Digital Network Measuring Equipment

D5115

- ■ Supports evaluation of ISDN devices and switches and IMT-2000 base stations and systems
- ■ Supports optimum U point interface for evaluation of communications devices with built-in DSUs
- ■ Supports multi-interface, multi-channel simultaneous monitoring and simulation functions
- ■ Supports bit error rate test function that enables evaluation of line quality and other characteristics
- ■ Supports LAN data transmission with Windows 95
- ■ Employs platform that can flexibly respond to user needs
- ■ Graphical user interface enables easy operation
- ■ Supports PPP, IP translation (option)

D5115
Multimedia Protocol Analyzer

■ Features

The D5115 multimedia protocol analyzer has the flexibility to support evaluation of ISDN devices, switches, PBXs, and communications devices with built-in DSUs (routers, terminal adapters, etc.) as well as base stations and system evaluation for the next-generation IMT-2000 mobile communications protocol.

The D5115 can be taken advantage of for a wide range of applications, including development, production, and maintenance thanks to flexible system configured to meet diverse user environments by using the unit with the interface and function modules. In addition, the D5115 features easy operation by making use of the popular GUI used in the D5112 ISDN protocol analyzer. Using the same data format enables use of the data retrieved with the D5112 as well as the simulation programs, ensuring effective employment of existing resources.

■ Up to four modules mountable

It can run monitor, simulation, and bit error rate test (BERT) functions simultaneously on multiple channels and multiple interfaces by selectively combining independent interface and function modules.

■ Simultaneous execution of multiple simulation programs

The D5115 can simultaneously execute multiple simulation programs for selected interfaces. Sample programs stored in the main unit's hard disk can be easily modified to match user needs and abnormal communication sequences and error sequences can be easily reproduced.

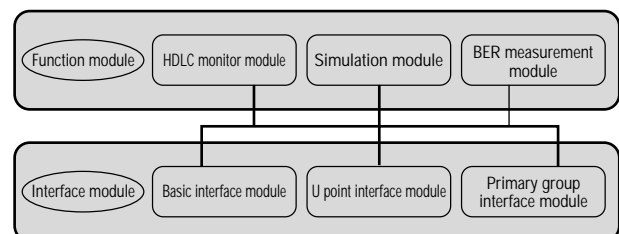This function also enables line switching function between selected interfaces.

■ Long-term monitoring function reliably captures

A 1G hard disk is integrated into the HDLC monitor function module to reliably capture communications errors (intermittent errors) for which the time of occurrence is unknown. Since this hard disk is divided into four partitions, four-channel simultaneous long-term monitoring can be achieved. D-channel can record approximately 900,000 frames (with a maximum frame length of 256 bytes).
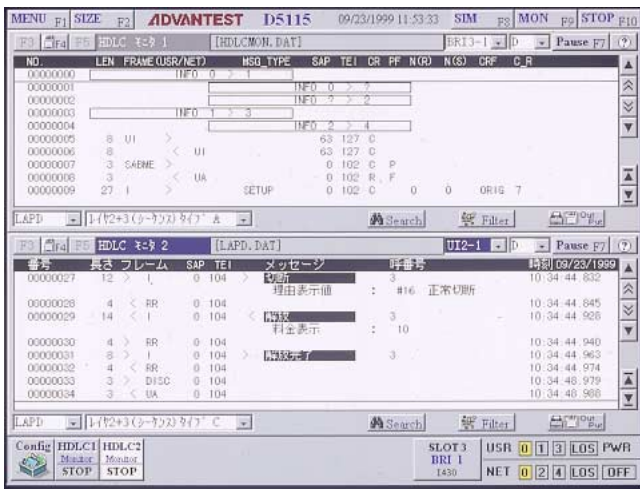
The D5115 can run multi-channel, multi-line long-term monitoring lasting up to several weeks depending on the amount of traffic. Moreover, data monitored over a long period can be efficiently analyzed using the search, filter, and other functions.

■ Enables simultaneous quality evaluation of multiple lines

The D5115 is capable of simultaneously performing multi-interface, multi-channel bit error rate tests to effectively evaluate line quality. The BER measurement function module allows BER measurement to be performed with up to six B channels (selected interfaces) at the same time when used in combination with the selected interface module (A simulation program is unnecessary). Simultaneous execution is also available for a maximum of four basic interfaces (D, B1 and B2 channels) with a single unit. This enables bit error tests to be carried out quickly for communication devices with multiple interfaces. When used in combination with the selected interface module, the simulation function module enables BER measurement using the selected B channel. (A simulation program is needed.)

