MU120021A
Protocol Unit
Operation Manual

Sixth Edition

Read this manual before using the equipment.
Keep this manual with the equipment.

ANRITSU CORPORATION

Document No.: M-W1371AE-6.0

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. Insure that you clearly understand the meanings of the symbols BEFORE using the equipment. Some or all of the following five symbols may not be used on all Anritsu equipment. In addition, there may be other labels attached to products which are not shown in the diagrams in this manual.

Symbols used in manual

DANGER This indicates a very dangerous procedure that could result in serious injury or death if not performed properly.

WARNING This indicates a hazardous procedure that could result in serious injury or death if not performed properly.

CAUTION This indicates a hazardous procedure or danger that could result in light-to-severe injury, or loss related to equipment malfunction, if proper precautions are not taken.

Safety Symbols Used on Equipment and in Manual

The following safety symbols are used inside or on the equipment near operation locations to provide information about safety items and operation precautions. Insure that you clearly understand the meanings of the symbols and take the necessary precautions BEFORE using the equipment.

This indicates a prohibited operation. The prohibited operation is indicated symbolically in or near the barred circle.

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

This indicates 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.

MU120021A
Protocol Unit
Operation Manual

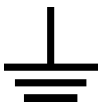
6 October 1997 (First Edition)
21 September 2004 (Sixth Edition)

For Safety

WARNING ⚠

1. ALWAYS refer to the operation manual when working near locations at which the alert mark shown on the left is attached. If the operation, etc., is performed without heeding the advice in the operation manual, there is a risk of personal injury. In addition, the equipment performance may be reduced.
   Moreover, this alert mark is sometimes used with other marks and descriptions indicating other dangers.

or



2. When supplying power to this equipment, connect the accessory 3-pin power cord to a grounded outlet. If a grounded outlet is not available, before supplying power to the equipment, use a conversion adapter and ground the green wire, or connect the frame ground on the rear panel of the equipment to ground. If power is supplied without grounding the equipment, there is a risk of receiving a severe or fatal electric shock.

Repair

WARNING ⚠

3. This equipment cannot be repaired by the user. DO NOT attempt to open the cabinet or to disassemble internal parts. Only Anritsu-trained service personnel or staff from your sales representative with a knowledge of electrical fire and shock hazards should service this equipment. There are high-voltage parts in this equipment presenting a risk of severe injury or fatal electric shock to untrained personnel. In addition, there is a risk of damage to precision parts.

For Safety

CAUTION ⚠

Check Terminal

1. Never input a signal of more than the indicated value between the measured terminal and ground. Input of an excessive signal may damage the equipment.

Equipment Certificate

Anritsu Corporation certifies that this equipment was tested before shipment using calibrated measuring instruments with direct traceability to public testing organizations recognized by national research laboratories including the National Institute of Advanced Industrial Science and Technology, and the National Institute of Information and Communications Technology, and was found to meet the published specifications.

Anritsu Warranty

Anritsu Corporation will repair this equipment free-of-charge if a malfunction occurs within 1 year after shipment due to a manufacturing fault, provided that this warranty is rendered void under any or all of the following conditions.

- The fault is outside the scope of the warranty conditions described in the operation manual.
- The fault is due to mishandling, misuse, or unauthorized modification or repair of the equipment by the customer.
- The fault is due to severe usage clearly exceeding normal usage.
- The fault is due to improper or insufficient maintenance by the customer.
- The fault is due to natural disaster including fire, flooding, earthquake, etc.
- The fault is due to use of non-specified peripheral equipment, peripheral parts, consumables, etc.
- The fault is due to use of a non-specified power supply or in a non-specified installation location.

In addition, this warranty is valid only for the original equipment purchaser. It is not transferable if the equipment is resold.

Anritsu Corporation will not accept liability for equipment faults due to unforeseen and unusual circumstances, nor for faults due to mishandling by the customer.

Anritsu Corporation Contact

If this equipment develops a fault, contact Anritsu Service and Sales offices at the address at the end of paper-edition manual or the separate file of CD-edition manual.

CE Conformity marking

Anritsu affixes the CE Conformity marking on the following product (s) in accordance with the Council Directive 93/68/EEC to indicate that they conform to the EMC and LVD directive of the European Union (EU).

CE marking

1. Product Model

Plug-in Units: MU120021A Protocol Unit

2. Applied Directive and Standards

When the MU120021A Protocol Unit is installed in the MP1220A, the applied directive and standards of this Unit are conformed to those of the MP1220A main frame.

PS: About main frame
The kind of main frame (a measuring apparatus) will be to increase.
Please, contact us about the newest information of the main frame.

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

Plug-in Units: MU120021A Protocol Unit

2. Applied Directive and Standards

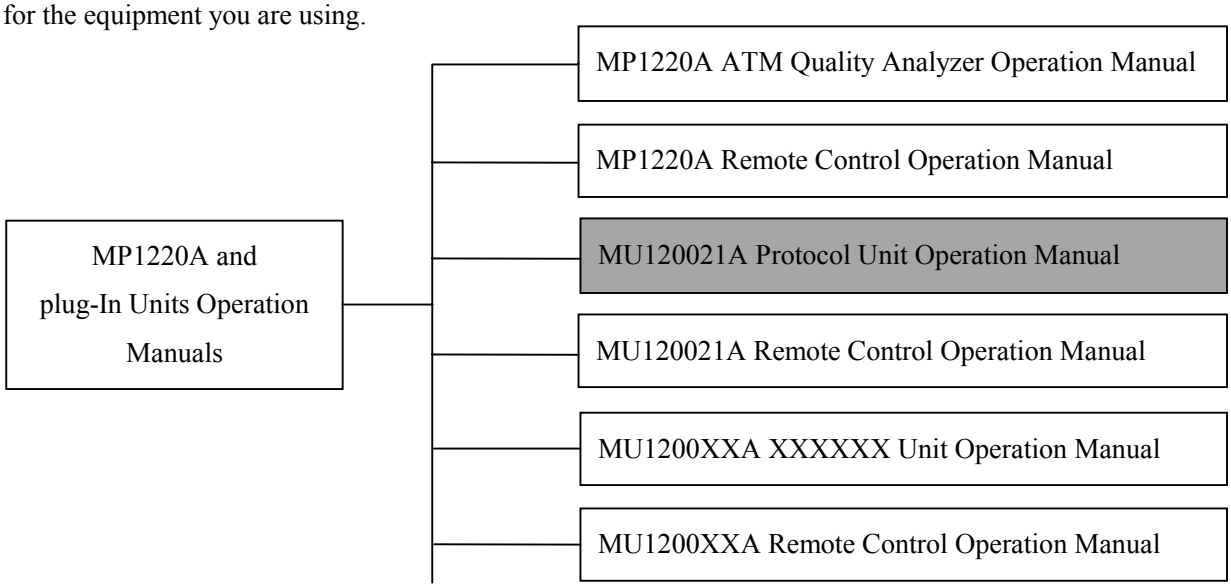
When the MU120021A Protocol Unit is installed in the MP1220A, the applied directive and standards of this Unit are conformed to those of the MP1220A main frame.

PS: About main frame
The kind of main frame (a measuring apparatus) will be to increase. Please, contact us about the newest information of the main frame.

PREFACE

Organization of This Manual

The MU120021A Protocol Unit is a plug-in device that can be inserted in the MP1220A ATM Quality Analyzer. There are Operation Manuals for the main unit and each of the other units. In addition, each of them comes with a Remote Control Operation Manual (the remote control software is an option). Consult the Operation Manuals for the equipment you are using.



- MP1220A ATM Quality Analyzer Operation Manual

Provides an overview of the MP1220A, explains the preparation before using it, and describes the unit's panel, specifications, performance, and operation.

- MP1220A ATM Quality Analyzer Remote Control Operation Manual

Describes control through the external interface and some program examples.

- Operation Manual for each unit

Provides an overview of the unit and describes the unit's panel, specifications, performance, and operation.

- Remote Control Operation Manual for each unit.

Describes control through the external interface and some program examples.

CONTENTS

Section 1 Overview

1.1 Product

The MU120021A Protocol Unit (hereafter referred to as the Unit) is a plug-in device that can be inserted in the MP1220A ATM Quality Analyzer (hereafter referred to as the Main Frame).

Features

- **Live monitor**

Monitors AAL types on all channels on ATM circuits and the number of errors by type on up to 1,023 channels.

- **Error measurement**

Measures the number and rate of a variety of errors on AAL1, AAL3/4, and AAL5.

- **Capture capability**

Captures up to 130,000 cells (8 MB) according to a variety of triggers (all cells or specified cells only), and then displays their content in detail.

1.2 Specifications

Table 1-1 shows the Unit's specifications.

Table 1-1 Specifications

No.	Item	Specifications
1	External interface	
1.1	Trigger Input	
	Connector	BNC
	Level	TTL
	Logic	Negative logic
	Impedance	75 Ω
2	Send/receive common	
2.1	function	
	Memory	
	Capacity	8 MB (131,072 cells)
	Usage	Any of the following may be selected: Use all 8 MB in sending unit Use all 8 MB in receiving unit Use 4 MB each for sending and receiving units

No.	Item	Specifications
3	Sending unit functions	
3.1	Cell generation	
	Time stamp setting	Setting of time where sending operation directive is taken as standard Time stamp : 0 to 9 days 23 hours 59 minutes 59.999999 seconds (time)
	Time stamp resolution	1us
	Time stamp usage/non-usage	One of the following may be selected: Use time stamp Do not use time stamp (only according to sending signal from subordinate unit)
	Generation mode	One of the following may be selected: Single Repeat Step
	Sending range	One of the following may be selected: Start data position End data position
	Synchronous sending from multiple units	One of the following may be selected: Stand-alone Master Slave
	Sending operation directive	Data send start and end directive

No.	Item	Specifications
3.2	Error addition function	
	Error type	One of the following may be selected: Bit error Cell loss OFF
	Error insertion cycle	Bit error insertion cycle can be set 1.0E-3 to 1.0E-6
	Error specification data number	Cells for which bit errors are continuously added when single generation and cyclic are selected 1 to 64
	Error insertion position	Bit error insertion position 1 to 53 bytes
	Cell loss Target ALL type	Operates as follows according to the following error types. Bit error insertion/deletion directive (includes error insertion directives when single generation is selected)

No.	Item	Specifications
4	Receiving unit functions	
4.1	Specific channel setting	Following settings are possible:
	1VPI/VCI setting	VPI: 0 to 255 dec (for UNI) and 0 to 4095 dec (for NNI) VCI: 0 to 65535 dec
	AAL type auto-classification	Automatically identifies AAL type for cells flowing on a specific channel
	AAL type auto-identification directive	Performs auto-identification when a specific channel has been determined and a directive issued Auto-identification start directive
	AAL type specification	AAL1 AAL3/4 AAL5 Cell
	MID value setting during AAL3/4	During AAL3/4, the following can be set: MID value: 0 to 1023 dec
4.2	Cell inclusion function	
	VPI/VCI filter selection	One of the following may be selected: All cells All cells except for idle cells A specific VPI/VCI (specific channel set by 4.1 Specific VPI/VCI setting function) VPI/VCI (max. 15) + specific VPI/VCI
	AAL filer setting	Can be used when a specific VPI/VCI or 15 VPI/VCI + specific VPI/VCI is selected for VPI/VCI filter On the specific VPI/VCI is targeted ALL type is the type set by specific VPI/VCI setting

No.	Item	Specifications
4.2	AAL1	The following settings are possible: Filter selections : One or more of the following may be selected. CSI value : 0 or 1 Payload value (47 byte any setting, mask possible)
	AAL3/4	The following settings are possible: MID value set by specific VPI/VCI setting is targeted Filter selections : One or more of the following may be selected. ST value : BOM, COM, EOM, SSM CPI value : 00 to FF hex Payload value (40 byte any setting, mask possible)
	AAL5	The following settings are possible: Filter selections : One of the following may be selected. Payload value (48 byte any setting, mask possible)
	Cell	The following settings are possible: Filter selections : One of the following may be selected. Payload value (48 byte any setting, mask possible)
	Trigger condition selection	Any of the following may be selected: Multiple event generation Second event after first Manual
	Event generation count	The following setting is possible when multiple event generation is selected: 1 to 16 times
	Manual trigger designation	Trigger designation when manual is selected

No.	Item	Specifications
4.2	Even selection	The following can be selected in combination (OR operation) Selection of the first event and second event can be done separately 1VPI/VCI (any VPI/VCI set by filter can be selected regardless of whether filter is active/inactive Specific VPI/VCI AAL1-SN error cell Specific VPI/VCI AAL1-SN incorrect Cell Specific VPI/VCI AAL3/4-ST error cell Specific VPI/VCI AAL3/4-LI error cell Specific VPI/VCI AAL3/4-SN error cell Specific VPI/VCI AAL3/4-CRC error cell Specific VPI/VCI AAL5-CRC error frame Specific VPI/VCI specified pattern value Trigger signal 1 from other unit Trigger signal 2 from other unit Signal from external connector
	Specified payload setting	AAL type is type set by specific VPI/VCI setting The following can be set: Pattern value: 0000 to FFFF hex Mask: every 4 bits Comparison position : AAL1 Bytes 1 to 41 AAL3/4 Bytes 1 to 65528 AAL5 Bytes 1 to 65528 Cell Bytes 1 to 41 Target setting: Set value or other
	Trigger position	One of the following may be set: Start (trigger position is at the start of included data) Middle (trigger position is in the middle of included data) End (trigger position is at the end of included data)
	Cell inclusion operation directive	Cell inclusion start and end directive

No.	Item	Specifications
4.2	Data display	Sets on of the following when display data: Display AAL type: AAL1, AAL3/4, AAL5, and Cell Display content: One or more of the following may be specified: Cell header Cell payload SAR header and trailer information SAR-PDU payload CPCS header and trailer information CPCS-PDU payload CPCS-PDU payload (first cell only) CPCS-PDU payload (last cell only) SSCOP Display VPI/VCI: The following may be selected: All VPI/VCI or one type Reassembly timer reference: Used/no Used (for AAL3/4 and AAL5) Reassembly timer value: 10 to 100 ms (10 ms steps) 100 ms to 1 s (100 ms steps) 1 s to 10 s (1 s steps)
	Display content	Displays following for all data: Trigger points Number of cells taken into memory Number of frames taken into memory Individual data is displayed by selecting display content Displays individual data arrival time (time stamp)
	Time stamp accuracy	100 ns

No.	Item	Specification
4.2	Retrieval	Has the following functions: Jump: selection of jump destination First data End data Specified data (data No. specification) Trigger data Data retrieval: selection of target VPI/VCI AAL1-CSI value AAL1-SNP normal/abnormal AAL1-payload value AAL3/4-ST value AAL3/4-ST normal/abnormal AAL3/4-MDI value AAL3/4-LI normal/abnormal AAL3/4-CRC normal/abnormal AAL3/4-payload value AAL3/4-CPI value AAL3/4-BEtag normal/abnormal frame AAL3/4-BASize value AAL3/4-AL value AAL3/4-Length normal/abnormal frame AAL5-CPCS-UU value AAL5-CPI value AAL5-Length normal/abnormal frame AAL5-CRC normal/abnormal frames AAL5-CPCS-CI value AAL5CPCS-LP value AAL5-payload value Cell-payload value

No.	Item	Specification
4.3	Trigger signal output to other unit	One of the following may be selected: Only may be select for AAL type set by specific channel setting Specific channel AAL1-SN error cell Specific channel AAL1-SN incorrect cell Specific channel AAL3/4-ST error cell Specific channel I AAL3/4-LI error cell Specific channel AAL3/4-SN error cell Specific channel AAL3/4-CRC error cell Specific channel AAL5-CRC error frame Capture trigger
4.4	Count Count target Reassembly timer setting Measurement item AAL3/4 selection AAL1	Specific VPI/VCI (VPI/VCI set by 4.1 Specific VPI/VCI setting function) The following may be set: Reassembly timer use/non-use (for AAL3/4, AAL5) Reassembly timer value: 10 to 100 ms (10 ms steps) 100 ms to 1 s (100 ms steps) 1 s to 10 s (1 s steps) AAL type is type set by specific VPI/VCI setting For AAL3/4, the following may be selected: AAL3/4-SAR or AAL3/4-CPCS Measures the following: Number of cells (number of SAR-PDU) Number/rate/ES of SN errors Number/rate/ES of SN incorrected Number/rate/ES of lost cells

No.	Item	Specification
4.4	AAL3/4-SAR	Measures the following Number of cells (number of SAR-PDU) Number/rate/ES of ST error Number/rate/ES of SN error Number/rate/ES of LI errors Number/rate/ES of CRC error Number/rate/ES of aborted SAR-PDU Number of CPCS-PDU Number of CPCS errors (CPCS error logical operation indicated by AAL3/4-CPCS)
	AAL3/4-CPCS	Measures the following: Number of CPCS-PDU Number/rate/ES of reassembly timeout PDU Number/rate/ES of CPI errors Number/rate/ES of SN errors Number/rate/ES of BEtag errors Number/rate/ES of BASize errors Number/rate/ES of AL errors Number/rate/ES of Length errors Number of cells (number of SAR-PDU) Number of SAR errors (SAR error logical operation indicated by AAL3/4-SAR)
	AAL5	Measures the following: Number of cells (SAR-PDU) Number of CPCS-PDU Number/rate/ES of reassembly timeout PDU Number/rate/ES of frame size errors Number/rate/ES of CPI errors Number/rate/ES of Length errors Number/rate/ES of CRC errors

No.	Item	Specification
4.4	Cell	Measures the following: Number of cells
4.5	1023VPI/VCI monitor	
	AAL type auto-identification	Automatically identifies AAL type (AAL1, AAL3/4, AAL5, or Unknown) for 1,023 types of VPI/VCI cell flows
	AAL type auto-identification directive	Auto-identification start directive
	Measurement item	Measures following for each AAL type:
	AAL1	Measures the following for VPI/VCI identified as AAL1 Number of cells (number of SAR-PDU) Number/rate of SN errors Number/rate of cell loss
	AAL3.4	Measures the following for VPI/VCI identified as AAL3/4 Number of cells (number of SAR-PDU) Number/rate of CRC errors Number of CPCS-PDU
	AAAL5	Measures the following for VPI/VCI identified as AAL5 Number of cells (number of SAR-PDU) Number of CPCS-PDU
	Unknown	Measures the following for VPI/VCI identified as Unknown Number of cells
	Display format	The following display formats may be selected Table format Graph format
	Measurement directive	Count operation start and end directive Shared with other units and not unique to protocol unit

No.	Item	Specification
5	Save/load	Has functions for saving the following: Sending unit setting data Receiving unit setting conditions Receiving unit memory inclusion data Receiving unit count data Receiving unit monitor data Has functions for loading the following: Sending unit setting data Receiving unit setting conditions Receiving unit memory inclusion data
6 6.1	General specifications Environment specifications	 According to main unit
6.2	Physical specifications Dimensions Weight	 29.5(H)×169(W)×241(D)[mm] 1 kg or less

1.3 Hardware Configuration

1.3.1 Standard Configuration

Table 1-2 shows the Unit's standard configuration.

