MD1230B-26
PPPoE
Operation Manual

Second Edition

- **For safety and warning information, please read this manual before attempting to use the equipment.**
- **Additional safety and warning information is provided within the MD1230B Data Quality Analyzer Operation Manual. Please also refer to this document before using the equipment.**
- **Keep this manual with the equipment.**

ANRITSU CORPORATION

Document No.: M-W2906AE-2.0

Safety Symbols

To prevent the risk of personal injury or loss related to equipment malfunction, Anritsu Corporation uses the following safety symbols to indicate safety-related information. Ensure that you clearly understand the meanings of the symbols BEFORE using the equipment. Some or all of the following symbols may be used on all Anritsu equipment. In addition, there may be other labels attached to products that are not shown in the diagrams in this manual.

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This indicates an obligatory safety precaution. The obligatory operation is indicated symbolically in or near the circle.

This indicates a warning or caution. The contents are indicated symbolically in or near the triangle.

This indicates a note. The contents are described in the box.

These indicate that the marked part should be recycled.

MD1230B-26
PPPoE
Operation Manual

19 March 2007 (First Edition)
8 June 2007 (Second Edition)

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Anritsu Corporation guarantees that this equipment was inspected at shipment and meets the published specifications.

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- During the warranty period, Anritsu Corporation will repair or exchange this software free-of-charge if it proves defective when used as described in the operation manual.
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- The warranty period after repair or exchange will remain 1 year from the original purchase date, or 30 days from the date of repair or exchange, depending on whichever is longer.
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In addition, this warranty is valid only for the original equipment purchaser. It is not transferable if the equipment is resold.

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CE marking

1. Product Model

Option: MD1230B-26 PPPoE

2. Applied Directive and Standards

When the MD1230B-26 is installed in the MD1230B, the applied directive and standards of this option conform to those of the MD1230B main frame.

PS: About main frame
Please contact Anritsu for the latest information on the main frame types that MD1230B can be used with.

C-tick Conformity Marking

Anritsu affixes the C-tick marking on the following product(s) in accordance with the regulation to indicate that they conform to the EMC framework of Australia/New Zealand.

C-tick marking

1. Product Model

Option: MD1230B-26 PPPoE

2. Applied Directive and Standards

When the MD1230B-26 is installed in the MD1230B, the applied directive and standards of this option conform to those of the MD1230B main frame.

PS: About main frame
Please contact Anritsu for the latest information on the main frame types that MD1230B can be used with.

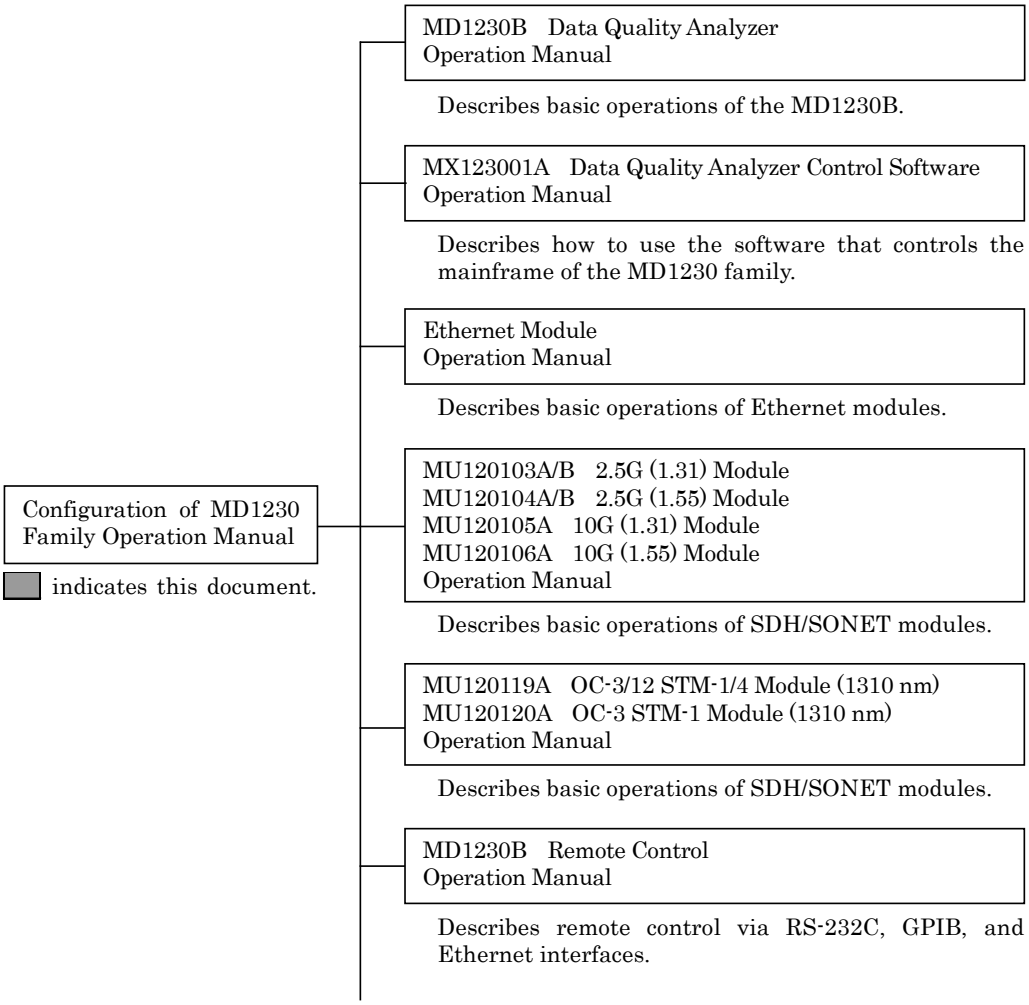
About This Manual

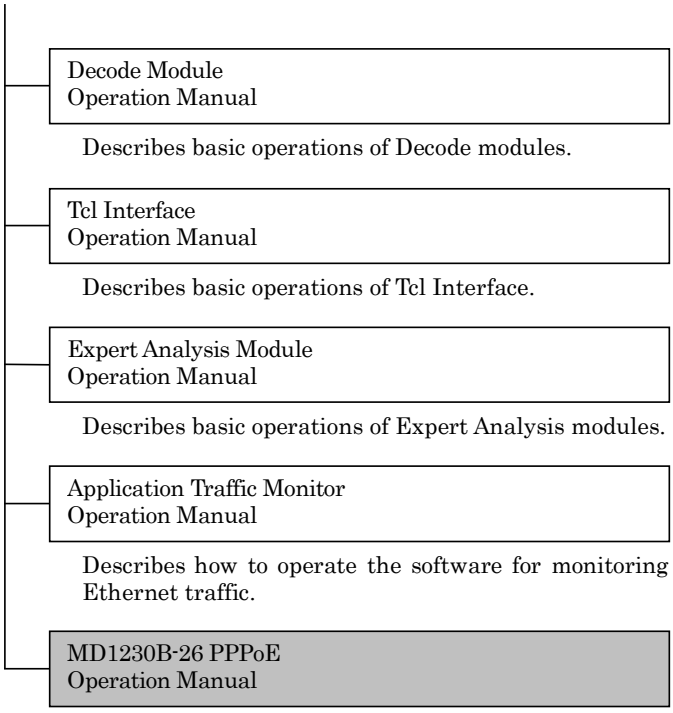
The MD1230 family operation manuals consist of separate documents for the main unit, control software, module(s), remote control operation, and options, as shown below.

Note:

MD1230 family is a general name for the MD1230A/B Data Quality Analyzer, the MD1231A/A1 IP Network Analyzer, and the MT7407A Multislot Chassis.

Note that the MD1230A, MD1231A/A1, and MT7407A are not supported in Ver. 7.0 and above.




Decode Module
Operation Manual
Describes basic operations of Decode modules.
Tcl Interface
Operation Manual
Describes basic operations of Tcl Interface.
Expert Analysis Module
Operation Manual
Describes basic operations of Expert Analysis modules.
Application Traffic Monitor
Operation Manual
Describes how to operate the software for monitoring Ethernet traffic.
MD1230B-26 PPPoE
Operation Manual
Describes how to operate the software for measuring traffic on PPPoE/Ethernet.

This operation manual covers the following equipment and software:

Model Name	Product Name	Option Name of Corresponding Application PPPoE
MD1230B	Data quality analyzer	MD1230B-26

In this manual, the MD1230B are referred to as “main unit.”
The MD1230B-26 PPPoE is referred to as “this option.”

Table of Contents

Section 1 Overview

This section summarizes this option.

1.1 Product Overview

This option controls the MU120121A/22A modules installed in the main unit and monitors the traffic on the PPPoE session. It can measure throughput and delay by "session group", which is a group of more than one PPPoE sessions.

Measurement is performed by establishing a session first, generating traffic, and disconnecting the session.

There are two types of measurement: manual where traffic is started/stopped manually and auto where measurement is repeated automatically. The user can switch the measurement method.

This option measures traffic for the following three types of network topologies:

Note:

In this manual, the user flow from client to server is referred to as "UpLink" and from server to client "DownLink."

Network topology consisting of PPPoE client and PPPoE server

A PPPoE session is established between the PPPoE client and PPPoE server. Traffic is measured by exchanging user data between client and server using session information.

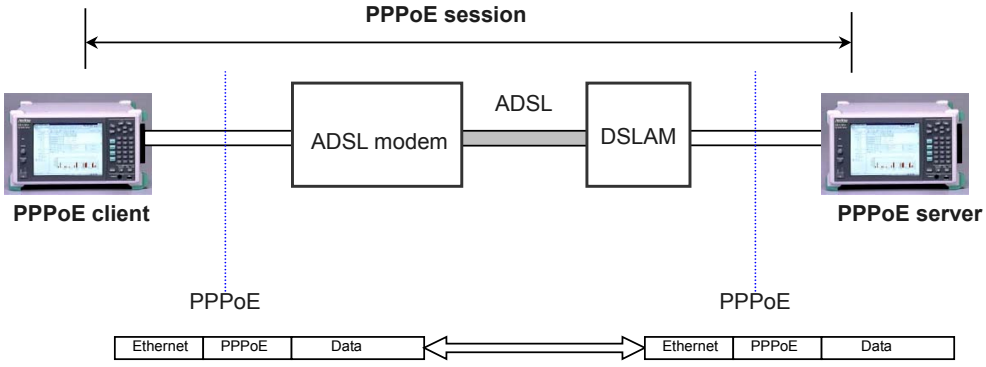


Fig. 1.1-1 Network topology consisting of PPPoE client and PPPoE server

Network topology consisting of PPPoE client and Internet server

A PPPoE session is established between the PPPoE client and server (BB-RAS) and user data is exchanged. Traffic is measured by exchanging user data between the PPPoE client and internet server using session information.

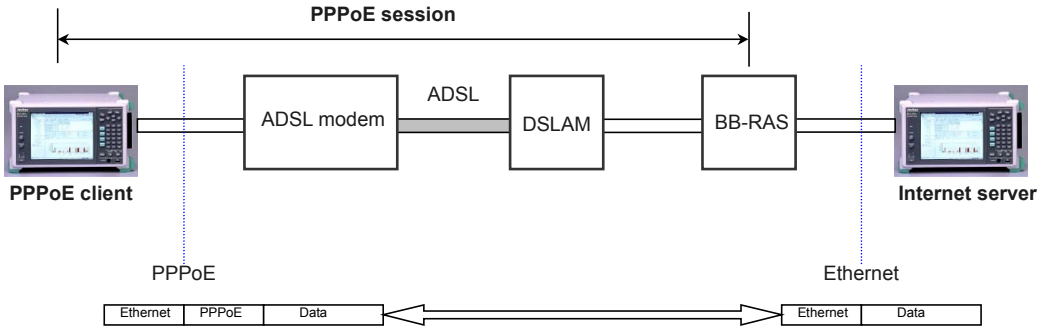


Fig. 1.1-2 Network topology consisting of PPPoE client and Internet server

Network topology consisting of Ethernet client and Internet server

Traffic is measured by exchanging user data between the ethernet client and internet server without establishing a PPPoE session between the ethernet client and internet server.

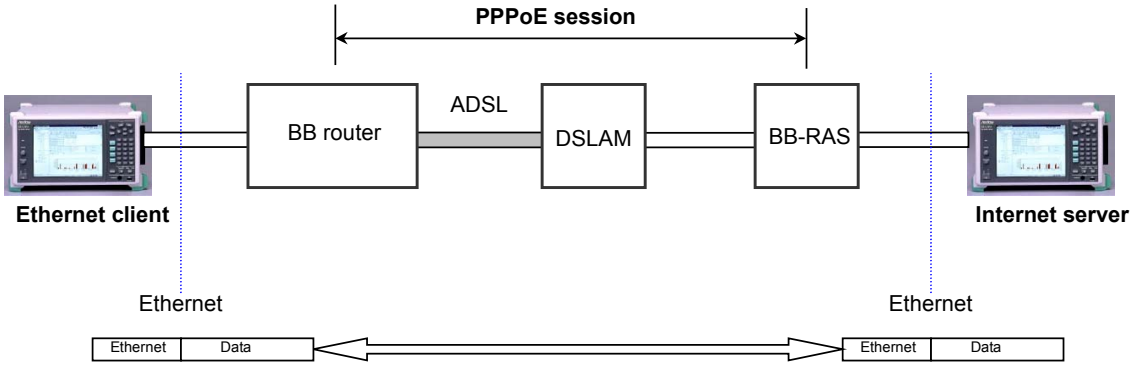


Fig. 1.1-3 Network topology consisting of Ethernet client and Internet server

Note:

When connecting between the ethernet client and PPPoE server via a BB router, this network topology is subject to restriction.

1.2 Features

This unit has the following features:

- Capbale of measuring traffic by “session group” consisting of multiple sessions
- Measures traffic and displays measured results while sessions established
- Real-time display of information during traffic measurement
- Visual and easy-to-understand charts
- Saves and loads specified information to and from file
- Exports measurement results to file
- Manual or automatic traffic measurement

1.3 Usage Restrictions

This option is used by switching the ports of the main unit using the Setup utility, which can be executed from the menu that appears after starting the main unit. Note that this option functions and the normal measurement function are mutually exclusive. When this option is enabled, normal measurement function is disabled. In addition, remote control using the remote command options is also disabled.

The main unit can control the MU120121A/22A modules. Other modules cannot be controlled by the main unit and are not be recognized even if installed. This unit can control only one module per unit. If more than one module is installed, only the module in the top slot is controlled.

When this option screen is opened, only the following keys can be used: 0 to 9, A to F, ./:, +/-, BS, DEL, Set, Cancel, ->|F, R|<-, <, >, ∧, ∨, keys and pointing device.

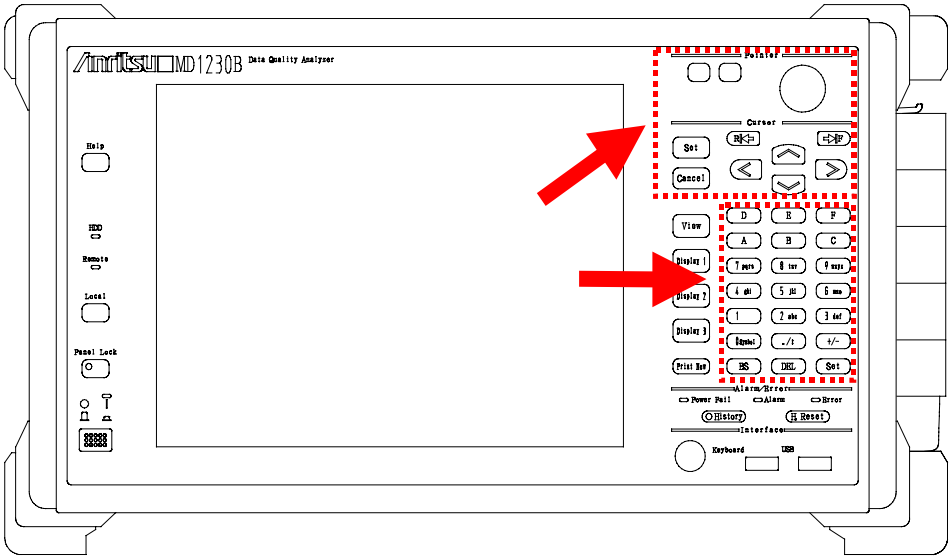


Fig. 1.3-1 Active keys on the front panel

1.4 Starting Application

To use this option, the main unit operation mode must be set to PPPoE mode. Once set, the operation mode setting is not required again since the setting is retained in the main unit. The PPPoE mode is set as follows:

Setting PPPoE mode

1. Connect a mouse to the main unit before turning it on. Install the module to be used by this option in the main unit.
2. Turn on the main unit, and wait until the Selector is started. Press the [Setup utility] button to start the Setup utility.

