D3286 Specifications

Operating Frequency

Operating Frequency Range: 150 MHz to 12 GHz
150 MHz to 12.5 GHz (Option 72)

Measuring Functions

Reference Measuring Functions:
Simultaneous measurement of 6 functions, 1 function can be selected for display
Error rate measurement
Error count measurement
Error interval (EI) measurement
Error free interval (EFI) measurement
Frequency measurement
Frame count measurement:
Frame count measurement can only be done when the pattern mode is FRAME, the payload format is WORD or PRBS, and the measuring time mode is FRAME TIME (FR. TIME) or FRAME INTERVAL (FR. INTV)

Display Format: Synchronous measurement

Error rate measurement (1 type fixed)

Exponential format: Displays the number of error bits per number of input bits
Up to 5 digit mantissa + exponent

Error count measurement (2 types, 1 type can be selected for display)

Exponential format: Displays the number of error bits in exponential format
Up to 5 digit mantissa + exponent

Integer format: Displays the lowest 8 digits of the number of error bits as an integer

Error interval measurement (2 types, 1 type can be selected for display)

% format: Displays the number of error intervals per number of measured intervals as a fixed decimal point percentage
Up to 3 digit integer part + 4 digit decimal part

Number of interval format: Display the number of error intervals in exponential format
Up to 5 digit mantissa + exponent

Error free interval (EFI) measurement (2 types, 1type can be selected for display)

% format: Displays the number of error free intervals as a fixed decimal point percentage
Up to 3 digit integer part + 4 digit decimal part

Number of interval format: Displays the number of error free intervals in exponential format
Up to 5 digit mantissa + exponent

Frequency measurement (1 type fixed)

Fixed decimal point: Displays the frequency of the input clock in MHz units in fixed decimal point format
Up to 5 digit integer part + 3 digit decimal part

Number of frames measurement (1 type fixed)

Exponent format: Converts the number of input bits to a number of frames and displays this number
Up to 5 digit mantissa + exponent

Error Measurement Mode: 3 groups can be selected, within each group three types of measurements can be done simultaneously, and one type displayed

Omission/Insertion Group

OMISSION: Displays the measured value of errors of the sort when logical data value of '0' is input when '1' is the expected value

INSERTION: Displays the measured value of errors of the sort when logical data value of '1' is input when '0' is the expected value

TOTAL: Displays the measured value of the sum of OMISSION and INSERTION type errors (all errors).

Overhead/Payload Group

Can only be selected when the pattern mode is FRAME

OVERHEAD: Displays the measured value of errors in the overhead part.

PAYLOAD: Displays the measured value of errors in the payload part.

ALL: Displays the measured value of sum of the errors in the overhead part and payload part (all frame errors).

Specific field group

Can only be selected when the pattern mode is WORD or FRAME

SPECIFIC FIELD: Displays the measured value of errors within a specified specific field.

OTHER FIELD: Displays the measured value of errors within the fields other than the specified specific field.

ALL: Displays the measured value of the sum of the errors in the specific field and the other fields (all pattern errors)

Midway Results Display: ON/OFF selectable

Threshold EF/EFI Measurement:
Measured results can only be given as printer output and file record Measures simultaneously with the reference measurement function

Error Performance Measurement:
Measured results can only be given as printer output and file record
Measurement items (the 5 items below are measured simultaneously with the reference measurement function)
ES:Errored Seconds
EFS: Error Free Seconds
SES: Severely Errored Seconds
US:Unavailable Seconds
DM:Degraded Minutes

Measurement Control

START: Starts simultaneous measurement of all measuring functions, or measurement interrupt and re-start. Can be done with front panel keys, GPIB or external gate input signal.

STOP: Stops simultaneous measurement of all measuring functions. Can be operated through front panel keys, GPIB built-in timer, or external gate input signal.

Measuring Time Mode: Any of 4 types can be selected

NORMAL: Sets measurement interval in seconds units, measurement period in day/hour/minute/second units.

