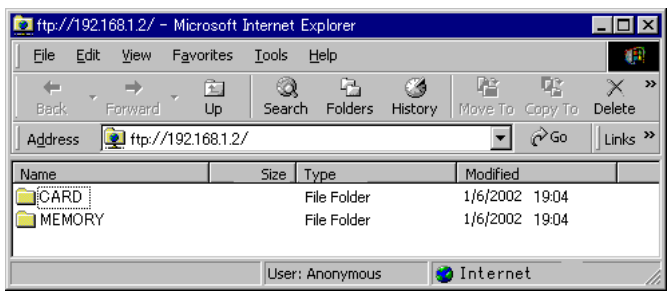
9721 RS-232C CABLE (straight)
+Straight cable included with modem

Comm Window (PPP 2/5)

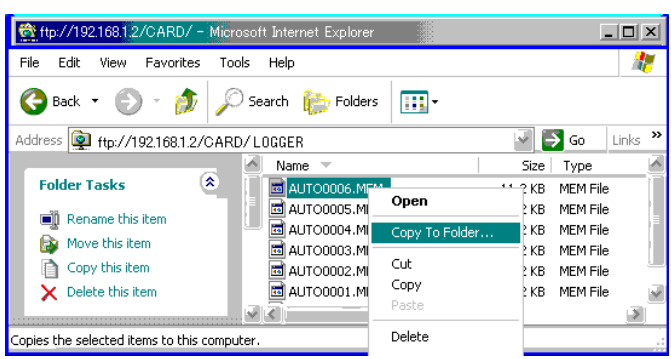


1.6.3 FTP Operation Procedure

Various types of FTP clients for Windows are available. One of the standard FTP clients is a text-based FTP command, available at the DOS prompt.
When the address of the instrument, such as "ftp://192.168.1.2," is entered on Internet Explorer or other browser software, the directory (e.g., CARD, MEMORY) will be displayed.
(For PPP connected via a modem, enter the address as ftp://192.168.55.2.)



In the MEMORY directory are listed a SETUP.SET file and, if there is measurement data, a MEMORY.MEM and a MEMORY.TXT file. Those files can be downloaded into the PC, as can the files in the card.
By downloading files in the MEMORY directory, you can obtain measurement and setting data in the internal memory in the form of a file.
Files in the PC card of the instrument can be retrieved from the CARD directory.



1.6.4 FTP Authentication

FTP authentication of this instrument is set to "Anonymous." Any device 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.

1.7 Automatic Data Transfer by FTP Client

The binary files automatically and periodically saved to a PC card during measurement, or automatically saved after measurement can be automatically sent from this instrument to an FTP server within the network or on a remote PC.
(For automatic saving, select "Binary" (real-time). To save and send files periodically, select "Divide" or "Regularly" for save mode. To continuously save and send files even after the PC card is full, also select "Remove".)
❖ Instruction Manual See Section 7.5 "Automatic Data Saving" (133 page.)

(For FTP servers, Windows FTP servers may be used. Set and register this instrument by user name and password in those FTP servers before use. For details, refer to HELP for Windows FTP servers.)
The free War FTP Daemon Software can be used instead of the windows FTP Server.
Before automatic data transfer by an FTP client can be performed, the IP address of the PC on which the FTP server operates must be specified.

1.7.1 FTP Data Transfer by 10BASE-T LAN

1. Set parameters for the LAN on the instrument and on the PC.
   ❖ See Section 1.3.1 to Section 1.3.5.

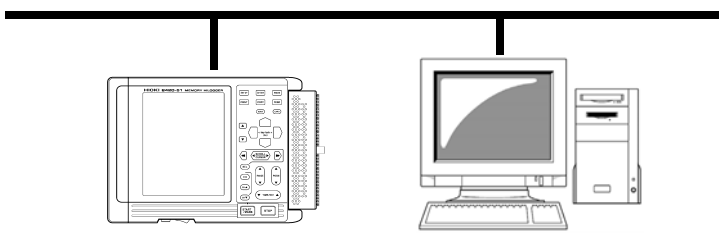
2. Set parameters for communications on the instrument.
   ❖ See Section 1.7.1.

3. Operate the FTP server on the PC.
   ❖ See Section 1.7.5 to Section 1.7.6.

4. Carry out FTP automatic transmission on the instrument.
   ❖ See Section 1.7.3 to Section 1.7.4.

5. Set the parameters for automatic saving.
   ❖ Instruction Manual See Section 7.5 "Automatic Data Saving" (133 page.)

6. When measurement is started on the instrument and a file is automatically saved onto the PC card, the file is automatically transmitted to the FTP server on the PC.



Memory HiLogger
(e.g., 192.168.1.2)

FTP server PC
(e.g., 192.168.1.1)

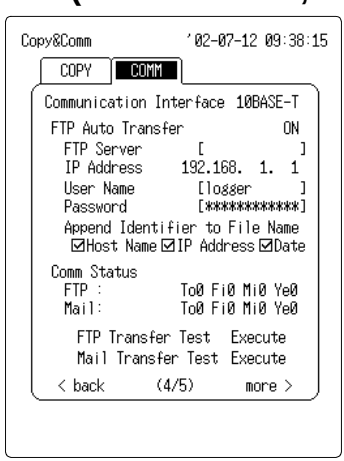
Example of How to Set Automatic Data Transfer by FTP Client

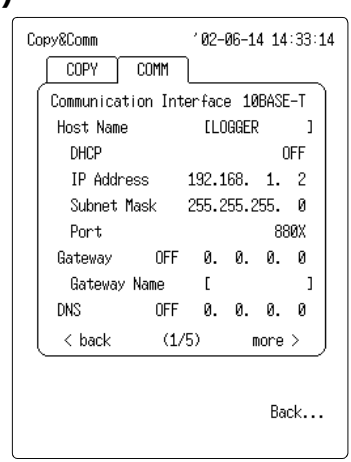
(When sending data to FTP server 192.168.1.1)

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 Communication Interface screen 1/5)
IP Address	Attach IP address to file name to be sent. (Set on Communication Interface 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.

Comm Window (10BASE-T 4/5, 1/5)





1.7.2 FTP Data Transfer by PPP (RS-232C + Modem)

1. Set the parameters for the PPP on the instrument.
   ❖ See Section 1.4.1 and Section 1.4.2.

2. Set parameters for communications on the instrument.
   ❖ See Section 1.7.2.

3. Configure the modem on the PC.
   ❖ See the Instruction Manual of your modem.

4. Set up the remote access server on the PC.
   ❖ See Section 1.10.8 to Section 1.10.13.

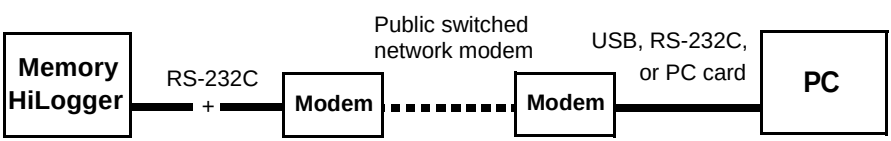
5. Set up the FTP server on the PC.
   ❖ See Section 1.7.5 to Section 1.7.6.

6. Carry out FTP automatic transmission on the instrument.
   ❖ See Section 1.7.3 and Section 1.7.4.

7. Set the parameters for automatic saving.
   ❖ Instruction Manual See Section 7.5 "Automatic Data Saving" (133 page.)

8. hen measurement is started on the instrument and a file is automatically saved onto the PC card, the file is automatically transmitted to the FTP server on the PC.

(In addition to public switched networks and cellular phones can be used.)



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

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

1. 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.)

2. FTP Dial Number:
   Set the telephone number on the PC side at the connected destination.

3. 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 Section 1.10.8 "Calling from the Instrument to PC" (90 page.)

4. 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 Section 1.10.8 "Calling from the Instrument to PC" (90 page.)

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

6. IP address of DNS:
   To use the DNS at the connected destination, set the IP address of the DNS.

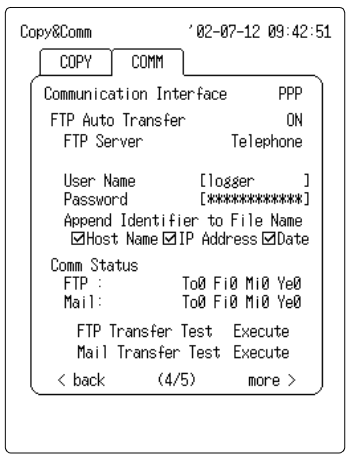
7. Retry Count, Retry Interval:
   If the call cannot be connected, the number is redialed (after waiting the specified retry interval) as many times as specified by the retry count.

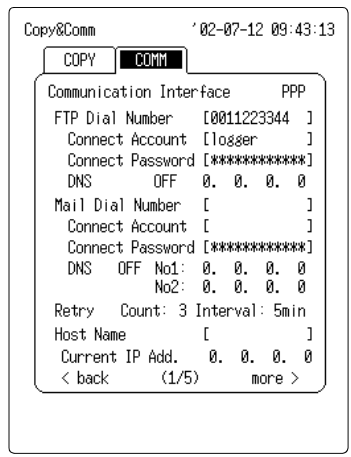
8. AT Command:
   If necessary, the AT command can be specified for the modem as an option.
   ❖ See Section 1.4.2 "PPP (RS-232C + Modem) Settings" (27 page.)
   ❖ For details of the commands, see the Instruction Manual of your modem.

9. 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.

Comm Window (PPP 4/5, 1/5)





1.7.3 FTP Communication Status

(Comm Window 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.)

1.7.4 FTP Data Transfer Test

(Comm Window 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.

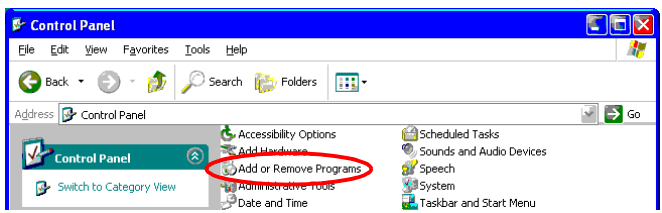
Data Transfer Time

When 16 channels of data are measured for one hour at one-second intervals, for example, the file size is (3600 data * 2 bytes * 16 channels + header 15000) = 130K bytes. Therefore, the transfer time via PPP at 9600 bps is 130K bytes * 8 bits/9600 bps = 108.5 seconds = 1 minute, 49 seconds. 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 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 130K 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.

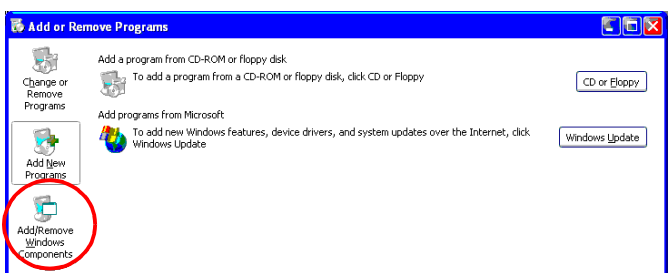
1.7.5 Setting the FTP server in Windows XP Professional

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

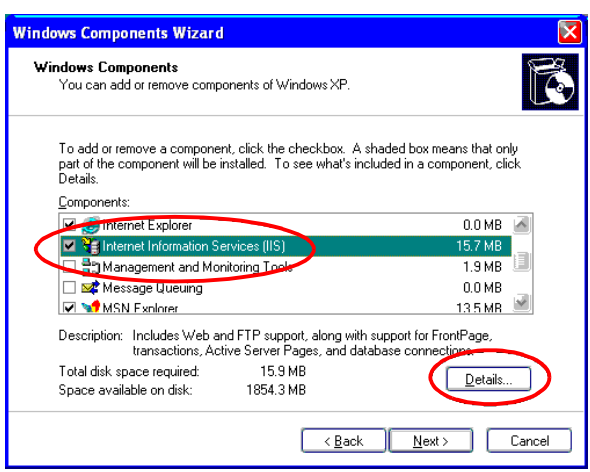
1. Choose [**Add or Remove Programs**] in [**Control Panel**.]



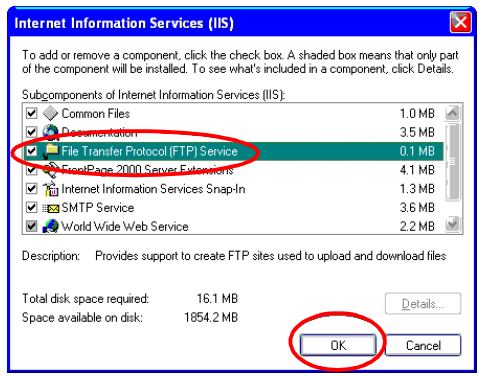
2. Choose [**Add/Remove Windows Components**.]



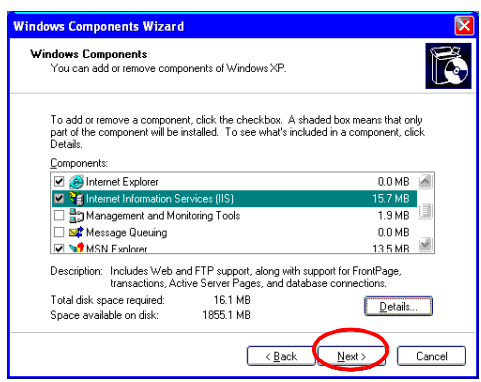
3. Choose [**Internet Information Services (IIS)**] then [**Details**.]



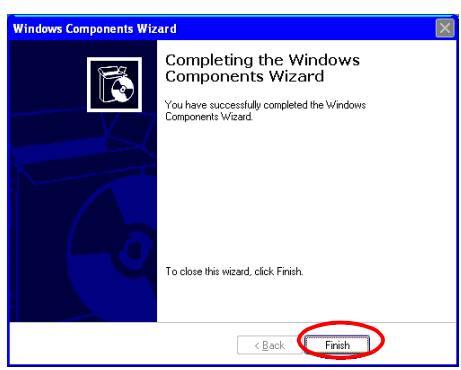
4. Select the [**File Transfer Protocol (FTP) Service**] check box and click [**OK**.]