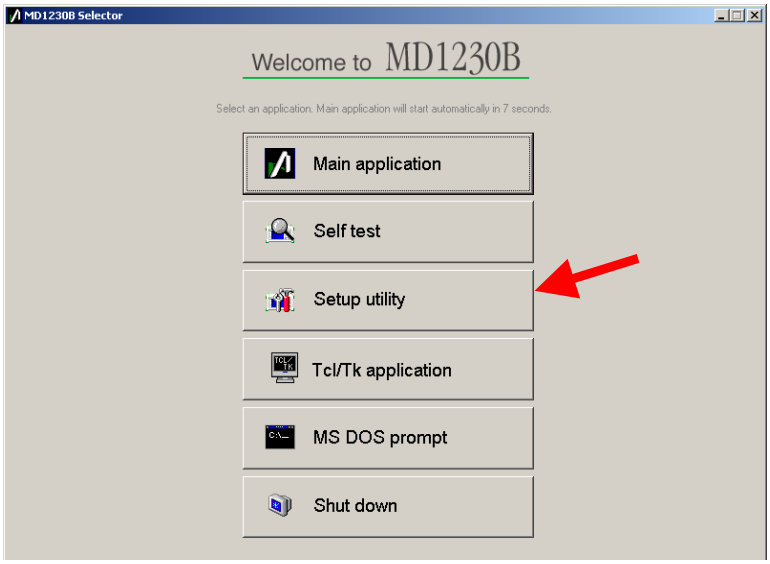


Fig. 1.4-1 Selector (Normal mode)

3. Open the {Firmware Functionality} tab and select [PPPoE] from the Unit list.

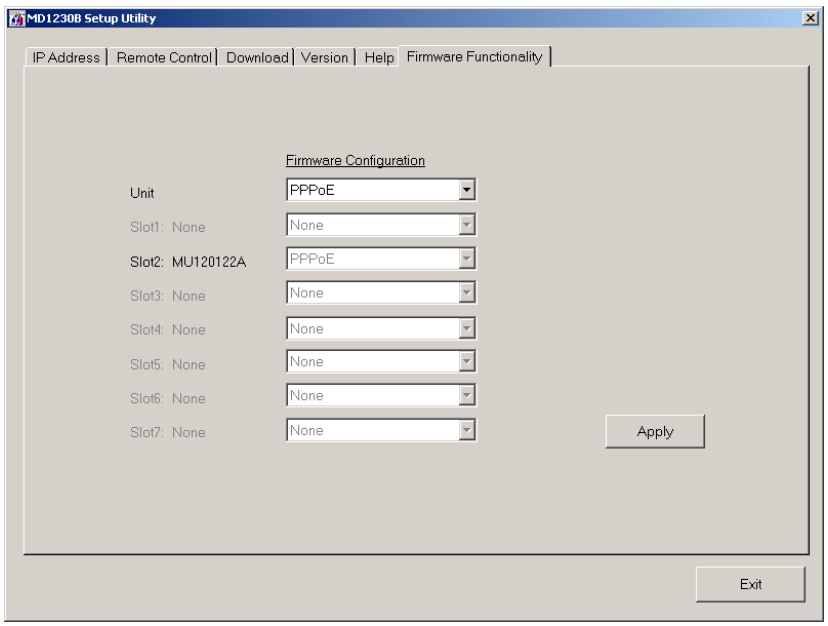


Fig. 1.4-2 Setup Utility (Firmware Functionality tab)

4. Press the [Apply] button and then click OK at the displayed dialog to start the change operation mode processing.
   Wait until the operation mode is changed completely.
5. When the operation mode is changed, the [Exit] button is enabled. Press the [Exit] button to terminate the Setup utility.

Notes:

1. Only one module can be used in PPPoE mode.
   The module to be used is displayed with highlighted solid characters and unused modules are grayed out.

   ☞ For details, refer to Section 1.3 "Usage Restrictions"

2. To return the main unit from the PPPoE mode to the normal mode, select [Default] from the Unit list and then click the [Apply] button.

3. Sometimes a module does not become available even when a supported module is installed. In such case, press the [Apply] button again.

6. Check that the Selector is as shown in the Fig.1.4-3. The [PPPoE application] button on the top has changed to the dedicated button for starting this option.
   Clicking this button opens this option screen from which user can start operation.

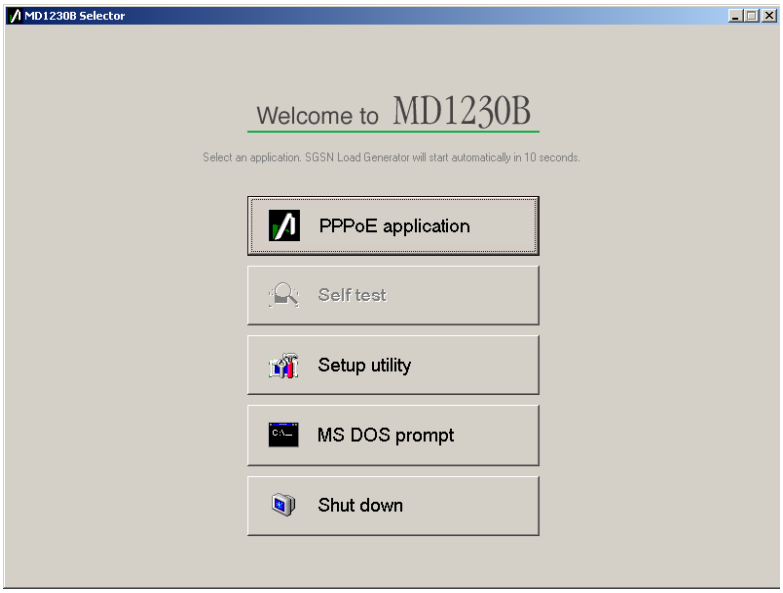


Fig. 1.4-3 Selector (PPPoE mode)

7. When this option is started for the first time or if unit connection has failed, the Unit connection appears.
   If this screen appears, set the IP address and press the [Connect] button. The PPPoE Application main screen opens.
   Select [Automatically connect next time] at the bottom of the screen to connect automatically and display the main screen next time this option is started.

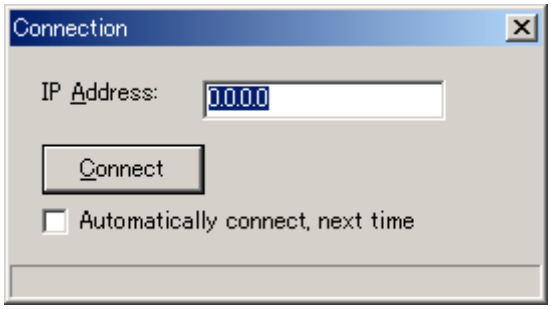


Fig. 1.4-4 Unit connection

Note:

The IP address of the unit to be connected can be checked from the {IP Address} tab of the Setup Utility screen (see Fig. 1.4-2 Setup Utility).

1.5 Using Application

This option provides three basic operation: setup, measurement, and result view. The layout of main screen and basic operation of the application are described below.

The basic operation of the application is described in the recommended order of operation.

1.5.1 Screen Layout

This is the main screen of this option. Parameter setting for traffic measurement, execution of measurement, and display of measured result can be all performed from this screen.

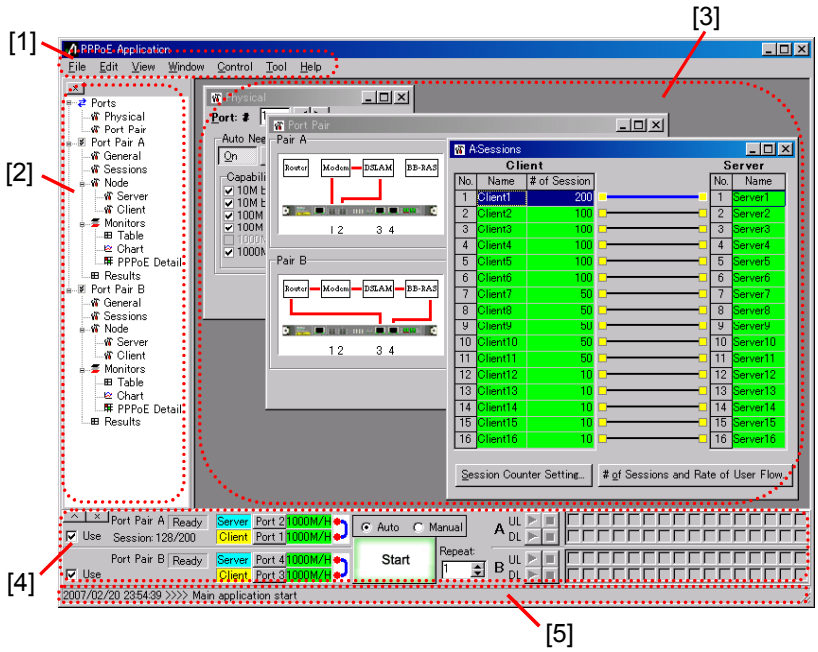


Fig. 1.5.1-1 Main screen

[1] Main menu

- Display the screen of the selected menu item in the [3]Client Window.
- Perform traffic measurement.
- Save or load specified content to or from a file.
- Display or hide [2]Window Bar, [4]Control Bar, and [5] Status Bar.

[2] Window Bar

- Display the setting, monitoring and result menus in a hierarchy.
- Display the screen of the selected menu item in [3]Client Window.
- Enable changing of [2]Window Bar width with the mouse

[3] Client Window

- Display the setting, monitoring and result view screens

[4] Control Bar

- Perform traffic measurement

[5] Status Bar

- Display the operation status and result

1.5.2 Basic Operation

The basic operation flow is shown in the Fig.1.5.2-1.

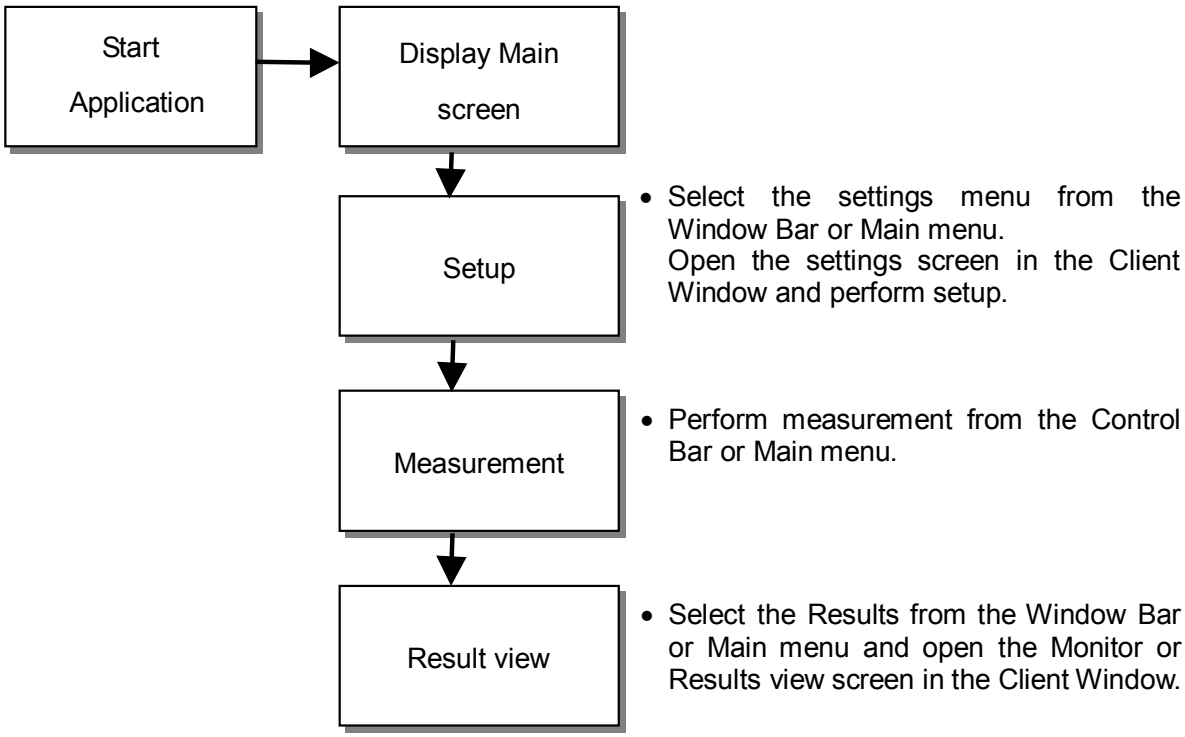


Fig. 1.5.2-1 Basic operation of the application

☞ To start the application, refer to Section 1.4 "Starting Application"

☞ Layout of the main screen, refer to Section 1.5.1 "Screen Layout"

☞ For details on settings, refer to Section 2 "Settings"

☞ For details, refer to Section 3 "Measurement"

☞ For details, refer to Section 4 "Monitor & Results"

Each operation is described below.

(1) Settings

Set the parameters for the following (a) through (e) for traffic measurement:

☞ For details, refer to Section 2 "Settings"

(a) Physical

Set physical interface parameters of each port.

(b) Port Pair

Set the client/server port pairs and set the protocol type.

(c) General

Set the PAD interval for each port, delay measurement during traffic measurement, and traffic transmission time.

(d) Sessions

Specify the client and server to establish session.

(e) Node

Open the following tabs and set the parameters necessary for measurement:

- Users
- Address
- VLAN
- PPPoE
- PPP
- User Flow

(2) Measurement

Traffic is measured based on parameters set in step (1).

Traffic measurement can be performed automatically or manually.

Manual measurement can be performed by manually establishing a session, generating traffic, and disconnecting the session.

Auto measurement can also be performed by automatically establishing a session, generate traffic, and disconnect the session with a single operation. In addition, the number of repetitions can be specified.

☞ For details, refer to Section 3 "Measurement."

(3) Result view

Displays the measured results during and after measurement.

☞ For details, refer to Section 4 "Monitor & Results".

(a) PPPoE Detail view

Displays the full session status of client being measured.

(b) Monitors Table view

Displays the traffic status during measurement as tables.

The PPPoE status counter, counter, and delay status are displayed for each client.

(c) Monitors Chart view

Displays the traffic status during measurement as charts.

The PPPoE status counter, counter, and delay status are displayed for each client.

(d) Results view

Displays the Results of the measured PPPoE packet as tables.

(4) File I/O

(a) Save/load Setting Parameters
The information of all settings can be saved.
The saved file can be loaded.

Note:

The saved file cannot be edited.

☞ For detail, refer to Section 2.4 "Saving and Loading Settings"

(b) Import/export information in Sessions
The exported file can be edited.

☞ For details, refer to Section 2.4 "Saving and Loading Settings"

(c) Measurement result export
The result can be exported.

Note:

The exported file cannot be loaded.

☞ For details, refer to Section 4.3 "Saving Measurement Results"

1.6 Application Restrictions

The following functions of the main unit cannot be used when using this option.

- Multi-user function and remote control
- RS-232C interface connection
- GPIB interface connection
- Ethernet interface connection

Note:

For the details of each function, see Section 5 “External Connection” in the MD1230B Data Quality Analyzer Operation Manual.

Section 2 Settings

This section describes how to set this option.

2.1 Setting Items

The setting items of which user mainly sets are as follows:

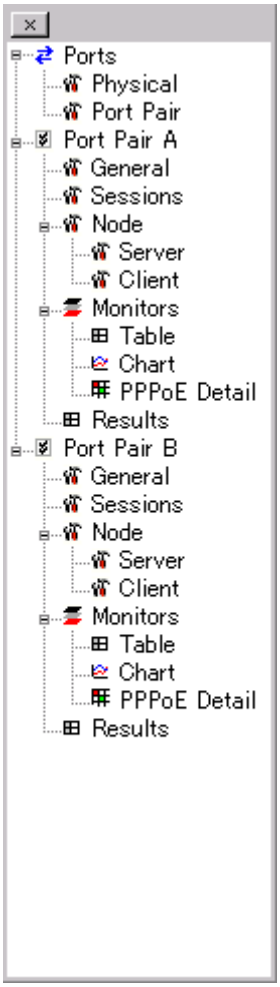


Fig. 2.1-1 Window Bar

Table 2.1-1 Setting Items

Setting item and description				Setting unit
Ports	**Physical** Communication speed and method of each port.			Individual port
	Port Pair Port pair combination to connect client and server, and protocol.			Port Pair
Port Pair A	**General** Packet transmission interval,user flow transmission time, etc.	**Delay**		Port Pair
		PAD Interval		Port Pair
		User Flow		Port Pair
	Sessions Server and client connection	**Connection**		Port Pair
			Session Counter Setting	Port Pair
			# of Session and Rate of User Flow	Port Pair
	Node Connection parameters and the transmission user flow for each server or client		**Users**	Server/Client
			Address	Server/Client
			VLAN	Server/Client
			PPPoE	Server/Client
			PPP	Server/Client
			User Flow	Server/Client
		Server		Server
		Client		Client
Port Pair B...	Same as Port Pair A			

The Window Bar is displayed or hidden each time [Window Bar] is selected from the [View] menu of main menu.

2.2 Ports Parameters

2.2.1 Physical

Set the communication speed and method for each port.