FR. TIME: Can only be selected when pattern mode is FRAME. Measuring interval is set in number of frame units and measuring period is set in day/hour/minute/second units.

FR. INTV: Can only be selected when pattern mode is FRAME. Measuring interval is set in number of frame units and measuring period is set in number of measuring interval units.

BURST: Each time pattern synchronization is established during the period from measuring start to measuring end, only the area set by the burst timer is measured.

Mask Function: Can only be selected when pattern mode is WORD or FRAME.
Synchronization and measurement are done ignoring errors in the specified mask field.

Pattern Synchronization

Auto synchronization: ON/OFF selectable
When ON, re-synchronization is done automatically when the error rate is equal to or greater than the prescribed value.

Frame synchronization: Can be turned ON or OFF when pattern mode is FRAME or WORD.
Set OFF during PRBS.
When ON, the specified hunting pattern is searched and high speed pattern synchronization is done.

Re-synchronization: Command can be given using front panel keys or GPIB.

Measurement Conditions Display Lamp

GATE: Lights during measurement.

OVER: Lights when measurement results overflow.

Error Alarm Display Lamp

DATA error: Lights when a 1 or more bit error is detected.
Goes out when error is no longer detected.

CLOCK error: Lights when the input clock fails or frequency is too low.
Goes out when normal clock is input.

SYNC error: Lights when there is a pattern synchronization error.
Goes out when pattern synchronization is established.

History Display Lamp

POWER fail: Lights after power is restored after a power failure. Stays lit until the next measurement stars.

CLOCK error: Lights when the input clock fails or frequency is too low. After the error is recovered, lights until the next measurement starts.

SYNC error: Lights when there is a pattern synchronization error. After the error is recovered, lights until the next measurement starts.

Buzzer

Error: Sounds when there is a DATA error. Can be set to ON/OFF. Volume variable (same as alarm volume).

Alarm: Sounds when there is a CLOCK or SYNC error. Can be set to ON/OFF. Volume variable (same as error volume).

Measurement Input

Data Input

Input format:	DC termination, DC coupling
Code:	NRZ
Polarity:	Logical inversion possible
Input amplitude:	0.1 Vp-p to 2 Vp-p
Threshold level:	Setting range -2.040 V to + 2.040 V Setting resolution 0.001 V steps (with 0 V terminal voltage) Setting range -1.850 V to -0.750 V Setting resolution 0.001V steps(with -2 V terminal voltage)
Terminal voltage:	-2 V/0 V (GND)
Input impedance:	Approx. 50 Ω
Connector:	2.92 mm (plug)

Clock Input

Input format:	DC termination, AC coupling
Duty ratio:	50% ±5%
Polarity:	Identified at rise edge
Variable delay:	±400 ps 1 ps steps (at monitor output)
Input amplitude:	0.5 Vp-p to 2 Vp-p
Terminal voltage:	-2 V/0 V (GND)
Input impedance:	Approx. 50 Ω
Connector:	2.92 mm (plug)
Input waveform:	Sine wave or rectangular wave

Auto Search Function

Automatically finds the optimum values for data input threshold level and clock input delay.

Trigger Signal Output

Output Signal:	Can be selected as either clock synchronization or pattern synchronization
Clock synchronization (1/32 CLK):	Clock frequency 1/32 divided output
Pattern synchronization (PATTERN):	Varies output position to any position in 16 bit units
Output level:	HIGH level 0 V ±0.2 V, LOW level -1 V ±0.2 V
Load impedance:	50 Ω to 0 V
Connector:	SMA

Auxiliary Output

Monitor Output

Data monitor:	Outputs data input through amplifier
Load impedance:	50 Ω to 0 V
Connector:	2.92 mm (plug)
Clock monitor:	Outputs clock input through amplifier and variable delay line
Load impedance:	50 Ω to 0 V
Connector:	2.92 mm (plug)