Table 1-2 Standard Configuration

Item	Model Number	Part	Quantity
Main Unit	MU120021A	Protocol Unit	1
Accessories	M-W1371AE	MU120021A Operation Manual	1
	M-W1372AE	MU120021A Remote Control Operation Manual	1

Section 2 Preparation Before Using Unit

2.1 Environment Conditions

Avoid using the Unit in the following locations:

1. Areas where the temperature is not within a range of 5 to 50 ℃ and the humidity is not within the range of 45 to 85%.
2. Areas exposed to direct sunlight or having large amounts of dust.
3. Areas where condensation might form or there is the danger of exposure to volatile gases.
4. Area where the equipment might oxidize or those subject to violent vibrations.

2.2 Safety Measures

- This Unit if for use only with the MP1220A ATM Quality Analyzer. Never use it in other equipment. Inserting it into other equipment may result in damage and accidents.

- When inputting a signal to this Unit, make sure the voltage does not exceed the rated value. Failing to observe this warning may result in circuit damage.

- Using the Unit at room temperature after it has been in use for long period of time in a low temperature may result in short circuits due to condensation. If condensation forms, dry it out thoroughly before using.

- To counteract static electricity, make sure to ground the unit to another piece of equipment (including test circuits) before connecting the input/output terminals.

- The outer and inner wires of coaxial cable can become electrified as a condenser, so make sure to use a metal object to discharge them before using.

Section 3 Panels Description

3.1 Panel Arrangement and Description

Figure 3-1 shows the Unit's front panel and Table 3-1 describes it.

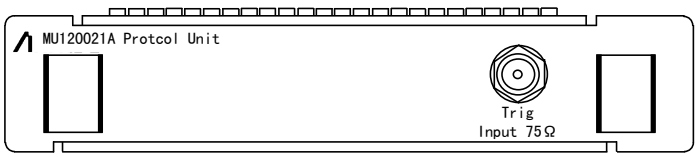


Figure 3-1 MU120021A Protocol Unit Front Panel

Table 3-1 MU120021A Protocol Unit Front Panel Description

No.	Label	Description
1	Trig Input 75 Ω	Trigger input connector (BNC)
2	(Ejector)	For inserting and removing the Unit

Section 4 Screen Description

4.1 MU120021A Protocol Unit Window

The MU120021A Protocol UNIT window is where you make all settings and view all results for the Unit. Open it from the toolbar in the MP1220A ATM Quality Analyzer window. For more information, refer to the MP1220A ATM Quality Analyzer Operation Manual.

The MU120021A Protocol UNIT window is comprised of the following panels.

Table 4-1 Panels

Panel Name	Panel
Construction Panel	Sets the send/receive memory capacity
Tx-Setup Panel	Sets up the sending unit
Rx-Setup Panel	Sets alarm/error measurement
Alarm/Error Panel	Displays alarm/error measurement results
Analyze Panel	Displays a history for alarm/error measurement results
Capture Setup Panel	Makes setting for capture
Capture Result Panel	Displays capture results
Live Monitor Panel	Displays live monitor results

Figure 4-1 shows the MU120021A Protocol UNIT window

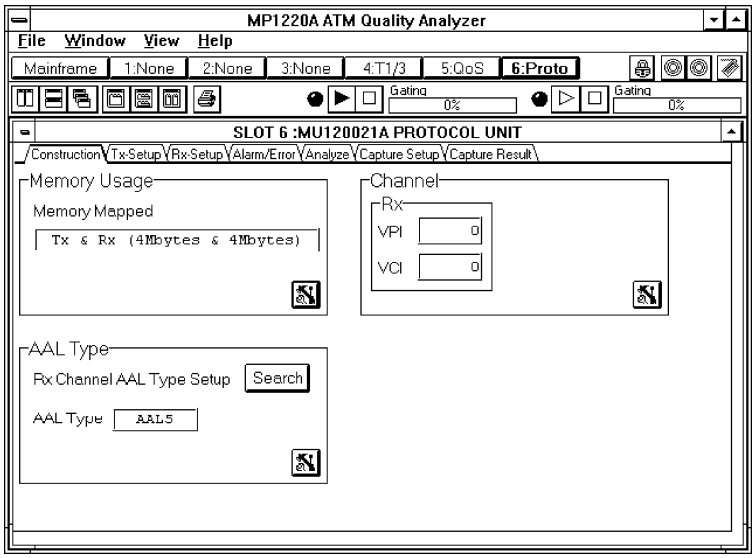


Figure 4-1 MU120021A Protocol UNIT Window

4.2 Construction Panel

Figure 4-2 shows the Construction panel, and Table 4-2 describes it.

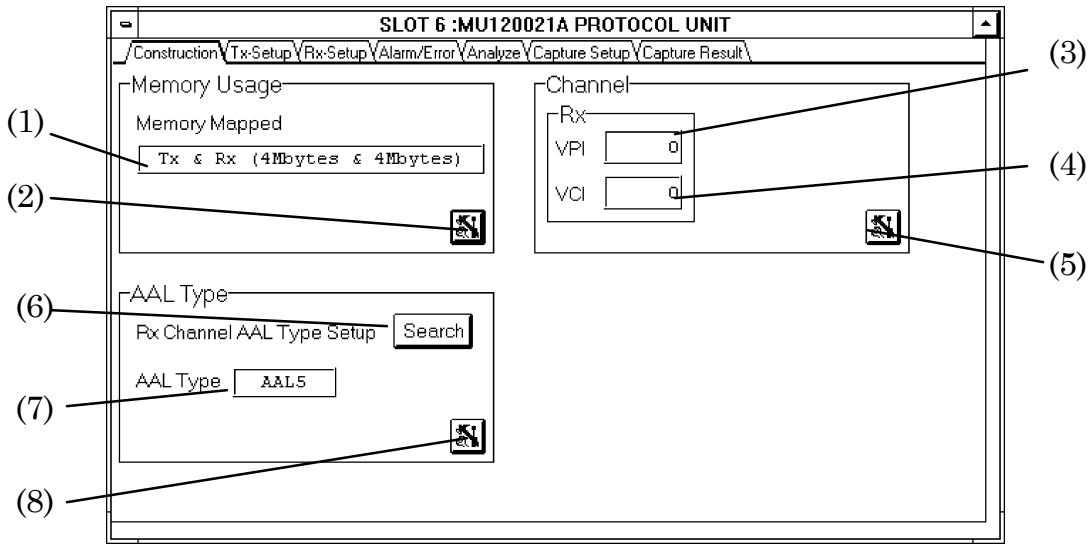


Figure 4-2 Construction Panel

Table 4-2 Construction Panel Description

No.	Item	Description
(1)	Memory Mapped	Displays memory usage
(2)		Opens Memory Setup dialog box
(3)	VPI	Displays VPI value for a specific channel
(4)	VCI	Displays VCI value for a specific channel
(5)		Sets a specific channel
(6)	Search	Automatically set AAL Type from VPI and VCI values that were set
(7)	AAL Type	Displays AAL to measure
(8)		Sets AAL type to measure

4.2.1 Memory Setup Dialog Box

Figure 4-3 shows the Memory Setup dialog box and Table 4-3 describes it.

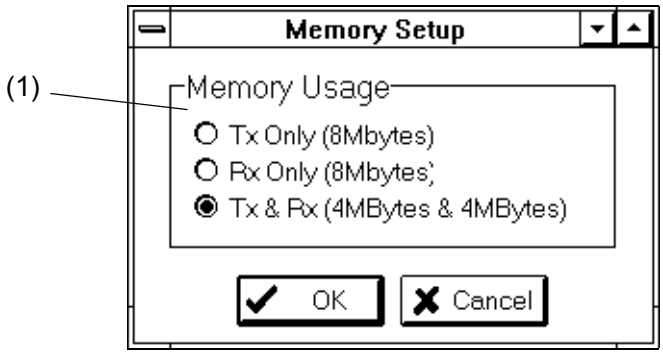


Figure 4-3 Memory Setup Dialog Box

Table 4-3 Memory Setup Dialog Box Description

No.	Item	Description
(1)	Memory Usage	Selects memory usage Tx only : Allocates all 8 MB of memory to sending unit. Rx only : Allocates all 8 MB to receiving unit. Tx&Rx : Allocates 4 MB each to the sending and receiving units.

4.2.2 AAL Type Setup Dialog Box

Figure 4-4 shows the AAL Type Setup dialog box and Table 4-4 describes it.

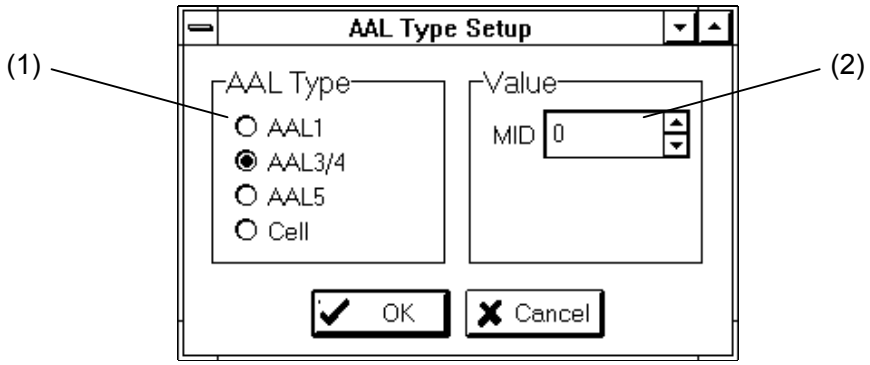


Figure 4-4 AAL Type Setup Dialog Box

Table 4-4 AAL Type Setup Dialog Box Description

No.	Item	Description
(1)	AAL Type	Sets AAL type
(2)	MID	Sets MID value of AAL3/4 frames

4.3 Tx-Setup Panel

Figure 4-5 shows the Tx-Setup panel and Table 4-5 describes it.

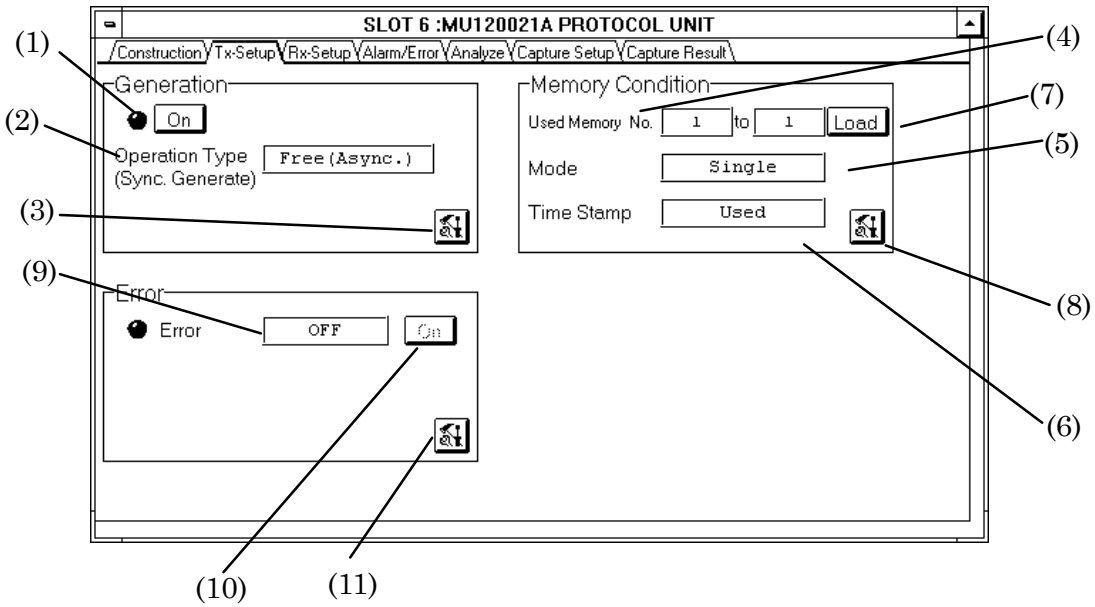


Figure 4-5 Tx-Setup Panel

Table 4-5 Tx-Setup Panel Description

No.	Item	Description
(1)	On/Off	Direct cell transmission or stop
(2)	Operation Type	Displays unit cell transmission operation Master : Sets the Unit as a master unit for simultaneously controlling transmission directives. Slave : Set the Unit a slave that follows the Master protocol unit (The transmission directive button will not function) Free (Async) : Control for this Unit only
(3)		Sets cell transmission operation class
(4)	Used Memory No.	Displays transmission range of cells set in transmission memory.
(5)	Mode	Displays the cell transmission operation set in the Condition Setup dialog box Single : Stops transmission after sends the cells in the range of (4) Repeat : Repeatedly sends cells in the range of (4) Manual: Sends on cell at a time in the range of (4) The cell send directive is set by On/Off from (1)

No.	Item	Description
(6)	Time Stamp	Displays the specified transmission timing (use/do not use Time Stamp) set in the Condition Setup dialog box
(7)	Load	Opens the Load dialog box and reads saved cell data files
(8)		Opens the Condition Setup dialog box
(9)	Error	Displays the addition error class set in the Error Addition Setup dialog box
(10)	On/Off	Adds the error displayed by (9)
(11)		Opens the Error Addition Setup dialog box

4.3.1 Condition Setup Dialog Box

Figure 4-6 shows the Condition Setup dialog box and Table 4-6 describes it.

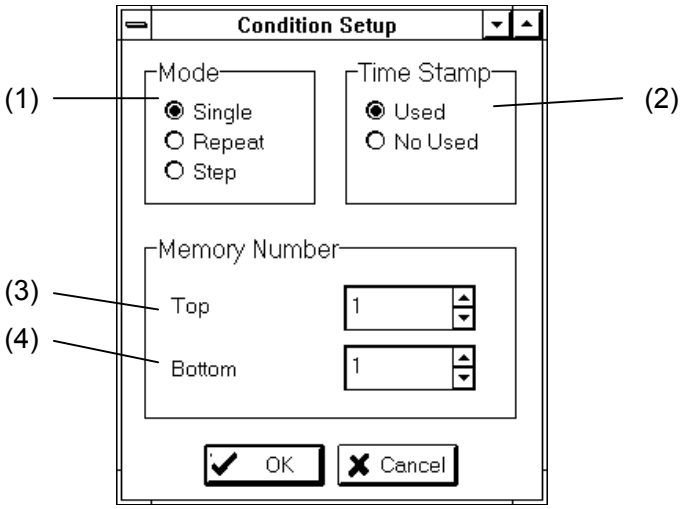


Figure 4-6 Condition Setup Dialog Box

Table 4-6 Condition Setup Dialog Box Description

No.	Item	Description
(1)	Mode	Sets the cell transmission mode
(2)	Time Stump	Sets whether a time stamp will be used in cell transmission timing
(3)	Top	Sets the transmission cell starting number for transmission memory that was set
(4)	Bottom	Sets the transmission cell ending number for transmission memory that was set

4.3.2 Error Addition Setup Dialog Box

Figure 4-7 shows the Error Addition Setup dialog box and Table 4-7 describes it.

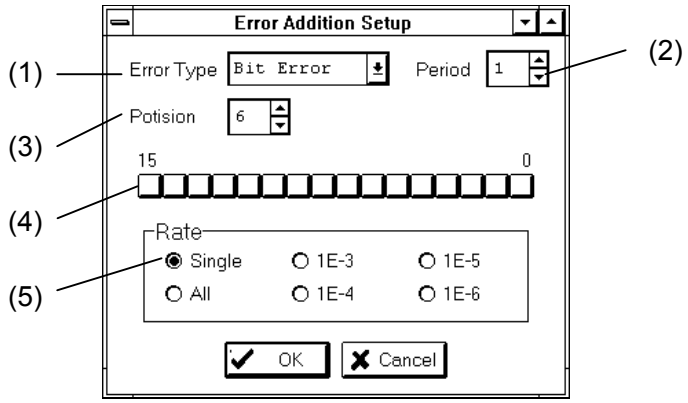


Figure 4-7 Error Addition Setup Dialog Box

Table 4-7 Error Addition Setup Dialog Box Description

No.	Item	Description
(1)	Error Type	Selects the error type to add When Cell is selected, displays a warning dialog box and confirmation message if BIT is selected in either the MU120020 QoS Unit or MU1200xxA interface unit setup screen
(2)	Period	Sets the continuous number of cells for which to add errors. Set the values you want (1 to 64 cells). This can only be set when Bit from (1) is selected
(3)	Position	Set the payload position of the cell where the bit is reversed. This can only be set when On is selected in (1)
(4)		Specifies the bit to reverse. This can only be set when On is selected in (1)
(5)	Rate	Select the error addition timing You can set single, all, or rate (1E-n n=3,4,5,6)

4.4 Rx-Setup Panel

Figure 4-8 shows the Rx-Setup panel and Table 4-8 describes it.