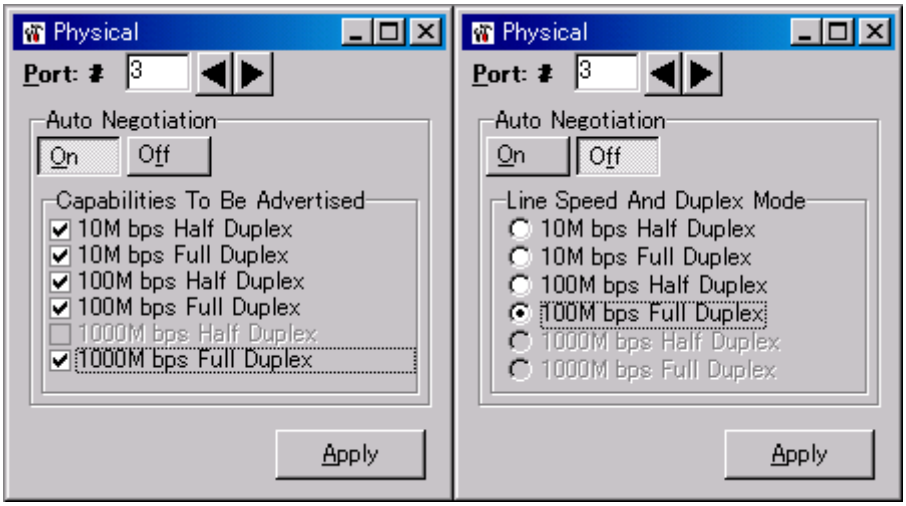


Fig. 2.2.1-1 Physical window

Table 2.2.1-1 Parameter setting in the Physical window

Setting Item and Parameter	Description
Port # • 1 to 4	Select the port to set with a number.
Auto Negotiation • On / Off	If On, Auto Negotiation is performed. Initial value: On
If Auto Negotiation is On, select one or more of the following: • 10 Mbps Half Duplex • 10 Mbps Full Duplex • 100 Mbps Half Duplex • 100 Mbps Full Duplex • 1000 Mbps Full Duplex If Auto Negotiation is Off, select one of the following: • 10 Mbps Half Duplex • 10 Mbps Full Duplex • 100 Mbps Half Duplex • 100 Mbps Full Duplex	Select one or multiple communication speed and method combination(s) to measure. Initial value: All selected

Note:

Parameters already set for ports 1 and 2 cannot be changed if an MU120122A module is used, and the parameter setting is fixed as follows:

Auto Negotiation: On

Line speed: 1000 Mbps

Duplex: Full Duplex.

2.2.2 Port Pair Combination

Set the port pair combination by specifying the port number of client and server, and protocol used for connection between them. Port pair A and B can be set.

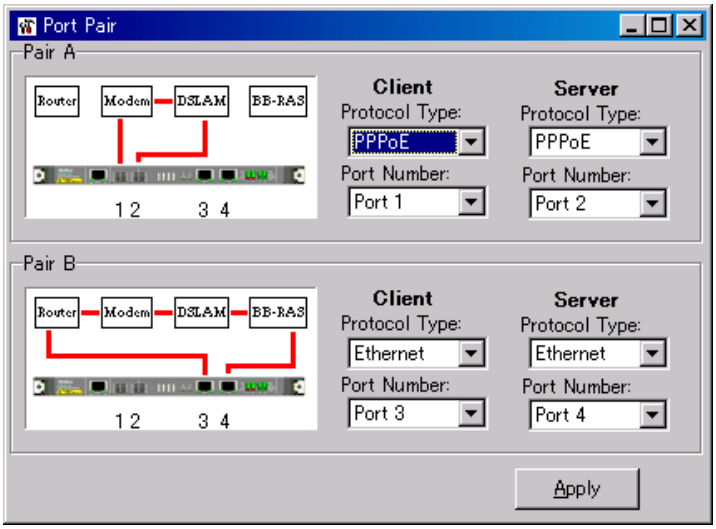


Fig. 2.2.2-1 Port Pair window

Table 2.2.2-1 Parameter setting in the Port Pair window

Setting Item and Parameter		Description
Client	**Protocol Type** • PPPoE • Ethernet	Set protocol used for the connection between client and server that is applied to the port connected to client. Initial value: Port Pair A PPPoE Port Pair B Ethernet
	Port Number • Port 1 to 4	Set port number of the port connected to client. Initial value: Port Pair A port1 Port Pair B port3
Server	**Protocol Type** • PPPoE • Ethernet	Set protocol used for the connection between client and server that is applied to the port connected to server. Initial value: Port Pair A PPPoE Port Pair B Ethernet
	Port Number • port 1 to 4	Set port number of the port connected to server. Initial value: Port Pair A port2 Port Pair B port4

Note :

Port 1 to 3 can be selected for Port Pair A, and Port 2 to 4 can be selected for Port Pair B.

2.3 Port Pair Parameters

Set port pair parameters for port pair A and B.
The parameters item for each port pair are the same.
Here, the screen of port pair A is used as an explanatory example for the parameter setting.

☞ For details on Port Pair Combination setting, refer to Section 2.2.2 "Port Pair Combination"

2.3.1 General

For Port pairs A and B, set the delay distribution measurement range, protocol packet transmission interval, and user flow transmission time.

(1) Delay

Set the measurement range (measurement start location and resolution) when measuring delay distribution.

The measurement range is from start point to start point + resolution × 30 and is displayed in the variation column. Available delay measurement range is from 0 to 3 seconds.

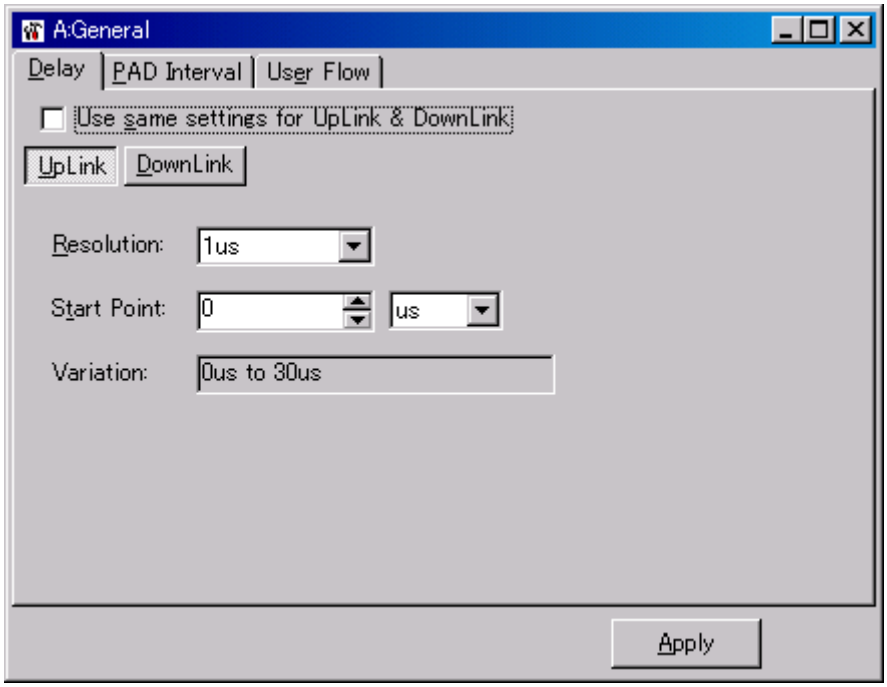


Fig. 2.3.1-1 Delay tab of the General window

Table 2.3.1-1 Parameter setting on the Delay tab of the General window

Setting Item and Parameter	Description
Use same settings for UpLink & DownLink	Select this checkbox when using the same resolution and start point for UpLink and DownLink.
• UpLink • DownLink	Press the [UpLink] or [DownLink] button to specify the link direction when "Use same setting for UpLink & DownLink" is not selected.
Resolution • 100 ns • 1 μs • 10 μs • 100 μs • 1 ms • 10 ms • 100 ms	Select the resolution. Initial value: 1 μs
Start Point • 0 to less than 3 seconds	Select the start point. Initial value: 0 μs

(2) PAD Interval

Set the PAD (PPPoE Active Discovery) Interval (time delay) between the PAD packet transmissions during PPPoE session. This setting is only valid when protocol type is set to PPPoE.

For details on Protocol Type setting, refer to Section 2.2.2 "Port Pair Combination"

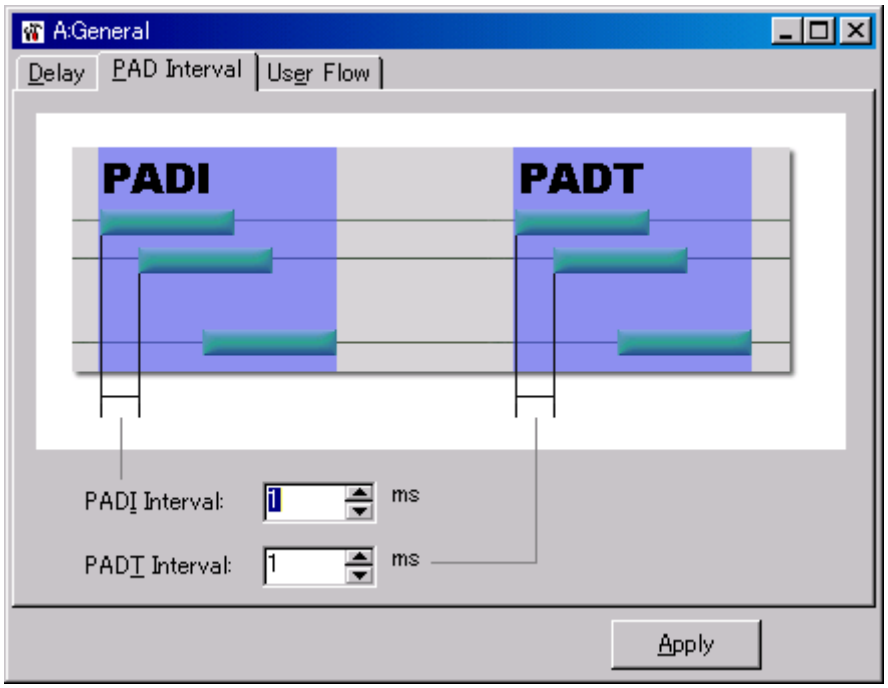


Fig. 2.3.1-2 PAD Interval tab of the General window

Table 2.3.1-2 Parameter setting on the PAD Interval tab of the General window

Setting Item and Parameter	Description
PADI Interval • 1 to 999 ms	Select interval of the PADI (PPPoE Active Discovery Initiation) packet transmission during PPPoE session. Initial value: 1 ms
PADT Interval • 1 to 999 ms	Select interval of the PADT (PPPoE Active Discovery Terminate) packet transmission during PPPoE session. Initial value: 1 ms

(3) User Flow

Set the user flow transmission time.

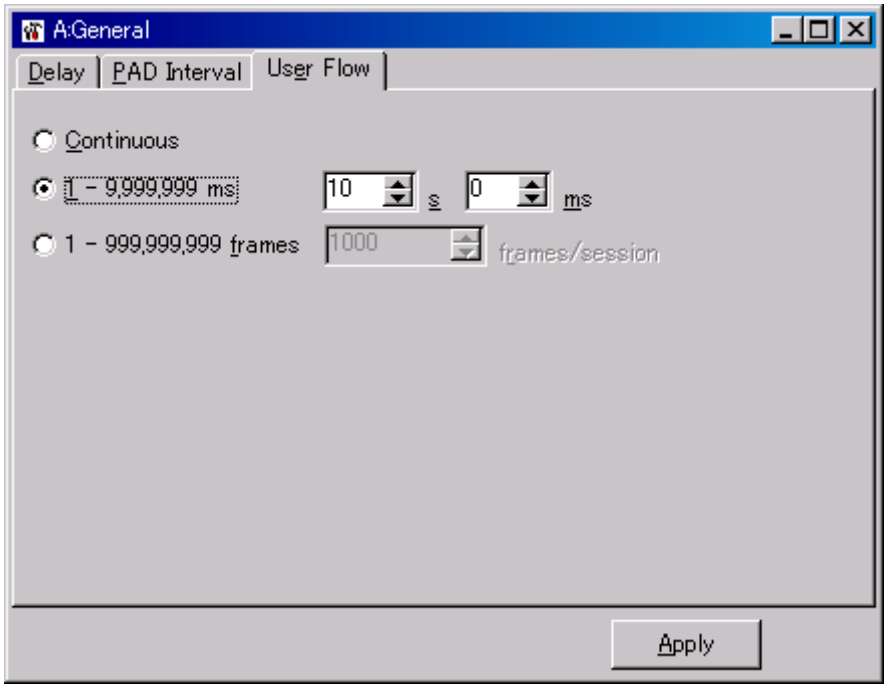


Fig. 2.3.1-3 User Flow tab of the General window

Table 2.3.1-3 Parameter setting on the User Flow tab of the General window

Setting Item and Parameter	Description
• Continuous • 1 to 9,999,999 ms • 1 to 999,999,999 frames/session	Set the user flow transmission with time or number of frames. Initial value: 10000 ms When set to "Continuous", user flow transmission continues until it is stopped manually.

2.3.2 Sessions

(1) Connection

Set the client and server connection (session group) and the number of session.

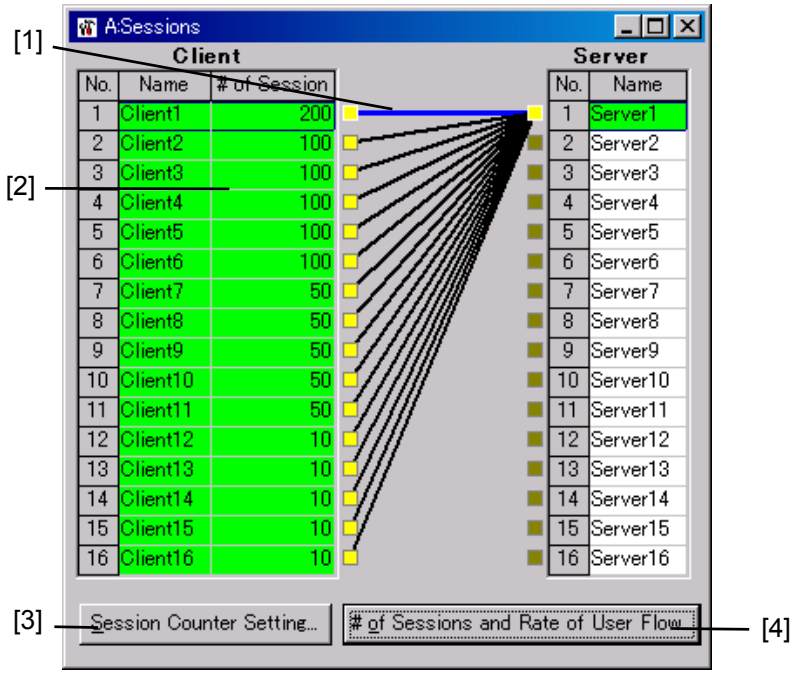


Fig. 2.3.2-1 Sessions window

[1] Click ■ of the client and server to form a session group and connect them with a line.
Up to 16 clients can be connected to a server.
By default, Client 1 and Server 1 are connected while others are disconnected.

When a line is connected, clicking ■ erases the line and cancels the session group.

When Client or Server set at Session group is double-clicked, the Client or Server test parameter is displayed.

☞ For details of test parameter, refer to section 2.3.3 "Node"

[2] The column shows the number of sessions connected by each client.

☞ For details, refer to Section 2.3.2 (3) "# of Session and Rate of User Flow"

[3] When this button is pressed, the screen for selecting the session to monitor is displayed.

☞ For details, refer to Section 2.3.2 (2) "Session Counter Setting"

[4] When this button is pressed, the screen for setting the session traffic rate is displayed.

☞ For details, refer to Section 2.3.2 (3) "# of Sessions and Rate of User Flow"

Notes:

1. A client can be connected to only one server.

2. When the protocol type of client is Ethernet and the server is PPPoE, only Client 1 to Server 16 combination is possible as a session group.

(2) Session Counter Setting

When the [Session Counter Setting...] button at the Session window is pressed, the Session Counter Setting dialog is displayed.

This setting is used when monitoring traffic in session units. Select [3] the session to monitor at each [1] Client (Session group). A maximum of 32 sessions can be selected for each Port Pair. In addition, the monitored traffic direction can be selected as [2]UpLink/DownLink. When the [Clear All] button is pressed, all selections are cleared.

See Section 4.1.2 “Traffic Counter [2]” for the Monitor results display method.