Digital Network Measuring Equipment

Optimum for Evaluation of Built-in DSU Terminal (U point: Ping-Pong)

D5115

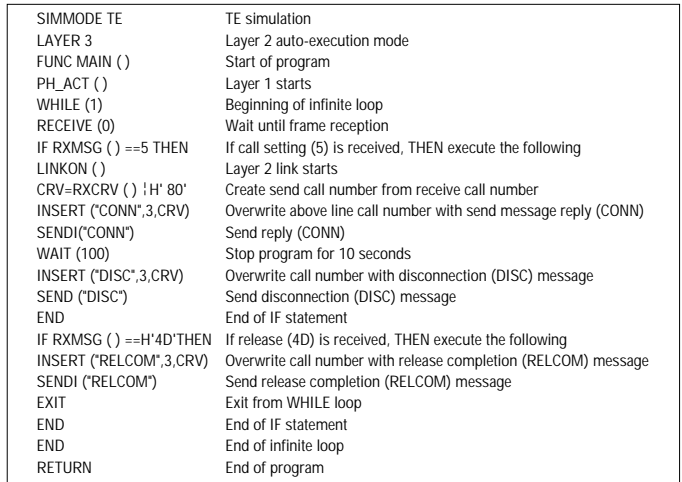■ **HDLC monitor screen (Layer 1 and sequence display)**

■ **HDLC monitor screen (Japanese detailed display)**

■ **Message builder screen (Enables easy creation and transmission of selected data)**

■ **Editor screen (Selected scenario preparation/ simulation program)**

SIMMODE TE	TE simulation
LAYER 3	Layer 2 auto-execution mode
FUNC MAIN ( )	Start of program
PH_ACT ( )	Layer 1 starts
WHILE (1)	Beginning of infinite loop
RECEIVE (0)	Wait until frame reception
IF RXMSG ( ) ==5 THEN	If call setting (5) is received, THEN execute the following
LINKON ( )	Layer 2 link starts
CRV=RXCRV ( ) ¦H' 80'	Create send call number from receive call number
INSERT ("CONN",3,CRV)	Overwrite above line call number with send message reply (CONN)
SENDI("CONN")	Send reply (CONN)
WAIT (100)	Stop program for 10 seconds
INSERT ("DISC",3,CRV)	Overwrite call number with disconnection (DISC) message
SEND ("DISC")	Send disconnection (DISC) message
END	End of IF statement
IF RXMSG ( ) ==H'4D'THEN	If release (4D) is received, THEN execute the following
INSERT ("RELCOM",3,CRV)	Overwrite call number with release completion (RELCOM) message
SENDI ("RELCOM")	Send release completion (RELCOM) message
EXIT	Exit from WHILE loop
END	End of IF statement
END	End of infinite loop
RETURN	End of program

■ **Example of simulation function application (Enables implementation of line switching function between selected interfaces)**

■ **Bit error measurement function (Simultaneous BER measurement of six selected channels of selected interface)**

BER : Bit Error Rate
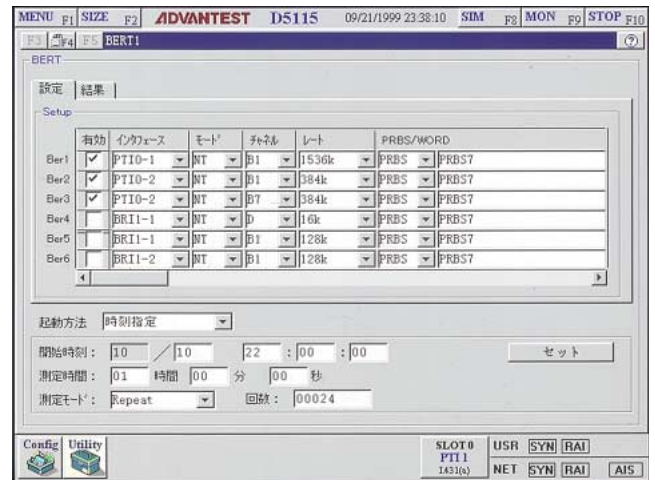
Digital Network Measuring Equipment

Optimum for Evaluation of DSU integrated terminal (U point: Ping-Pong)

D5115

— Specifications —

Main unit
OS: Microsoft® Windows 95® operating system
CPU: i486™ DX4 (100 MHz)
Main memory: 32MB
Built-in FDD: 3.5-inch (2 modes; 720kB/1.44MB)
Built-in HDD: 2.5-inch (1GB)
Serial terminal: RS-232 D-sub 9-pin
Parallel terminal: Centronics D-sub 25-pin
External CRT terminal: Analog RGB mini D-sub 15-pin
Mouse terminal: PS/2 type mini DIN 6-pin
Keyboard terminal: PS/2 type mini DIN 6-pin
PC card: JEIDA/PCMCIA compliant (type II × 2 or type III × 1)
Internal standard clock: Precision of ±5ppm
Display function: 10.4-inch (TFT color LCD with FL backlight, 640 × 480 dots, 256 colors)
Power supply: AC100V to 240V, 50/60 Hz
Dimensions: 355 (W) × 250 (H) × 170 (D) mm
Mass: Approx. less than 6.4 kg (main unit only)
*Keyboard and mouse are sold separately. Customers are requested to either supply their own or purchase from the list of Advantest accessories.