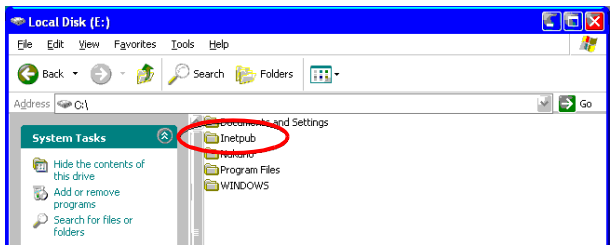
5. Click [**Next.**]
(You will be asked for the Windows XP CD.)



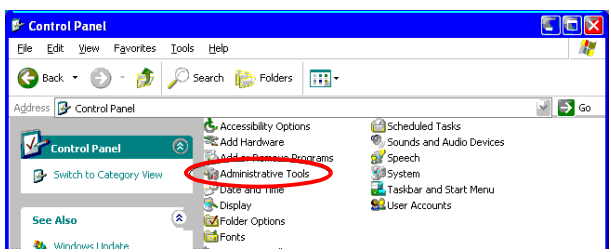
6. Click [**Finish**.]



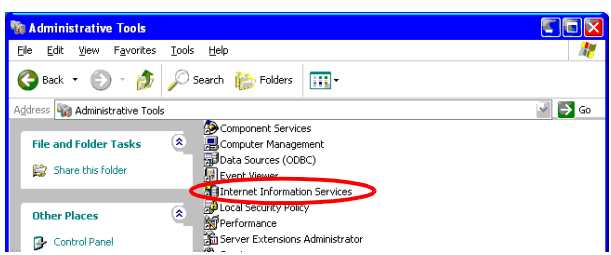
7. A directory named [**InetPub**] is created when installation is completed.



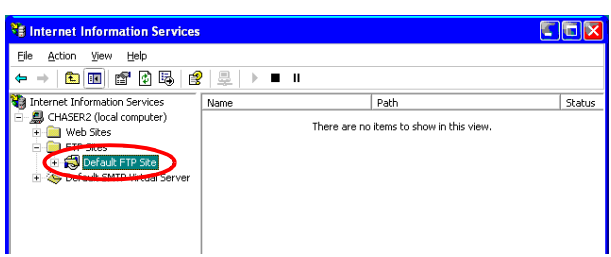
8. Choose [**Administrative Tools**] in [**Control Panel**.]



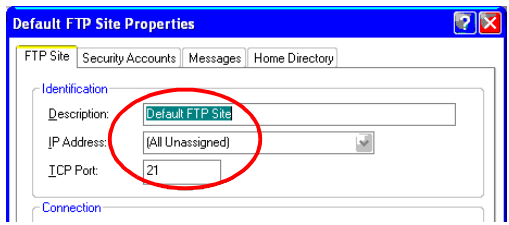
9. Choose [**Internet Information Services**.]



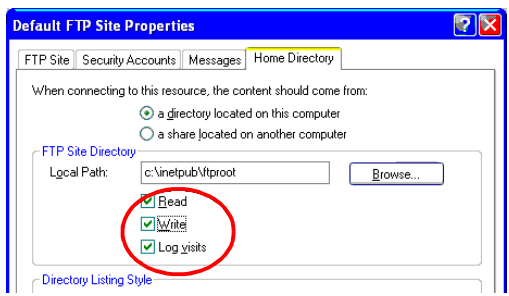
10. Choose [**Default FTP Site**] and right-click to select [**Property**.]



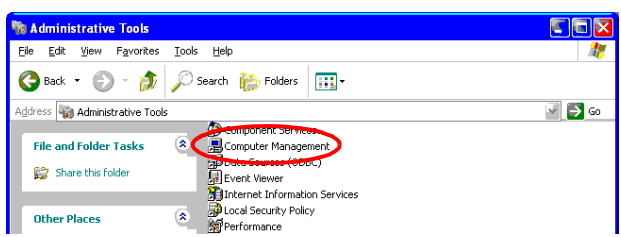
11. Select [**(All Unassigned)**] for IP Address.



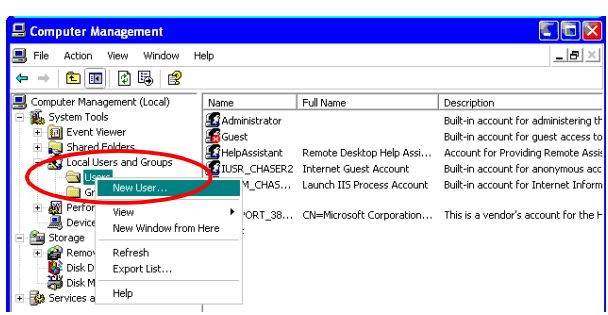
12. Select the [**Read**], [**Write**], and [**Log visits**] check boxes for Home Directory, then click [**OK**.]



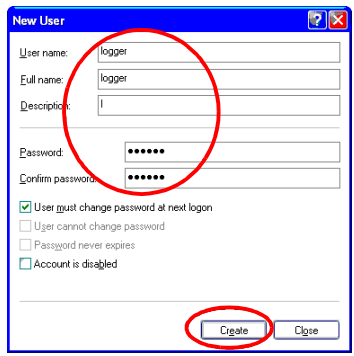
13. Choose [**Computer Management**] in [**Administrative Tools**.]



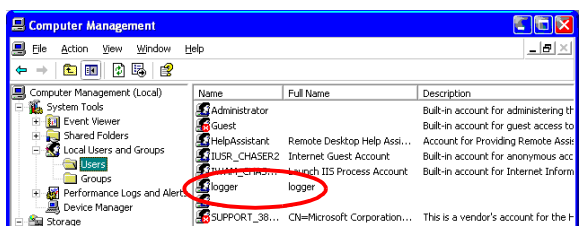
14. Choose [**Users**] in [**Local User and Group**] and right-click to select [**New User**.]



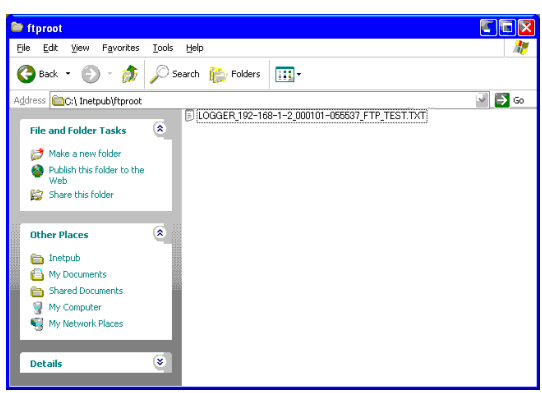
15. Enter User name, Full name, Password, and Password reentry for confirmation (e.g., logger), and then choose [**Create**.]



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



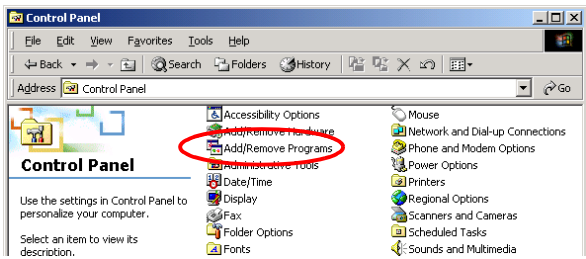
17. After setting up the FTP server on the Windows side, execute the FTP data transfer test from this instrument (192.168.1.2) to the PC (192.168.1.1) using the "logger" user name and "logger" password. The test file (e.g., LOGGER_192-168-1-2_000101-055537_FTP_TEST.
TXT) is then sent to C:\Intpub\ftproot.



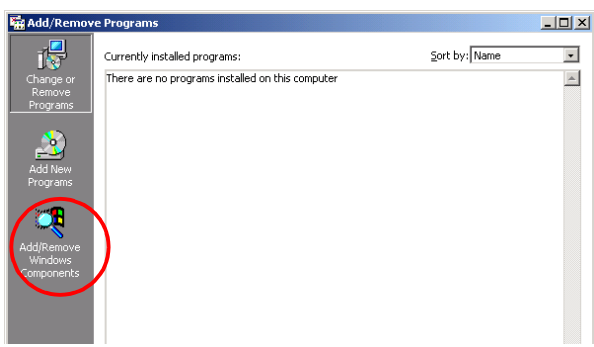
The free War FTP Daemon Software can be used instead of the windows FTP Server.

1.7.6 Setting the FTP server in Windows 2000

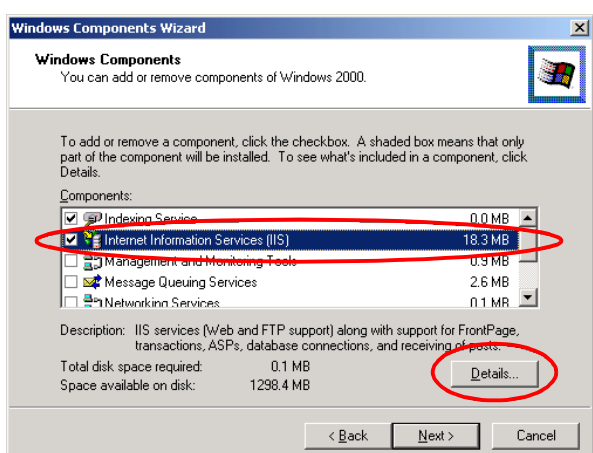
1. Choose [**Add/Remove Programs**] in [**Control Panel**.]



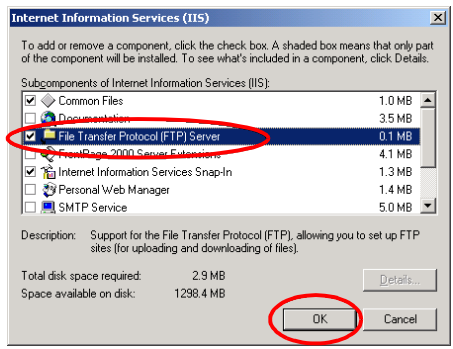
2. Choose [**Add/Remove Windows Components**.]



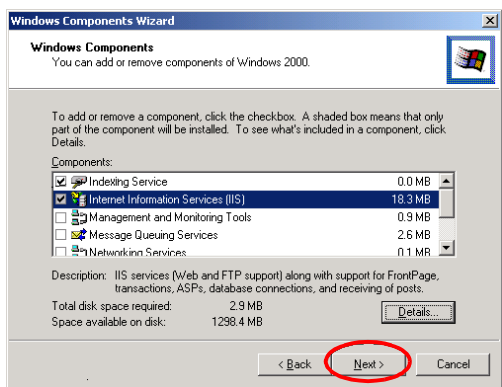
3. Choose [**Internet Information Services (IIS)**] then [**Details.**]



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

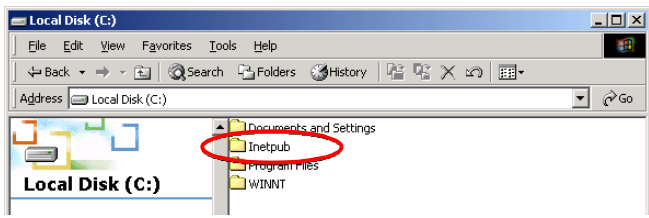


5. Click [**Next**.]

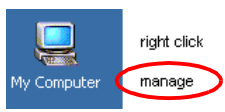


6. Click [**Finish**.]

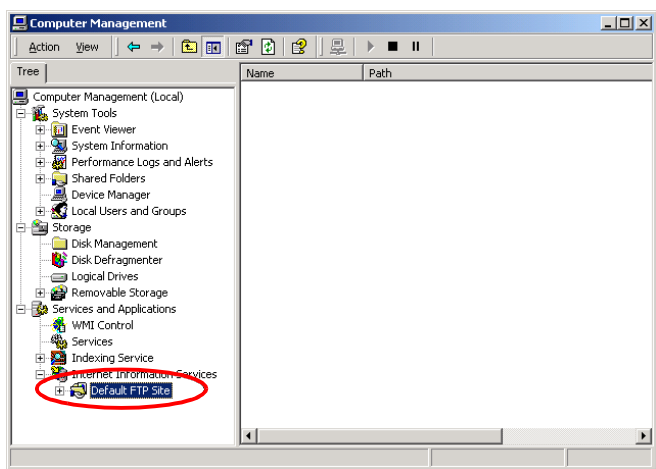
7. A directory named [**InetPub**] is created when installation is completed.



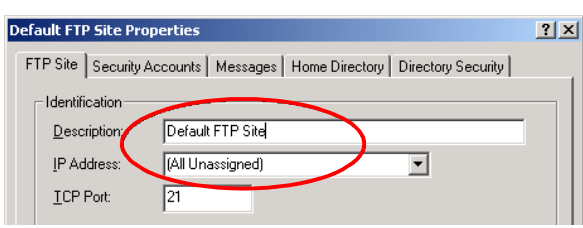
8. Choose [**My Computer**] and right-click to select [**manage**.]



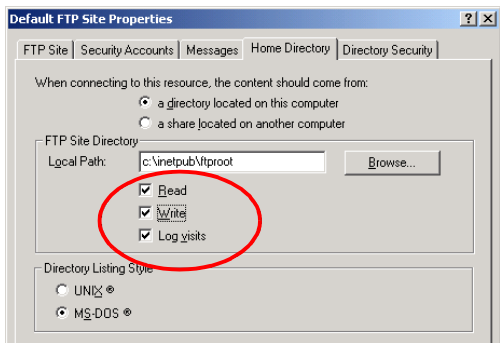
9. Choose [**Default FTP Site**] for [**Service and Applications**]-[**Internet Information Services**], then right-click to select [**Property**.]



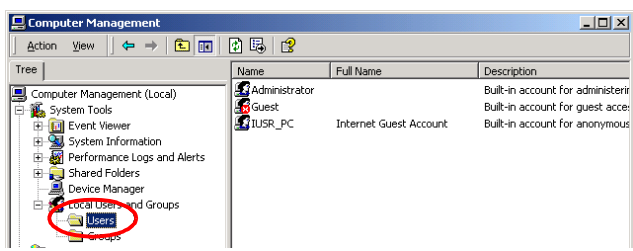
10. Select [**(All Unassigned)**] for IP Address.