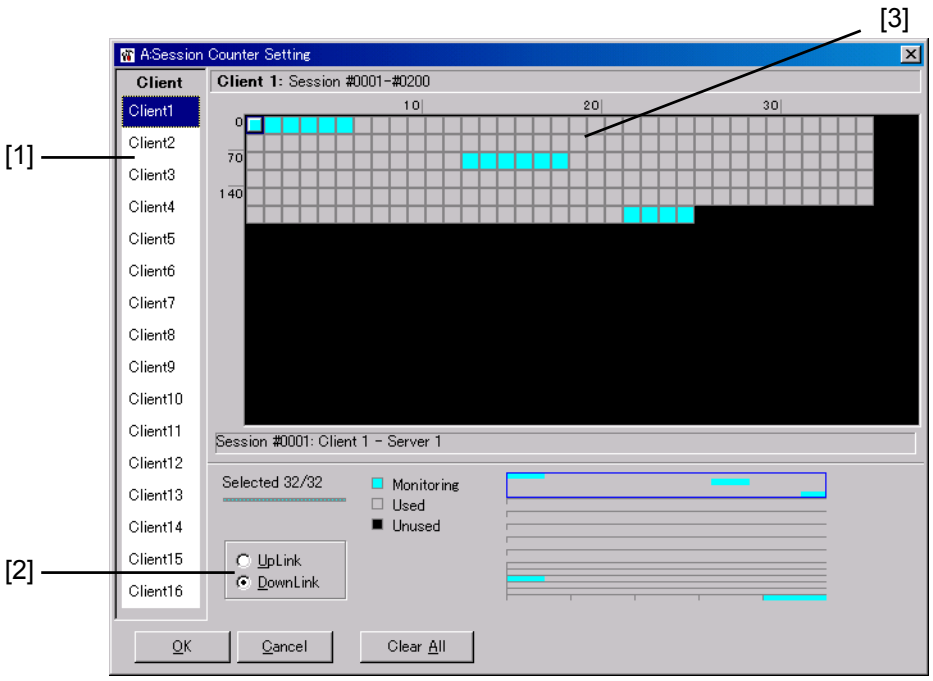


Fig. 2.3.2-2 Session Counter Setting dialog

Note:

This setting is only allowed for the port pair combination of port 1 and 2.

(3) # of Sessions and Rate of User Flow

When the [# of Sessions and Rate of User Flow...] button is pressed at the Sessions window, the # of Sessions and Rate of User Flow dialog is displayed.

The # of Sessions and Rate of User Flow dialog is used to set the traffic transmission rate of the user flow and number of session.

Transmission rate is calculated from the frame size automatically.

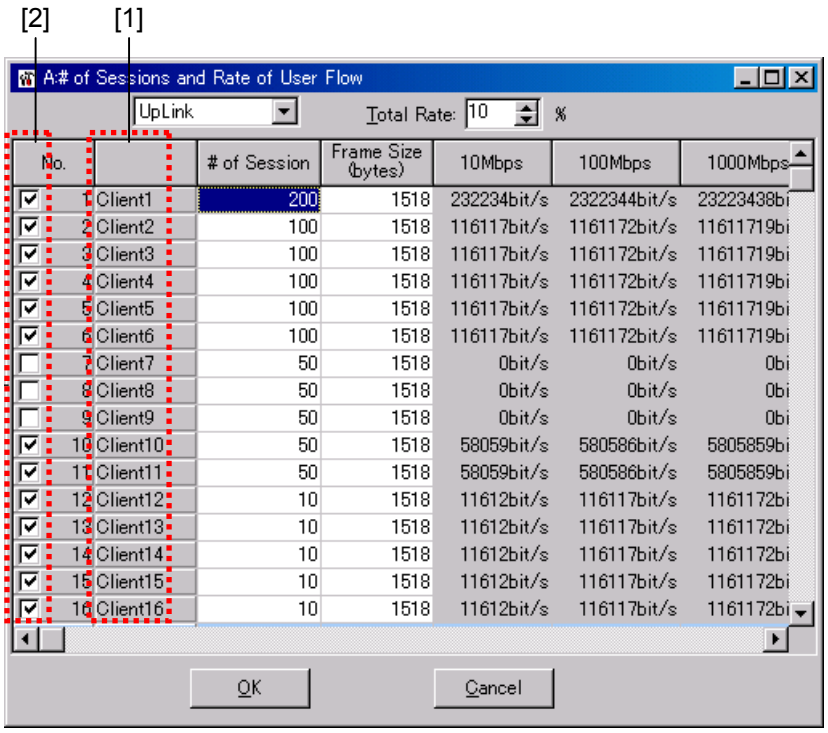


Fig. 2.3.2-3 # of Sessions and Rate of User Flow dialog

Table 2.3.2-1 Parameter setting in the # of Sessions and Rate of the User Flow dialog

Setting Item and Parameter	Description
Link direction • DownLink/ UpLink	Set the link direction. At UpLink, Client becomes the Stream Tx side, and at DownLink, Server become the Tx side. As a consequence, part [1] becomes Client1 to Client16 at UpLink, and Server1 to Server16 at DownLink. Initial value: UpLink
Total Rate • 1 to 100%	Set the transmission rate (%) for each port. Initial value: 10%
No.	Set whether or not to send traffic. Select the checkbox [2] of server (if DownLink) or client (if UpLink) that sends the traffic. Initial value: All checked
# of Session • 0 to 1000 sessions (Total session of all client is 1000)	This is only allowed for UpLink. Initial value: 1
Frame Size (bytes) • 64 to 1518 bytes	Set the frame length of the user flow sent from the server (if DownLink) or client (if UpLink). Initial value: 1518 bytes

Note:

The frame length set for Frame Size, described above, is the frame length of the Ethernet frame. The frame length of the actually sent user flow is the sum of the frame length set for Frame Size and that of the VLAN tag.

☞ For details on VLAN setting, refer to Section 2.3.3 (3) "VLAN"

2.3.3 Node

(1) Users

■ When protocol type is PPPoE

Set the name of client or server, PPP authentication ID, and passwords.

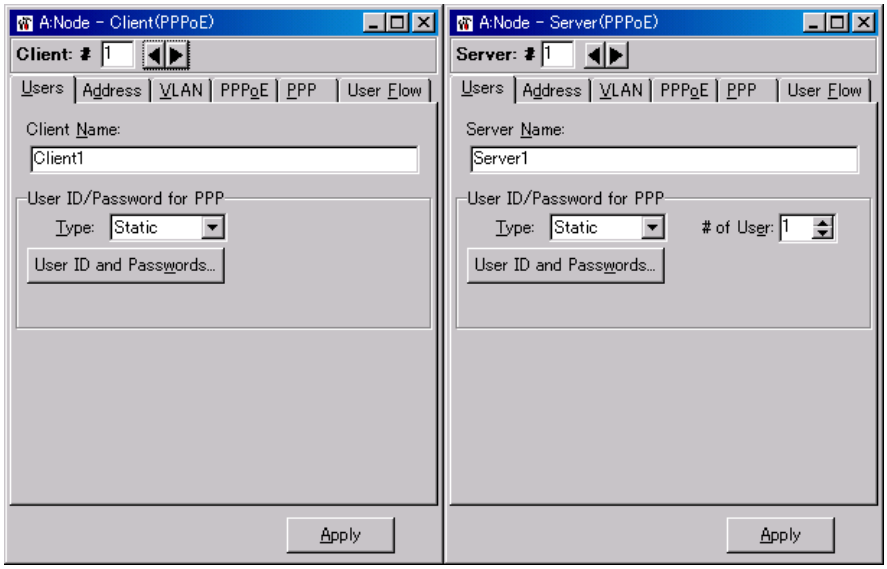


Fig. 2.3.3-1 Users tab of the Node window (PPPoE)

Table 2.3.3-1 Parameter setting on the Users tab of the Node window (PPPoE)

Setting Items and Parameters	Description
Group # or **Server #** • 1 to 16	Select the client or server to set with a number. Initial value: 1
Client Name or Server Name • 0 to 255 characters	Specify the name of the client or server with up to 255 byte.
Type • Static • Increment	Select the user ID and password setting method. Initial value: Static
[User ID and Passwords...]	This is displayed when the Type is “Static”. Set the user ID and password pair in the User ID & Password & MAC Address dialog (next page). This dialog can control 128 pairs for server and 1000 pairs for client.
User ID • 0 to 251 characters	This is displayed when the Type is “Increment”. Set the start User ID. For example, when the Type is “Increment” and the User ID is “User”, values such as “User0001”, “User0002”, ... are used for authentication. Initial value: User
Password • 0 to 251 characters	This is displayed when the Type is “Increment”. Set the start password. For example, when password is "Password", values such as “Password 0001”, “Password 0002”, ... is used for authentication. Initial value: Password
# of User • 1 to 128	This is displayed for server. Set the number of Combination(user ID and password) for authentication. Initial value: 1

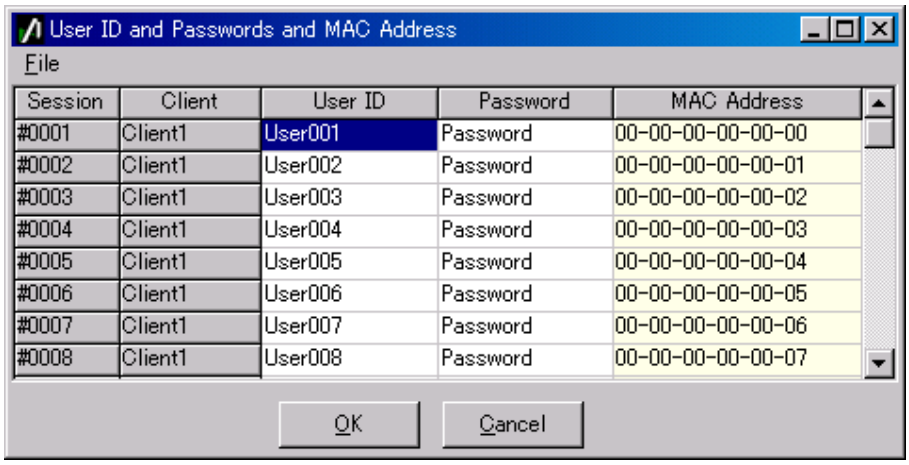


Fig. 2.3.3-2 User ID & Passwords & MAC Address dialog (for Client)

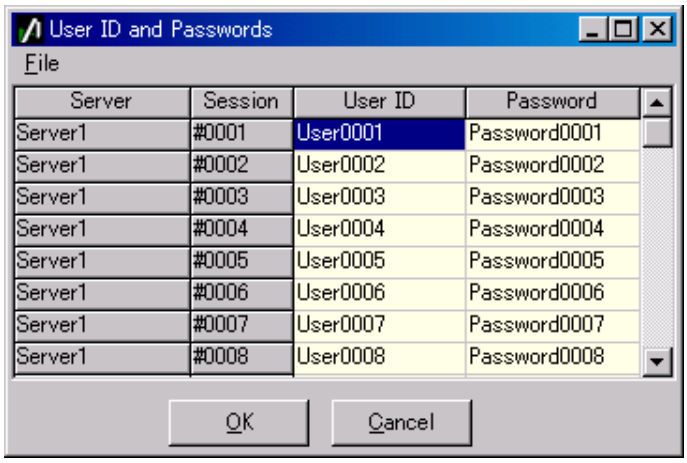


Fig. 2.3.3-3 User ID & Passwords dialog (for Server)

Note:

The User ID and password pair, and MAC address setting can be save/read as individual session data.

☞ For details, refer to Section 2.4.2 "Saving and Loading Session Information"

■ Ports for when both client and server uses Ethernet protocol

Set the client or Server Name.

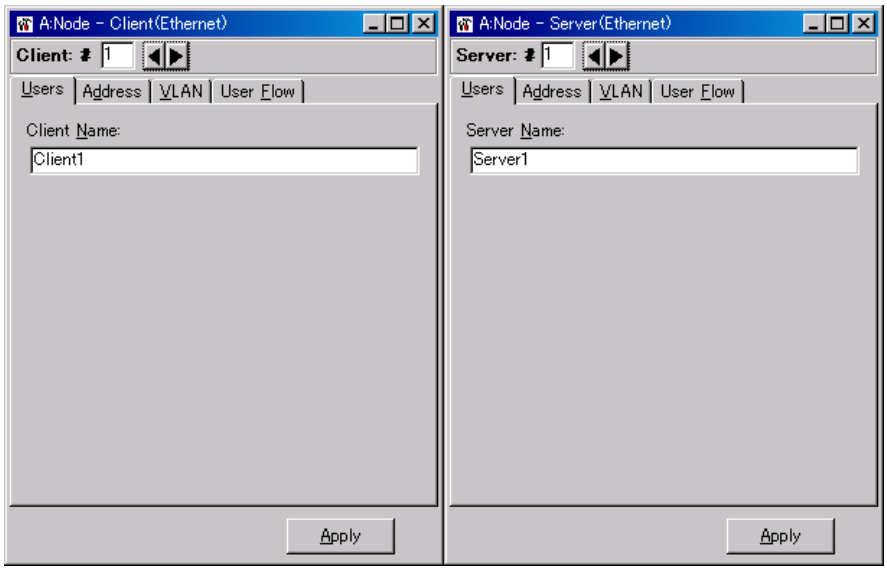


Fig. 2.3.3-4 Users tab of the Node window (Ethernet)

Table 2.3.3-2 Parameter setting on the Users tab of the Node window (Ethernet)

Setting Item and Parameter	Description
Client # or **Server #** • 1 to 16	Select the client or server to set with a number. Initial value: 1
Client Name or Server Name • 0 to 255 characters	Specify the name of the client or server with up to 255 characters

(2) Address

Set the MAC address/IP address of the client and server.

■ Ports for when client uses PPPoE protocol

Set the MAC address of the PPPoE client.

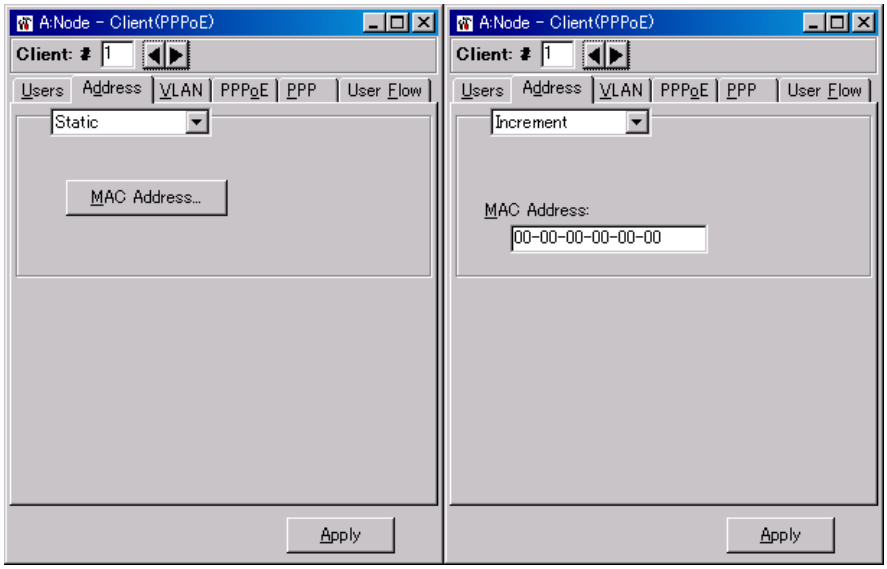


Fig. 2.3.3-5 Address tab of the Node window (PPPoE client)

Table 2.3.3-3 Parameter setting on the Address tab of the Node window (PPPoE client)

Setting Item and Parameter	Description
• Static • Increment	Select the MAC address setting method. Initial value: Static
[MAC Address...]	This is displayed when the setting method is "Static". Set the MAC address. This dialog can control 1000 items.
MAC Address	This is displayed when the setting method is "Increment". Set the start MAC address. Initial value: 00-00-00-00-00-00

■ Ports for when server uses PPPoE protocol

Set the IP address and MAC address of the PPPoE server.

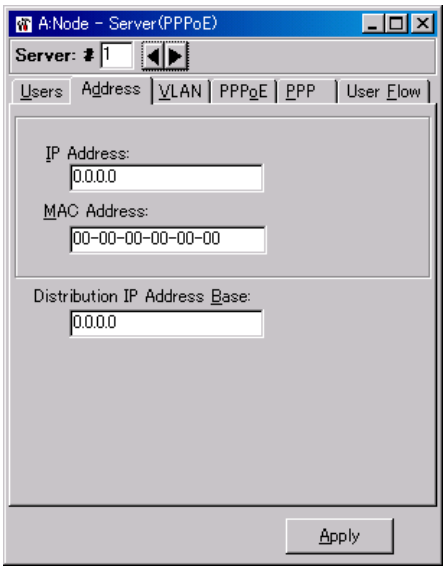


Fig. 2.3.3-6 Address tab of the Node window (PPPoE server)

Table 2.3.3-4 Parameter setting on the Address tab of the Node window (PPPoE server)

Setting Items and Parameters	Description
IP Address	Set the IP address of the PPPoE server. Initial value: 0.0.0.0
MAC Address	Set the MAC address of the PPPoE server. Initial value: 00-00-00-00-00-00
Distribution IP Address Base	Set the start address of the distribution IP address by PPPoE (IPCP). Initial value: 0.0.0.0

■ Ports for when client uses Ethernet protocol

Set the MAC address of the client.