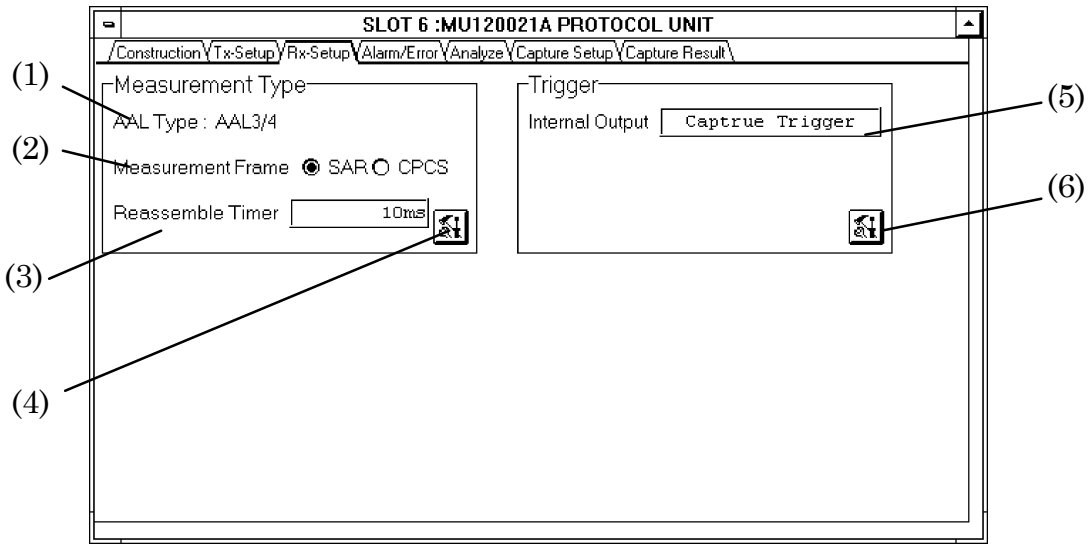


Figure 4-8 Rx-Setup Panel

Table 4-8 Rx-Setup Panel Description

No.	Item	Description
(1)	AAL Type	Displays AAL type to measure
(2)	Measurement Frame	Selects measurement target (SAR/CPCS) when (1) is AAL3/4
(3)	Reassemble Timer	Displays frame reassembly time during AAL3/4 and AAL5 measurement
(4)		Sets Reassemble Time
(5)	Internal Output	Displays the content of the internal trigger set in the Trigger Setup dialog
(6)		Opens the Trigger Setup dialog

4.4.1 Trigger Setup Dialog Box

Figure 4-9 shows the Trigger Setup dialog box and Table 4-9 describes it.

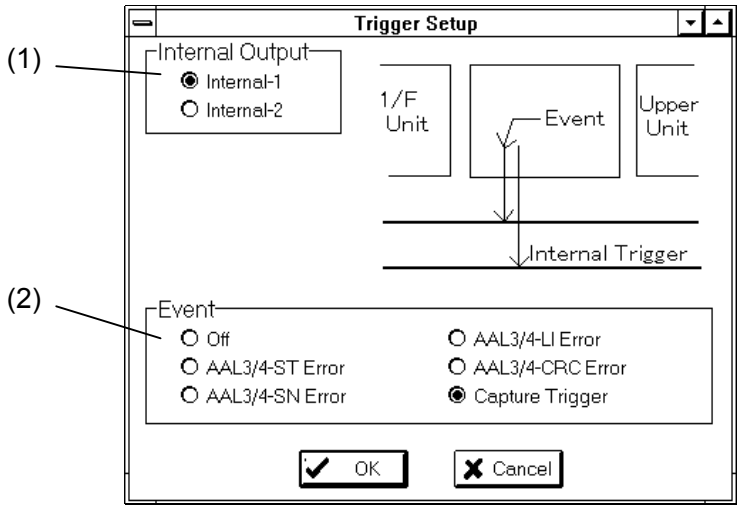


Figure 4-9 Trigger Setup Dialog Box

Table 4-9 Trigger Setup Dialog Box Description

No.	Item	Description
(1)	Internal Output	Sets the trigger to output to the trigger line Internal-1 : Outputs trigger to trigger line 1 Internal-2 : Outputs trigger to trigger line 2
(2)	Event	Selects trigger output type Off : No event selection AAL1-SN Error : SN error detection during AAL1 measurement AAL1-Invalid Frame : Detects uncorrectable SN errors during AAL1 measurement AAL3/4-ST Error : Detects ST errors during AAL3/4 measurement AAL3/4-SN Error : Detects SN errors during AAL3/4 measurement AAL3/4-LI Error : Detects LI errors during AAL3/4 measurement AAL3/4-CRC Error : Detects CRC errors during AAL3/4 measurement AAL5-CRC : Detects CRC errors during AAL5 measurement Capture trigger : Detection trigger set by Capture

4.5 Alarm/Error Panel

Figure 4-10 shows the Alarm/Error panel and Table 4-10 describes it.

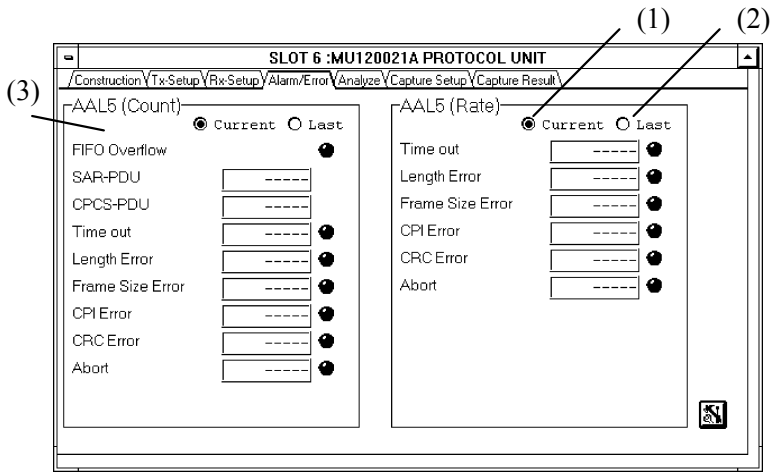


Figure 4-10 Alarm/Error Panel

Table 4-10 Alarm/Error Panel Description

No.	Item	Description
(1)	Current	Displays results from the beginning of measurement to the present.
(2)	Last	Displays the measurement end results.
(3)		Displays alarm/error measurement results FIFO Overflow : Internal FIFO Overflow Status During AAL1 measurement SAR-PDU : SAR-PDU total number SN-Error : SN error SN Incorrected : SN uncorrectable Cell Loss : Lost cells During AAL3/4-SAR measurement SAR-PDU : SAR-PDU total number SAR-PDU(MID=xxx) : Number of SAR-PDU in MID value specification ST Error : ST error SN Error : SN error LI Error : LI error CRC Error : CRC error Abort : Number of aborts CPCS-PDU : CPCS-PDU total number CPCS-PDU Error : Number of CPCS frame errors

No.	Item	Description
(3)		During AAL3/4-CPCS measurement CPCS-PDU : CPCS-PDU total number Time Out : CPCS frame reassembly timeout CPI Error : CPI error BEtag Error : BEtag error BASize Error : BASize error AL Error : AL error Length Error : Frame data length error SAR-PDU(MID=xxx) : Number of SAR-PDU in MID value specification SAR-PDU Error : Number of SAR frame errors During AAL5 measurement SAR-PDU : SAR-PDU total number CPCS-PDU : CPCS-PDU total number Time Out : CPCS frame reassembly timeout Length Error : Frame data length error Frame Size Error : Frame maximum data length (65535 bytes) error Abort : Number of aborts CPI Error : CPI errors CRC Error : CRC errors During Cell-CPCS measurement Cell : Total number of cells
(4)	LED	Displays status of alarms, errors, and cell detection Red : Currently occurring Yellow : Occurring during measurement (when Current is selected) Occurred during last measurement (when Last is selected)
(5)		Opens the Layout dialog box

4.5.1 Layout Dialog Box

Figure 4-11 shows the Layout dialog box and Table 4-11 describes it.

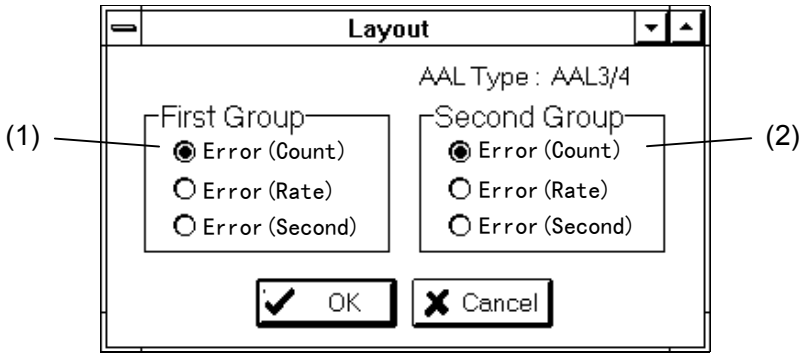


Figure 4-11 Layout Dialog Box

Table 4-11 Layout Dialog Box Description

No.	Item	Description
(1)	First Group	Selects measurement results display items in the first group Error (Count) : Count number display Error (Rate) : Rate display Error (Second) : Error item error seconds display
(2)	Second Group	Selects measurement results display items in the second group Error (Count) : Count number display Error (Rate) : Rate display Error (Second) : Error item error seconds display

4.6 Analyze Panel

Figure 4-12 shows the Analyze panel and Table 4-12 describes it.

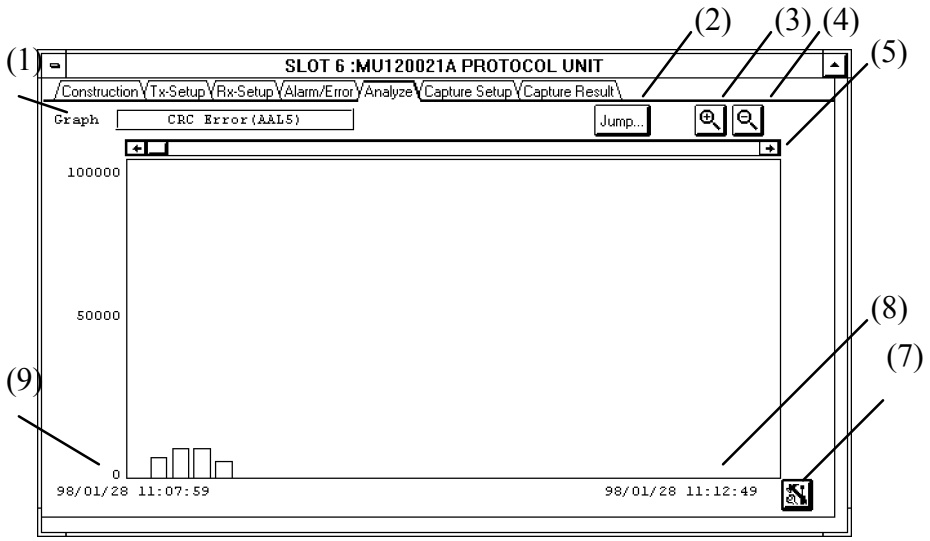


Figure 4-12 Analyze Panel

Table 4-12 Analyze Panel Description

No.	Item	Description
(1)	Graph	Displays the graph display item name set in the Analyze Setup dialog box
(2)	Jump..	Jumps to the marked date and time
(3)	Z+	Zooms in on the graph. Zooms in so that the marked location will be at the center of the screen
(4)	Z-	Zooms out on the graph. Zooms out so that the marked location will be at the center of the screen
(5)		Scrolls the screen horizontally.
(6)		Displays the time at the marker positions and error/alarm detailed data at that position.
(7)		Opens the Analyze Setup dialog box
(8)		Displays the starting time of the displayed graph
(9)		Displays the ending time of the displayed graph

4.6.1 Analyze Setup Dialog Box

Figure 4-13 shows the Analyze Setup dialog box and Table 4-13 describes it.

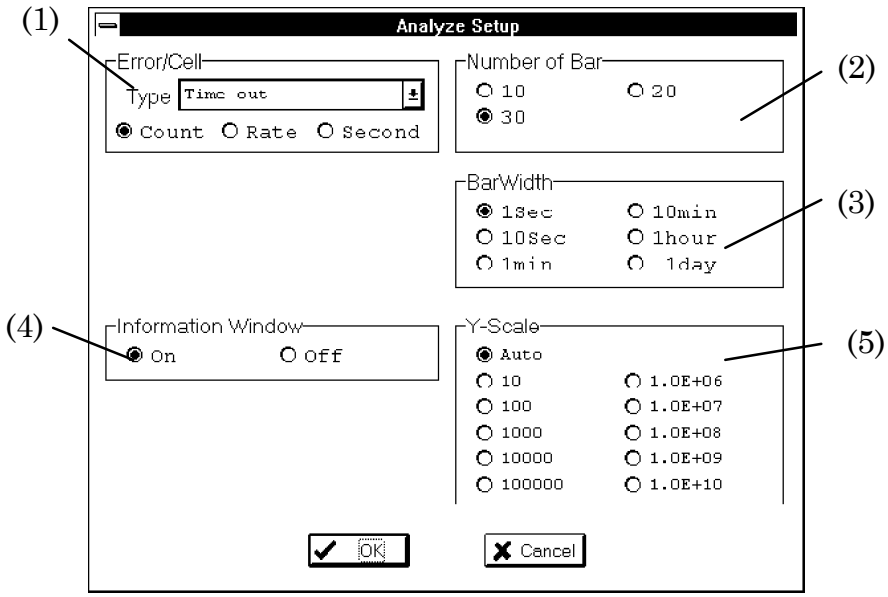


Figure 4-13 Analyze Setup Dialog Box

Table 4-13 Analyze Setup Dialog Box Description

No.	Item	Description
(1)	Type	Selects either errors or cell to display on graph. Error/cells can only be displayed at the same time for one item
(2)	Number of Bar	Selects the number of bars to display on one screen
(3)	Bar width	Selects the time indicated by one bar
(4)	Information window	Selects whether to display 4.6(7) on Analyze sheet.
(5)	Y-Scale	Select the graph's y-axis Auto : The minimum y-axis that the maximum value of displayed data can display is automatically set

4.7 Capture Setup Panel

Figure 4-14 shows the Capture Setup panel and Table 4-14 describes it.

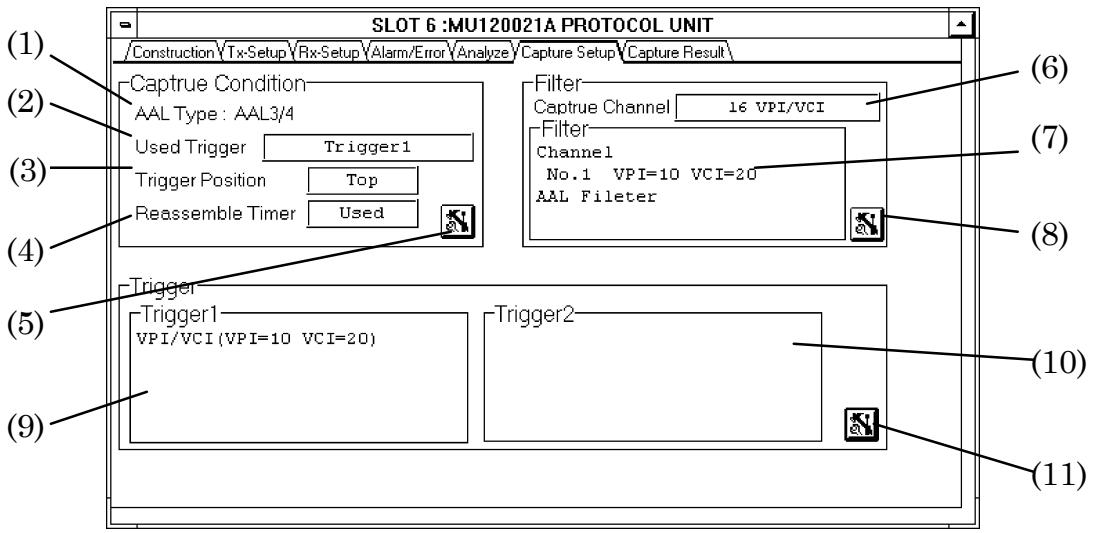


Figure 4-14 Capture Setup Panel

Table 4-14 Capture Setup Panel Description

No.	Item	Description
(1)	AAL Type	Displays the AAL type of the Capture target
(2)	Used Trigger	Displays the trigger type
(3)	Trigger Position	Displays the trigger position
(4)	Reassemble Timer	Selects whether or not to use the frame reassemble timer
(5)		Opens the Condition Setup dialog box
(6)	Caputure Channel	Displays filter target channel class of the capture
(7)	Filter	Displays detailed information regarding the filter
(8)		Opens the Filter Setup dialog box
(9)	Trogger1	Displays trigger information details set in the Trigger Setup dialog Note that this will not be displayed if Trigger1 and Trigger1->2 are not selected by (2)
(10)	Trogger2	Displays trigger information details set in Trigger Setup dialog box Note that this will not be displayed if Trigger1->2 is not selected by (2)
(11)		Opens the Trigger Setup dialog box

4.7.1 Condition Setup Dialog Box

Figure 4-15 shows the Condition Setup dialog box and Table 4-15 describes it.