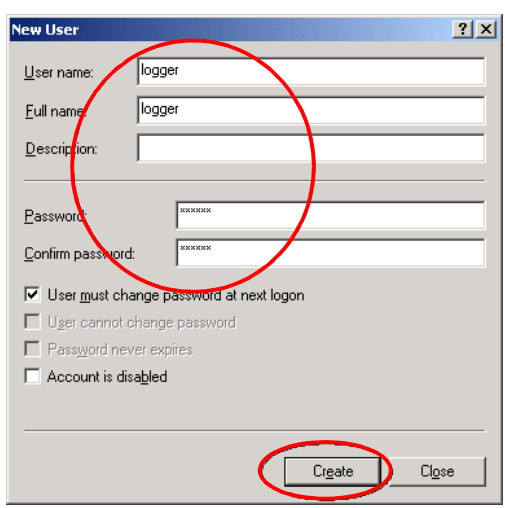
11. Select the [**Read**], [**Write**], and [**Log visits**] check boxes for Home Directory, then click [**OK**.]



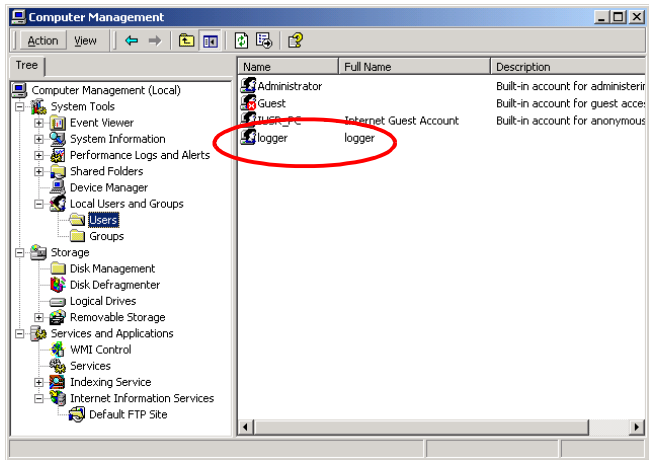
12. Choose [**Users**] in [**Local User and Group**] and right-click to select [**New User**.]



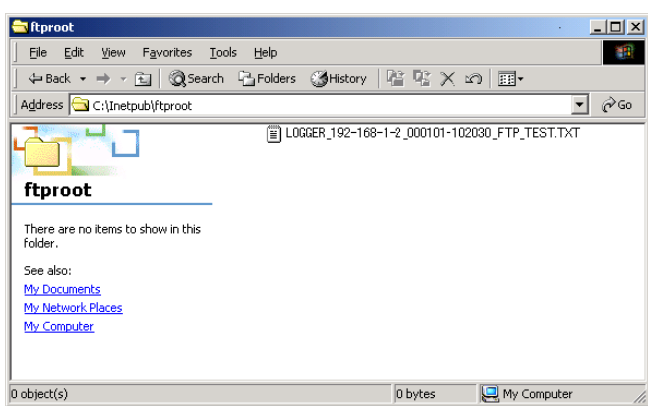
13. Enter User name, Full name, Password, and Password reentry for confirmation (e.g., logger), and then choose [**Create**.]



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



15. After setting up the FTP server on the Windows side, 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. The test file (e.g., LOGGER_192-168-1-2_000101-055537_FTP_TEST.
TXT) is then sent to C:\Intpub\ftproot.



The free War FTP Daemon Software can be used instead of the windows FTP Server.

1.8 Sending Mail

When such events as a start or stop trigger, alarm, start backup, memory full, or card full occur during measurement with this instrument, e-mail can be sent via a SMTP mail server to PCs within the network or at remote locations, or to cellular phones capable of handling e-mail. (The 8993 DIGITAL I/O UNIT is required for alarms. Alarms that occur frequently will result in mail being sent frequently. In such case, turn the alarm hold function on so that mail will only be sent for the first alarm on each alarm channel.)
Up to three recipient addresses can be registered.

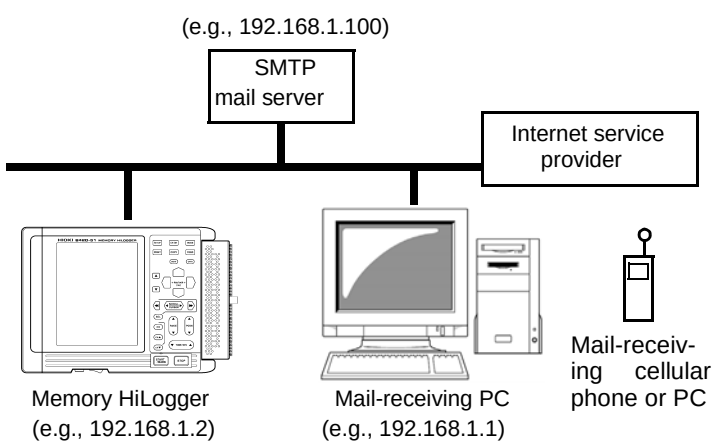
1.8.1 Sending Mail via 10BASE-T LAN

1. Set parameters for the LAN on the instrument.
   ❖ See Section 1.3.1 to Section 1.3.5.

2. Set parameters for communications on the instrument.
   ❖ See Section 1.8.1.

3. Carry out email transmission via the instrument.
   ❖ See Section 1.8.3 to Section 1.8.5.

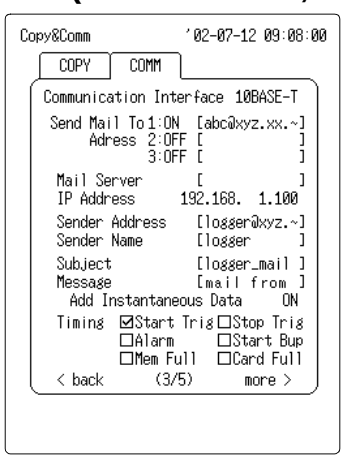
4. When measurement is underway on the instrument and a trigger or alarm is activated, an email is sent via email server.

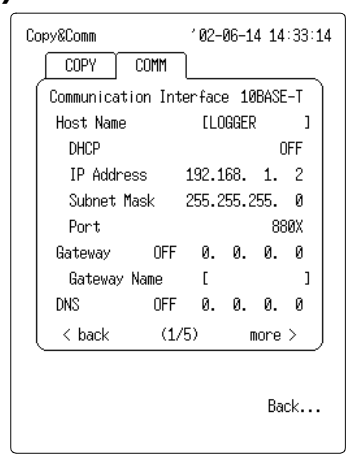


Example of mail settings [For sending mail from this instrument ("logger@xyz.xx.xx" to "abc@xyz.xx.xx") via SMTP mail server 192.168.1.100 at start trigger occurrence]

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	
Start Trigger	ON	Stop Trigger OFF
Alarm	OFF	Start Backup OFF
Memory Full	OFF	Card Full OFF

Comm Window (10BASE-T 3/5, 1/5)





1.8.2 Sending Mail via PPP (RS-232C + Modem)

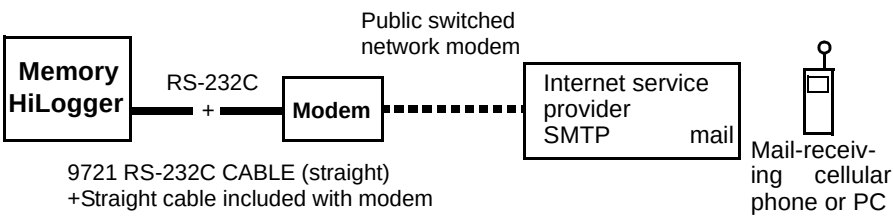
1. Set the parameters for the PPP on the instrument.
   ❖ See Section 1.4.1 and Section 1.4.2.

2. Set parameters for communications on the instrument.
   ❖ See Section 1.8.2.

3. Carry out email transmission via the instrument.
   ❖ See Section 1.8.3 to Section 1.8.5.

4. When measurement is underway on the instrument and a trigger or alarm is activated, an email is sent via email server.

(In addition to public switched networks and cellular phones can be used.)



Comm Window (PPP 1/5, 3/5, 2/5)

1. 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.)

2. 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.

3. 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.)
   ❖ See Section 1.10.8 "Calling from the Instrument to PC" (90 page.)

4. 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.)
   ❖ See Section 1.10.8 "Calling from the Instrument to PC" (90 page.)

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

6. 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.)

7. 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.

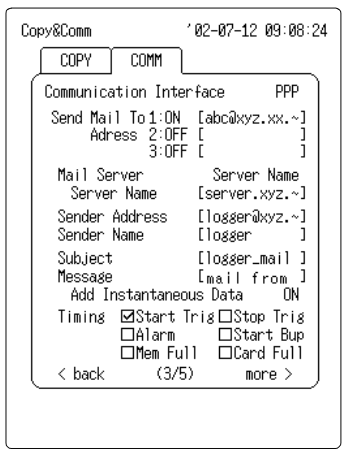
8. AT Command:
   If necessary, the AT command can be specified for the modem as an option.
   ❖ See Section 1.4.2 "PPP (RS-232C + Modem) Settings" (27 page.)
   ❖ See the Instruction Manual of your modem.

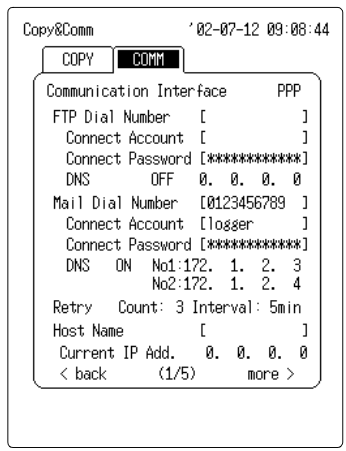
9. Baud Rate (Slow down if you cannot communicate.)

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.

Comm Window (PPP 3/5, 1/5)





Example of Sending Mail

```
mail from:logger@xyz.xx.xx
mail to:abc@xyz.xx.xx
subject:logger_mail



message = mail from logger

comment = title comment
time = '02-04-25 13:11:34

start trigger happen

trigger source = CH1
data   = -163.795mV
channel comment = channel1

instant data
  CH1 = -163.795mV
  CH2 =  121.635mV
  CH3 =  102.435mV
  CH4 =  -81.885mV
  CH5 = -163.795mV
  CH6 =  102.435mV
  CH7 =  -81.850mV
  CH8 =  102.435mV
```

1.8.3 Mail Communication Status

(Comm Window 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.)

1.8.4 Mail Transfer Test

(Comm Window 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.

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.

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.

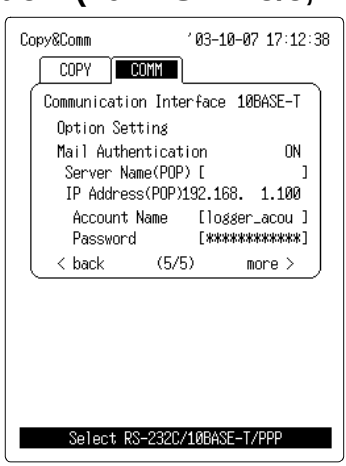
1.8.5 Email Transmission Requiring Email Authentication

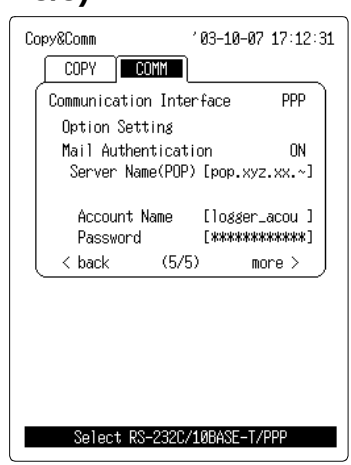
(Comm Window 5/5)
To send an email, you must access an SMTP server. However, SMTP servers do not carry out authentication. To prevent abuse, some Internet service providers use a security measure called "POP before SMTP" for which you must undergo mail authentication at the mail-receiving server (POP 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 Window (10BASE-T 5/5, PPP 5/5)





1.9 Measurement with the 9334 LOGGER COMMUNICATOR

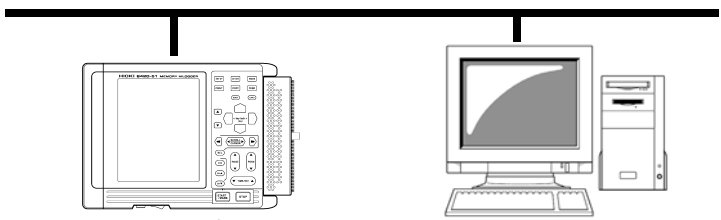
When using the optional 9334 LOGGER COMMUNICATOR, measurement with the 9334 and Logger Watcher (Monitor Server) is available.
The 9334 LOGGER COMMUNICATOR is used for real-time measurement on a PC. The Logger Watcher is a monitoring function that enables monitoring of the start of measurement, trigger, and end of measurement on the PC.
For details, see the instruction manual of the 9334 LOGGER COMMUNICATOR.

1.9.1 Using the 9334 via 10BASE-T LAN

1. Set parameters for the LAN on the instrument and on the PC.
   ❖ See Section 1.3.1 to Section 1.3.5.

2. Set parameters for communications on the instrument.
   ❖ See Section 1.9.1.

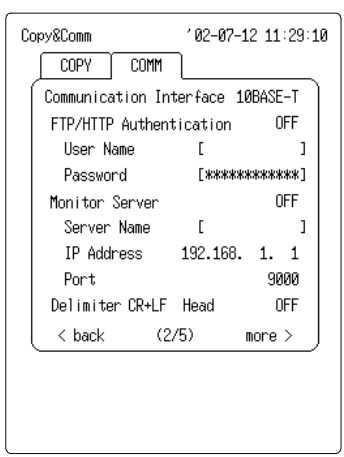
3. Operate the 9334 on the PC.
   ❖ See the 9334 LOGGER COMMUNICATOR (option) Instruction Manual.