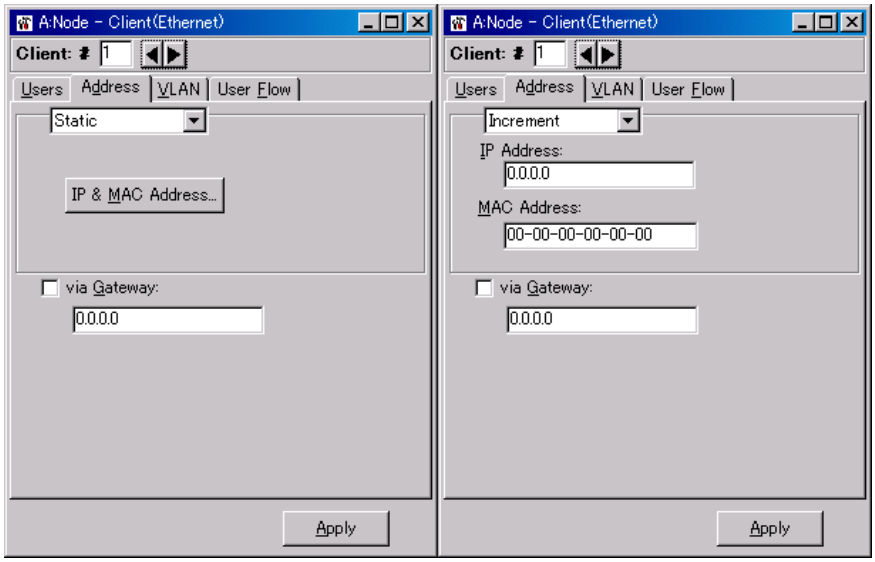


Fig. 2.3.3-7 Address tab of the Node window (Ethernet client)

Table 2.3.3-5 Parameter setting on the Address tab of the Node window (Ethernet client)

Setting Item and Parameter	Description
• Static • Increment	Select the IP/MAC address setting method. Initial value: Static
[IP & MAC Address...]	When the displayed IP/MAC Address setting method is "Static", a combination of the IP Address and MAC Address is set.This dialog can control 1000 items.
via Gateway	If the traffic goes through a gateway, select this checkbox and set the gateway address. Initial value: 0.0.0.0
IP Address	When the displayed IP/MAC Address setting method is "Increment", the start IP Address is set. Initial value: 0.0.0.0
MAC Address	When the displayed IP/MAC Address setting method is "Increment", the start MAC Address is set. Initial value: 00-00-00-00-00-00

■ Ports for when server uses Ethernet protocol

Set the IP address and MAC address of the server.

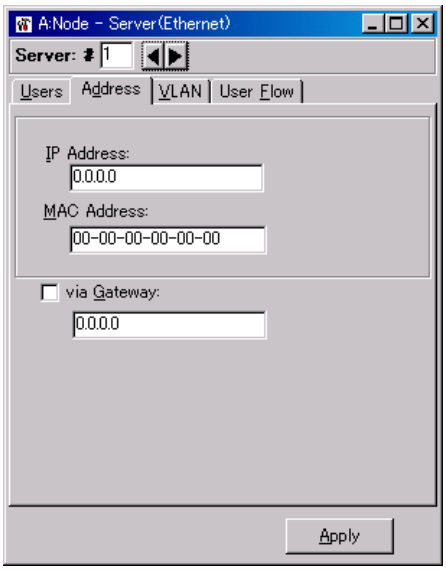


Fig. 2.3.3-8 Address tab of the Node window (Ethernet server)

Table 2.3.3-6 Parameter setting on the Address tab of the Node window (Ethernet server)

Setting Item and Parameter	Description
IP Address	Set the IP address of the Ethernet server. Initial value: 0.0.0.0
MAC Address	Set the MAC address of the Ethernet server. Initial value: 00-00-00-00-00-00
via Gateway	If the traffic goes through a gateway, select this checkbox and set the gateway address. Initial value: 0.0.0.0

(3) VLAN

The following tabs are used to set VLAN.

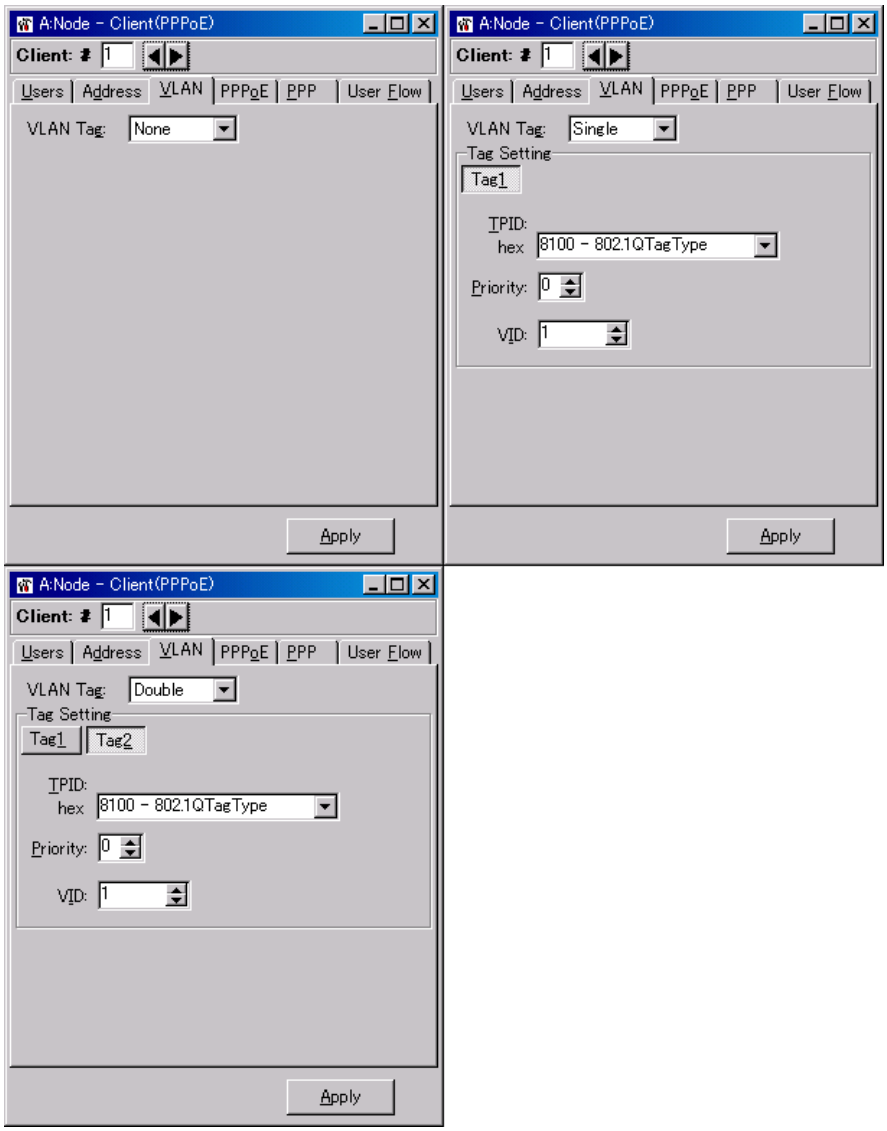


Fig. 2.3.3-9 VLAN tab of the Node window

Table 2.3.3-7 Parameter setting on the VLAN tab of the Node window

Setting Item and Parameter	Description
VLAN Tag • None • Single • Double	Select the VLAN tag level. None: VLAN tag is not set. Single: VLAN tag is set for one level. Double: VLAN tag is set for two levels. Initial value: None
• [Tag1] • [Tag2]	If VLAN tag is "Double", select the desired tag.
TPID hex	Specify the Tag Protocol ID with four hexadecimal digits. Initial value: 8100
Priority • 0 to 7	Set the VLAN User Priority. Initial value: 0
VID • 0 to 4095	Set the VLAN ID. Initial value: 1

(4) PPPoE

Set the parameters necessary to establish a session.

■ Client side parameter setting

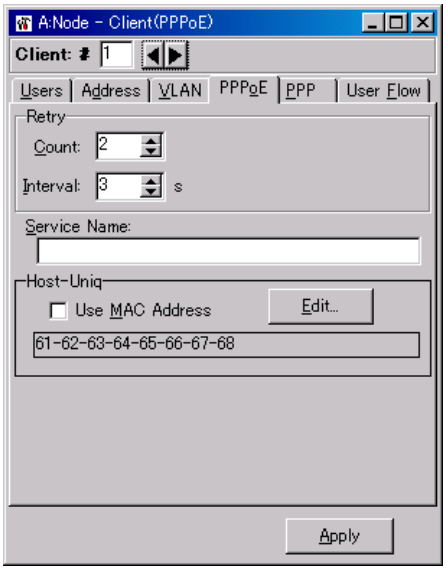


Fig. 2.3.3-10 PPPoE tab of the Node window (Client)

Table 2.3.3-8 Parameter setting on the PPPoE tab of the Node window (Client)

Setting Item and Parameter	Description
Retry Count • 0 to 10 times	Specify the number of retries when establishing a PPPoE session. Initial value: 2
Retry Interval • 1 to 30 s	Specify the interval of retries when establishing a PPPoE session. Initial value: 3 s
Service Name • 0 to 255 characters	Set the Service Name with up to 255 characters. Initial value: Blank
Host-Uniq • Use MAC Address	Select this checkbox to use MAC address as Host-Uniq name. Initial value: Checked
[Edit]	When "Use MAC Address" is not used, display the Host-Uniq dialog (Fig.2.3.3-12) and edit the code.

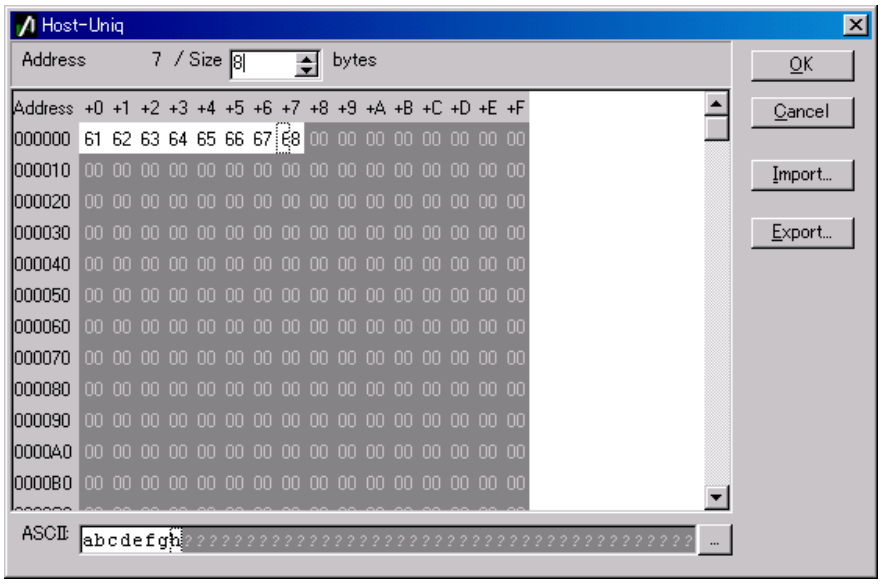


Fig. 2.3.2-11 Host-Uniq dialog

Notes:

1. The retry count and the retry interval is used to PPPoE discovery stage.

2. The Host Uniq value can be saved to/read from a file.

   For details, refer to section 2.4.3 "Saving and Loading Host-Uniq Information"

3. The content of Host-Uniq when actually sent is the set value with 4 bytes information appended at the end.
   [Added content]
   Upper 2 bytes: Port number.
   Lower 2 bytes: Client ID in the high-order 6 bits and Session number in the low-order 10 bits.

■ Server side parameter setting

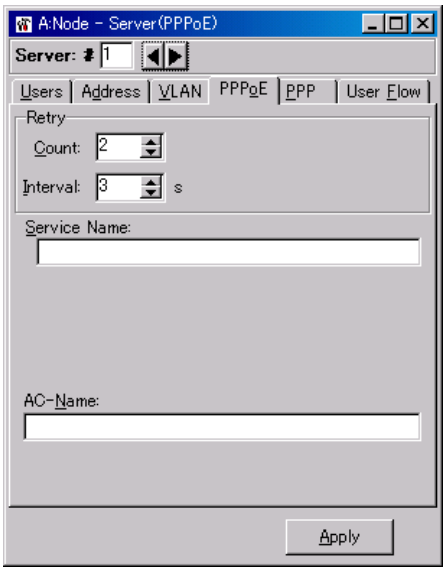


Fig. 2.3.3-12 PPPoE tab of the Node window (Server)

Table 2.3.3-9 Parameter setting on the PPPoE tab of the Node window (Server)

Setting Item and Parameter	Description
Retry Count • 0 to 10 times	Specify the number of retries when establishing a PPPoE session. Initial value: 2
Retry Interval • 1 to 30 s	Specify the interval of retries when establishing a PPPoE session. Initial value: 3 s
Service Name • 0 to 255 characters	Set the Service Name with up to 255 characters. Initial value: Blank
AC-Name • 0 to 255 characters	Set the AC-Name with up to 255 characters. Initial value: Blank

(5) PPP

Set the PPP and LCP parameters.

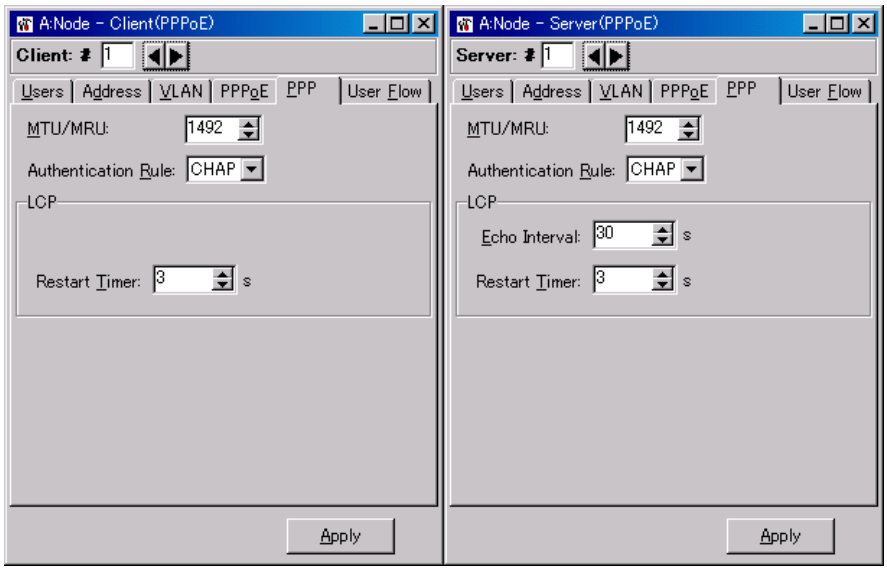


Fig. 2.3.3-13 PPP tab of the Node window

Table 2.3.3-10 Parameter setting of the PPP tab of the Node window

Setting Item and Parameter	Description
MTU/MRU Value • 64 to 1492 bytes	Set the MTU (Max Transfer Unit) and MRU(Max Receive Unit). Initial value: 1492 bytes
Authentication Rule • None • PAP • CHAP • Both	Select the authentication Rule. Initial value: CHAP
LCP Echo Interval • 0 to 300 s	Set the LCP Echo transmission interval. Set "0" to send no LCP Echo(Server only). Initial value: 30 s
LCP Restart Timer • 1 to 30 s	Set the interval until request is resent when the packet is not received upon the sent request. Initial value: 3 s

☞ For details on user ID and password used for PPP authentication, refer to section 2.3.3 (1) "Users"

Note:

After PPPoE session is established, LCP Echo packets are sent according to the “LCP Echo Interval” setting. In addition, LCP ACK is returned upon receiving LCP Echo and the session is continued. The decision to disconnect the session depends solely on the “Retry Count” setting.

☞ For details on setting Retry Count, refer to Section 2.3.3(4) "PPPoE"

(6) User Flow

Set the content (format) of the user flow to be sent.