Error Output

Direct output	
Rate:	1/32 of clock input
Signal form:	32 phase logical sum
Code:	RZ
Output voltage:	HIGH level -0.0 ± 0.3 V LOW level -1.0 ± 0.3 V
Load impedance:	50 Ω to 0 V
Connector:	SMA (jack)
Stretched output	
Level:	TTL positive pulse
Pulse width:	Approx. 100 ns
Load impedance:	50 Ω to 0 V
Connector:	BNC (jack)

Control Input

External Gate Input

Function:	Controls measurement start/stop
Input level:	0 V/-1 V
Input impedance:	Approx. 50 Ω to 0 V
Connector:	BNC (jack)

External Alternate Input

Function:	Switches between patterns A and B in alternate mode. Pattern A at HIGH level, pattern B at LOW level.
Input level:	0 V/-1 V
Input impedance:	Approx. 50 Ω to 0 V
Connector:	BNC (jack)

Patterns

Same as for the D3186 Pulse Pattern Generator

Timer/Clock

Timer/Clock Display

ELAPSED:	Displays the elapsed time since the start of measurement.
TIMED:	Displays the remaining time until the end of measurement.
PERIOD:	Displays or sets the measuring period from the start of measurement until the end.
INTERVAL:	Displays or sets the measuring cycle.
BURST TIME:	Displays or sets the measuring time per signal burst when the measuring time mode is BURST.
REAL TIME:	Displays or sets real time as year/month/day/hour or day/hour/minute/second.

Timer Mode

SINGLE:	When the set period of measurement has elapsed, the measurement is stopped.
REPEAT:	When the set period of measurement has elapsed, a new measurement is begun. The sequence is repeated until a command to stop is received.
UNTIMED:	Measurement continues regardless of the set measuring period, until the command to stop is given.

Time Reference Clocks:	Internal, external, selected automatically
Internal clock stability:	10 ppm/year
External clock input:	10 MHz, 1 Vp-p , AC coupled
Connector:	BNC (Jack)

System Functions

Printer:	Measurement results can be output to an external printer

External printer interface:

Standard specification:	Centronics specification
Connector:	36 pin micro ribbon
File Function:	Same as for the D3186 Pulse Pattern Generator and possible to save measurement results
Measurement results:	MS-DOS® text format

Remote Control

Interface:	GPIB (IEEE 488-1978)

Master/Slave Function

Function:	When used together with the D3186 Pulse Pattern Generator, allows the pattern settings of the D3186 and D3286 to be interlocked.
Connection method:	Connected by GPIB cable, through each GPIB connector

Panel Lock:	Can lock all condition settings except power ON/OFF, panel lock ON/OFF, GPIB Local return, rear panel DIP switch settings, and buzzer volume level.

General Specifications

Numerical value display:	Green 7 segment LED display
Set conditions memory:	After power has been ON for 12 hours, retained at least 2 weeks (backed up by secondary battery)
Operating temperature range:	0°C to +40°C +20°C to +30°C (Option 72)
Operating humidity range:	40% to 85% RH
Storage temperature range:	-20°C to +60°C
Storage humidity range:	30% to 85% RH (without condensation)
Power:	AC 100 V to 120 V, AC 220 V to 240 V (switches automatically) 48 to 63 Hz, sine wave
Power consumption:	500 VA max.
Mass:	32 kg max.
External dimensions:	Approx. 266 (H)×424 (W)×550 (D) mm

Standard Accessories

Name	Type	Stock No.	Quantity	Remarks
Power Cable	A01402	DCB-DD2428X01	1	
SMA-SMA Cable	DGM224-00700A	DCB-FF1211X01	3	
GPIB Cable	408JE-101	DCB-SS1076X02	1	
3 Pin - 2 Pin Converter Adapter For Power Plug	A09034	JCD-AL003EX03	1	
2.92 mm Adapter	02K121-K00S3	JCF-BJ001EX05	4	
User's Manual		JD3286 ED3286	1	Japanese English

Please be sure to read the manual of product thoroughly before using the products. Specifications may change without notification.