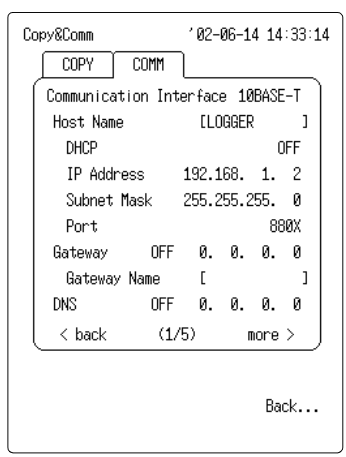


Memory HiLogger
(e.g., 192.168.1.2)

PC (9334)
(e.g., 192.168.1.1)

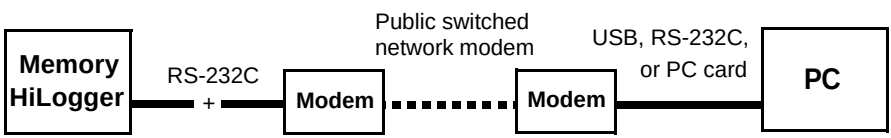
Comm Window (10BASE-T 2/5, 1/5)





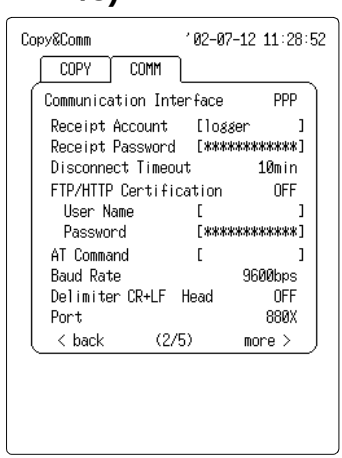
1.9.2 Using the 9334 via PPP (RS-232C + Modem)

1. Set the parameters for the PPP on the instrument.
   ❖ See Section 1.4.1 and Section 1.4.2.
2. Set parameters for communications on the instrument.
   ❖ See Section 1.5.2 and Section 1.9.2.
3. Configure the modem on the PC.
   ❖ See the Instruction Manual of your modem.
4. Set dialup information on the PC.
   ❖ See Section 1.10.1 to Section 1.10.7.
5. Operate the 9334 on the PC.
   ❖ See the 9334 LOGGER COMMUNICATOR (option) Instruction Manual.



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

Comm Window (PPP 2/5)



1.10 PPP (RS-232C + Modem) Settings on PC Side

1.10.1 Calling from PC to the Instrument

The following functions can be used by making calls from PCs to this instrument using PPP (RS-232C + modem) via public switched networks or cellular phones.

- Remote operation by HTTP server
  - ❖ For settings on the instrument side:
    See Section 1.5 "Remote Measurement Using HTTP Server" (33 page.)

- Manual data acquisition by FTP server
  (Settings on this instrument side are the same as for HTTP.)
  - ❖ See Section 1.6 "Downloading Data to a PC via FTP Server" (43 page.)

- Real-time measurement by the 9334 LOGGER COMMUNICATOR
  - ❖ For settings on the instrument side:
    See Section 1.9 "Measurement with the 9334 LOGGER COMMUNICATOR" (71 page.)
  - ❖ See the 9334 LOGGER COMMUNICATOR (option) Instruction Manual.

  (Pay attention to telephone charges because the telephone remains connected during measurement. Because the modem communication speed is limited, measurement may not be possible at speeds faster than a one-second recording interval.)

- Measurement using a program created in Visual Basic, etc.
  - ❖ See the Interface Manual on the Application Disk (CD-R).

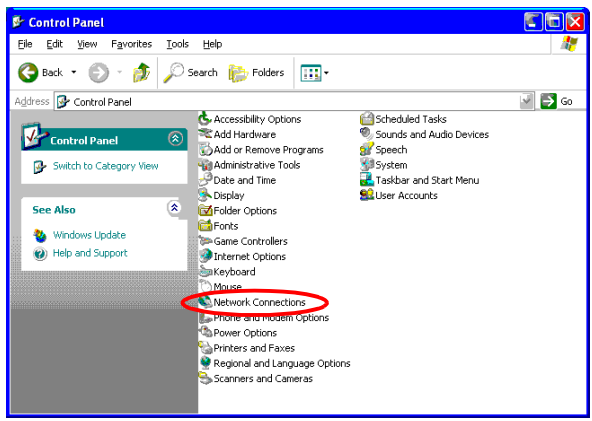
The connecting IP address when a telephone message is being received is 192.168.55.2 for this instrument, and 192.168.55.1 for the PC.
"Current IP Address" indicates the IP address actually assigned to this instrument.

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.

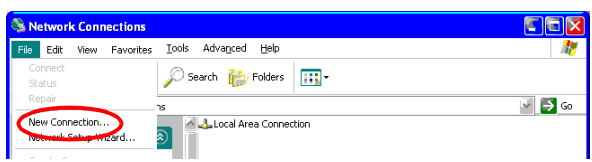
For details on how to add a modem to Windows, refer to the user's manual supplied with your modem.

1.10.2 Setting Up Dial-up Connections in WindowsXP

1. Choose [**Network Connections**] in [**Control Panel**.]

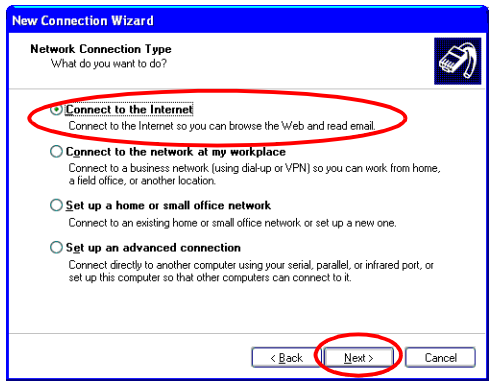


2. Choose [**New Connection**.]

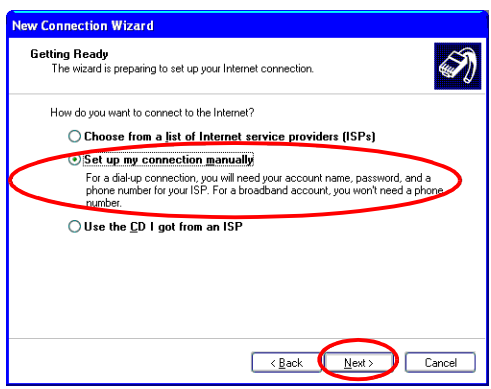


3. Click [**Next**.]

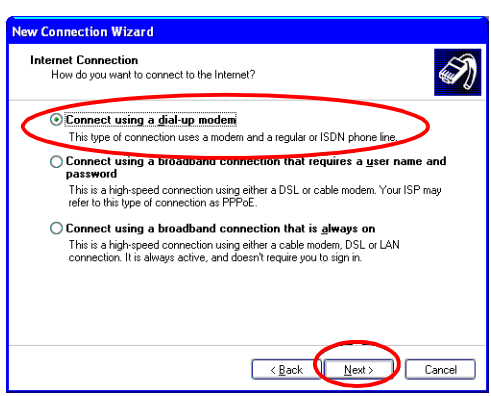
4. Select [**Connect to the Internet**] and click [**Next**.]



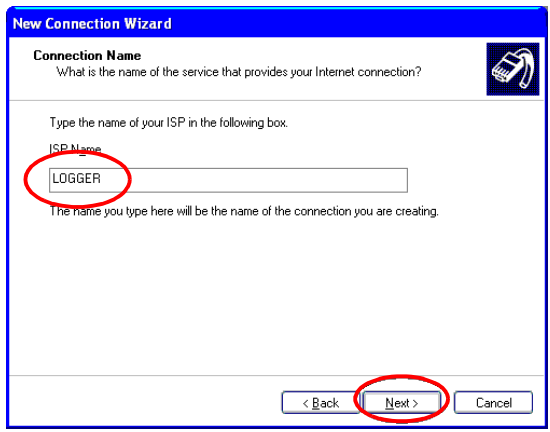
5. Select [**Set up my connection manually**] and click [**Next**.]



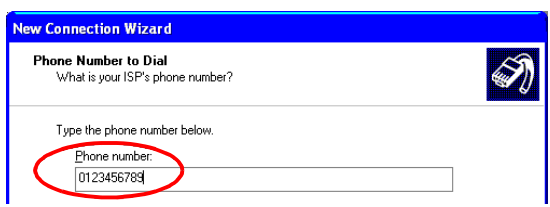
6. Select [**Connect using a dial-up modem**] and click [**Next**.]



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

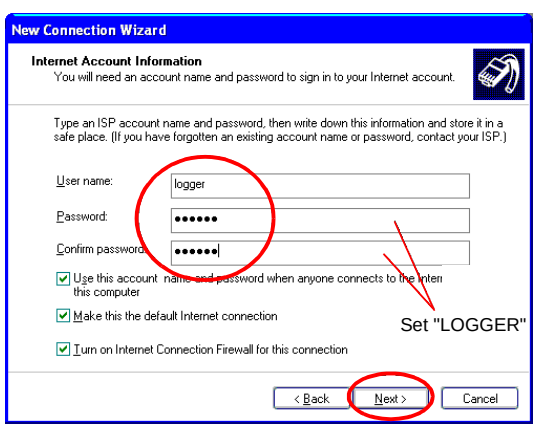


8. Set the telephone (Phone number) and and click [**Next**.]

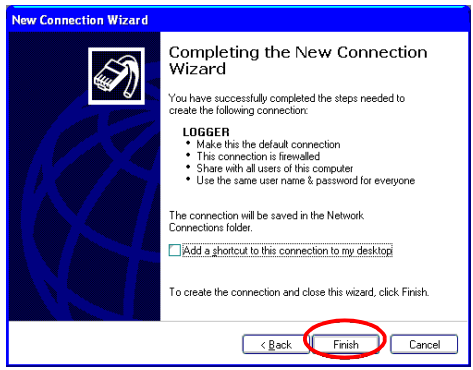


9. Select [**All Users**] and click [**Next**.]

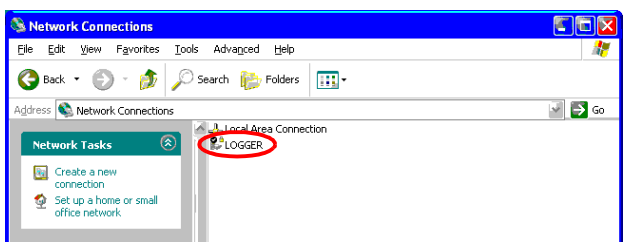
10. Set the user name (e.g., logger) and password (e.g., logger), then click [**Next**.]
(Same as receiving user name (Receipt Account) and password (Receipt Password) on this instrument side when using HTTP or FTP servers and the 9334 LOGGER COMMUNICATOR.)



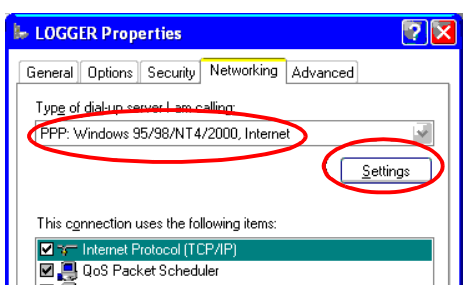
11. Click [**Finish**.]



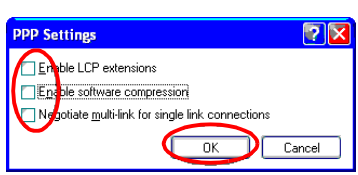
12. Select the connection you've just created from [**Network Connections**] and right-click to select [**Property**.]



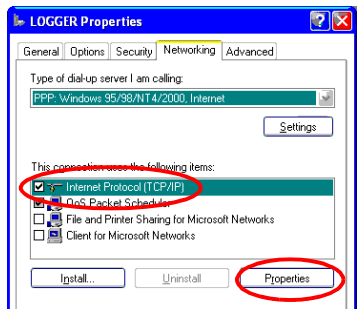
13. Click the [**Networking**] tab, choose [**PPP: Windows 95, 98, NT4/2000, Internet**], and click on [**Settings**.]



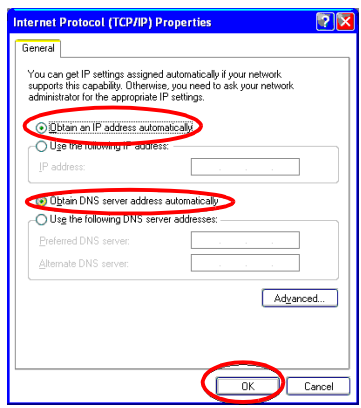
14. Deselect all check boxes for [**PPP Settings**] and click [**OK**.]



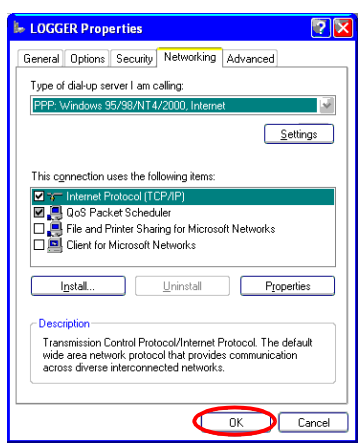
15. Select [**Internet Protocol (TCP/IP)**] then [**Properties**.]



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

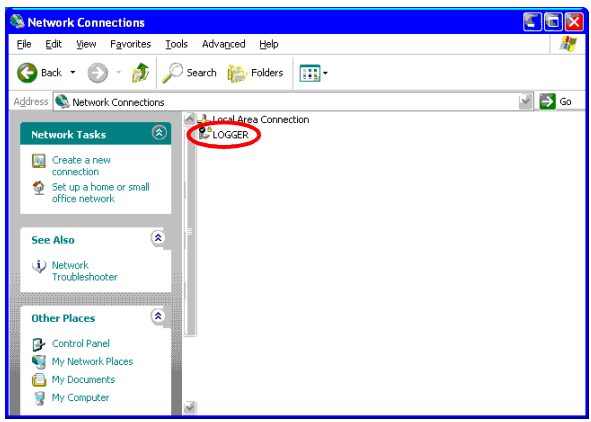


17.Click [**OK**.]