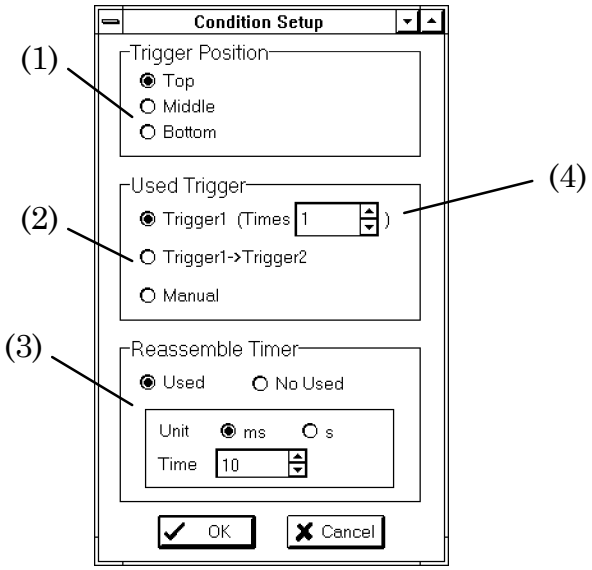


Figure 4-15 Condition Setup Dialog Box

Table 4-15 Condition Setup Dialog Box Description

No.	Item	Description
(1)	Trigger Position	Sets the trigger position
(2)	Used Trigger	Sets the trigger method Trigger1 : Activates a trigger using the settings made in the Trigger1 group box You can specify the count Trigger1->Trigger2 : Activates a trigger using the settings made in the Trigger1,2 group box The trigger is activated when the trigger 2 condition is fulfilled after the 1 condition is fulfilled Manual : Triggers can be activated by pressing the trigger button in the Capture Result panel
(3)	Reassemble Timer	Sets the CPCS frame reassembly timeout time
(4)	Time	Sets the count when Trigger1 is set in (2)

4.7.2 Filter Setup Dialog Box

4.7.2.1 CH Tab Sheet

Figure 4-16 shows the CH tab sheet and Table 4-16 describes it.

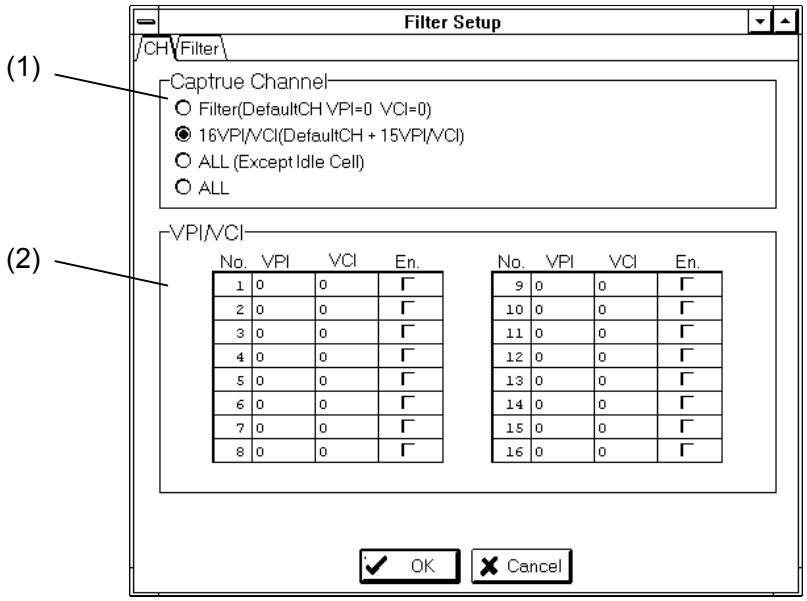


Figure 4-16 CH Tab Sheet

Table 4-16 CH Tab Sheet Description

No.	Item	Description
(1)	Capture Channel	Selects a channel
(2)	VP/VCI	Sets VP/VCI Cannot be set if something other than 16VPI/VCI is set by (1). In addition, the nothing an be entered into the No. 1 field because the Construction panel's VPI/VCI value is allocated.

4.7.2.2 Filter Tab Sheet

Figure 4-17 shows the Filter tab sheet and Table 4-17 describes it.

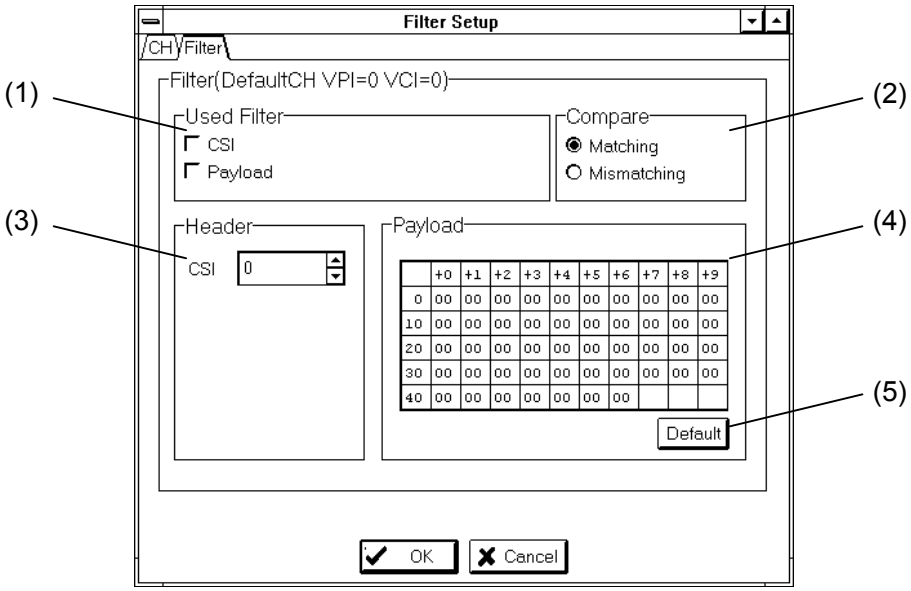


Figure 4-17 Filter Tab Sheet

Table 4-17 Filter Tab Sheet Description

No.	Item	Description
(1)	Used Filter	Selects the filter type to use AAL1-CSI : Applies a filter using the specified CSI value AAL1-Payload : Applies a filter using the specified Payload value AAL3/4-ST : Applies a filter using the specified ST value AAL3/4-MID : Applies a filter using the specified MID value AAL3/4-CPI : Applies a filter using the specified CPI value AAL3/4-Payload : Applies a filter using the specified Payload value AAL5-Payload : Applies a filter using the specified Payload value Cell-Payload : Applies a filter using the specified Payload value The class from the above AAL1 to Cell differs depending on the AAL Type in the Construction panel
(2)	Compare	Selection for filter by comparing the (3) and (4) settings with (1) Used Filter selected
(3)		Sets values for each filter type
(4)		Displays the filter payload value
(5)	Default	Sets the payload value to the default value (OOH)

4.7.3 Trigger Setup Dialog Box

Figure 4-18 shows the Trigger Setup dialog box and Table 4-18 describes it.

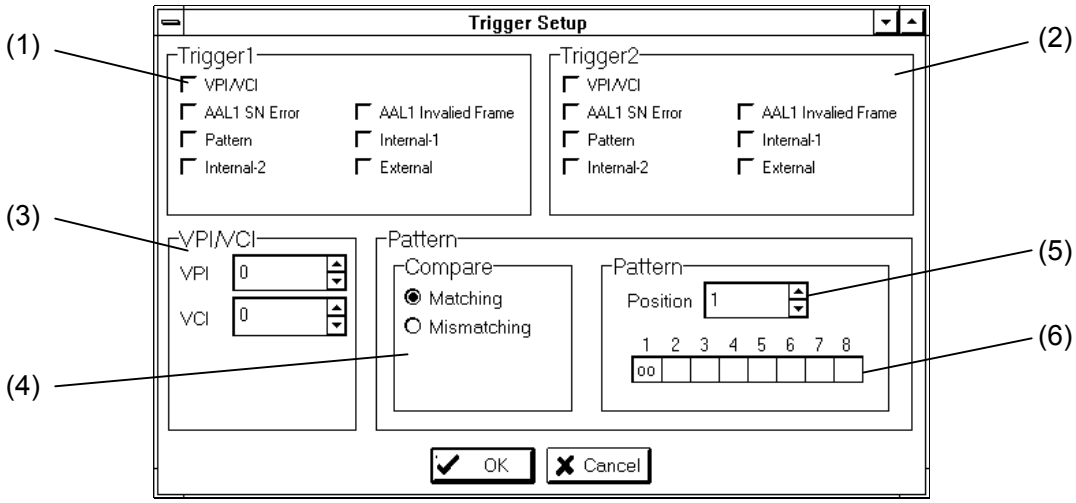


Figure 4-18 Trigger Setup Dialog Box

Table 4-18 Trigger Setup Dialog Box Description

No.	Item	Description
(1)	Trigger1	Selects the trigger class for ending the capture VPI/VCI : Set VPI/VCI detection AAL1-SN Error : SN error detection AAL1-Invalid Frame : SN incorrected error detection AAL3/4-ST Error : ST error detection AAL3/4-SN Error : SN error detection AAL3/4-LI Error : LI error detection AAL3/4-CRC Error : CRC error detection AAL5-CRC Error : CRC error detection Pattern : Set pattern data detection External : External input signal startup edge Internal-1 : Internal input signal 1 startup edge Internal-2 : Internal input signal 2 startup edge Note that the content of AAL1 to AAL5 differs depending on the AAL Type in the Construction panel

No.	Item	Description
(2)	Trigger2	Selects the trigger class for ending the capture VPI/VCI : Set VPI/VCI detection AAL1-SN Error : SN error detection AAL1-Invalid Frame : SN incorrected error detection AAL3/4-ST Error : ST error detection AAL3/4-SN Error : SN error detection AAL3/4-LI Error : LI error detection AAL3/4-CRC Error : CRC error detection AAL5-CRC Error : CRC error detection Pattern : Set pattern data detection External : External input signal startup edge Internal-1 : Internal input signal 1 startup edge Internal-2 : Internal input signal 2 startup edge Note that the content of AAL1 to AAL5 differs depending on the AAL Type in the Construction panel
(3)	VPI/VCI	Sets the VPI/VCI value of the cell that will serve as a trigger
(4)	Compare	Sets the comparison condition for pattern data that will serve as a trigger Matching : Detects a match with pattern data Mismatching : Detects a mismatch with pattern data
(5)	Position	Sets the Comparision position for pattern data that will serve as a trigger
(6)	Pattern	Sets pattern data that will serve as a trigger

4.8 Capture Result Panel

Figure 4-19 shows the Capture Result panel and Table 4-19 describes it.

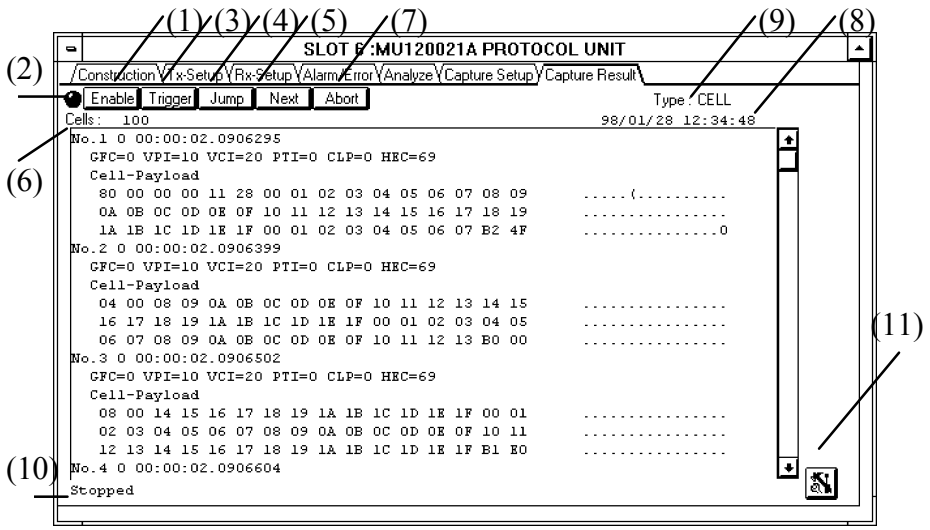


Figure 4-19 Capture Result Panel

Table 4-19 Capture Result Panel Description

No.	Item	Description
(1)	Enable	Displays the capture start/end directive and its state Enable : Capture starts when the button is pressed Stop : Capture stops when the button is pressed
(2)		Lights during capture and goes out when complete
(3)	Trigger	Activated when Manual is set by 4.7.1 (2) and a capture is in progress. Pressing this button generates a cell capture end trigger
(4)	Search	Opens the Search dialog box
(5)	Next	Performs a search based on the content set in 4.8.2
(6)	Cells, Frames	Displays the number of cell captured. Displays the number of frames captured
(7)	Abort	Displays the capture abort direceive. Abort : Capture abort when the button is pressed.
(8)		Displays the time the capture started
(9)		Reassembles cell data stored in reception memory in the specified format and displays it
(10)	[Capture Status Line]	Stop state : Stopped Trigger waiting state : Waiting for Triger End wait state : Waiting for Capture End
(11)		Opens the Condition Setup dialog box

4.8.1 Condition Setup Dialog Box

Figure 4-20 shows the Condition Setup dialog box and Table 4-20 describes it.

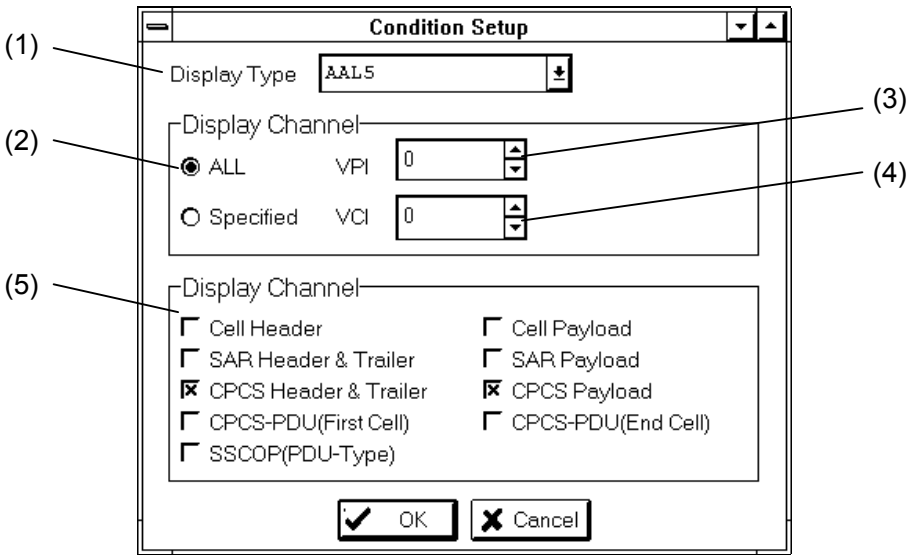


Figure 4-20 Condition Setup Dialog Box

Table 4-20 Condition Setup Dialog Box Description

No.	Item	Description
(1)	Display Type	Sets the type to display in 4.8 (8)
(2)	Display Channel	Sets the VPI/VCI value to display for 4.8 (8)
(3)	VPI	Sets a VPI
(4)	VCI	Sets a VCI
(5)	Display Format	Select the format of the display content for 4.8 (8) The display differs depending on the selected content

4.8.2 Search Dialog Box

Figure 4-21 shows the Search dialog box and Table 4-21 describes it.

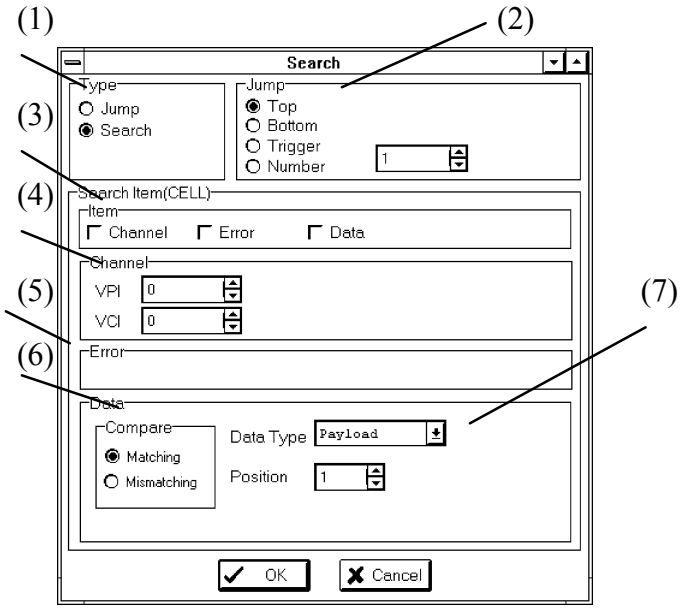


Figure 4-21 Search Dialog Box

Table 4-21 Search Dialog Box Description

No.	Item	Description
(1)	Type	Selects the Type to search Jump : Displays the specified frame number according to the content of the Jump group box Search : Displays the specified frame number according to the content of the Search group box
(2)	Jump	Selects the jump destination Top : Jumps to the display of the beginning frame Bottom : Jumps to the display of the ending frame Trigger : Jumps to the display of the triggered frame Number : Jumps to the display of the frame with the specified number
(3)	Item	Selects the Item (Channel, Error, or Date) for which to search
(4)	Channel	Sets the VPI/VCI value for which to search
(5)	Error	Selects the error type for which to search
(6)	Compare	Selects the data comparison format match/mismatch for which to search
(7)	Data Type	Select the data type to set
(8)	Position	When (7) is payload, sets the data position subject to the search
(9)	Pattern	Sets the data for which to search

4.9 Live Monitor Panel

Figure 4-22 shows the Live Monitor panel and Table 4-22 describes it.