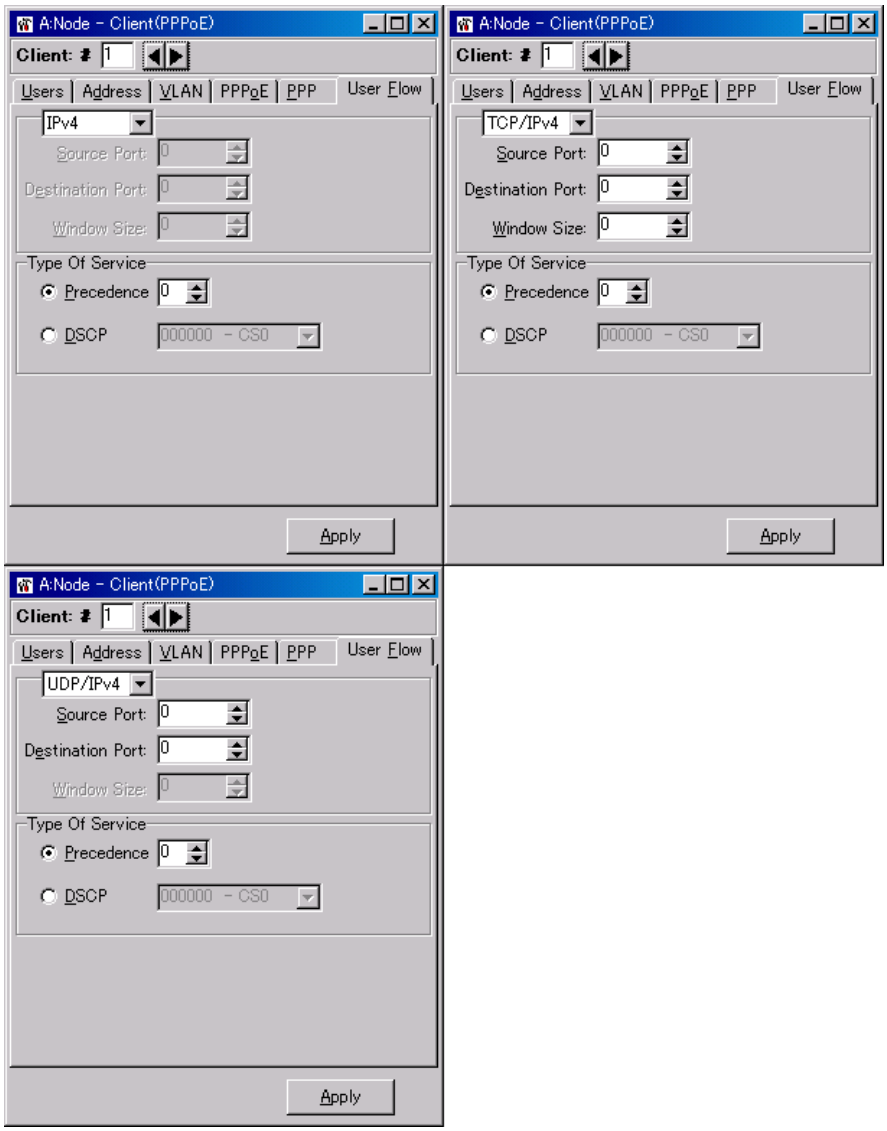


Fig. 2.3.3-14 User Flow tab of the Node window

Table 2.3.3-11 Parameter setting on the User Flow tab of the Node window

Setting Item and Parameter	Description
Data Type • IPv4 • TCP/IPv4 • UDP/IPv4	Set the data type of the user flow to be sent. IPv4: Add IPv4 header only. TCP/IPv4:Add IPv4 and TCP header. UDP/IPv4:Add IPv4 and UDP header. Initial value: IPv4
Source Port • 0 to 65535	Set the TCP/UDP source port number of the user flow to be sent. This is valid when TCP/IPv4 or UDP/IPv4 is selected. Initial value: 0
Destination Port • 0 to 65535	Set the TCP/UDP destination port number of the user flow to be sent. This is valid when TCP/IPv4 or UDP/IPv4 is selected. Initial value: 0
Window Size • 0 to 65535	Set the TCP Window value of the user flow to be sent. This is valid when TCP/IPv4 is selected. Initial value: 0
Precedence • 0 to 7	Set the precedence value of the user flow to be sent. Set the IP header and TOS (Type of Service) fields. Initial value: 0
DSCP • 000000 to 111111	Set the DSCP value. Set the IP header and TOS (Type of Service) fields. Initial value: 000000

☞ For details on the packet format of the sent user flow (traffic), refer to Appendix B "Stream Format"

2.4 Saving and Loading Settings

All values of the set node or session values can be written to a file. These values can also be loaded and set from a file.

2.4.1 Saving and Loading All Settings

Save or load all setting parameters.

Note:

Do not modify the saved file on your PC. You will not be able to load it back to the main unit.

(1) Saving All Settings

Save the setting parameters as follows:

1. Select [File] - [Save Settings...] at the Main menu.
   The Save Setting Data dialog appears.
2. Specify a file name and click [Save].

(2) Loading All Settings

Load the setting parameters as follows:

1. Select [File]–[Load Settings...] at the Main menu to display the Load Setting Data dialog.
2. Select the file and press the [Open] button.
   When reading is completed normally, the setting values are overwritten in accordance with the contents of the read file.

2.4.2 Saving and Loading Session Information

Save or load session information in CSV format.
The following information is loaded:

- MAC address
- IP address
- User ID (for authentication)
- Password (for authentication)

The save file can be edited on your PC.

(1) Saving Session information

Save the session information as follows:

1. Display the User ID & Passwords & MAC Address dialog or User ID & Passwords dialog.
2. Select [File] - [Export...] at the Main menu.
   The Export session information dialog appears.
3. Enter a file name and click [Save].

(2) Loading Session information

Load session information as follows:

1. Display the User ID & Passwords & MAC Address dialog or User ID & Passwords dialog.
2. Select [File] - [Import...] at the Main menu.
   The Import session information dialog appears.
3. Select the file and press the [Open] button.
   When reading is completed normally, the session data value is overwritten in accordance with the contents of the read file.

☞ For details on User ID & Passwords & MAC Address dialog or User ID & Passwords dialog, refer to Section 2.3.3 (1) "Users"

2.4.3 Saving and Loading Host-Uniq Information

Save or load Host-Uniq values in text format.

(1) Saving Host-Uniq information

Save the Host-Uniq information as follows:

1. Display the Host-Uniq dialog.
2. When the [Export...] button is pressed, the Export Binary Data dialog is displayed
3. Enter a file name and click [Save].

(2) Loading Host-Uniq information

Load Host-Uniq information as follows:

1. Display the Host-Uniq dialog.
2. When the [Import...] button is pressed, the Import Binary Data dialog is displayed.
3. Select the file and press the [Open] button.
   When reading is completed normally, the Host Uniq data value is overwritten in accordance with the contents of the read file.

☞ For details on Host-Uniq dialog, refer to section 2.3.3 (4) "PPPoE"

Section 3 Measurement

This section describes how to perform measurement with this option.

3.1 Measurement

There are two types of measurements:

- Auto measurement
- Manual measurement

3.1.1 Auto measurement

Auto measurement is started by clicking [Start] on the Control Bar and measurement is performed automatically.

The Auto measurement sequence is as follows:

(1) Select Port Pair (Click [Use] checkbox).

↓

↓

(2) Establish PPPoE session of all clients for which connection is set

↓

(3) Start user flow transmission for the established session

↓

(4) End user flow transmission

↓

(5) Disconnect all established PPPoE sessions

↓

(6) End measurement

☞ For details on connection setup, refer to Section 2.3.2 "Sessions"

Auto measurement is performed as follows:

- User flow is not sent when PPPoE session cannot be established.
- If user flow transmission time is different between port pair A and port pair B, or UpLink and DownLink direction, ends measurement when the one that takes longer ends.
- Steps (2) to (5) are repeated when "Repeat" is specified for Auto measurement.
- When user flow is set to "Continue", user flow transmission continues until it is manually stopped.


For details on setting user flow transmission time and count refer to Section 2.3.1 (3) "User Flow"

3.1.2 Manual Measurement

Manual measurement is started by clicking [Start] on the Control Bar and then manually starting user flow transmission.

The Manual measurement sequence is as follows:

(1) Select Port Pair (Click [Use] checkbox).

↓

↓

(2) Establish PPPoE session of all clients for which connection is set

↓

(3)  (User flow start button on the Control Bar)

↓

(4) Start user flow transmission to the specified client/server.

↓

(5) End user flow transmission

↓

↓

(6) Disconnect all sessions

↓

(7) End measurement

☞ For details on screen operation, refer to Section 3.2 "Control Bar"

3.2 Control Bar

The Control Bar is used for traffic measurement.

During Auto measurement

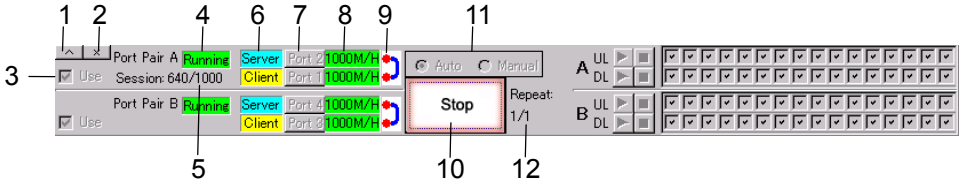


Fig. 3.2-1 Control Bar (Auto measurement)

Table 3.2-1 Components of Control Bar (Auto measurement)

Components of Control Bar		Description
1	Move up/down button	Moves the Control Bar to the top/bottom of the screen (above the Status Bar).
2	Close button	Hides the Control Bar. Select [View] - [Control Bar] checkbox to redisplay at Main menu.
3	Use checkbox	Used to select the port pair to use. Initial value: checked
4	Status indication	Indicates port status (Ready / Starting / Running / Stopping).
5	Session count indication	Indicates the number of established/set PPPoE sessions. (When protocol type of client is PPPoE)
6	Server/Client indication	Indicates server or client.
7	Port button	Displays the Physical window of each port. (Refer to Section 2.2.1 “Physical”)
8	Connection speed indication	Indicates the connection speed and communication method.
9	Connection status indicator	Shows the port pair connection.
10	Start/Stop button	Starts measurement. This changes to [Stop] button during measurement.
11	Auto and Manual radio buttons	Used to switch between Auto/Manual measurement by selecting the Auto or Manual radio button. Initial value: Auto
12	Repeat	Sets the measurement repeat count during Auto measurement. This is disabled during Manual measurement. Initial value: 1

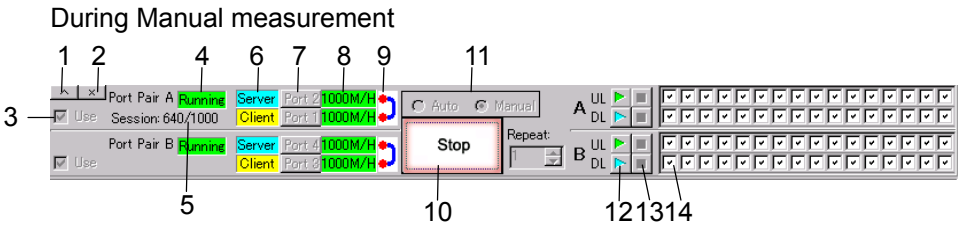


Fig. 3.2-2 Control Bar (Manual measurement)

Table 3.2-2 Components of Control Bar (Manual measurement)

Components of Control Bar		Description
1	Move up/down button	Moves the Control Bar to the top/bottm of the screen (below the Menu Bar).
2	Close button	Hides the Control Bar. Select [View] - [Control Bar] checkbox to redisplay at Main menu.
3	Use check	Selects the port pair to use. Initial value: Checked
4	Status indication	Indicates port status. (Ready / Starting / Running / Stopping)
5	Session count indication	Indicates the number of established/set PPPoE sessions. (When protocol type of client is PPPoE)
6	Server/Client indication	Indicates server or client.
7	Port button	Displays the Physical window of each port. (Refer to Section 2.2.1 “Physical”)
8	Connection speed indication	Indicates the connection speed and communication method.
9	Connection status indicator	Shows the port pair connection.
10	Start/Stop button	Starts measurement. This changes to [Stop] button during measurement.
11	Auto and Manual radio buttons	Used to switch between Auto/Manual measurement by selecting the Auto or Manual radio button. Initial value: Auto
12	Start user flow button	Starts user flow transmission during manual measurement.
13	Stop user flow button	Stops user flow transmission during manual measurement.
14	User flow selection checkbox	Selects client or server user flow transmission during manual measurement. No user flow is sent if not selected. Initial value: checked

3.3 Starting Measurement

3.3.1 Starting Auto Measurement

Auto measurement is performed as follows:

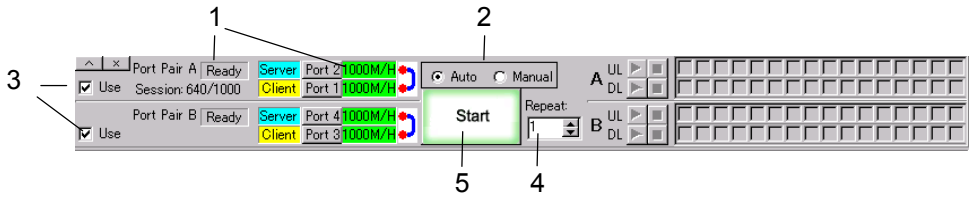


Fig. 3.3.1-1 Auto measurement start procedure

1. Check that status is “Ready” and server and client are connected.

   For details on server and client Connection refer to Section 2.3.2 (1) "Connection"
2. Click the “Auto” radio button.
3. Select the [Use] checkbox of the port pair to measure.
4. Set the “Repeat” count as necessary.
5. Click the [Start] button.
   Measurement starts.
   When measurement ends, the screen returns to the state before starting measurement.

Notes:

1. During measurement, the [Start] button changes to [Stop] button. Click the [Stop] button to stop measurement.

2. When user flow is set to “Continuous”, measurement does not stop automatically. Click the [Stop] button to manually stop measurement.

   For details on user flow settings refer to Section 2.3.1 (3) "User Flow"

3.3.2 Starting Manual Measurement

Manual measurement is performed as follows:

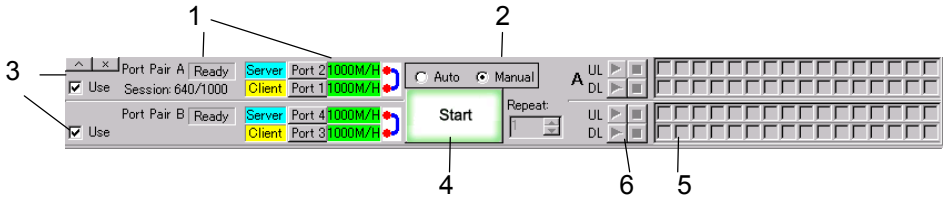


Fig. 3.3.2-1 Manual measurement start procedure

1. Check that status is “Ready” and server and client are connected.

   ☞ For details on server and client Connection refer to Section 2.3.2 (1) "Connection"
2. Click the “Manual” radio button.
3. Select the [Use] checkbox of the port pair to measure.
4. Click the [Start] button. (This changes to [Stop] button during measurement.)
5. Select the client and server to send the user flow.
6. Click the user flow start button to send.
   (User flow transmission starts.)
7. Repeat steps 5 to 6 as necessary to send the user flow.
8. Click the [Stop] button to end measurement.
   PPPoE session is disconnected and the screen returns to the state before starting measurement.

Notes:

1. During measurement, the [Start] button changes to [Stop] button.

2. Click the user flow stop button to stop user flow transmission.

3.4 Ping

This screen is displayed by selecting [Tool] - [Ping] from the Main menu.
Ping can be sent when protocol type is ethernet.

Ping is performed as follows:

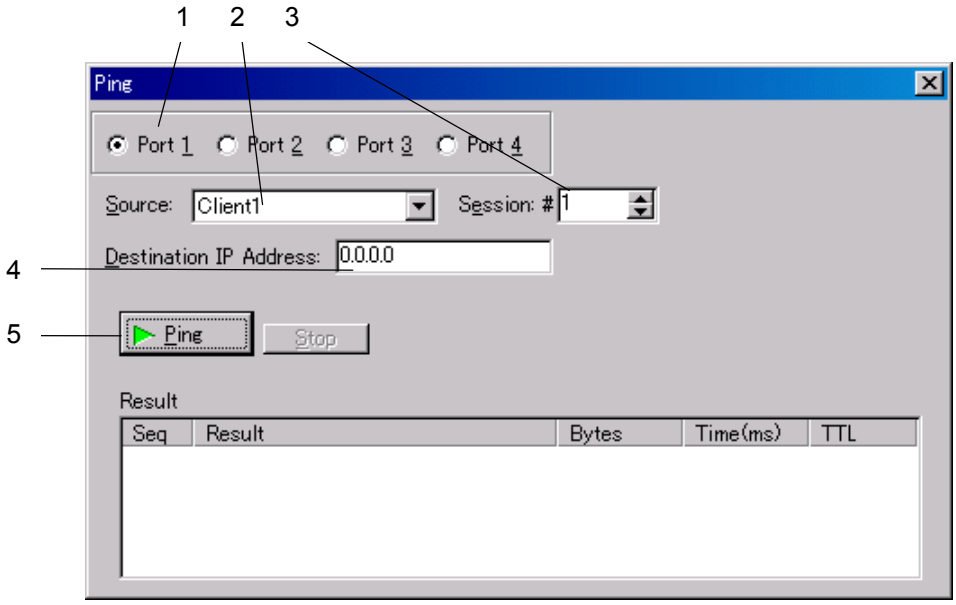


Fig. 3.4-1 Ping dialog

1. Select the transmission port.
2. Select the client or server to send.
3. Select session when client is selected in step 2.
4. Specify the destination IP address.
5. Click [Ping] button.
   Ping is performed and the result is displayed .