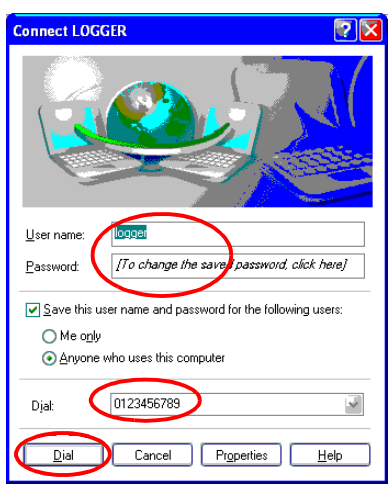


1.10.3 Creating a Dial-up Connection (Dialing) in Windows XP

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

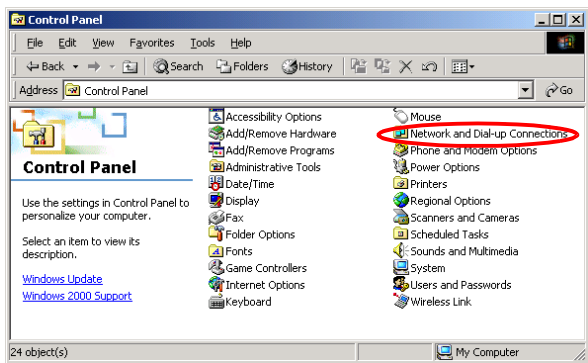


2. Enter User name and Password (e.g., logger) and then enter the telephone number in the [**Dial**] field.
   Click on the [**Dial**], and the dial-up process will begin.
   (Use the same user name (Receipt Account) and password (Receipt Password) as on the HTTP server, FTP server, or the 9334 for receiving on the instrument.)

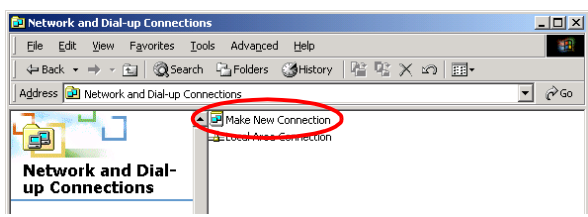


1.10.4 Setting Up Dial-up Connections in Windows 2000

1. Choose [**Network and Dial-up Connections**] in [**Control Panel**.]

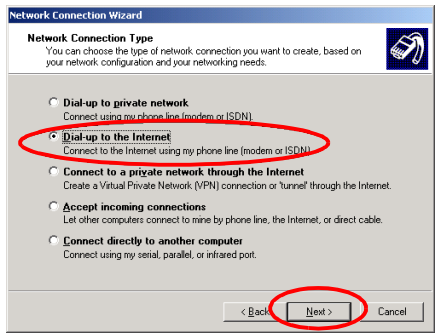


2. Choose [**Make New Connection**.]

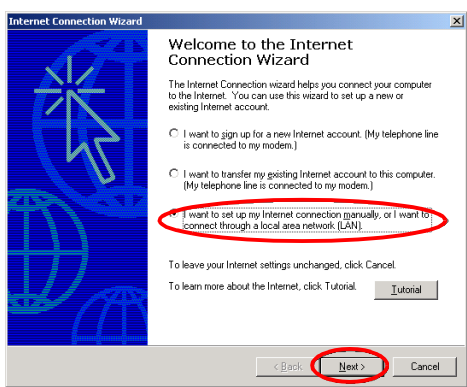


3. Click [**Next**.]

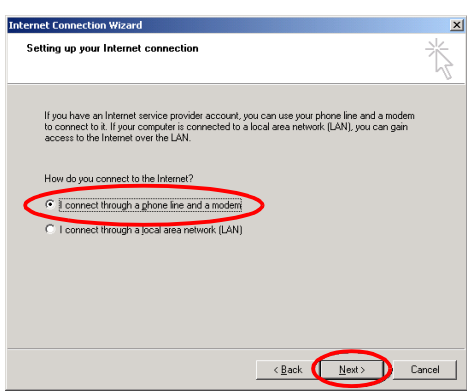
4. Select [**Dial-up to the Internet**] and click [**Next.**]



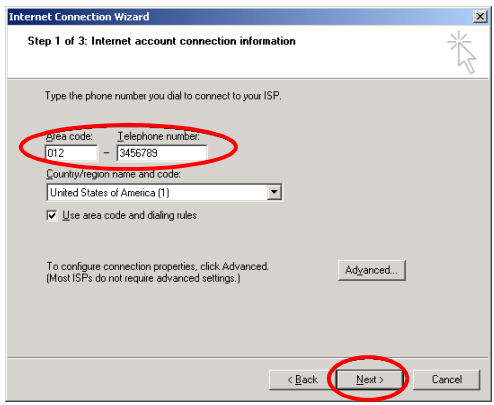
5. Select [**I want to set up my Internet connection manually, or I want to connect through a local area network(LAN)**] and click [**Next.**]



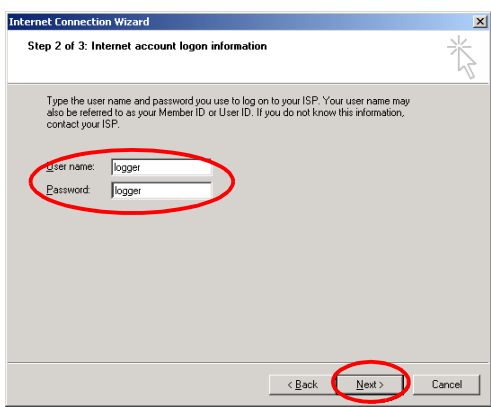
6. Select [**I connect through a phone line and a modem**] and click [**Next.**]



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

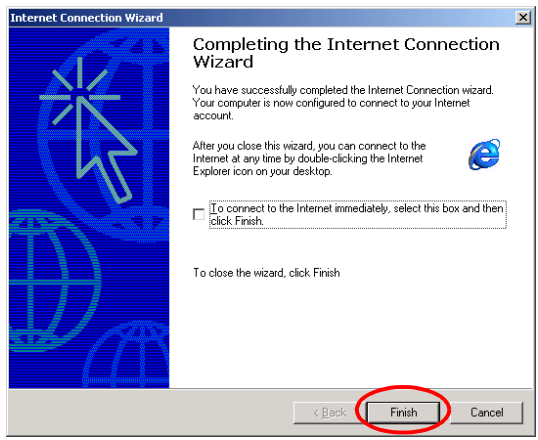


8. Set the user name (e.g., logger) and password (e.g., logger), then click [**Next**.]
   (Same as receiving user name (Receipt Account) and password (Receipt Password) on this instrument side when using HTTP or FTP servers and the 9334 LOGGER COMMUNICATOR.)

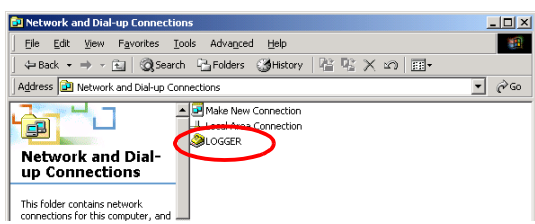


9. Set the connection name (e.g., LOGGER) and click [**Next**.]

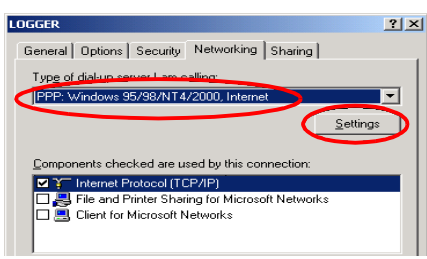
10. Click [**Finish**.]



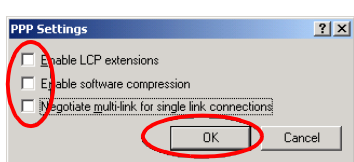
11. Select the connection you've just created from [**Network and Dial-up Connection**] and right-click to select [**Property**.]



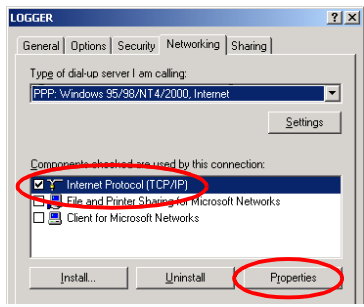
12. Select [**PPP:Windows95,98,NT4/2000,Internet**] in [**Networking**], then [**Settings**.]



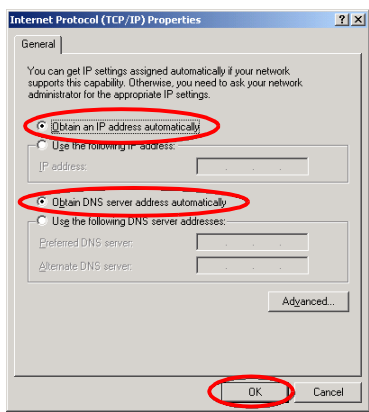
13. Deselect all check boxes for [**PPP Settings**] and click [**OK**.]



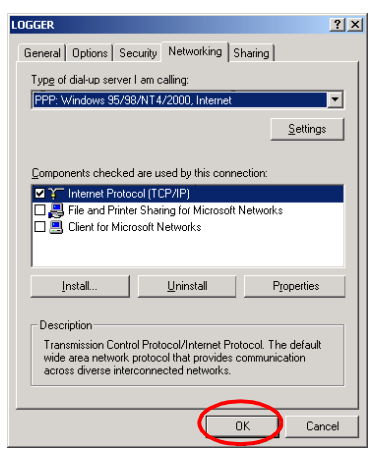
14. Select [**Internet Protocol (TCP/IP)**] then [**Properties**.]



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

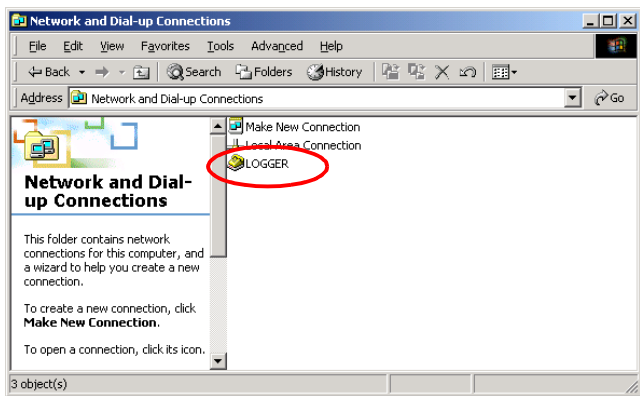


16. Click [**OK**.]

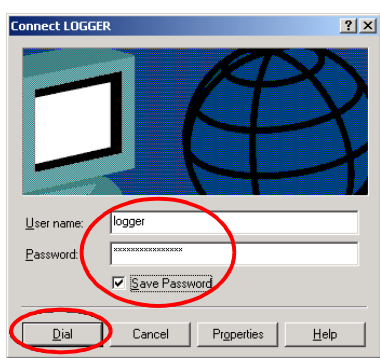


1.10.5 Creating a Dial-up Connection (Dialing) in Windows2000

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

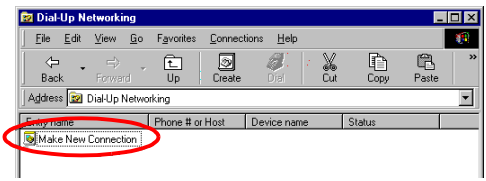


2. Enter the user name (e.g., logger), password (e.g., logger), and telephone number. Then select the connection to make a dial-up connection.
   (Same as receiving user name (Receipt Account) and password (Receipt Password) on this instrument side when using HTTP or FTP servers and the 9334 LOGGER COMMUNICATOR.)

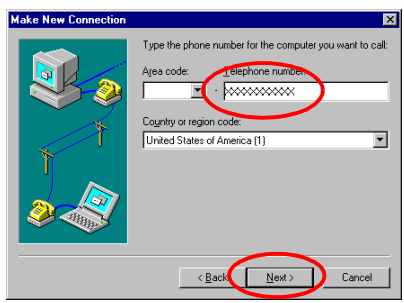


1.10.6 Setting Up Dial-up Connections in Windows98/Me

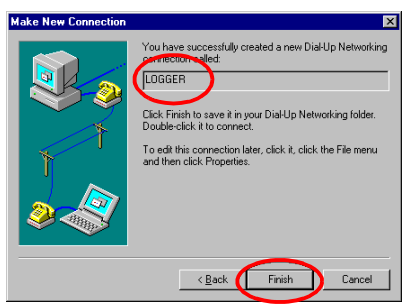
1. Choose [**My Computer**]-[**Dial-Up Networking**], then [**Make New Connection**.]



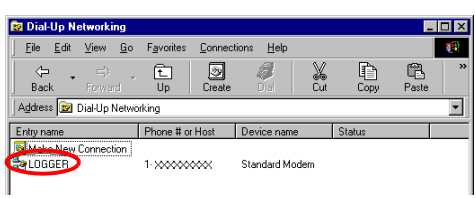
2. Set the telephone number and click [**Next**.]



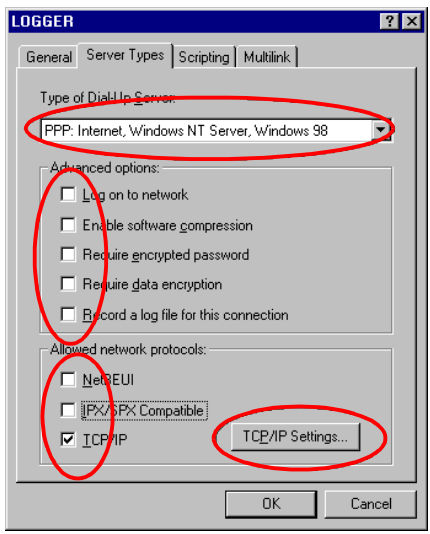
3. Set the name and click [**Finish**.]



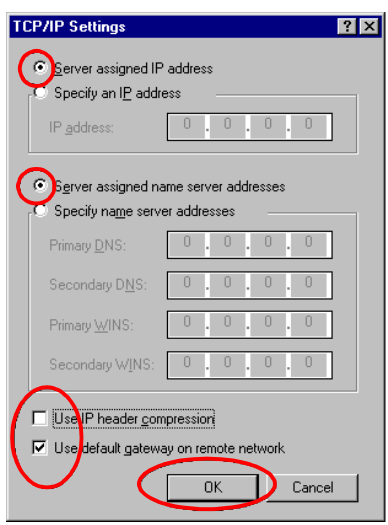
4. From [**Dial-Up Networking**], select the connection you've just created and right-click to select [**Property**.]