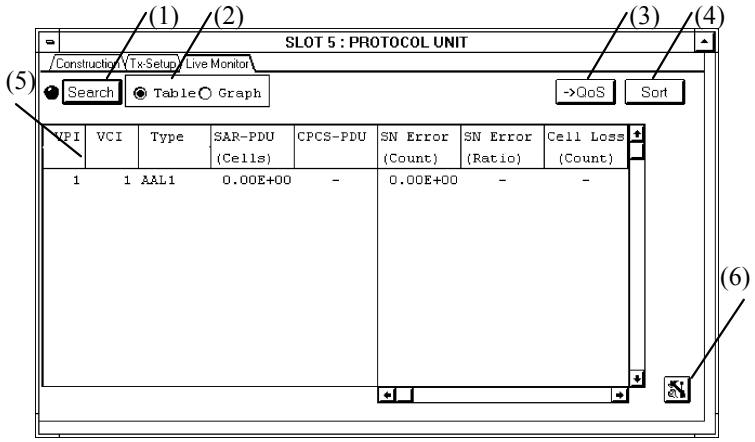


Figure 4-22 Live Monitor Panel

Table 4-22 Live Monitor Panel Description

No.	Item	Description
(1)	Search	Measures the AAL Type for the set VPI and VCI values, and then makes decisions and measurements
(2)	Table/Graph	Selects the result display format for the Live Monitor Table : Table format Graph : Graph format
(3)	→ Qos	When the button is pressed, the Live Monitor's channel (VPI/VCI) order on the Protocol Unit is reflected in the Live Monitor's channel (VPI/VCI) order on the MU120020A QoS Unit
(4)	Sort	Opens the Live Monitor Setup (Sort) dialog box
(5)		Displays the Live Monitor results VPI : VPI value VCI : VCI value Type : AAL type for VPI/VCI SAR-PDU : Total number of SAR-PDU received CPCS-PDU : Total number of CPCS-PDU received (Type AAL3/4 and AAL5 only) SN-Error : Number of SN Errors (Type AAL1 only) Cell Loss : Number of Cell Losses (Type AAL1 only) CRC Error : Number of CRC Errors (Type AAL3/4 only)
(6)		Opens the Live Monitor Setup dialog box

4.9.1 Live Monitor Setup Dialog Box

Figure 4-23 shows the Live Monitor Setup dialog box and Table 4-23 describes it.

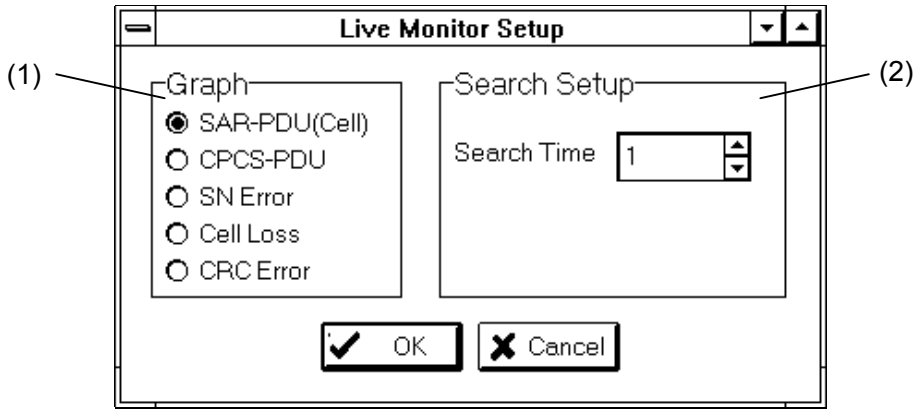


Figure 4-23 Live Monitor Setup Dialog Box

Table 4-23 Live Monitor Setup Dialog Box Description

No.	Item	Description
(1)	Graph	Sets the content to be displayed when Graph is selected for 4.9 (2)
(2)	Search Time	Sets the automatic detection time for the AAL Type

4.9.2 Live Monitor Setup Dialog Box

Figure 4-24 shows the Live Monitor Setup dialog box and Table 4-24 describes it.

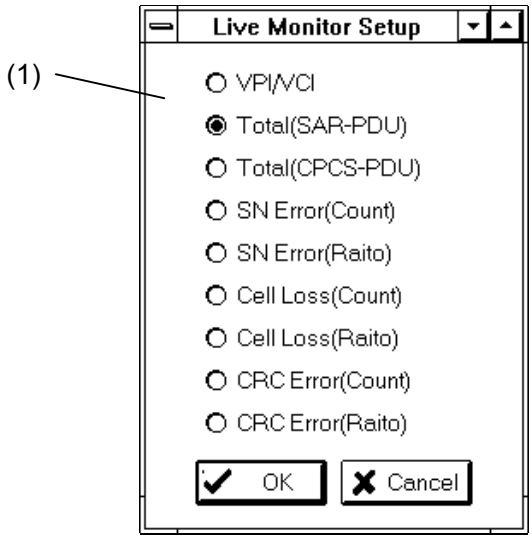


Figure 4-24 Live Monitor Setup Dialog Box

Table 4-24 Live Monitor Setup Dialog Box Description

No.	Item	Description
(1)		Selects the sort type for the Live Monitor's result display order

Section 5 Actual Measurement

5.1 Transmitting Cells

5.1.1 Setting Memory Usage

Set the amount of memory to use in transmitting cells. You can set up to 8 MB and also use individually set sizes of data as transmission data.

1. Open the Memory Setup dialog box from the Construction panel.

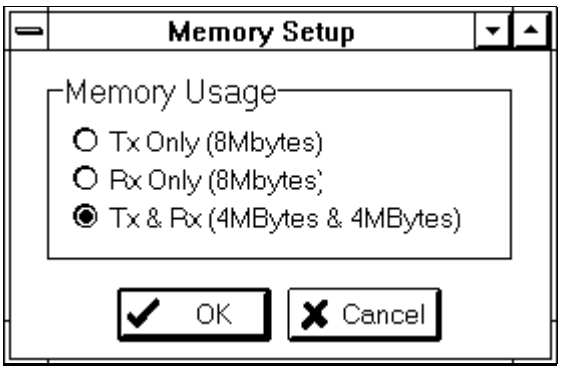


Figure 5-1 Memory Setup Dialog Box

2. Select the memory size to use (including whether or not to use it in transmission) from the options in the Memory Setup dialog box.

3. To activate the setting you made in the Memory Setup dialog box, press the OK button. To cancel the settings, press the Cancel button.

5.1.2 Setting Up Cell Data

Set up cell data and transmission conditions.

1. Press the Load button in the Tx-Setup panel's Memory Condition group box to load the file storing saved transmission data.

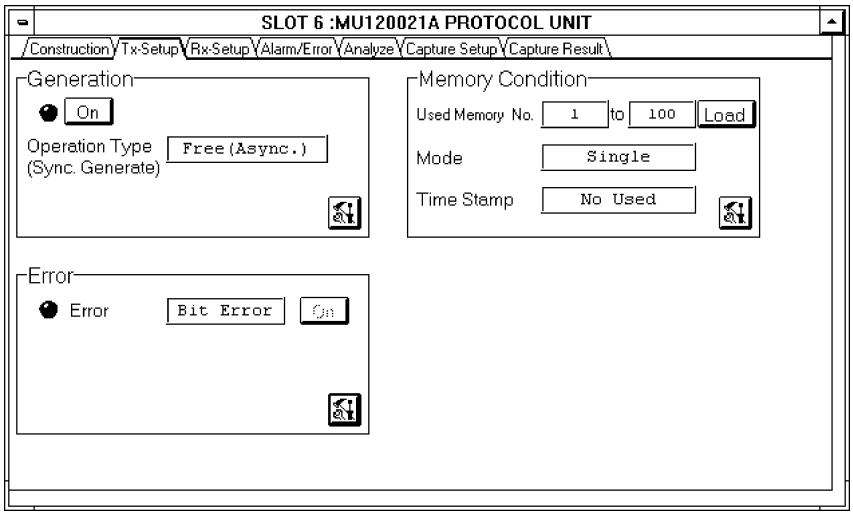


Figure 5-2 Tx-Setup Panel

2. Open the Condition Setup dialog box.

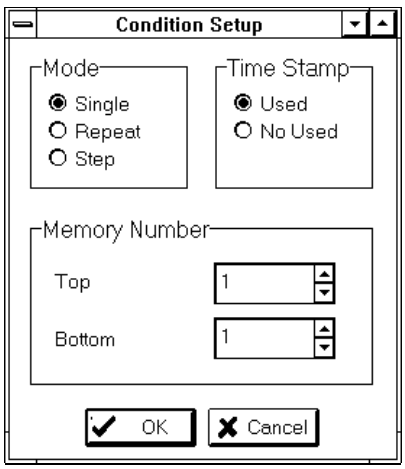


Figure 5-3 Condition Setup Dialog Box

3. Set the cell number you want to send, send mode, and whether or not to send using a Time Stamp.

5.1.3 Setting Bit Errors/Cell Loss

Set bit error and cell loss additions for the cells transmitted by the Unit.

1. Open the Error Addition Setup dialog box from the Tx-Setup panel.

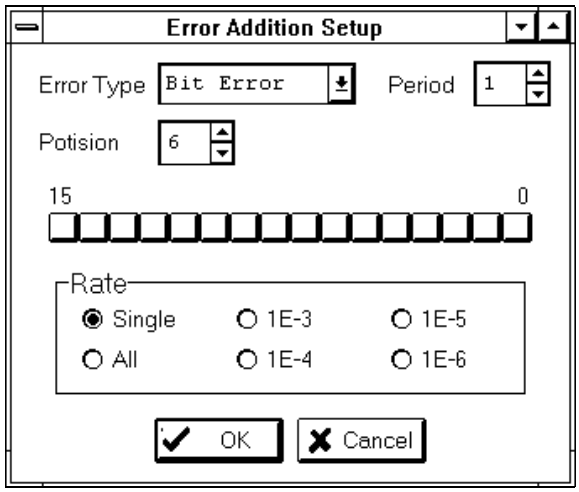


Figure 5-4 Error Addition Setup Dialog Box

2. Make a selection from the Error Type drop-down list box. The settings hereafter differ depending on the error type you select. The following example shows the setting method when Bit Error has been selected.

3. Use the Position spinning box to set the cell byte position for adding bit errors.

4. The Bit button selects the bit position within the byte for which to add the bit error.

5. Select the bit error rate from the Rate group box.

6. If you did not set the addition of bit errors for all cells in step 5 above, use the Period spinning box to set the number of burst bit error cells.

7. To activate the settings you made, press the OK button. To cancel the settings, press the Cancel button.

5.1.4 Cell Transmission and Error Addition

The following shows how to transmit the cells you set up and how to add errors to those cells.

1. Display the Tx-Setup Panel.

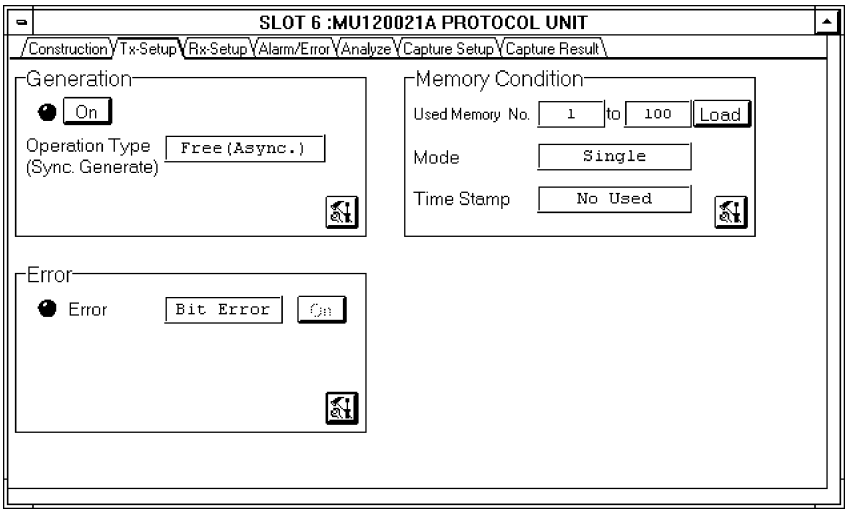


Figure 5-5 Tx-Setup Panel

2. Set the Operation Type in the Generation Setup dialog box. Set Free if you will not be simultaneously controlling multiple protocol units.

3. Transmit cells using the On/Off button in the Generation group box. During cell transmission, the LED to the left of the On/Off button lights.

Note

The lighting of the On/Off button display and LED may differ from the actual cell transmission timing.

4. Add a bit error using the On/Off button in the Error group box. During bit error addition, the LED to the left of the On/Off button lights.

Note

The lighting of the On/Off button display and LED may differ from the actual cell transmission timing

5.2 Performing Live Monitoring

This section describes live monitoring settings and how to display live monitoring results.

5.2.1 Setting Monitor Channels

The following shows how to set monitor channels.

1. Start off by setting monitor channels. There are two ways to do this. Either the user sets monitor channels or they are retrieved automatically. In either case, up to 1,023 channels can be set. The setting of channels is performed by the Interface Unit, so you should refer to the Interface Unit Operation Manual for more information.

5.2.2 Setting AAL Type

Set the AAL Type before starting the Live Monitor.

1. Open the Live Monitor Setup dialog box.
2. Set the time for retrieving the AAL type.
3. To activate the setting you made in the Live Monitor Setup dialog box, press the OK button. To cancel the settings, press the Cancel button.
4. Pressing the Search button starts the AAL type search on the monitor channels that where set.

5.2.3 Starting/Ending Live Monitor

The following describes how to start and stop the Live Monitor.

1. Display the Live Monitor Panel.

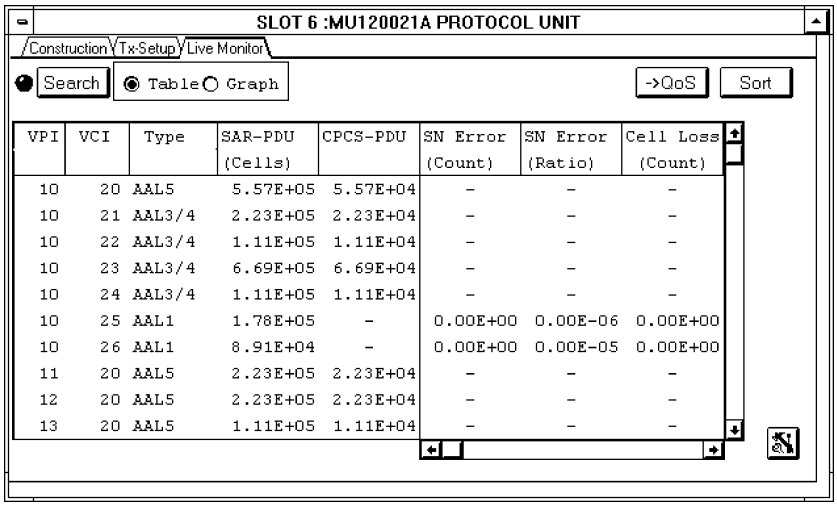


Figure 5-6 Live Monitor Panel

2. You will see the monitor channels and AAL Type you set in 5.2.1 and 5.2.2.

3. The Live Monitor is started and stopped using the Start and Stop buttons on the MP1220A ATM Quality Analyzer's tool bar. For more information, refer to the MP1220A ATM Quality Analyzer Operation Manual.

5.2.4 Displaying Live Monitor Results

The following describes how to display live monitor results.

1. Live Monitor results are displayed in the Live Monitor panel.
2. Sort monitor items as necessary. Do this by opening the Live Monitor Setup(Sort) dialog box where you select the items to sort.
3. Live Monitor results can be displayed in table and graph form. Make your selection using the option buttons. Once you select a graph format, the items selected in the Live Monitor Setup dialog box will be subject to display.

5.3 Measuring Errors

This section shows how to set up error measurement and display its results.

5.3.1 Setting Receiving Channel

Set the receiving channel.

1. Open the Channel Setup dialog box from the Construction panel.

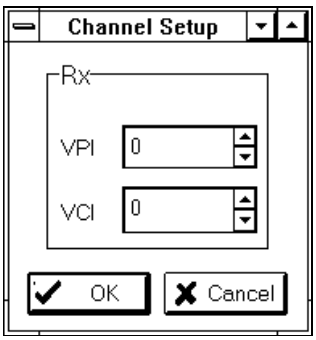


Figure 5-7 Channel Setup Dialog Box

2. Set the receiving channel using the VPI/VCI text boxes in the Rx group box.

3. To activate the settings you made in the Channel Setup dialog box, press the OK button.
   To cancel the settings, press the Cancel button.

5.3.2 Setting AAL Type to Measure

Set the AAL Type that will be measured. The AAL Type to be measured is the VPI/VCI value set in 5.3.1. The setting can either be automatic or selected by the user.

The following shows how to select the type from the dialog box.

1. Open the AAL Type Setup dialog box from the Construction panel.

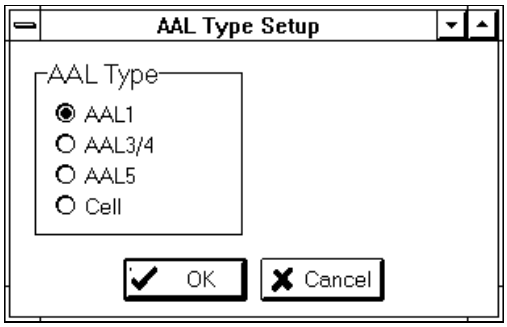


Figure 5-8 AAL Type Setup Dialog Box

2. Use the AAL Type Setup dialog box option buttons to select the AAL Type to measure. If you select AAL3/4, the MID value field will activate. Set the MID value to measure.

