Digital Network Measuring Equipment

New 12.5Gbps Error Detector for SDH/SONET

D3286

- **SDH/SONET frame synchronization suitable for system evaluation**
- **Error detection with area specification effective for SDH frame and ATM cell measurement**
- **Burst data measurement effective for Round-Trip test**
- **Auto search function which adjusts the most appropriate timing and voltage**
- **Monitor output of data and clock**
- **FD drive for storing measurement results and setup data**
- **GUI environment realizing easy and legible operating environment**

D3286
Error Detector

To accommodate transmission of large-capacity information in the coming multimedia generation, ultra high-speed digital telecommunications networks are being constructed.
For evaluation and analysis of O/E and E/O modules and ultra high-speed logic devices used for multiplexers and repeaters for telecommunications systems, a signal source with high speed and high quality is necessary.
D3186 Pulse Pattern Generator/D3286 Error Detector offers excellent waveforms with high speed and high quality and diverse error detecting functions in an operating frequency range from 150 Mbps to 12.5 Gbps.
In addition, with the 8 M-bit large capacity memory and ADVANTEST's unique frame pattern generation function, D3186/D3286 is a new generation of error performance test system which is compatible with STM-1 (155.52 Mbps) to STM-64 (9.95 Gbps) in SDH/SONET.

■ SDH/SONET Frame Synchronization Suitable for System Evaluation

With SDH/SONET equipment, frames are recognized by means of the synchronization pattern described on the SOH (section overhead).
D3286 error detector mounts the circuit for recognizing the frame synchronization signal and has the capability to set not only SDH/SONET frames but also FDDI, ATM frames and arbitrary synchronization patterns, allowing frames to be synchronized with user-specific frame patterns.

■ Burst Data Measurement Effective for Round-Trip Testing

In long-distance round-trip testing, inter-satellite digital transmission testing and burst data (non-continuous data) are measured. Therefore conventional error detectors cannot be used. For easy measurement of burst data, D3286 error detector is provided with the internal gate and external gate measurement modes.

■ Error Rate Measurement Function with Area Specification, Effective for Measurement of ATM Cell

The measurement function with area specification of D3286 makes it possible to recognize whether the error occurs on the SOH or payload (in error measurement on SDH/SONET frames); measure errors within the specified cells (in error measurement on ATM cells).

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■ Automatic Adjustment to the Aimed Voltage at Optimum Timing with Any Mark-Space Rate and WORD Pattern

The auto search function allows D3286 to adjust to the aimed threshold voltage at optimum timing with any mark-space rate and WORD pattern, even if an error exists. In addition, GPIB interface makes it possible to read the voltage value, reducing the time for automatic measurement and evaluation.

■ Detailed Analysis of Error Measurement Results

The error measurement result classification function which classifies the result into omit error and insert error, displays them and makes it easier to recognize the tendency in error occurrence of the system and device under adjustment. For example, determine whether the amount of bias is appropriate or not. This function is evaluated as powerful and effective function at development, inspection sections and production lines.

■ Monitor Output of Input and Clock Data Effective for Evaluation of Jitter and Waveform Quality

During bit error measurement, by observing waveforms of the device under measurement without disconnecting the cables, waveform quality can be checked and the amount of jitter measured.
The monitor output can also be used as a signal to the clock generation circuit and is effective for O/E converters and OR devices.

■ Simple and Convenient Operating Environment with GUI (Graphical User Interface)

To allow the user easy concentration on the desired functions, D3286 configures graphical operating environment on the monitor of a personal computer.
Mouse-oriented operation and effective screen configuration make it easier to perform key selection without mis-operation.

■ Built-In FDD for Storing Measurement Results and Setting Data

D3286 mounts a floppy disk drive for storing measurement results and settings (measurement conditions).

Specifications

Clock input:
Frequency range: 150 MHz to 12.5 GHz
Data input:
Frequency range: 150 Mbps to 12.5 Gbps
Sensitivity: 100 mV_{p-p} typ. (12 Gbps)
50 mV_{p-p} typ. (6 Gbps)
Approx. 50 Ω
Measurable patterns:
PRBS (pseudo random pattern): 2^N-1, N = 7, 9, 10, 11, 15, 23 and 31
WORD (programmable pattern): Max. 8-Mbit long
SDH/SONET pattern: Max. STM-64/OC-192
Measurement functions:
Bit error rate
Bit error count
Bit error interval
Bit error-free interval
Threshold EI/EFI
Error performance (conforms to CCITT G.821)
Frequency
Measurement modes:
Normal, external gate and burst
Area specification and error bit location (error location function) (optional)
Timer modes:
Single, repeat and untimed
Synchronization modes:
Normal synchronization and frame synchronization (selectable)
Alarms:
DATA : Informs a bit error.
Sound pitch varies with the amount of errors.
ALARM : Informs CLOCK interrupt, frequency reduction, pattern-out-of-synchronization, frame-out-of-synchronization and power failure.
Sound volume: Variable
External storage devices:
FDD: 2DD, 2HD (MS-DOS format)
Options:
OPT3286+70 : Mixed pattern generation function
OPT3286+72 : Main unit operating frequency range (150M to 12.5GHz)