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**.]

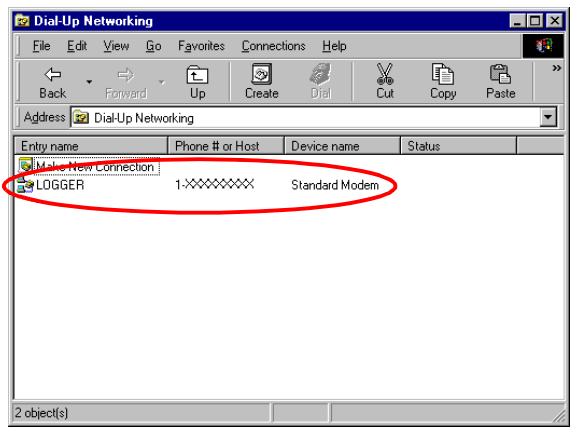


6. Select the [**Server assigned IP address**] and [**Server assigned name server address**] check boxes, then select the [**Use default gateway on remote network**] check box and click [**OK**.]

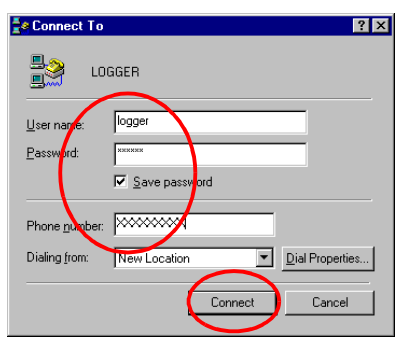


1.10.7 Creating a Dial-up Connection (Dialing) in Windows98/Me

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 and the 9334 LOGGER COMMUNICATOR.)



1.10.8 Calling from the Instrument to PC

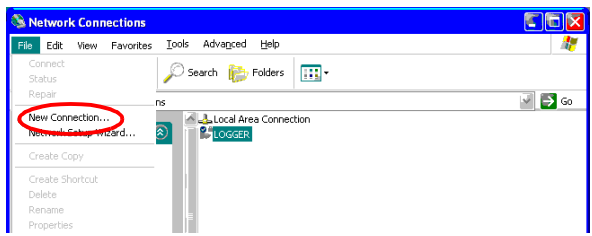
The following functions can be used when making calls from this instrument to PCs using PPP (RS-232C + modem) via public switched networks or cellular phones.

- Mail transfer by e-mail
  - ❖ For settings on the instrument side:
    See Section 1.8 "Sending Mail" (64 page.)
- Automatic data transfer by FTP client
  - ❖ For settings on the instrument side:
    See Section 1.7 "Automatic Data Transfer by FTP Client" (47 page.)

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.

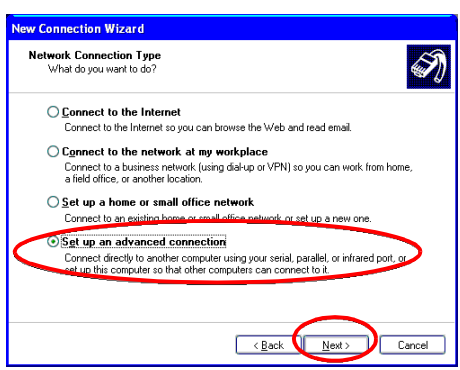
1.10.9 Setting Up Remote Access Servers (Incoming Connections) in WindowsXP

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

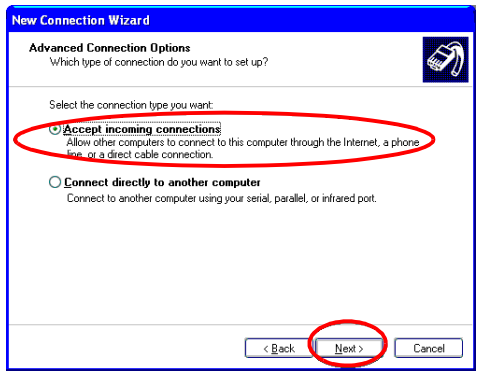


2. Click [**Next.**]

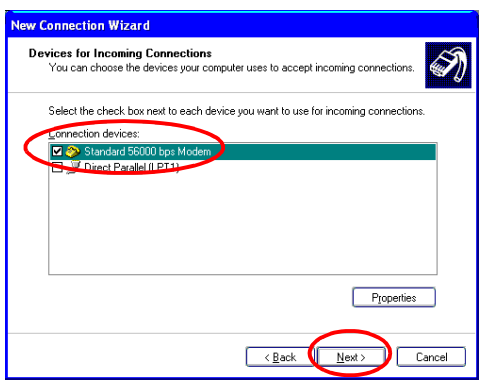
3. Select [**Set up an advanced connection**] and click [**Next.**]



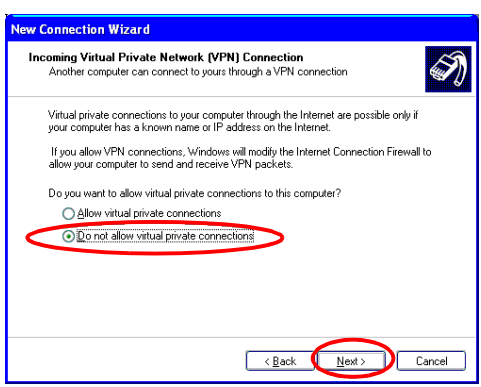
4. Select [**Accept incoming connections**] and click [**Next**.]



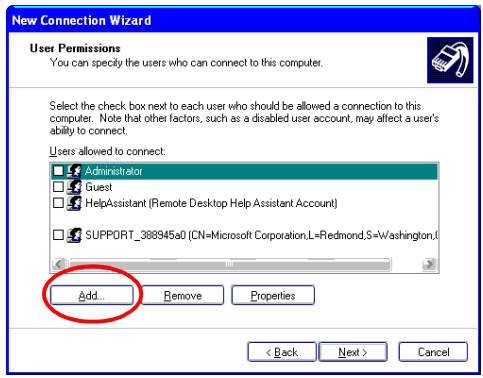
5. Select the modem set up in your PC and click [**Next**.]



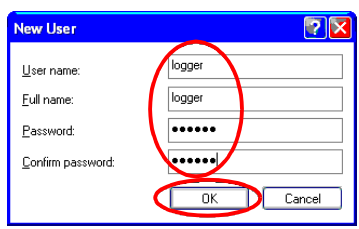
6. Select [**Do not allow virtual private connections**] and click [**Next**.]



7. Select [**Add**.]

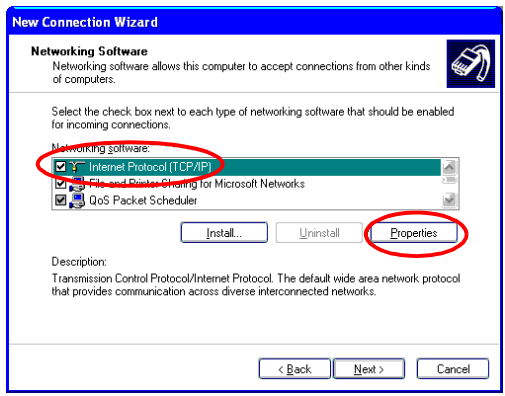


8. Enter the user name (e.g., logger), full name (e.g., logger), and password (e.g., logger). Confirm the password by entering "logger", for example, then click [**OK**.]
(Same as calling user name (Connect Account) and password (Connect Password) on this instrument side when sending FTP data.)

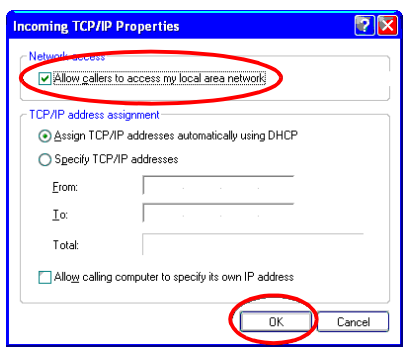


9. Select the [**logger**] added and click [**Next**.]

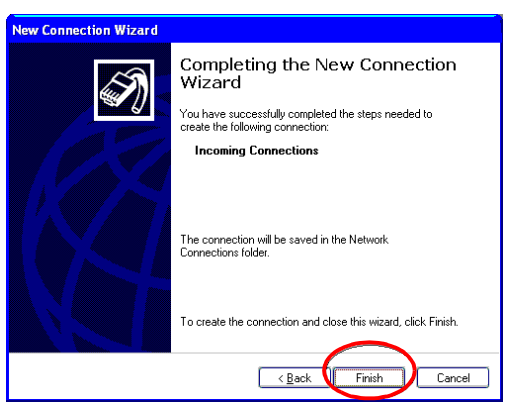
10. Select [**Internet Protocol (RCP/IP)**] and then [**Properties**.]



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

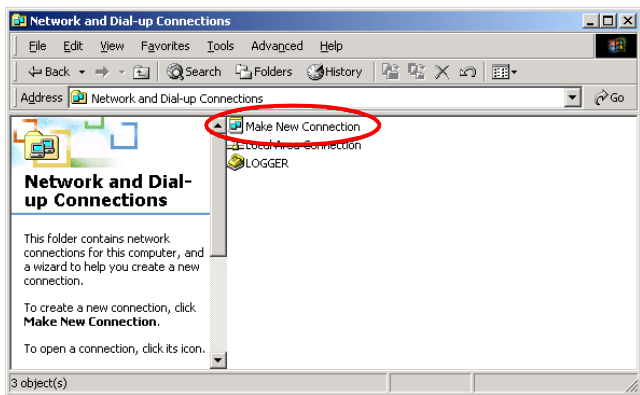


12. Click [**Finish**.]



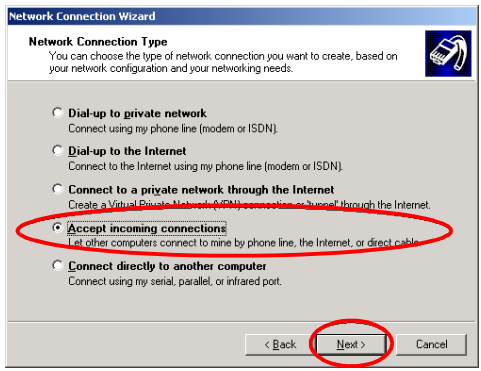
1.10.10Setting Up Remote Access Servers (Incoming Connections) in Windows 2000

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

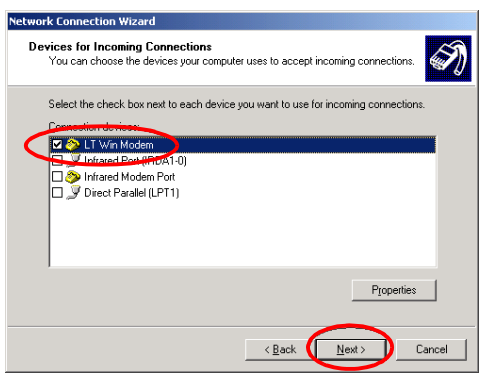


2. Click [**Next**.]

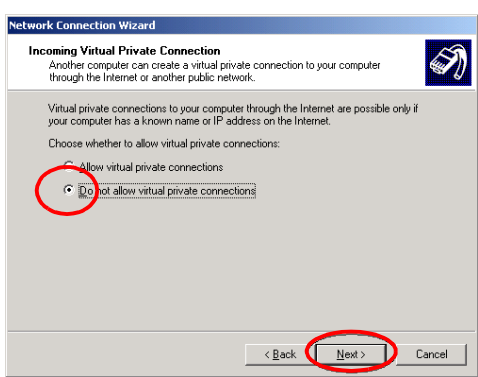
3. Select [**Accept incoming connections**] and click [**Next**.]



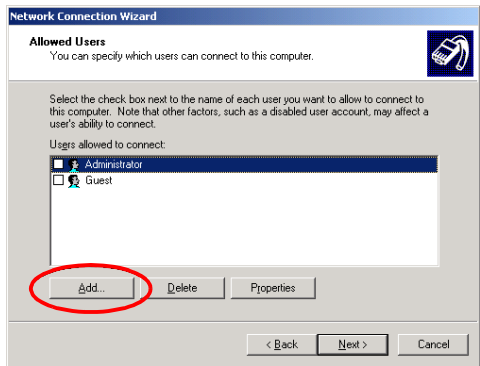
4. Select the modem set up in your PC and click [**Next**.]



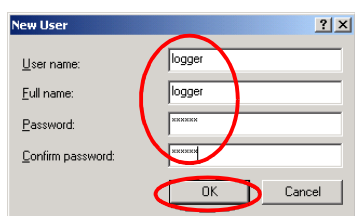
5. Select [**Do not allow virtual private connections**] and click [**Next**.]



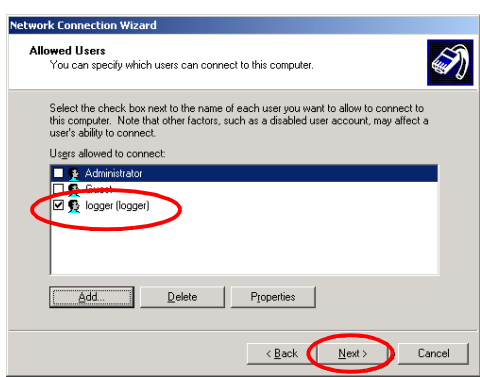
6. Select [**Add**.]