3. To activate the settings you made in the AAL Type Setup dialog box, press the OK button. To cancel the settings, press the Cancel button.

5.3.3 Setting Measurement Type

If the AAL Type set in 5.3.2 is AAL3/4 or AAL5, make the following settings concerning measurement.

1. Open the Measurement Type Setup dialog box from the Rx-Setup panel.

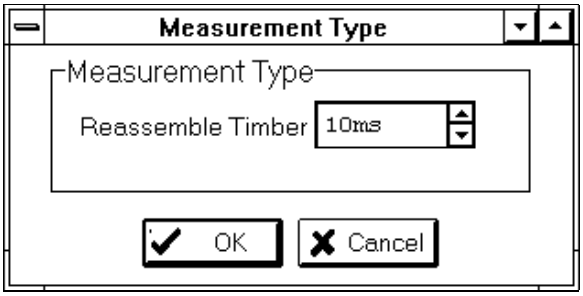


Figure 5-9 Measurement Type Setup Dialog Box

2. Set the frame reassembly timeout value.

3. To activate the settings you made in the Measurement Type Setup dialog box, press the OK button. To cancel the settings, press the Cancel button.

4. If AAL3/4 is to be measured, select the Measurement Frame option in the Measurement Type group box.

5.3.4 Starting/Stopping Error Measurement

The following describes how to start and stop error measurement.

1. Error measurement is started and stopped using the Start and Stop buttons on the MP1220A ATM Quality Analyzer's tool bar. For more information, refer to the MP1220A ATM Quality Analyzer Operation Manual.

5.3.5 Displaying Error Measurements

The following describes how to display error measurement results.

1. Display the Alarm/Error panel.

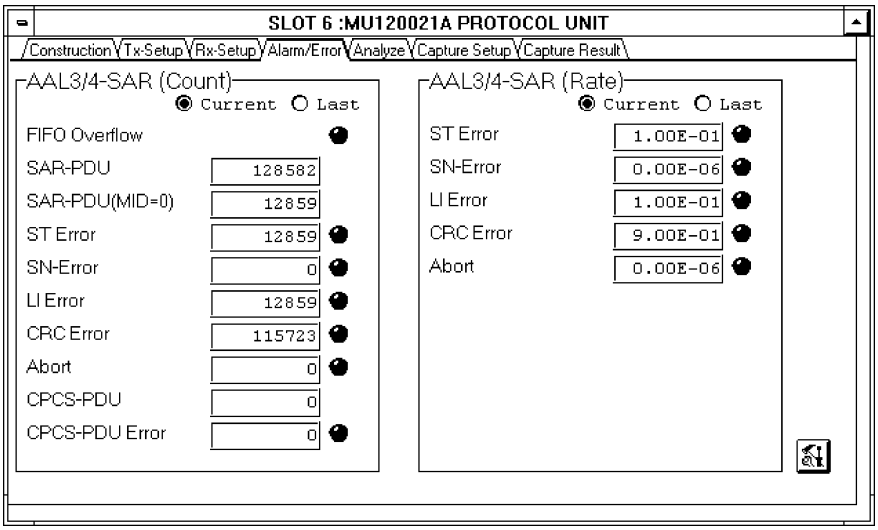


Figure 5-10 Alarm/Error Panel

2. You will see measurement results. To change the way the measurement results are displayed, use the option buttons in the group box. You can also change result display items by opening the Layout dialog box.

5.4 Capturing

This section describes how to set up captures and display their results.

5.4.1 Setting Up Memory

Set up the capture memory (Rx). Refer to 5.1.1 for the setting procedure.

5.4.2 Setting Up a Capture

Set the capture conditions, filters, and capture end trigger.

1. Display the Capture Setup panel.

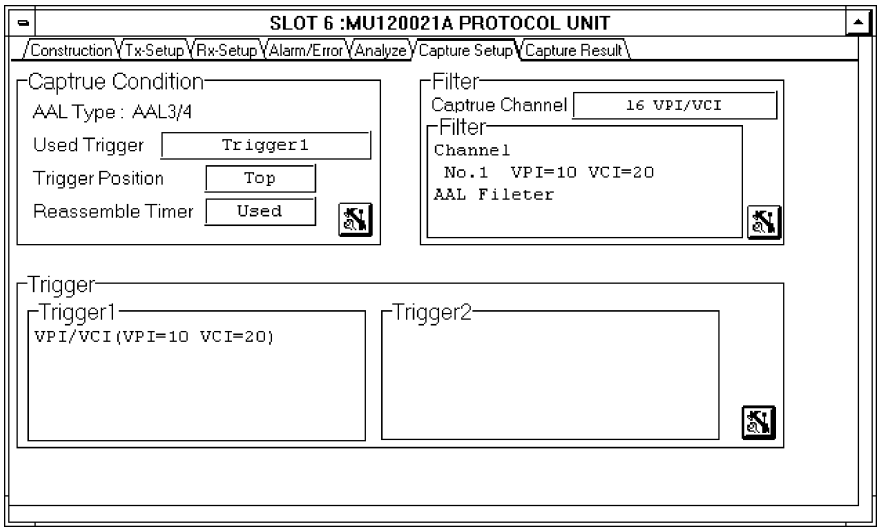


Figure 5-11 Capture Setup Panel

2. Open the Condition Setup dialog box from the Capture Condition group box.

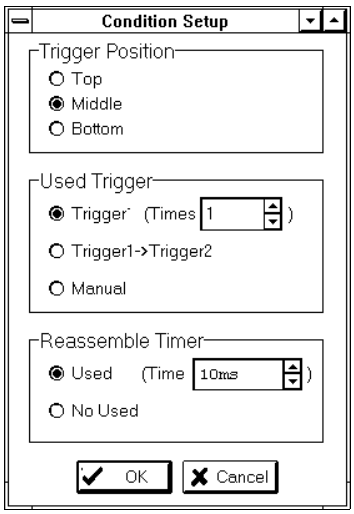


Figure 5-12 Condition Setup Dialog Box

3. Set the capture end trigger to use and the trigger position. If you set AAL3/4 or AAL5 capture conditions, set the CPCS frame reassembly timer.

4. Open the Filter Setup dialog box from the Filter group box.

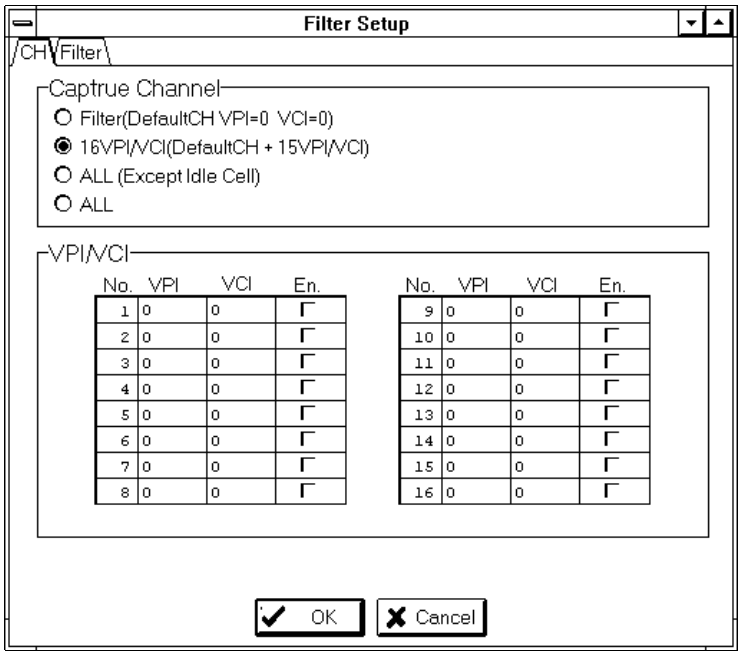


Figure 5-13 Filter Setup Dialog Box

5. Set the Channel and AAL Filter (setting for each targeted frame) for the cells to be captured.

6. Open the Trigger Setup dialog box from the Trigger group box.

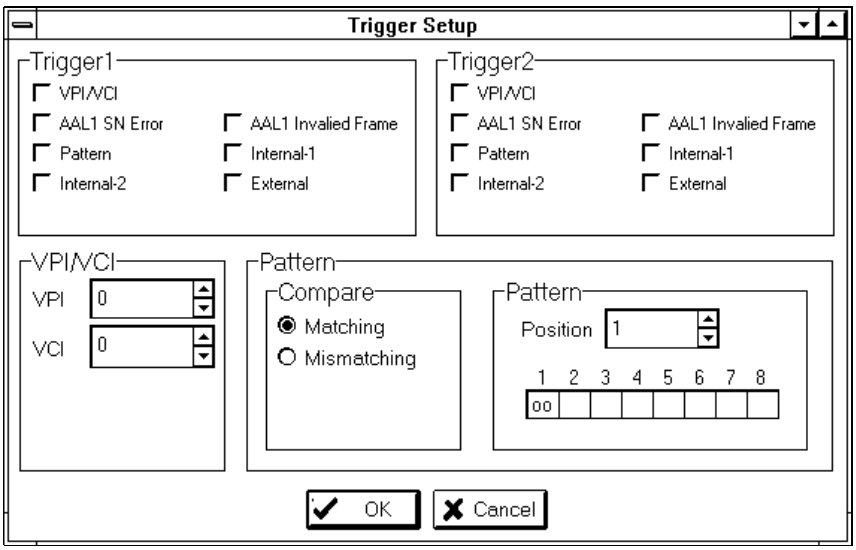


Figure 5-14 Trigger Setup Dialog Box

7. Use the check boxes to select a capture end trigger, and set the corresponding trigger.

5.4.3 Starting/Ending Capture

The following shows how to start and end captures.

1. Open the Capture Result panel.

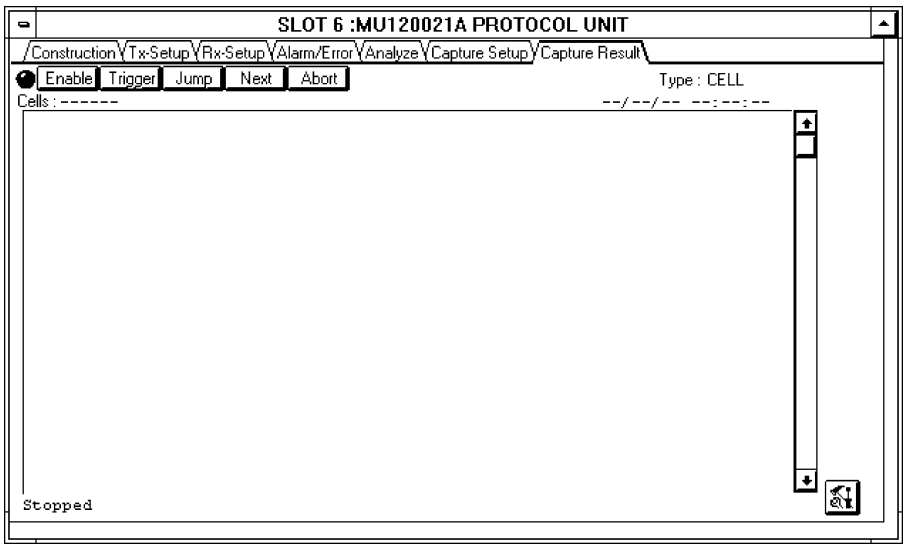


Figure 5-15 Capture Result Panel

2. Captures are started and stopped by pressing the Enable/Stop button. During captures, the LED to the left of the Enable/Stop button lights.

3. If the capture end trigger has been set to manual, pressing the Trigger button during a capture will generate and capture end trigger.

4. The capture status line displays the operation status of the capture.

5.4.4 Displaying Capture Results

The following describes the display of capture results.

1. When a capture ends, the results will automatically be displayed in the Capture Result panel.
2. To change the display format of the captured data, open the Condition Setup dialog box, and select the AAL Type, Channel, and display format to view.

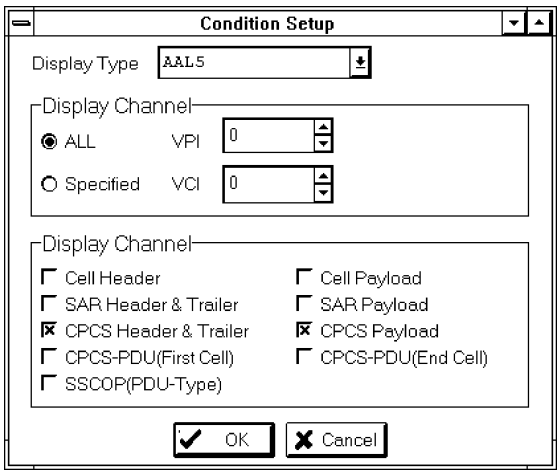


Figure 5-16 Condition Setup Dialog Box

Note

When you change the AAL Type, the number of the captured cells (frames) are reassigned. This may take some time to complete.

3. You can set Search and Jump conditions by pressing the Search button to open the Search dialog box. When you select Search, you can search and display in order from the currently displayed line using the Next button in the Capture Result panel.

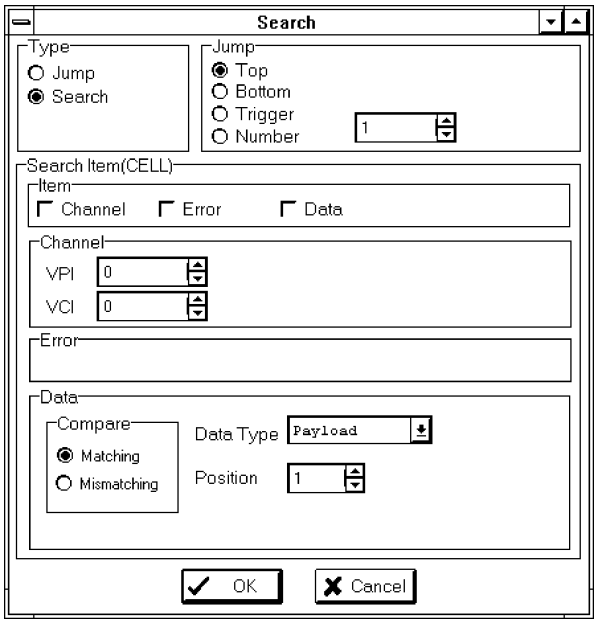


Figure 5-17 Search Dialog Box

Section 6 Performance Test

6.1 Overview

This Section discussed the performance test used to make sure the Unit is operating normally. Insert the Unit into the Main Frame, turn on power, and then refer to the MP1220A ATM Quality Analyzer Operation Manual for the procedure up to the opening of the MU120021A Protocol Unit window. Before running a performance test, use the internal self-loop back function from the Interface Unit to enable the reception of transmission signals. Refer to the Interface Unit Operation Manual for more information.
Appendix A provides a table for entering performance test results.

6.1.1 Error Measurement Test

Use transmission data (s_test.xxx to s_test5.xxx) prepared by the application to run the performance test. Measurements are made for AAL types AAL1, AAL3/4-SAR, AAL3/4-CPCS, and AAL5.

1. Use the Channel Setup dialog box opened from the Construction panel to adjust the Rx channel to the transmission data (VPI=1, VCI=16).

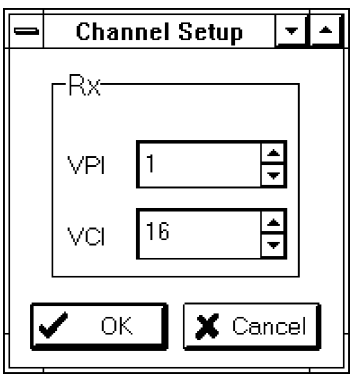


Figure 6-1 Channel Setup Dialog Box

2. Use the Memory Setup dialog box opened from the Construction panel to set the memory setting to Tx&Rx(4Mbytes).

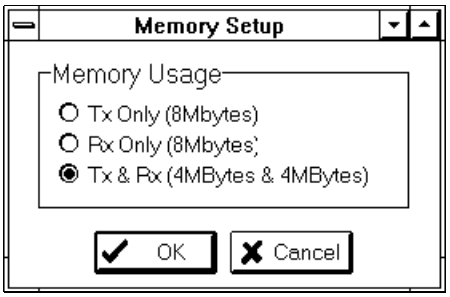


Figure 6-2 Memory Setup Dialog Box

3. Use the AAL Type Setup dialog box opened from the Construction panel to switch the AAL type. Tests are run separately for AAL1, AAL3/4-SAR, AAL3/4-CPCS, and AAL5, so make changes for each test. For AAL3/4-SAR and AAL3/4-CPCS measurement, set the MID value to 10.

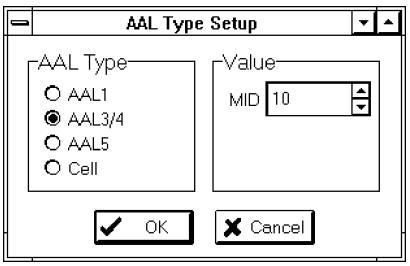


Figure 6-3 AAL Type Setup Dialog Box

4. Use the Generation Setup dialog box opened from the Tx-Setup panel to set transmission operation to Free.

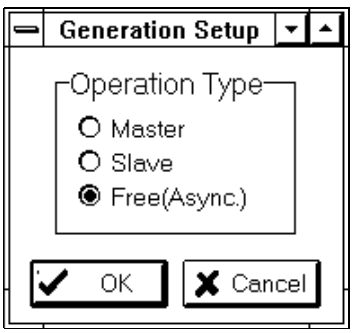


Figure 6-4 Generation Setup Dialog Box

5. Load the transmission data (s_test1.xxx and on) using the Memory Condition group box.
   There are five files. Load them separately for each test.

   s_test1.al1: Data for AAL1 test
   s_test2.al2: Data for AAL3/4-SAR test
   s_test3.al3: Data for AAL3/4-CPCS test
   s_test4.al4: Data for AAL5 test
   s_test5.al5: Data for 6.1.2 capture test

6. Use the Condition Setup dialog box opened from Tx-Setup to set the Mode and Time Stamp settings to Repeat and No Used respectively.