Section 4 Monitor & Results

This section describes the display of measurement result in real-time (Monitors) and after measurement (Results).

4.1 Monitor

When measurement starts, the measured results are displayed in real-time.
Measured results are displayed as values in a table or on a chart.

4.1.1 PPPoE Session Status

The PPPoE connection status is displayed in real-time for each client and displayed for all client.

(1) Table

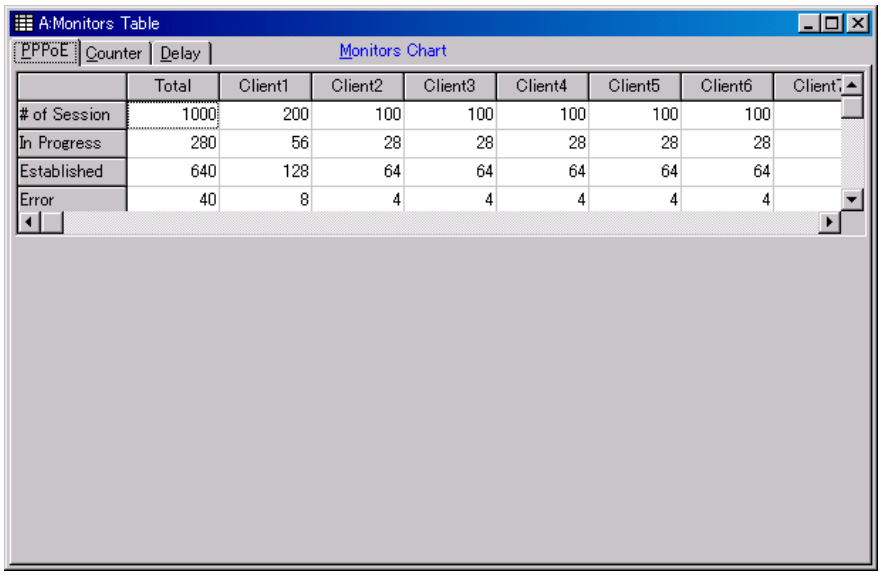


Fig. 4.1.1-1 PPPoE Tab of the Monitors Table window

Table 4.1.1-1 Items on the PPPoE Tab of the Monitors Table window

Item	Description
# of Session	Set number of sessions for each client
In Progress	Number of sessions being established
Established	Number of sessions successfully established
Error	Number of failed or disconnected sessions

Note:

{PPPoE} tab is not displayed, when the protocol type of client is Ethernet.

(2) Chart

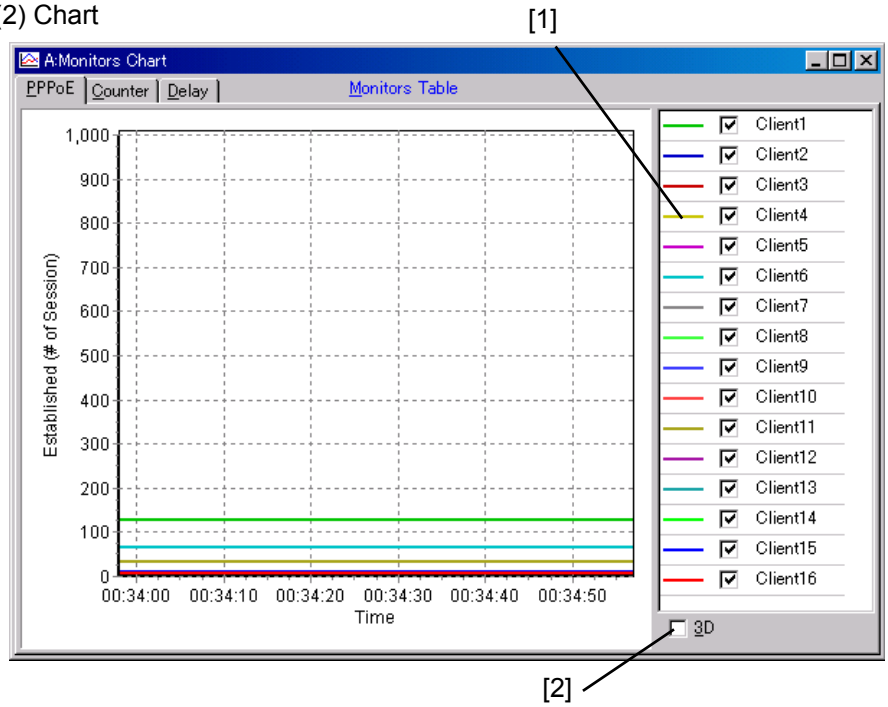


Fig. 4.1.1-2 PPPoE tab of the Chart window

[1] This part shows a list of clients that can be displayed on the graph. The number of sessions established for the client corresponding to checkbox selected is displayed on the graph in chronological order.

[2] Selecting “3D” checkbox displays a 3D graph.

Note:

{PPPoE} tab is not displayed, when the protocol type of client is Ethernet.

4.1.2 Traffic Counter

The number of user flow frames and rate are displayed for each client.

(1) Table

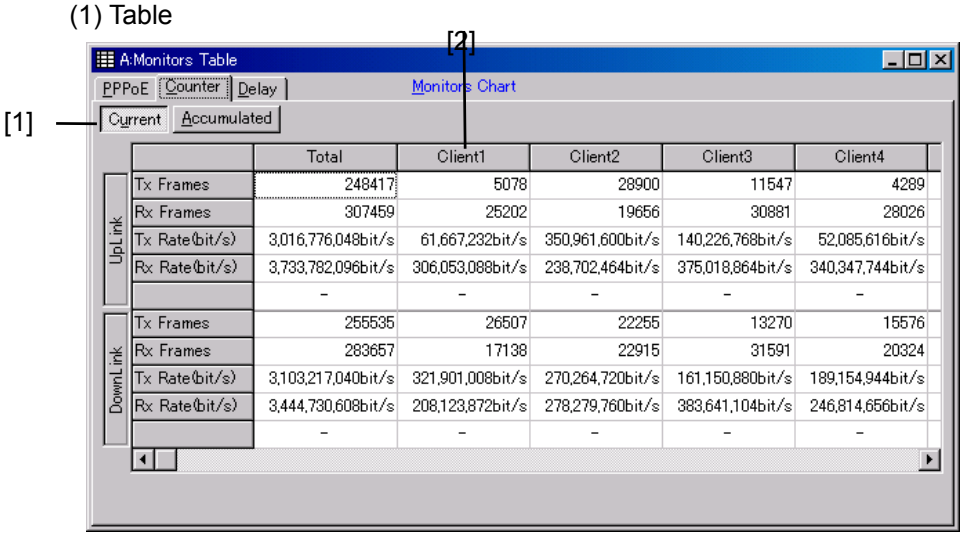


Fig. 4.1.2-1 Counter tab of the Monitors Table window

Table 4.1.2-1 Items on the Counter tab of the Monitors Table window

Items	Description
Tx Frames	Transmitted frames
Rx Frames	Received frames
Tx Rate	Transmission rate (bit per second) (This item is displayed, when [Current] is selected.)
Rx Rate	Receive rate (bit per second) (This item is displayed, when [Current] is selected.)
Frame Loss	Number of lost frames (This item is displayed when [Accumulated] is selected and is enabled after measurement is completed.)

[1] Click [Current] to display the current value: click [Accumulated] to display the accumulated value. This screen displays the data for both UpLink and DownLink direction.

[2] Click the table to display the Detail dialog to view the detail values of the session selected in the Session Counter Setting dialog.

☞ For details on Session Counter Setting dialog, refer to Section 2.3.2 (2) "Session Counter Setting"

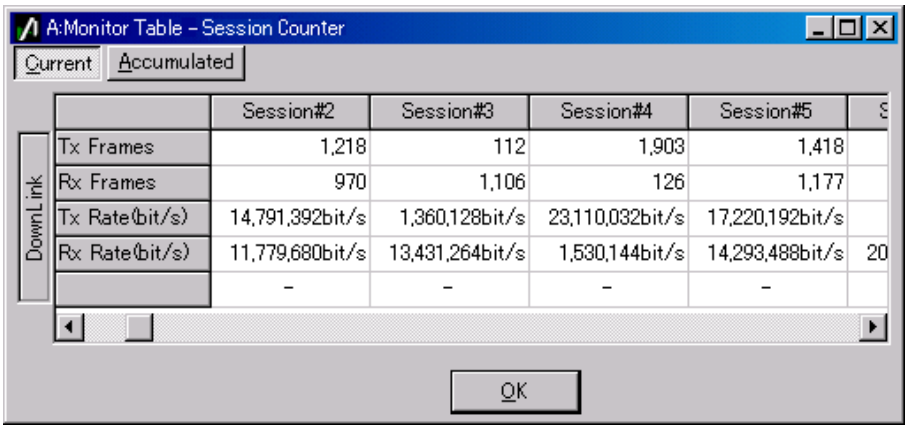


Fig. 4.1.2-2 Detail dialog

Table 4.1.2-2 Components of Detail dialog

Items	Description
Tx Frames	Transmitted frames
Rx Frames	Received frames
Tx Rate(bit/s)	Transmission rate (bit per second) (This item is displayed, when [Current] is selected.)
Rx Rate(bit/s)	Receive rate (bit per second) (This item is displayed, when [Current] is selected.)
Frame Loss	Number of lost frames (This item is displayed when [Accumulated] is selected and is enabled after measurement is completed.)

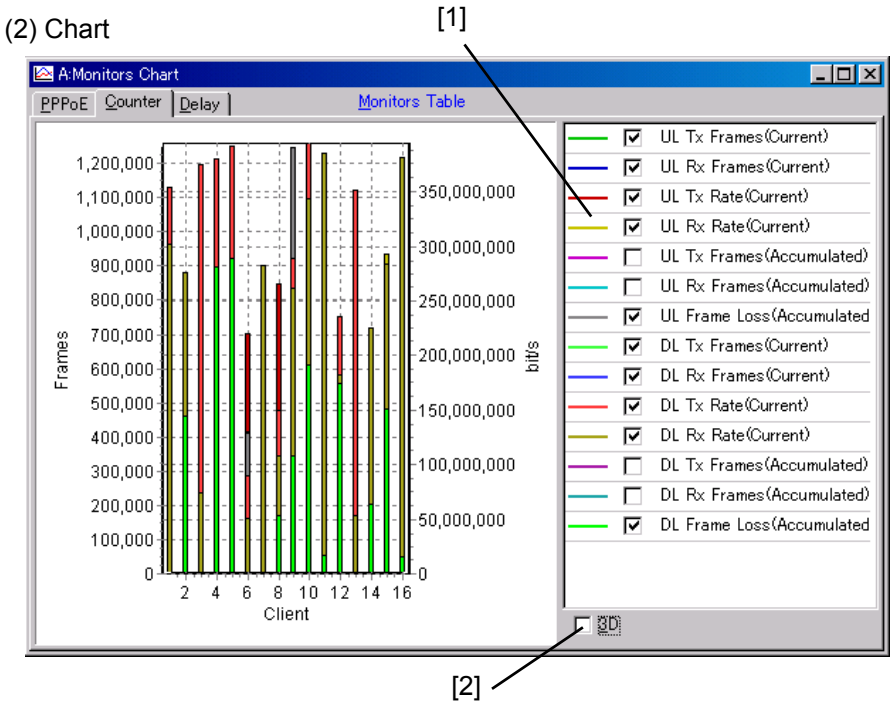


Fig. 4.1.2-3 Counter tab of the Chart window

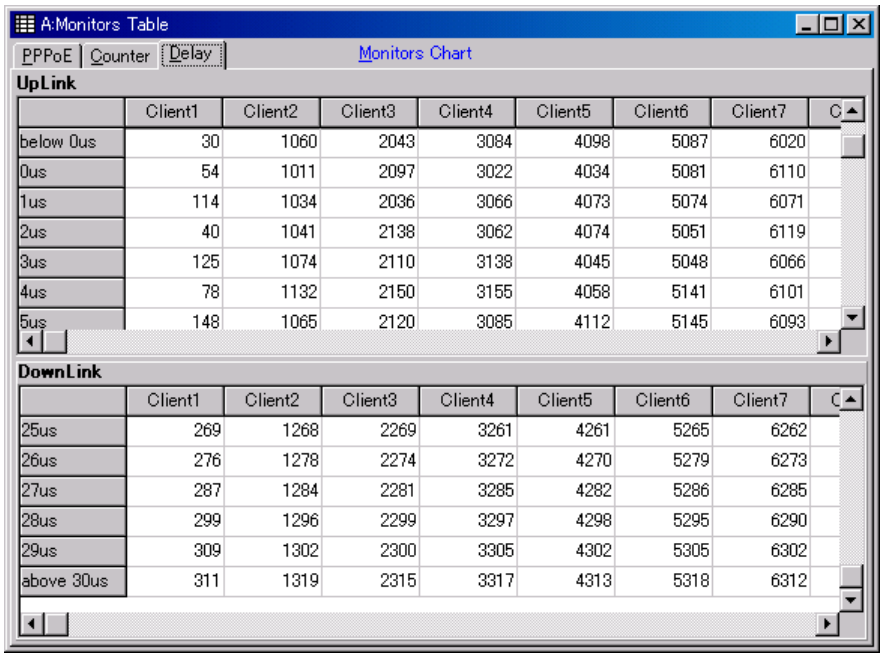
[1] This part shows the measurement items that can be displayed on the graph.
When a measurement item checkbox is selected, the corresponding measured value is displayed on the graph.

[2] Selecting “3D” checkbox displays a 3D graph.

4.1.3 Delay

The UpLink and DownLink delay distribution is displayed for each client.

(1) Table



	Client1	Client2	Client3	Client4	Client5	Client6	Client7
below 0us	30	1060	2043	3084	4098	5087	6020
0us	54	1011	2097	3022	4034	5081	6110
1us	114	1034	2036	3066	4073	5074	6071
2us	40	1041	2138	3062	4074	5051	6119
3us	125	1074	2110	3138	4045	5048	6066
4us	78	1132	2150	3155	4058	5141	6101
5us	148	1065	2120	3085	4112	5145	6093

	Client1	Client2	Client3	Client4	Client5	Client6	Client7
25us	269	1268	2269	3261	4261	5265	6262
26us	276	1278	2274	3272	4270	5279	6273
27us	287	1284	2281	3285	4282	5286	6285
28us	299	1296	2299	3297	4298	5295	6290
29us	309	1302	2300	3305	4302	5305	6302
above 30us	311	1319	2315	3317	4313	5318	6312

Fig. 4.1.3-1 Delay tab of the Monitors Table window

Table 4.1.3-1 Display items on the Delay Tab of the Monitors Table window

Item	Description
Min	Minimum delay
Max	Maximum delay
below ~	Distribution before start point
above ~	Distribution above variation

For details on Delay settings, refer to Section 2.3.1 (1) "Delay"

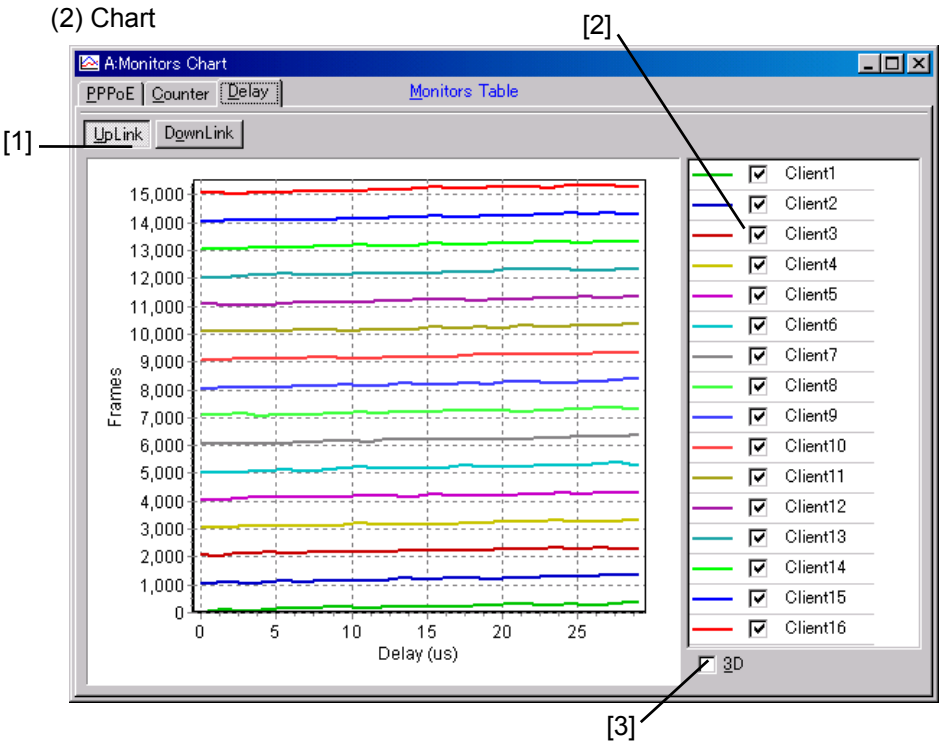


Fig. 4.1.3-2 Delay tab of the Chart window

[1] Select the measurement direction (UpLink or DownLink) to display .