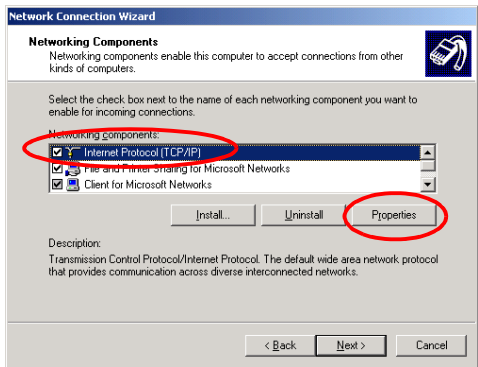
7. Enter the user name (e.g., logger), full name (e.g., logger), and password (e.g., logger). Confirm the password by entering "logger," for example, then click [**OK**.]
(Same as calling user name (Connect Account) and password (Connect Password) on this instrument side when sending FTP data.)



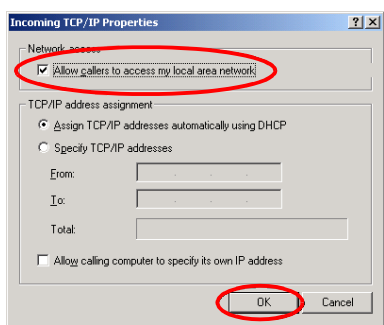
8. Select the [**logger**] added and click [**Next**.]



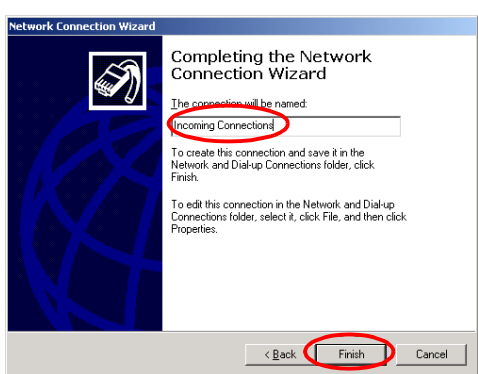
9. Select [**Internet Protocol (RCP/IP)**] and then [**Properties**.]



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



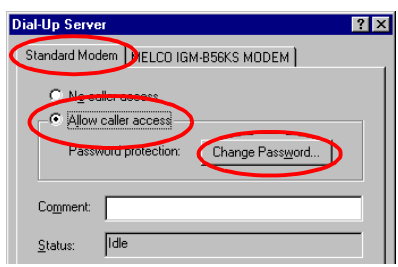
11. Set [**Incoming Connections**] for the [**The connection will be named**] and click [**Finish**.]



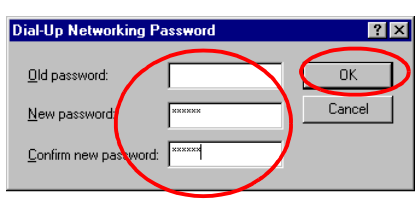
1.10.11Setting Up Remote Access Servers (Dial-up Server) in Windows 98/Me

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.)



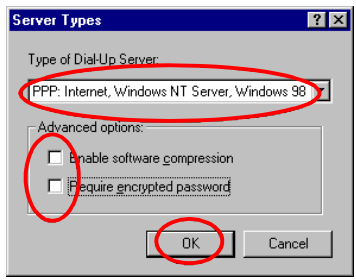
3. Enter a password in the New password and Confirm new password areas (e.g., logger). Click [**OK.**]
Leave [**Old password**] blank.
(Use the same username (Connect Account) and password (Connect Password) as the connect account and password of the instrument used when sending FTP data.)



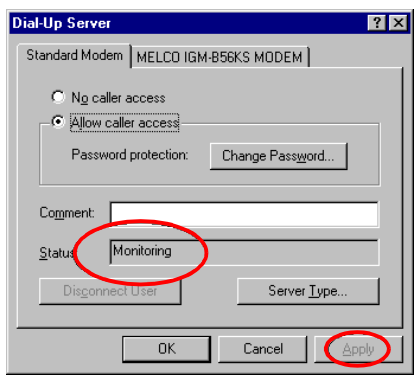
Old password
New password: logger
Confirm new password: logger

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

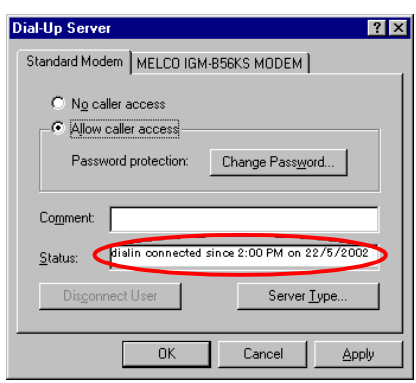
5. Set the [**Type of Dial Up Server**] to [**PPP: Internet, Windows NT Server, Windows 98.**] Remove the checkmarks from all [**Advanced options**] boxes, then click [**OK**.]



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



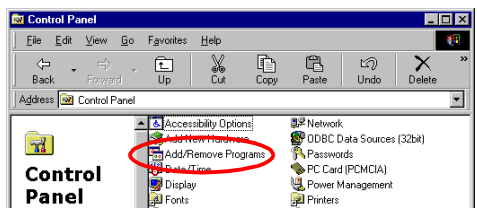
7. When a call is received, [**Status**] will change to "Connected."



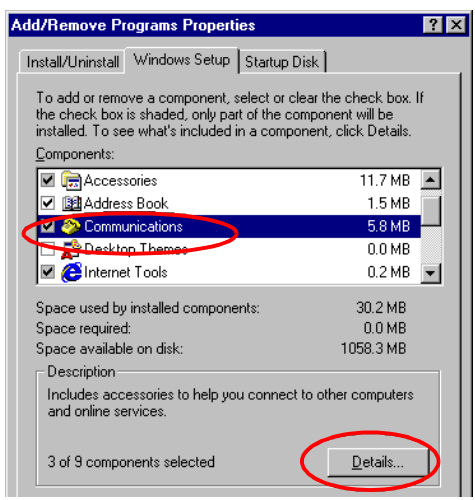
1.10.12Installing the Dial-Up Server in Windows 98/Me

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

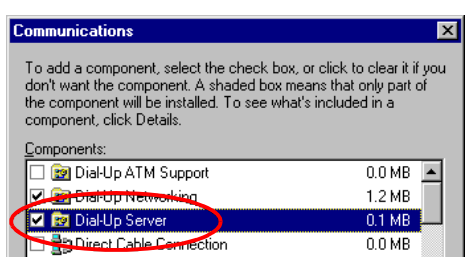
2. [**My Computer**]-[**Control Panel**], select [**Add/Remove Programs**.]



3. Click the [**Windows Setup**] tab.
   Check the box for [**Communications**] and click the [**Detail**.]



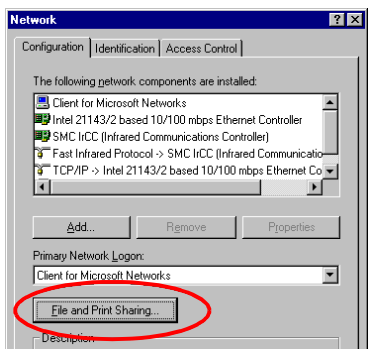
4. Select [**Dial-Up Server**] and click [**OK**.]



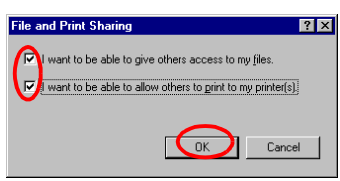
1.10.13Limiting Shared Level Access in Windows 98/Me

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

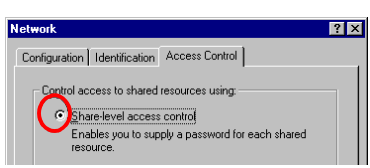
2. Click the [**Configuration**] tab, then the [**File and Print Sharing**.]



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**.]



Waveform Viewer (Wv) 2

The waveform viewer provides a simplified view of data transferred to a PC by remote control or data acquisition. The viewer has a CSV conversion function. Converted files may be read by a spreadsheet program.

(1) System requirements

For a PC running Windows 95, 98, Me, Windows NT4.0 SP3 or later, Windows 2000, or Windows XP

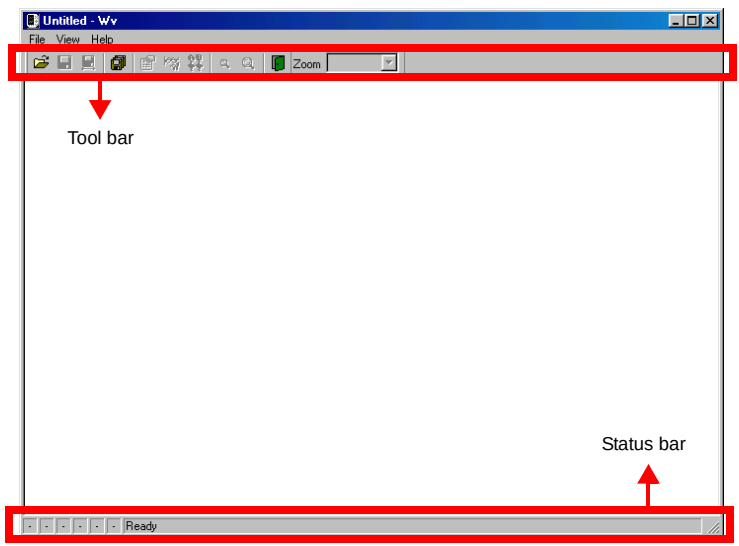
(2) Installation

Install by the following procedure:

1. When you insert the Application Disk (CD-R) into the CD-ROM drive, the opening page should appear automatically. If it does not appear, open the "index.htm" file with your Web browser.
2. Select the language to display (click the **English** icon).
3. Click the [**Wave viewer (Wv)**] icon to view Wv specifications and revision history.
4. Click the [**Install**] icon at the top right of the page to open the [**File Download**] dialog.
5. Click [**Open**] to display the confirmation dialog to proceed with installation.
6. Click [**Next**] to open the installation destination selection window. Click the [**Browse**] button to change the installation folder.
7. Click [**Next**] to start installation.
   The program is now installed.

2.1 Starting the Waveform Viewer

In the Windows Start menu, select [**Programs**]-[**HIOKI**]-[**Wv.**] This starts the waveform viewer application.
To close the waveform viewer application, in the [**File**]-[**Exit.**] You can also click the [**Close**] button at the top right corner of the window.



(1) ToolBar
Click the icons in the toolbar for the respective functions.
From the left, these are: [**Open**], [**Save All**], [**Save Between Cursors**], [**Batch Conversion**], [**Properties**], [**Wave Control Panel**], [**Trace**], [**Zoom Out**], [**Zoom In**], and [**Exit.**]
For details of these operations, see the descriptions of the corresponding menu items.
You can also select the magnification factor for the time axis by selecting on the toolbar.

(2) StatusBar
The status bar shows, from the left, the model name, function, recording length, time axis, trigger time, pre-trigger and judgement result.

(3) Version Information
To check the software version number, in the [**Help**] menu select [**About Wv.**]

2.2 Waveform Viewer Menus

The following is the complete menu tree of the waveform viewer application.

File	**Open**		❖ See Section 2.3.
	Save All		❖ See Section 2.4.
	Save Between Cursors		❖ See Section 2.4.
	Batch Conversion		❖ See Section 2.5.
	Exit		❖ See Section 2.1.
View	**ToolBar**		
	StatusBar		
	Wave Control Panel		❖ See Section 2.3.
	Properties		
	Trace		
	Block List		
	Zoom In		
	Zoom Out		
	Set Magnification		
	Jump	**Trig**	
		A Cursor	
		B Cursor	
	Time Notation	**DIV**	
		Sec	
		Point	
		Trig	
		Date	
	Grid type	**None**	
		Standard	
		Fine	
	Title		
	Remarks		
	Fixed		
	Capture		

Right-click with the mouse in the waveform display screen for the following functions.

Right-click with the mouse		
	Wave Control Panel	
	Properties	
	Trace	
	Block List	
	Zoom In	
	Zoom Out	
	Set Magnification	
	Jump	**Trig**
		A Cursor
		B Cursor
	Time Notation	**DIV**
		Sec
		Point
		Trig
		Date
	Grid Type	**None**
		Standard
		Fine
	Remarks	
	Fixed	
	Color	**Text**
		Background ❖ See Section 2.3.
		Grid
	Font ❖ See Section 2.3.	
	Capture	

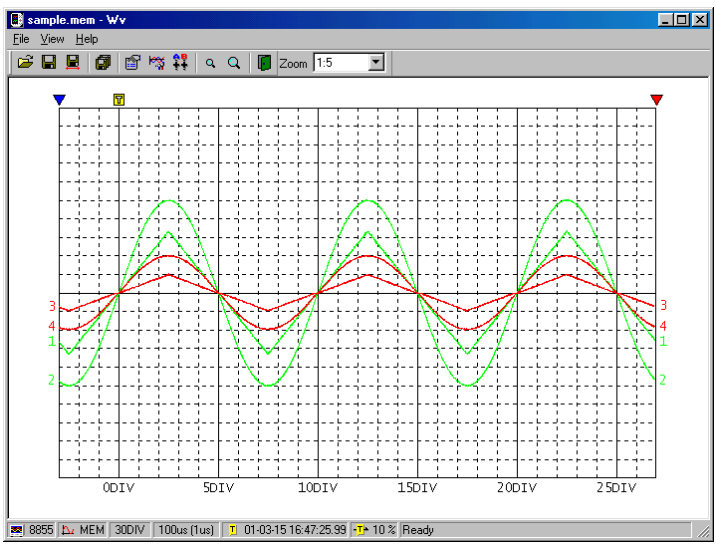
2.3 Using the Waveform Viewer

(1) Waveform Display

To display a waveform it is first necessary to select the file to be displayed.

Select [**File**]-[**Open**], to display the file selection dialog box.

Select a waveform file, and click [**Open**] to read in the file, and display the waveform.