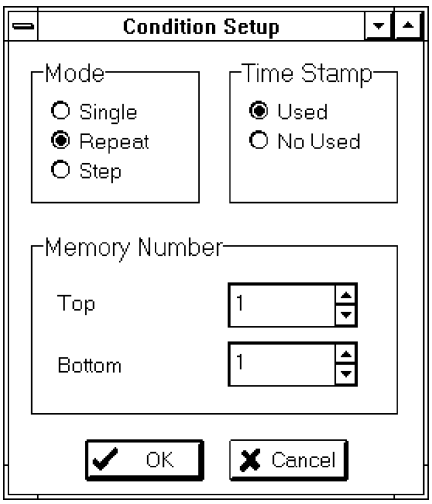


Figure 6-5 Condition Setup Dialog Box

7. Use the Error Addition Setup dialog box opened from the Tx-Setup panel to make the following settings:

•	Error type	Bit Error	
•	Period	1	
•	Rate	Single	
•	Bit	AAL 1 test	: 6
		AAL3/4-SAR test	: 8
		AAL3/4-CPCS test	: 10
		AAL5 test	: 10
•	Position	AAL 1 test	: 6
		AAL3/4-SAR test	: 8
		AAL3/4-CPCS test	: 10
		AAL5 test	: 10

Note

"Position" is counted from the beginning of the Header field.
Bit specification is performed in a word unit.

8. Use the Measurement Type dialog box opened from the Rx-Setup panel to set the reassembly timeout value to 10s. If the AAL Type is AAL3/4, set the SAR/CPCS to match the test.

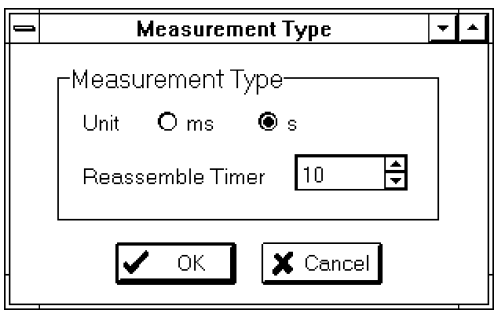


Figure 6-6 Measurement Type Dialog Box

9. Use the Layout dialog box opened from the Alarm/Error panel to make the following settings.

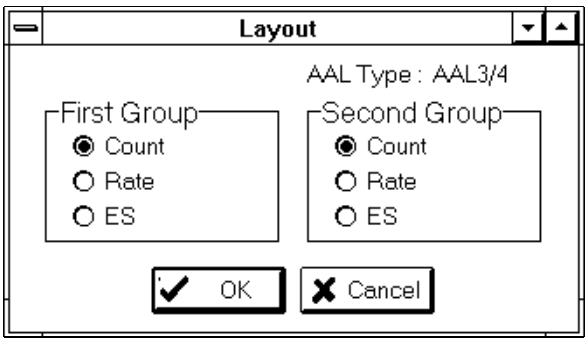


Figure 6-7 Layout Dialog Box

10. Transmit the test data.

11. Display the Alarm/Error panel, and select Current using the option buttons.

12. Start measurement. If the measurement results are as shown below, operation is normal.

Item		Measurement Result
AAL1 measurement	SAR-PDU	Depends on the Rate and measurement time of the Interface Unit
	SN Error	0
	SN Incorrected	0
	Cell Loss	0
AAL3/4-SAR measurement	SAR-PDU	Depends on the Rate and measurement time of the Interface Unit
	SAR-PDU(MID=xxx)	Depends on the Rate and measurement time of the Interface Unit
	ST Error	0
	SN Error	0
	LI Error	0
	CRC Error	0
	Abort	0
	CPCS-PDU	Depends on the Rate and measurement time of the Interface Unit (1CPCS-PDU = 4SAR-PDU)
	CPCS-PDU Error	0
AAL3/4-CPCS measurement	CPCS-PDU	Depends on the Rate and measurement time of the Interface Unit (1CPCS-PDU = 4SAR-PDU)
	Time Out	0
	CPI Error	0
	BEtag Error	0
	BASize Error	0
	AL Error	0
	Length Error	0
	SAR-PDU(MID=xxx)	Depends on the Rate and measurement time of the Interface Unit (1CPCS-PDU = 4SAR-PDU)
	SAR-PDU Error	0

Item		Measurement Result
AAL5 measurement	SAR-PDU	Depends on the Rate and measurement time of the Interface Unit (1CPCS-PDU = 4SAR-PDU)
	CPCS-PDU	Depends on the Rate and measurement time of the Interface Unit (1CPCS-PDU = 4SAR-PDU)
	Time Out	0
	Length Error	0
	Frame Size Error	0
	Abort	0
	CPI Error	0
	CRC Error	0

13. During measurement, insert a bit error (Single). If the measurement results are as shown below, operation is normal.

Item		Measurement Result
AAL1 measurement	SAR-PDU	Depends on the Rate and measurement time of the Interface Unit
	SN Error	1
	SN Incorrected	0
	Cell Loss	0
AAL3/4-SAR measurement	SAR-PDU	Depends on the Rate and measurement time of the Interface Unit
	SAR-PDU(MID=xxx)	Depends on the Rate and measurement time of the Interface Unit
	ST Error	- (indefinite)
	SN Error	- (indefinite)
	LI Error	0
	CRC Error	1
	Abort	0
	CPCS-PDU	Depends on the Rate and measurement time of the Interface Unit (1CPCS-PDU = 4SAR-PDU)
	CPCS-PDU Error	0

Item		Measurement Result
AAL3/4-CPCS measurement	CPCS-PDU	Depends on the Rate and measurement time of the Interface Unit (1CPCS-PDU = 4SAR-PDU)
	Time Out	0
	CPI Error	0
	BEtag Error	0
	BASize Error	0
	AL Error	0
	Length Error	0
	SAR-PDU(MID=xxx)	Depends on the Rate and measurement time of the Interface Unit (1CPCS-PDU = 4SAR-PDU)
	SAR-PDU Error	1
AAL5 measurement	SAR-PDU	Depends on the Rate and measurement time of the Interface Unit (1CPCS-PDU = 4SAR-PDU)
	CPCS-PDU	Depends on the Rate and measurement time of the Interface Unit (1CPCS-PDU = 4SAR-PDU)
	Time Out	0
	Length Error	0
	Frame Size Error	0
	Abort	0
	CPI Error	0
	CRC Error	1

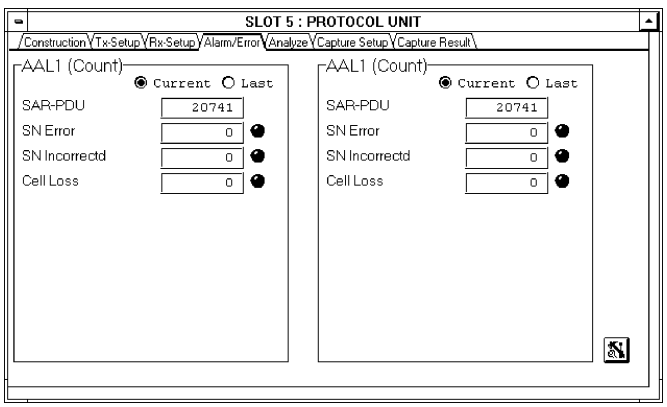


Figure 6-8 Alarm/Error Panel

6.1.2 Capture Test

Run a performance test by transmitting cells.

1. Make the setting from steps 1 through 5 under 6.1.1. The data used in this capture test is s_test5.xxx.

2. Select Cell for the setting in the AAL Type Setup dialog box opened from the Construction panel.

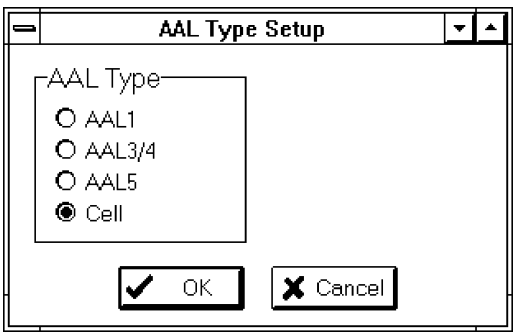


Figure 6-9 AAL Type Setup Dialog Box

3. Set Trigger Position and User Trigger in the Capture Setup panel's Condition Setup Dialog box to Top and Manual respectively. In addition, set Capture Channel and Used Filter in the Filter Setup dialog box to 1VPI/VCI and undefined (do not select) respectively.

4. Transmit data (On) in the Tx-Setup panel.

5. Display the Capture Result panel and start the capture (Enable). In a few moments after pressing the Trigger button, the capture stops, and you will see the content of the captured cells. If the content of the all the cells is as shown below, operation is normal.

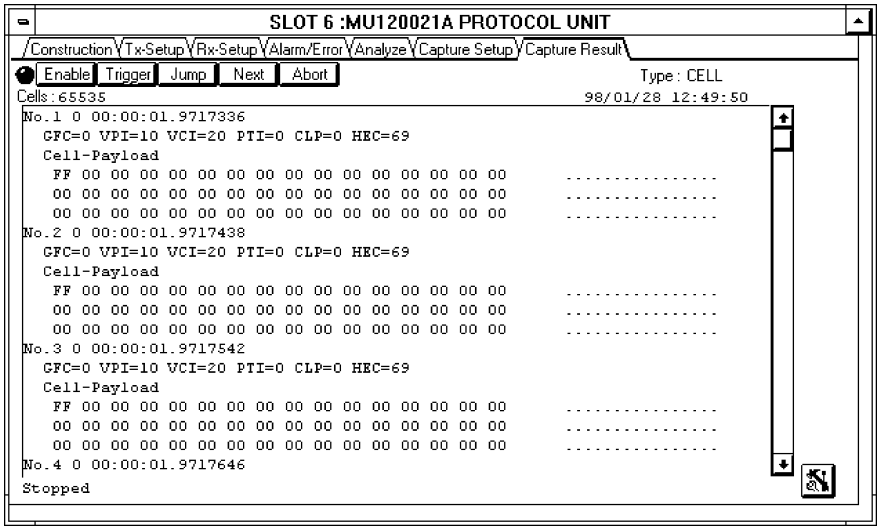


Figure 6-10 Capture Results panel

Item	Measurement Result
GFC	0 (H)
VPI	1 (H)
VCI	10 (H)
PT	0
CLP	0
HEC	E2 (H)
Payload	First byte is FF (H) and others are 00 (H)

Section 7 Editor

7.1 About Editor

This Section describes an attached application software (from now on, called AAL Editor). The AAL Editor is a software program that edits frame data for NULL, AAL1-SAR, AAL3/4-SAR, CPCS, and AAL5 to create a file that can be read in the Tx-Setup panel for the MU120021A Protocol Unit of the MP1220A ATM Quality Analyzer.

Table 7-1 Function description

Function	Description
Frame list edit function	Edits a frame list. That is, it can add, insert, and delete frame information from the frame list and convert it to a subframe.
Initialize function	Sets a network type and initial values for each frame.
Frame edit function	Edits data for an individual frame.
File function	Saves all frame data for a frame list in a file and reads the save data from the file. Also, it converts frame data to a file format that can be used for a protocol unit, and save the converted data in a file.

7.2 Starting AAL Editor

The AAL Editor is stored in the install disk with other MP1220A software. If the MP1220A software is already installed, the AAL Editor should be installed to the same MP1220A Group as the MP1220A ATM Quality Analyzer software. For more on how to install the AAL Editor, refer to your operation manual for the main unit.

1. Make sure that an Aaledit icon is added to the MP1220A Group of the Program Manager as shown in Figure 7-1.

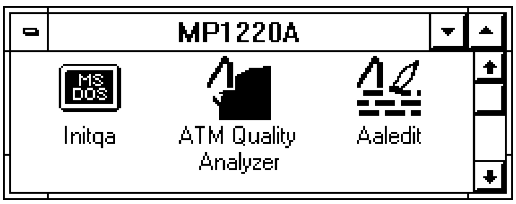


Figure 7-1 MP1220A Group box

2. Double-click on the icon for the AAL Editor. This starts the editor and enables it to be used.

Note

1. The AAL Editor may not work properly when it is started while other MP1220A software is running due to limited internal memory capacity. Use this editor after terminating all other MP1220A software programs.

7.3 Describing AAL Editor

7.3.1 Frame list screen

Start the AAL Editor to display the frame list screen as shown in Figure 7-2. Table 7-2 explains the items of the screen .

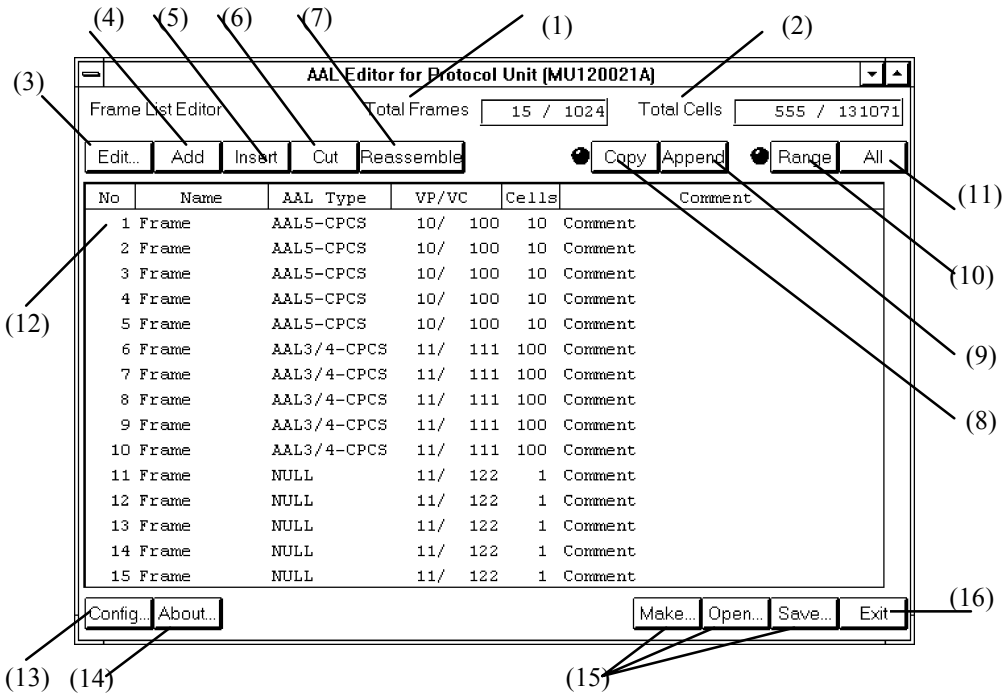


Figure 7-2 Frame list screen

Table 7-2 Frame list screen description

No.	Item	Description
(1)	Total Frames	Displays the total number of frames that have been added to a frame list. A maximum of 1024 frames can be added to the list. You cannot run Reassemble if the maximum number is exceeded.
(2)	Total Cells	Displays the total number of cells that make up each frame added to the list. A maximum of 131072 cells can be added to the list.
(3)	Edit button	Displays a dialog box for editing frames that have been added to a frame list. The Edit button can be run when a frame is selected (or displayed in reverse) in the frame list. Pressing the Edit button will display the frame edit dialog box shown in Section 7.3.3. Note that if more than one frame is selected, the frame you can edit is the top one.

No.	Item	Description
(4)	Add button	Adds a new frame to a frame list. The frame is added to the end of the list.
(5)	Insert button	Inserts a new frame into a frame list at the position where a frame is selected.
(6)	Cut button	Removes a selected frame from a frame list.
(7)	Reassemble button	Breaks down a selected frame and adds it to a frame list. Each frame type can be converted as follows: NULL → NULL AAL1-SAR → NULL AAL3/4-SAR → NULL AAL3/4-CPCS → AAL3/4-SAR AAL5 → NULL
(8)	Copy button	Copies a selected frame. To copy a frame, turn the LED green by pressing the Copy button with a frame selected, and click on the position of a frame list to which you want to copy it. The frame to be copied is inserted right before the clicked frame.
(9)	Append button	Copies a selected frame. To copy a frame, turn the LED green by pressing the Append button with a frame selected, and click on the position of a frame list to which you want to copy it. The frame to be copied is inserted right after the clicked frame.
(10)	Range button	Used to specify a range of multiple selected frames in a frame list. Clicking on a frame list selects one frame (displayed in reverse). With the frame being selected, clicking on another frame in the frame list after pressing the Range button will select all frames between the two frames. When the Range is valid, the LED turns green and the selected range is displayed in reverse.
(11)	All button	Selects a whole frame list. The whole frame list is displayed in reverse and the LED turns red if it is selected.
(12)	Frame list	Displays information on added frames. Clicking on a frame list selects and displays it in reverse. And, Double-clicking on a frame list works as if the Edit button was pressed.
(13)	Config button	Pressing the Config button displays a dialog box as shown in Figure 7-3. You can initialize the frame list screen and frame editor dialog by setting each item in the dialog box.
(14)	Abut button	Displays the version information of an ALL editor.