[2] This part shows a list of clients that can be displayed on the graph. When a client checkbox is selected, the corresponding client's delay distribution is displayed on the graph.

[3] Selecting the “3D” checkbox displays a 3D graph.

4.1.4 PPPoE Detail

PPPoE stages and errors are displayed for every PPPoE session. When click each element, client number, session number, IP address, session ID and status are displayed.

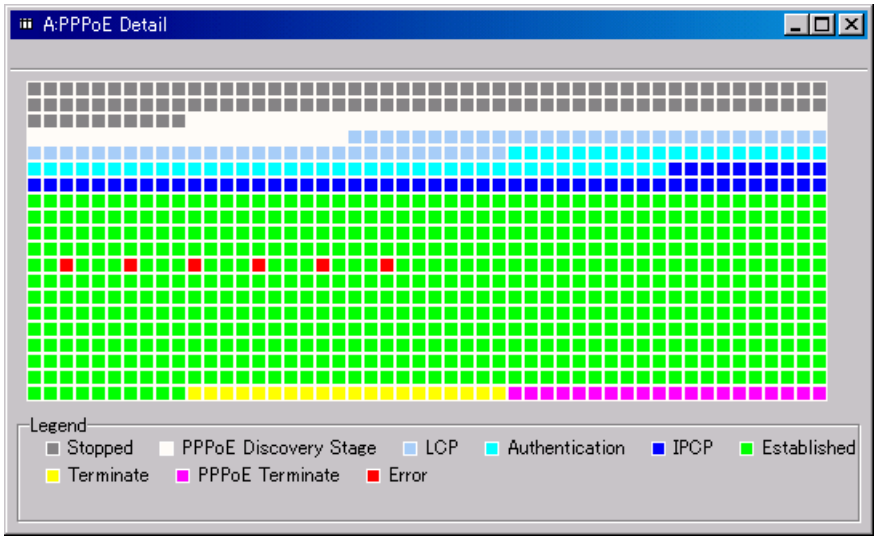


Fig. 4.1.4-1 PPPoE Detail window

Note:

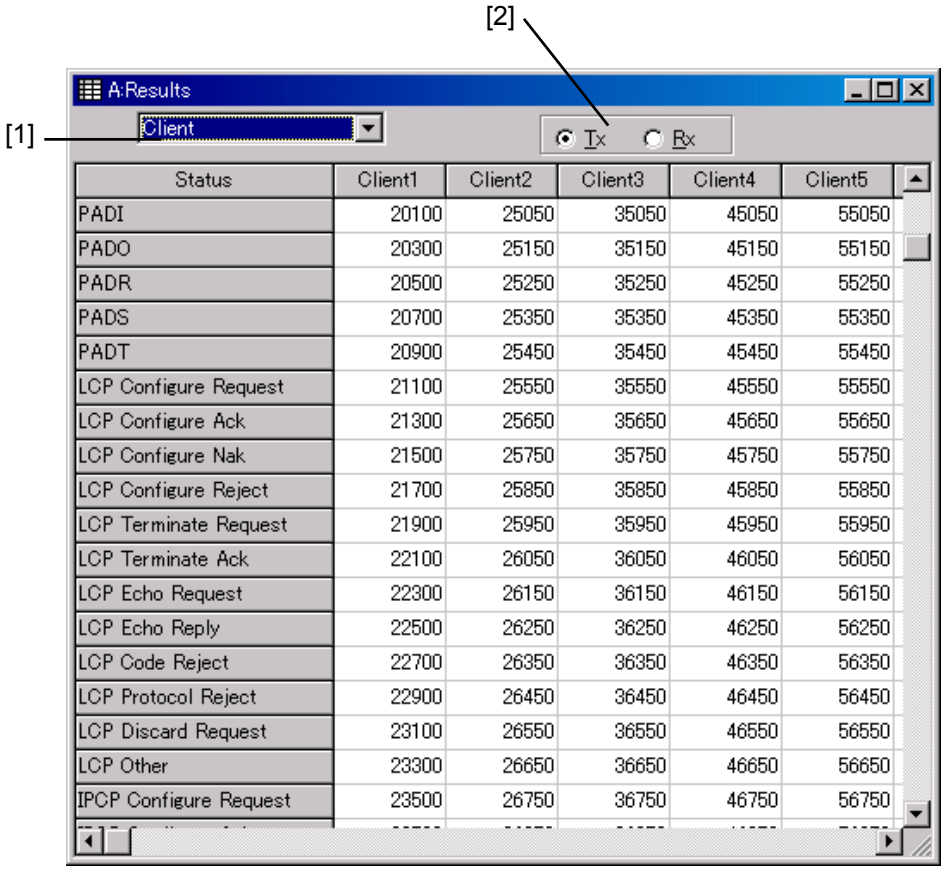
When the protocol type of client is Ethernet, this dialog is not displayed.

4.2 Results

When measurement is completed, the measurement results are displayed on the screen.

4.2.1 PPPoE Protocol Counter

When measurement completes, the PPPoE protocol packet count is displayed.



Status	Client1	Client2	Client3	Client4	Client5
PADI	20100	25050	35050	45050	55050
PADO	20300	25150	35150	45150	55150
PADR	20500	25250	35250	45250	55250
PADS	20700	25350	35350	45350	55350
PADT	20900	25450	35450	45450	55450
LCP Configure Request	21100	25550	35550	45550	55550
LCP Configure Ack	21300	25650	35650	45650	55650
LCP Configure Nak	21500	25750	35750	45750	55750
LCP Configure Reject	21700	25850	35850	45850	55850
LCP Terminate Request	21900	25950	35950	45950	55950
LCP Terminate Ack	22100	26050	36050	46050	56050
LCP Echo Request	22300	26150	36150	46150	56150
LCP Echo Reply	22500	26250	36250	46250	56250
LCP Code Reject	22700	26350	36350	46350	56350
LCP Protocol Reject	22900	26450	36450	46450	56450
LCP Discard Request	23100	26550	36550	46550	56550
LCP Other	23300	26650	36650	46650	56650
IPCP Configure Request	23500	26750	36750	46750	56750

Fig. 4.2.1-1 Results window

[1] Select the client or server to display.

[2] Select the data (Tx or Rx) to display.

Notes:

1. If protocol type is Ethernet, it is not able to select with [1].

2. When protocol type of the client and protocol type of the server are both Ethernet,the Results window is not displayed.

4.3 Saving Measurement Results

Save all measurement results for each port pair.
Save the contents displayed on the Monitor window and Results window.
Save the measurement result to a csv file as follows:

1. Select [File] - [Export Result] - [Port Pair A].
   or Select [File] - [Export Result] - [Port Pair B].
   The Export Measurement Results dialog appears.
2. Enter a file name and click [Save] button.

Appendix

A.1 Specifications

Table A.1-1 Specifications

Item		Specification
1	**Model Name**	MD1230B-26 PPPoE
2	**PPPoE protocol emulation** PPPoE Client emulation PPPoE Server emulation Authentication support VLAN emulation Reference	 Max. 16 client group/port pair Max. 1000 session/port pair Max. 16 server/port pair Max. 1000 session/port pair This PPPoE server emulation can not connect with other real PPPoE client. PAP, CHAP Max. 2 VLAN tag can be configured. RFC2516 PPPoE RFC1661 PPP/LCP RFC1334 PAP RFC1994 CHAP RFC1332 IPCP IEEE802.1Q VLAN
3	**Traffic (user flow) generator**	 Transmit mode: Continuous/Seconds/Frames Total transmit rate and frame size can be set. TCP/UDP header: Source/Destination port and window size fields can be set. IPv4 header: TOS/COS value can be set.

Table A.1-1 Specifications (Cont'd)

Item		Specification
4	**Measurement functions**	
	Session monitor	PPPoE status: Stopped, PPPoE Discovery Stage, LCP, Authentication, IPCP, Established, Terminate, PPPoE Terminate, Error
	Traffic counter	Number of session: In progress, Established, Error Tx frames and bps Rx frames and bps Frame loss
	Delay variation measurement	Resolution: 100 ns to 100 ms Variation: resolution × 30 Range: 0 to 3 s
	Display format	Table or graph
	PPPoE packet counter	PPPoE: PADI/PADO/PADR/PADS/PADT LCP: Configure Request/Configure Ack/ Configure Nak/Configure Reject/ Terminate Request/Terminate Ack/ Echo Request/Echo Reply/ Code Reject/Protocol Reject/ Discard Request/Other IPCP: Configure Request/Configure Ack/ Configure Nak/Configure Reject/ Terminate Request/Terminate Ack/ Code Reject CHAP: Challenge/Response/Success/Failure PAP: Authenticate Request/ Authenticate Ack/Authenticate Nak/ Other Only can display result stop after measurement.

Table A.1-1 Specifications (Cont'd)

Item		Specification
5	**Operation Mode** Port pair operation Auto Mode Manual Mode	 Max. 2 port pair can be operated simultaneously. Start/stop to iterate connect/send traffic/disconnect Start to connect Start/stop to send traffic Stop to disconnect
6	**Other functions**	 Ping Save/load configurations Export results (CSV format)
7	**Restrictions** Available I/F module Number of module per unit Not available functions	 MU120121A: 4 port 10/100/1000M Ethernet MU120122A: 2 port SFP and 2 port 10/100/1000M Ethernet Only 1 module per unit (MD1230B) Remote command interface Multi user function

B.1 Stream Format

The format of data stream for traffic measurement is shown below.
The data pattern for measurement is set in payload.

Ethernet (12)	**VLAN Tag 1** (4)	**VLAN Tag 2** (4)	**Ether Type** (2)	**PPPoE Header** (6)	**PPP Header** (2)	**IP Header** (20)	**TCPHeader** (20) or **UDP Header** (8)	**Payload**	**Ethernet** (4)
Destination MAC Address	TPID	TPID	Type	Version	Product	Version	Source Port		FCS
Source MAC Address	Priority	Priority		Type		IP Header Length	Destination Port		
	CFI	CFI		Code		Type of Service	Sequence Number		
	VID	VID		SESSION ID		Total Length	Acknowledge ment Number		
				Length		Identification	Data offset		
						Flags	Control bit		
						Fragment Offset	Window		
						Time to Live	Checksum		
						Protocol	Urgent Pointer		
						Header Checksum	(UDP)		
						Source IP Address	Source Port		
						Destination IP Address	Destination Port		
							Length		
							Checksum		

White :	Fixed parameter.
Green :	Parameter different according to Client Group (max 16 unique).
Pink :	Variable parameter in each Client (max 1000 unique).
Yellow :	Auto calculated.

Fig. B.1-1 Client (PPPoE)

Ethernet (12)	**VLAN Tag 1** (4)	**VLAN Tag 2** (4)	**Ether Type** (2)	**IP Header** (20)	**TCP Header** (20) or **UDP Header** (8)	**Payload**	**Ethernet** (4)
Destination MAC Address	TPID	TPID	Type	Version	Source Port		FCS
Source MAC Address	Priority	Priority		IP Header Length	Destination Port		
	CFI	CFI		Type of Service	Sequence Number		
	VID	VID		Total Length	Acknowledgement Number		
				Identification	Data offset		
				Flags	Control bit		
White :	Fixed parameter.			Fragment Offset	Window		
Green :	Parameter different according to Client Group (max 16 unique).			Time to Live	Checksum		
Pink :	Variable parameter in each Client (max 1000 unique).			Protocol	Urgent Pointer		
Yellow :	Auto calculated.			Header Checksum	(UDP)		
				Source IP Address	Source Port		
				Destination IP Address	Destination Port		
					Length		
					Checksum		

Fig. B.1-2 Client (Ethernet)

Ethernet (12)	**VLAN Tag 1** (4)	**VLAN Tag 2** (4)	**Ether Type** (2)	**PPPoE Header** (6)	**PPP Header** (2)	**IP Header** (20)	**TCP Header** (20) or **UDP Header** (8)	**Payload**	**Ethernet** (4)
Destination MAC Address	TPID	TPID	Type	Version	Product	Version	Source Port		FCS
Source MAC Address	Priority	Priority		Type		IP Header Length	Destination Port		
	CFI	CFI		Code		Type of Service	Sequence Number		
	VID	VID		SESSION ID		Total Length	Acknowledgement Number		
				Length		Identification	Data offset		
						Flags	Control bit		
						Fragment Offset	Window		
						Time to Live	Checksum		
						Protocol	Urgent Pointer		
						Header Checksum	(UDP)		
						Source IP Address	Source Port		
						Destination IP Address	Destination Port		
							Length		
							Checksum		

White :	Fixed parameter
Light Blue :	Parameter different according to Server (max 16 unique).
Pink :	Variable parameter in each Client (max 1000 unique).
Yellow :	Auto calculated.

Fig. B.1-3 Server (PPPoE)

Ethernet (12)	**VLAN Tag 1** (4)	**VLAN Tag 2** (4)	**Ether Type** (2)	**IP Header** (20)	**TCP Header** (20) or **UDP Header** (8)	**Payload**	**Ethernet** (4)
Destination MAC Address	TPID	TPID	Type	Version	Source Port		FCS
Source MAC Address	Priority	Priority		IP Header Length	Destination Port		
	CFI	CFI		Type of Service	Sequence Number		
	VID	VID		Total Length	Acknowledgement Number		
				Identification	Data offset		
				Flags	Control bit		
				Fragment Offset	Window		
				Time to Live	Checksum		
				Protocol	Urgent Pointer		
				Header Checksum	(UDP)		
				Source IP Address	Source Port		
				Destination IP Address	Destination Port		
					Length		
					Checksum		

White :	Fixed parameter
Light Blue:	Parameter different according to Server (max 16 unique).
Pink :	Variable parameter in each Client (max 1000 unique).
Yellow :	Auto calculated.

Fig. B.1-4 Server (Ethernet)

C.1 Menu

The main menu of this Option is described below.

Table C.1-1 File menu

Menu Item		Description
Save Settings		Saves all settings.
Load Settings		Loads all settings and uses them as current settings.
Export Result	Port Pair A	Outputs the measurement Results to a CSV format file.
	Port Pair B	
Initialize All Settings		Restores All Settings to default.
Quit		Ends this Option.

Table C.1-2 Edit menu

Menu Item	Description
Copy	Copies the selected string to the clipboard.
Cut	Copies the selected string to the clipboard and deletes the original.
Paste	Pastes the string in the clipboard.
Copy Port Pair A to B	Copies the all settings of port pair A to port pair B, and uses them as current settings.
Copy Port Pair B to A	Copies the all settings of port pair B to port pair A, and uses them as current settings.

Table C.1-3 View menu

Menu Item		Description
Window Bar		Displays/hides the Window Bar.
Control Bar		Displays/hides the Control Bar.
Status Bar		Displays/hides the Status Bar.
Arrange Windows	Tile	Arranges windows as tiles.
	Cascade	Cascades windows.
	Maximize	Maximizes the window.
Close	All Settings	Closes the Setting window.
	Monitors and Results	Closes the measurement window.
	All Windows	Closes all windows.
Full Screen		Maximizes the main window. Or restores it to the original Size.
800*600		Displays the main window as 800 × 600 dots.

Table C.1-4 Window menu

Menu Item		Description
Ports	Physical	Turns Auto Negotiation On/Off and sets communication speed and method.
	Port Pair	Sets the port pair combination.
Port Pair A	General	Sets Delay, PAD Interval, and Send Packet.
	Sessions	Sets Session.
	Node Server	Sets parameters (for server).
	Node Client	Sets parameters (for client).
	Monitors Table	Displays the measurement results as table.
	Monitors Chart	Displays the measurement results as graph.
	PPPoE Detail	Displays the PPPoE Session status.
	Results	Displays the completed measurement data.
Port Pair B	Same as Port Pair A	

Table C.1-5 Control menu

Menu Item		Description
Start Test Sequence		Starts/stops measurement.
Start User Flow	Port Pair A UL	Starts port pair A UpLink direction user flow transmission at Manual measurement.
	Port Pair A DL	Starts Port pair A DownLink direction user flow transmission at Manual measurement.
	Port Pair B UL	Starts Port pair B UpLink direction user flow transmission at Manual measurement.
	Port Pair B DL	Starts Port pair B DownLink direction user flow transmission at Manual measurement.
Stop User Flow	Port Pair A UL	Stops Port pair A UpLink direction user flow transmission at Manual measurement.
	Port Pair A DL	Stops Port pair A DownLink direction user flow transmission at Manual measurement.
	Port Pair B UL	Stops Port pair B UpLink direction user flow transmission at Manual measurement.
	Port Pair B DL	Stops Port pair B DownLink direction user flow transmission at Manual measurement.

Table C.1-6 Tool menu

Menu Item	Description
Ping	Performs ping.

Table C.1-7 Help menu

Menu Item	Description
Index	Not used
About	Displays version information.