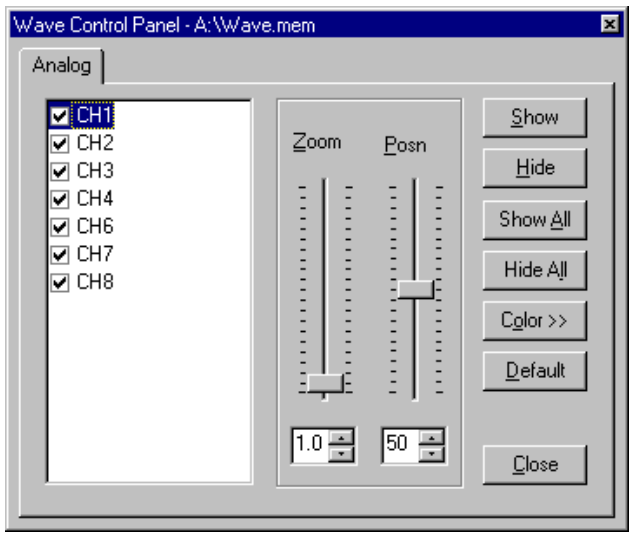


(2) Changing the Time Axis Scale (zoom function)

You can change the time axis scale in the display using the menus or toolbar.

In the toolbar, click the [**Set Magnification**] box, to display the possible zoom factors: you can then select any desired value.

(3) Changing Waveform Scale and Position (Waveform Control Panel)
You can adjust the display for each channel separately.
Select [**View**]-[**Waveform Control Panel**] to display a dialog box.



CH	This indicate the list of channel. When a check mark is present the corresponding channel is displayed.
Zoom	Set the magnification on the voltage axis for the specified channel.
Posn	Set the position of the specified channel.
Show	Display the specified channel(s).
Hide	Do not display the specified channel(s).
Show All	Display all channels.
Hide All	Do not display all channels.
Color >>	Change the color of the specified channel(s).
Default	Set all values of the specified channel(s) back to their default values.
Close	Close the Waveform Control Panel.

(4) Checking the Waveform Measurement Conditions (Properties)
Slelct [**View**]-[**Properties**] from the menu to display the measurement settings on the instrument.

(5) Checking Voltage Values (Trace)
Select [**View**]-[**Trace**] from the menu to check the time value and difference of the two cursors (A and B) and the voltage values and differences of all channels.

(6) File List in Index File
Select [**View**]-[**Block List**] to check the file list (block number, file name, time axis range, trigger time) in the index file.
Double-click a file in the list opens a new window in which you can check waveform in that file.
* This is effective only when reading Sequential, Multi-block, REC&MEM index files.

(7) Waveform Jump Function
Select [**View**]-[**Jump**] to jump to the trigger position or the positions of the A or B cursors.

(8) Time Notation
Select [**View**]-[**Time Notation**] to select the time notation on the waveform display screen.

(9) Setting the Grid Type
Select [**Display**]-[**Grid Type**] to select the grid type (None, Standard, or Fine).

(10) Display of Title Comment
Select [**View**]-[**Title**] to display a title comment at the top of the waveform screen.

(11) Waveform Legend View
Select [**View**]-[**Remarks**] to view the unit type of each channel, measurement mode, measurement range, filters, comments, scaling, display position, and magnification on the portion below the waveform screen.

(12) Fixing Waveform View Conditions
Select [**View**]-[**Fixed**] to always view waveforms with the same color, display position and magnification.
When this item is enabled, the file view settings are disabled.
The standard values for display conditions are automatically saved when the application is terminated or when the check mark is removed from [**Fixed**] menu.

(13) Setting the Display Colors

Right-click on the waveform display screen, and select [**Color**]-[**Text**]/[**Background**]/[**Grid**] to display a dialog box for setting the respective colors.

(14) Font Settings (Character size)

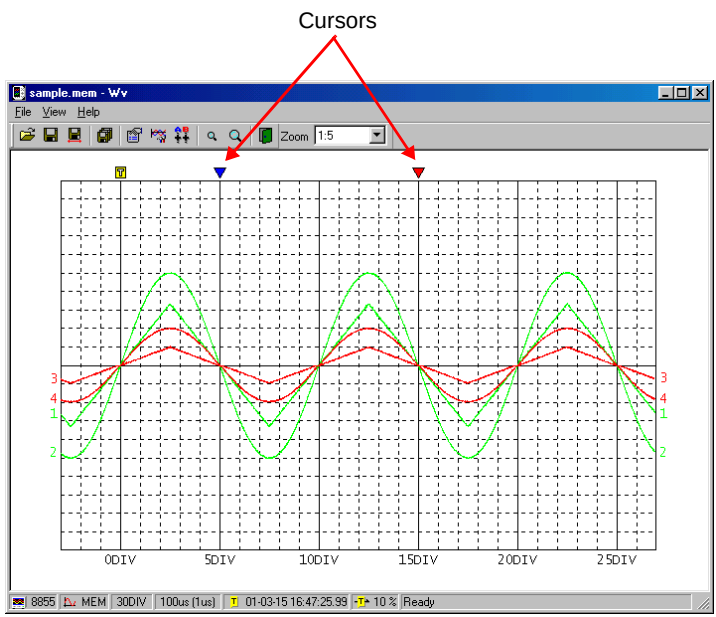
Right-click on the waveform display screen, and select [**Font**], to display the font setting dialog box. You can then select the font for text on the waveform display screen.

(15) Waveform Display Snaps (Capture)

Select [**View**]-[**Capture**] to capture waveform display and copy to clipboard as a bit image. You can paste it into other applications.

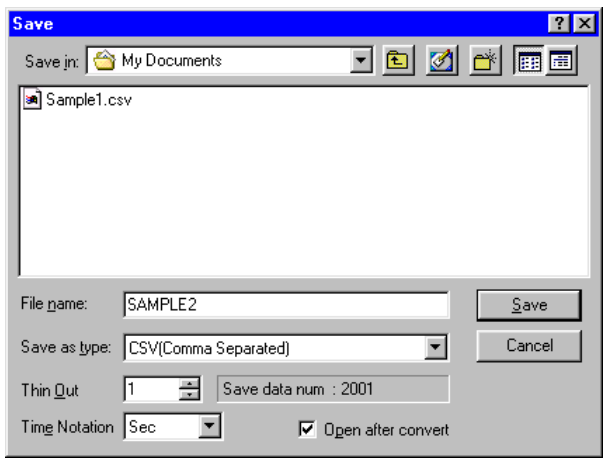
2.4 Conversion to CSV Format

You can convert displayed waveform data to a CSV format file. Once in CSV format, the file can be loaded into spreadsheet or other software for further processing. You can either convert the whole data file or a range selected with the cursors.
If selecting a range, first set the cursors to the required positions. These are indicated at the top of the waveform screen by inverted blue and red triangles: drag these triangles with the mouse to set the range.



Then to save all of the data, select [**File**]-[**Save All**]; to save the range only, select [**File**]-[**Save Between Cursors**.]

A dialog box appears for setting the file to be saved, and the thinning.



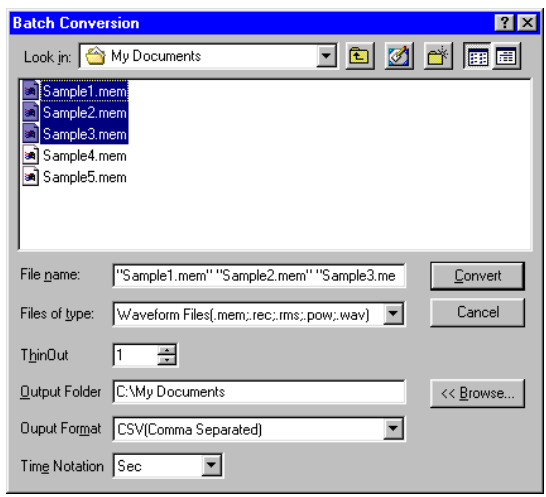
To save in text formats other than CSV (space delimited or tab delimited), select the desired format from the [**Save as type**] list.In the [Thin Out] box, enter the number of original samples corresponding to one converted value.
Use this when data over a large range (long time interval) is required, but the whole set of sampled data is not required.
Select [Time Notation] from among [**Sec**], [**Date**], [**Trig**], and [**Point**.]
Enter the name of the file to be saved, and click the [**Save**] button to convert the data to CSV format and save the file.

2.5 Batch Conversion to CSV Files

You can convert multiple waveform files CSV files.

1. Select [**File**]-[**Batch Conversion**.]

2. Select the desired files from the file list. To select two or more files, left-click on the desired files while holding down the **Shift** or **Control** key.



3. If required, specify the sampling intervals in the [**ThinOut**] box at which data is to be converted. Remember that not all data needs to be converted. This setting is useful when you need data over a broad time span.

4. In the [**Output Folder**], specify the folder in which to save the CSV files converted from waveform files. You can specify the desired folder without typing simply by clicking on the [**<<Browse...**] button and selecting the desired folder from the list.

5. To save in text formats other than CSV (space delimited or tab delimited), select the desired format from the [**Output Format**] list.

6. Select [Time Notation] from among [**Sec**], [**Date**], [**Trig**], and [**Point**.]

7. Click the [**Convert**] button. All selected waveform files are converted to CSV files and saved in the specified folder.

Error messages 3

Error Messages

In the following conditions, an error message is displayed until the cause of the error is remedied or the STOP button is pressed.

1	Paper End.	Printer paper has run out. Reload.
2	Set printer lever.	Lower the head up/down lever.
12	Printer is not connect-ed.	The 8992 PRINTER UNIT is not connected.
14	Printer Error.	Check the built-in printer.
21	Battery low. (Printer)	Battery voltage is low.

Warning Messages

When an error occurs, the accompanying warning message is displayed only once (and disappears after a few seconds). Warning messages can be cleared by pressing any button.

51	System files are damaged.	The power fault protection system files are damage. Perform a complete format.
52	File cannot be repaired.	The power fault protection system files are damage. Perform a complete format.
53	Cannot change to initial directory.	The directory stored when power was turned off could not be found.
54	Card is not logger formatted.	Format the PC card using this instrument.
55	File is locked.	Protected files or directories cannot be manipulated on this instrument.
71	Cannot load.	Data cannot be loaded, either because it is text data, or was not created by the instrument.
72	Illegal format.	The media does not have the correct MS-DOS format.
73	Write Protected.	The media is write-protected. Release the write protection.
75	File is read only.	File cannot be written or deleted because it is read-only.
76	General failure.	The media is not accessible due to an error such as a bad format or corrupt file.
80	Insert PC card.	No card is present in the PC Card slot.
90	File already exists.	Rename the file.
91	Directory full.	Only a limited number of files (including directories) can be created in the root directory.
93	Disk full.	There is no more disk space available. Delete files or replace the media.
94	Path name error.	Path names are limited to 127 characters.
95	Empty directory name.	Name the directory.
96	Directory already exists.	Another directory exists with the same name. Saving cannot be performed with this directory name.
99	Conditions for OVERWRITE are not satisfied.	The instrument conditions and file data conditions (function and time-axis) must be set to be the same.
201	Set printer paper.	Printer paper has run out. Reload.
202	Set printer lever.	The head up/down lever has been left in the up position.
205	Invalid. (START)	The button pressed is not valid during measurement operation.
206	Invalid. (Copy OFF)	Turn ON Screen Copy.

210	Cannot Save (File Lock)	Do not write, edit, or delete a file in the PC card using the FTP during automatic text save or at the start of the real-time save operation.
300	Cannot START.	Measurement cannot be started from a screen displayed by pressing the **CARD** button.
360	Interval has been changed. (humid)	Humidity measurement cannot be performed unless the recording interval is from 5 sec. to 1 hr. Therefore, the recording interval is automatically adjusted.
361	Cannot be faster than 5s. (humid)	When humidity is measured on any channel, a recording interval less than 5 sec. cannot be set.
362	Measurement range was changed.	When upper and lower limits have been set, the range is automatically changed to the optimum range that corresponds with the upper and lower limits.
364	Saving was interrupted.	Operation was forcibly interrupted while saving text.
370	Cannot change while measuring.	Press the **STOP** button twice to stop measurement, then change the setting.
375	Invalid event marker.	You have attempted to go to an event marker that is no longer in memory.
382	No waveform data.	There is no waveform data to display on the Waveform Screen. Data must be acquired before processing can start.
396	Out of range. (variable)	The settable area for upper and lower limits has been exceeded. Enter an appropriate value for the upper or lower limit. (variable)
397	Out of range. (scaling)	Input the appropriate signal level. (scaling)
398	A-B cursor positions invalid.	Move the cursors to valid positions.
520	Bad MAC address.	The MAC address is illegally rewritten. Contact us.
521	Bad IP address.	Check the IP address.
522	Bad server IP address.	Check the server's IP settings.
523	Can not connect to server.	Check the settings and connection.
524	Can not connect to 9334.	Check the settings and connection of the 9334 LOGGERCOMMUNICATOR.
525	Connection timed out.	Check the connected device.
526	Transfer was aborted.	Check the connected device.
527	Network error.	Check the instrument and connected device.
528	Server not found or DNS failed.	Check the DNS IP address or the line connection.
529	DHCP failed.	Check the connected device.
530	Password error.	Check the password. Password recognition is case-sensitive.
531	Can not change while server is working.	Stop the monitor server and edit the setting.

532	Bad FTP server IP address.	Check IP settings for automatic transfer of FTP data.
533	Can not connect to FTP server.	Check settings and connections for automatic transfer of FTP data.
534	Can not find FTP server / DNS failed.	Check settings, DNS IP address, and connections for automatic transfer of FTP data.
535	Bad Mail server IP address.	Check IP settings of the mail server.
536	Can not connect to Mail server.	Check mail server settings and connections.
537	Can not find Mail server / DNS failed.	Check settings, DNS IP address, and connections for the mail server.
538	PPP: Connection failed.	Check the telephone number, AT command, etc.
539	PPP: Bad Telephone number.	Set the correct telephone number.
540	PPP: Connection was aborted.	PPP settings were modified or the **STOP** button was pressed.
541	PPP: MODEM error.	Check the power supply for the modem, AT command, etc.
542	PPP: Login failed.	Check the calling user name, password, and PC settings.
560	Can not change while communication.	This item cannot be modified in remote operation.
561	FTP Auto Transfer has been changed.	Because auto save was modified, settings for automatic transfer of FTP data were also modified.
562	Please set Auto Save to Binary.	Unless auto save is binary, FTP data cannot be automatically transferred.
620	Battery low.	Recharge or replace the batteries.
621	Battery low. (Printer)	Battery voltage is low.

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