No.	Item	Description
(15)	Make, Open, Save buttons	Pressing any of the buttons will display the file dialog where you can save the results of editing into a file, read a saved file, and convert the edited contents to a file that can be used in protocol unit and then save the file. The function for each button is as follows: ・Make (convert → save) This allows you to save a whole information about a frame list as send data for the Tx-Setup panel in a protocol unit. A saved file has the file extension ".a12". ・Open This reads saved information about a frame list from a file. The file that can be read has the file extension ".ce". The read information will be added to the end of the frame list. ・Save This saves information about a frame list into a file. The file has the file extension ".ce".
(16)	Exit button	Terminates the current AAL editor.

7.3.2 Initial value edit dialog box

Press the Config button in the frame list screen shown in Figure 7-2 to display the initial value edit dialog given in Figure 7-3. Table 7-3 explains the items of the dialog box.

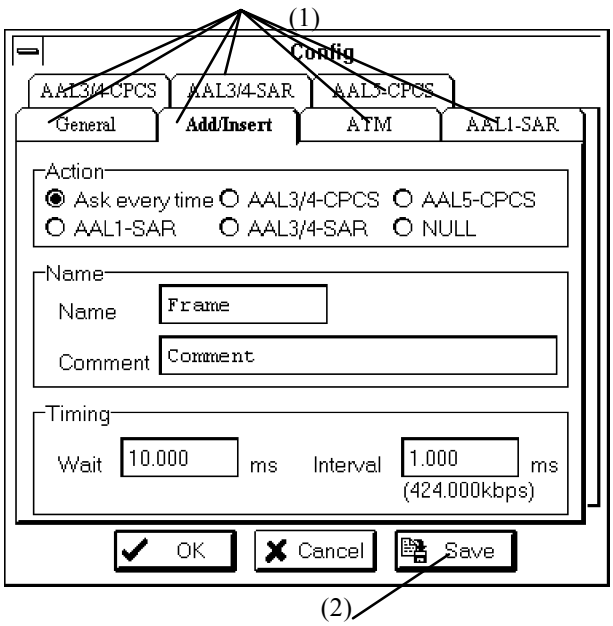


Figure 7-3 Initial value edit dialog box

Table 7-3 Initial value edit dialog box description

No.	Item	Description
(1)	Each tab sheet	Select a sheet that has items whose initial value you want to set. For information about what initial values you can set in what range, refer to Table 7-4.
(2)	Save button	Saves the contents that have been set. The saved settings will be valid when initiating the AAL editor.

Table 7-4 Description of each sheet

No.	Name of tab sheet	Item	Range	Description
(1)	General	Network Type	UNI NNI	Sets a network type. It allows you to set limits on GFC and VPI entered in the ATM set field in the frame edit dialog box. The changes will reflect in the cells that have been added to all frame lists.
(2)	Add/Insert	Action	Ask AAL1-SAR AAL3/4SAR AAL3/4CPCS AAL5	Sets the type of a newly created frame. When pressing the Add or Insert button, the type of a frame to be added will be determined. Selecting Ask everytime will set a dialog box to be displayed each time you try to add a frame.
		Name	—	Sets the Default frame name for a frame to be created.
		Comment	—	Sets the Default comment for a frame to be created.
		Wait	0～9999.999 [ms]	Sets the Default value in milliseconds for waiting time for a new frame to create. Initial value: 10 ms
		Interval	0～9999.999 [ms]	Sets the Default interval in milliseconds for cell interval time for a new frame to create. Initial value: 1 ms
(3)	ATM	GFC	0～F(H)	Sets the Default value for a cell header that makes up a new frame to create.
		VPI	0～255	
		VCI	0～65535	
		PT	0～7	
		CLP	0～1	
(4)	AAL1-SAR	CSI	0～1	Sets the Default value for a header and trailer for each new frame to create.
		SN	0～7	
(5)	AAL3/4-SAR	ST	0～3	
		SN	0～15	
		MID	0～1023	
(6)	AAL3/4-CPCS	MID	0～1023	
		CPI	0～255	
		Btag	0～255	
		AL	0～255	
(7)	AAL5-CPCS	UU	0～255	
		CPI	0～255	

7.3.3 Frame edit dialog box

In the frame list screen, click on the frame list or press the Edit button with a frame being selected to display the frame edit dialog where you can edit an individual frame.

7.3.3.1 General sheet

This sheet mainly allows you to set a cell header, frame header, or trailer that makes up a frame. The General sheet screen for the frame edit dialog box is shown in Figure 7.4 and the settings are given in Table 7-5.

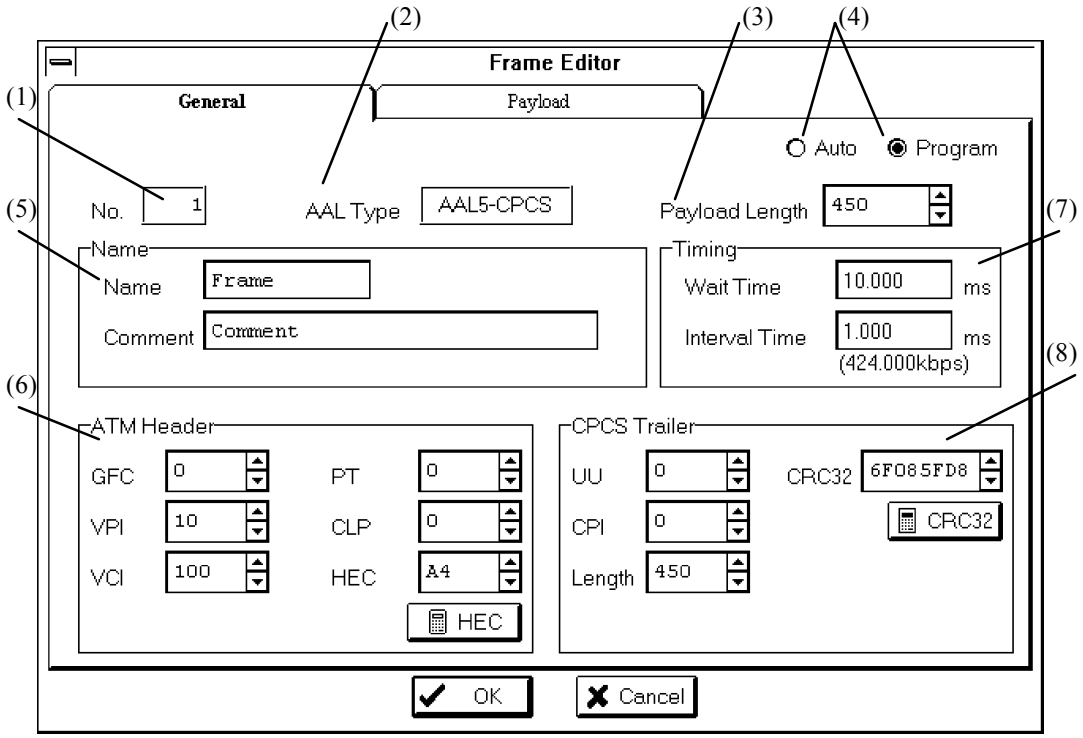


Figure 7-4 Frame edit dialog box (General tab sheet)

Table 7-5 Description about frame edit dialog box (General sheet)

No.	Item	Description
(1)	No.	Displays the edit number for a frame list.
(2)	AAL Type	Displays the AAL type for an edited frame.
(3)	Payload Length	Sets the Payload length (NULL, AAL1, AAL3/4-SAR) for a frame. It is not operational at time of editing frames because it has a fixed length.
(4)	Auto/Program	When editing AAL1, this calculates SNP automatically and sets it. When editing AAL3/4, this sets Etag to the value equal to Btag and Basize, and Length to the value of Payload Length. When editing AAL5, Length is set to Payload Length.
(5)	Name	Sets a frame name and comment. Up to 12 and 30 characters can be entered, respectively.
(6)	ATM Header	Sets a cell header for a cell that makes up a frame. GFC : 0～F(H) (valid only when setting UNI in the initial value edit dialog box) VPI : 0～4096 (0 - 255 for UNI) VCI : 0～65535 PT : 0～7 CLP : 0～1 The HEC button is valid only when an edited frame type is NULL cell and it is not operational for other AAL Types because automatic addition is set.
(7)	Timing	Sets up a send timing for a frame. Wait Time : Waiting time between frames Interval Time : Interval time between cells that make up a frame
(8)	Header・Trailer	Sets a header or trailer for a frame. When editing AAL1, CSI : 0～1 SN : 0～7 SNP : 0～F (cannot be set when item (4) is Auto) When editing AAL3/4-SAR, ST : 0～3 (BOM, COM, EOM, SSM) SN : 0～15 MID : 0～1023 LI : 8～44 for SSM, always 44 for BOM and COM, 4～44, 63 for EOM (This cannot be set when item (4) is Auto. And, L1 cannot be set if Abort is selected when editing EOM.) CRC : 0～3FF (cannot be set when item (4) is Auto)

No.	Item	Description
(8)	Header・Trailer (continued)	Sets a header or trailer for a frame. When editing AAL3/4-CPCS, MID : 0～1023 CPI : 0～255 Btag : 0～255 BASize : 0～65535 (cannot be set when item (4) is Auto) AL : 0～255 Etag : 0～255 (cannot be set when item (4) is Auto) Length : 0～65535 (cannot be set when item (4) is Auto) When editing AAL5, UU : 0～255 CPI : 0～255 Length : 0～65535 (cannot be set when item (4) is Auto) CRC : 0～FFFFFFFF (cannot be set when item (4) is Auto)

7.3.3.2 Payload tab sheet

You can set up a payload for a frame. The Payload sheet screen in the frame edit dialog box is shown in Figure 7-5, and its settings in Table 7-6. In the Payload sheet screen, a selected range is shown in reverse just as the frame select screen and can be, for example, cut or pasted.

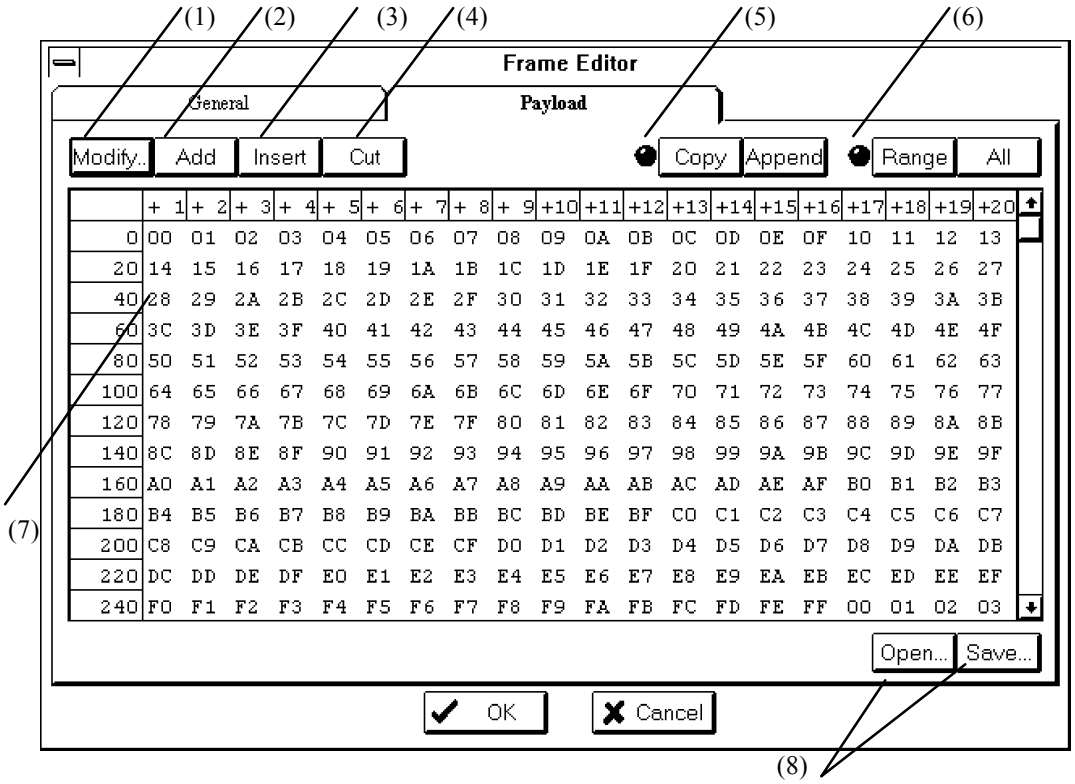


Figure 7-5 Frame edit dialog box (Payload tab sheet)

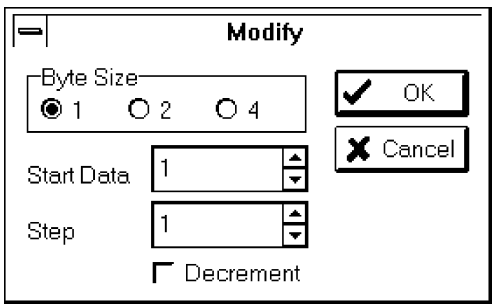


Figure 7-6 Modify dialog box

Table 7-6 Description about frame edit dialog box (Payload tab sheet)

No.	Item	Description
(1)	Modify button	Edits a selected range in a programmable manner. The Modify dialog box shown in Figure 7-6 is displayed at time of editing and allows you to set an edit byte size, start initial data, and step value. However, it is operational only when a selected range includes more than one byte.
(2)	Add button	Adds one byte of payload to the end of an existing payload.
(3)	Insert button	Adds one byte of payload to the position right before the place on which you click.
(4)	Cut button	Removes a selected range.
(5)	Copy and Append buttons	Copys a selected range. Press either button with bytes being selected to turn the LED green and then click on the place to which you want to copy them. ・Copy When you click on an edit payload indicated by (7), this will copy a selected range to the position right before the clicked position. ・Append When you click on an edit payload indicated by (7), this will copy a selected range to the position right after the clicked position.
(6)	Range and All buttons	Selects more than one byte. Normally, when you click on the position of an edit payload indicated by (7), only one byte is selected (displayed in reverse). To select a range of bytes, press the Range button and click on any position in the edit payload again with one byte being selected. This selects the bytes from the first to last byte you clicked on. Pressing ALL will select all bytes.
(7)	Payload grid	Edits a payload through keyboard.
(8)	Open and Save buttons	Pressing either button displays the file dialog where you can save the results of editing into a file and reads the saved results from the file. Each button has the following function: ・Open This reads the contents of a payload from a file. The file that can be read has the file extension ".bin". The file will be added to the end of the current payload. ・Save This save the contents of the current payload into a file. The name of a file to which the payload is saved has the file extension ".bin".

Section 8 Maintenance

8.1 Daily Care

1. When cleaning the unit's exterior, use a soft cloth damped with a neutral cleaning solution.
2. If the unit is covered with dust or other debris, remove it with a vacuum cleaner.
3. If any of the parts such as screws loosen, tighten them up using the appropriate tools.

8.2 Notes on Storage

Take note of the following information when storing the unit for long periods of time.

1. Remove any dust or debris before storing.
2. Avoid storing in areas where the temperature is not with a range of -20 to 60 ℃.
3. Do not store for a long period of time in places subject to direct sunlight or large amounts of dust.
4. Avoid areas where condensation might form or there is the danger of exposure to volatile gases.
5. Avoid areas where the equipment might oxidize or those subject to violent vibrations.

8.3 Transporting

When transporting the Unit, use its original packing materials if they are available. If they are not, pack the Unit according to the instructions below. When packing equipment, make sure to wear clean gloves and handle it carefully so as not to scratch or jolt it.

1. Wipe away dirt and dust from the exterior using a soft cloth.
2. Check to make sure no screws are loose or missing.
3. Protect protruding parts and other parts they may easily be deformed, and then wrap the Unit in a polyethylene sheet. In addition, wrap it with damp-proof paper or similar material.
4. Place the Unit in a sturdy cardboard box, and then seal it shut with adhesive tape. If necessary, use a wooden box or some other sort of container to transport the Unit.

8.4 Calibration

This Unit cannot be calibrated in anyway other than it was originally manufactured. To maintain top performance, we recommend periodic calibration.

Appendix

Appendix A Performance Test Result Entry Form

Unit Name : MU120021A Protocol Unit
Report Number : _____
Lot Number : _____
Tester : _____
Testing Location : _____
Room Temperature : _____ °C
Date : ___/___/_____(month/day/year)
Relative Humidity : _____ %
Notes : _____

Alarm/Error Performance Test

Item		Standard	Test Result	Pass/Fail
AAL1	SAR-PDU	-		
	SN Error	0 → 1		
	SN Incorrected	0		
	Cell Loss	0		
AAL3/4-SAR	SAR-PDU	-		
	SAR-PDU(MID=xxx)	-		
	ST Error	-		
	SN Error	-		
	LI Error	0		
	CRC Error	0 → 1		
	Abort	0		
	CPCS-PDU	0		
	CPCS-PDU Error	0		
AAL3/4-CPCS	SAR-PDU	-		
	SAR-PDU Error	0 → 1		
	CPCS-PDU	-		
	Time Out	0		
	CPI Error	0		
	BEtag Error	0		
	BASize Error	0		
	AL Error	0		
	Length Error	0		
AAL5	SAR-PDU	-		
	CPCS-PDU	-		
	Time Out	0		
	Length Error	0		
	Frame Size Error	0		
	Abort	0		
	CPI Error	0		
	CRC Error	0 → 1		

Capture Test

Item	Standard	Test Result	Pass/Fail
GFC	0		
PT	0		
CLP	0		
VPI	1 (H)		
VCI	10 (H)		
HEC	E2 (H)		
Pay Load	First byte FF (H) Other 00 (H)		