Applicable interface
Basic interface module (D51101):
Interface:
   I.430 (ISDN basic user, network interface layer 1 specification)
   I.430-a (Dedicated line user, network interface layer 1 specification)
Number of lines: Standard 1 line (max. 2 lines)
Operation mode: Monitor mode
Simulation mode; NT (network side)/TE (terminal side)
Layer 1 detection: INFO 0,1,2,3,4,LOS (loss of synchronization)
Power supply polarity detection: OFF/normal/reverse
Wiring configuration setting: Short-range passive bus/Extended passive bus/Point-to-point
End terminal resistance setting: OFF/50 Ω/100 Ω
U point interface module (D51102):
Interface: TCC standard JT-G961
   (ISDN basic access metallic link subscriber parent transmission method)
   (Ping-Pong method)
Number of lines: 1
Operating mode: Monitor mode
Layer detection: SIG status transition detection
Power supply polarity detection: OFF/normal/reverse
Primary group interface module (1.5Mbps interface) (D51103):
Interface:
   I.431 (ISDN primary group speed user, network interface layer 1 specification)
   I.431-a (Dedicated primary group speed user, network interface layer 1 specification)
Number of lines: Standard 1 line
   Max. 2 lines (with OPT51103+01 installation module)
Operating mode: Monitor mode
   Simulation mode; NT (network side)/TE (terminal side)
Layer 1 detection: USR; SYN, RAI, (AIS)
   NET; SYN, RAI, (AIS)
Number of channels: Standard 2 channels, maximum 4 channels

Protocols
Layer 2: Q.921 (LAPD) Q.921-a, Q921-b, LAPB
Layer 3: Q.931, Q-931-a, Q-931-b, X.25
Display format: Layer 1/2/3 individual display or simultaneous display Japanese sequence/detailed translated display/HEX display
Storage capacity:
   RAM; Approx. 2Mbytes/channel
   HDD; Approx. 1Gbyte
Time stamp: Resolution 1ms (Max. recording duration: 127 days)
Search function: Search by specifying time, frame, pattern, or error
Filter function: Layer 1 information, RR non-display, display of specified TEI, SAP1, or call numbers.
Audio monitoring function: A-law/u-law, 32k ADPCM/64k PCM, and selected single channel audio monitor using (3.5 headphone)

Simulation function (D51130)
Mode: When combined with the basic/primary group interface: NT (network side)/TE (terminal side)
   When combined with the U-point interface: LT (switching office side)
Line switching function: Function for switching between selected interface and selected B channel
Loopback function: Loop-back of selected channel
Audio: Audio I/O to a selected channel with accessory headset (Note 4) included (A-law/u-law, 32k ADPCM/64k PCM)
Bit error measurement: PRBS pattern, WORD pattern (16 bits)
LAPD function
Applicable protocol: Q.921 (LAPD), Q931, X.25 (In addition to the above protocols, optional protocols are available in the HEX input mode)
LAPB function
Applicable protocol: HDLC, X.25 (In addition to the above protocols, optional protocols are available in the HEX input mode)

BER measurement function module (D51140)
Number of measurement channels: 6
Channel rate (bit rate)
Channel 1 [bps]: 16K, 64K, 128K, 192K, 256K, 320K, 384K, 448K, 512K, 576K, 640K, 704K, 768K, 832K, 896K, 960K, 1024K, 1088K, 1152K, 1216K, 1280K, 1344K, 1408K, 1472K, 1536K
Channel 2 to 6 [bps]: 16K, 64K, 128K, 192K, 256K, 320K, 384K
Measurement pattern
PRBS: ($2^{n}-1$ n=3, 4, 5, 6, 7, 9, 10, 11, 15, 17, 18, 20, 21, 22, 23, 25, 28, 29, 31)
WORD: Pattern length; 1 to 65,536bit

IPV4 connection monitoring software (OPT5115+71)
   (PPP, IP translation software)

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   Windows is a trademark of Microsoft Corporation.