Product Brochure

Anritsu

MP8931A

Bit Error Rate Tester

1 kHz to 155 MHz

The MP8931A Bit Error Rate Tester has digital broadcast interfaces (DVB-ASI, DVB-SPI) in addition to the general bit-error-rate test function. It is suitable for quality evaluation at device production/construction and for maintenance after installation.

Features

- **Clock frequency: 1 kHz to 155 MHz**
- **Pseudo-random (PN9/15/23) and ALL0/1, 1010 fixed pattern measurement**
- **MP8931A includes conventional NRZ I/F (TTL-Clock/Data/Enable) as standard equipment, as well as DVB-ASI[*1] and DVB-SPI[*2], both of which are for digital broadcasting**
- **Selectable error rate measurement part in an DVB I/F data packet is possible**
- **Error insertion**
- **GPIB/RS-232C I/F**
- **Small design (Thin case)**

∗1: DVB-ASI: Digital Video Broadcasting - Asynchronous Serial Interface
∗2: DVB-SPI: Digital Video Broadcasting - Synchronous Parallel Interface

MP8931A

Bit Error Rate Tester

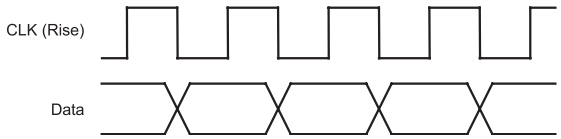
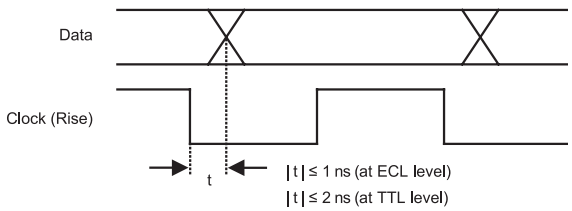
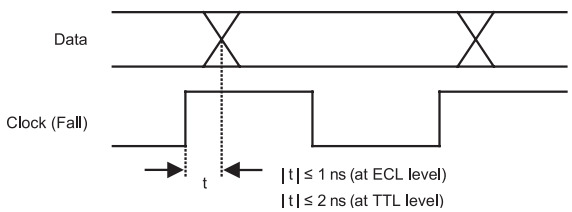
1 kHz to 155 MHz

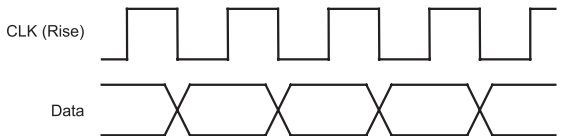
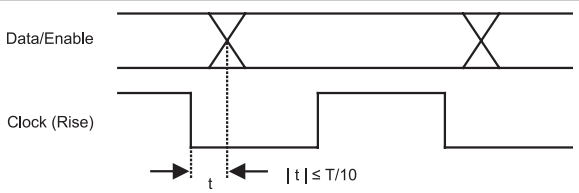
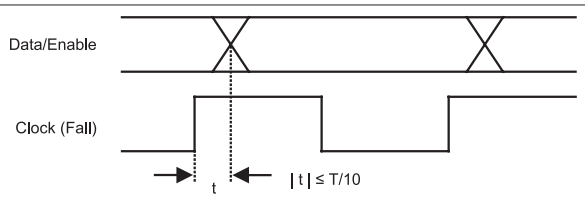
Specifications

(1) Common Items

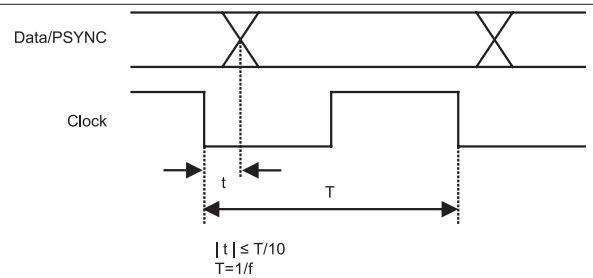
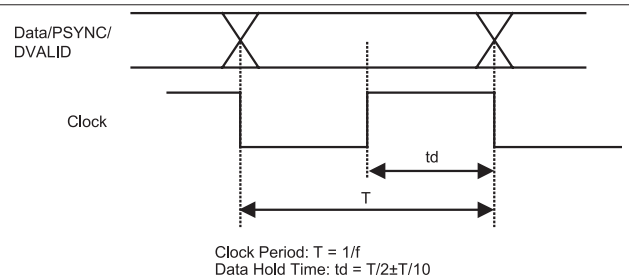
Item	Specifications
Measurement Interface	NRZ, DVB-SPI, DVB-ASI
Remote Control Interface	GPIB, RS-232C
Internal Clock Frequency Setting	Setting range: 1 kHz to 155 MHz, Resolution: 1 Hz, Accuracy: ±10 ppm
Transmission/Measurement Pattern	Pseudo-random code: PN9, PN9_REV, PN15, PN15_REV, PN23, PN23_REV, ALL“0”, ALL“1”, “1010” Synchronization establish condition: • NRZ: 50 bits +N bits (N: Number of stages, “0” when fixed), when normal • DVB-SPI, SVB-ASI: 8 × (8 + N) bits, when normal Synchronization loss condition: when 6 error bits of 64 bits detected
Error Addition	Manual, Continuous (10^{-2}, 10^{-3}, 10^{-4}, 10^{-5}, 10^{-6}, 10^{-7})
Measurement Time/Number of Bits	Measurement time (000h00m01s00 to 999h59m59s90) Number of measurement bits (10^{3} to 10^{15}) Repeat
AutoSync	On, Off
Burst	Disable, Enable
Status Indicator LED	Counting, Sync Loss, Signal Loss, Errors
Screen Display	[1] Switch between “Error rate” and “Number of errors/total count” [2] Over Flow display [3] Error display [4] Passed (elapsed) time/left (remaining) time display [5] Current/Last display
Display Screen Control	Screen display Off: None or 1, 5, 10, 20, 30, 40, 50, 60 min Brightness adjustment: 25, 50, 75, 100%
Auto Save of Setting Data	Saves the set parameters just before power-off and sets them automatically at the next power-on
Power Supply	Voltage: 85 to 250 V (ac) Frequency: 47.5 Hz to 63 Hz
Power Consumption	≤50 VA
Operating Temperature/Humidity	0° to 50°C, ≤80% (Non condensing)
Dimensions	426 (W) × 88 (H) × 451 (D) mm, excluding protrusions
Mass	≤7 kg

(2) NRZ Interface

Item			Specifications
Common (I/O)	Connector		BNC (75 Ω)
Output Signal	Signal Type		Data/Clock
	Common to Data/Clock	Level	<ECL> High: –0.9 ±0.2 V, Low: –1.7 ±0.2 V <TTL> High: +2.5 ±0.3 V, Low: 0 ±0.3 V
		Termination Voltage Conditions	ECL: –2 V, TTL: GND
		Termination	Fixed to 75 Ω
		Polarity Switching	Data: Positive, Negative Clock: Rise, Fall 
		Enable/Disable	Enable/Disable (fixed to Low) setting
	Data	Bit Rate	1 kHz to 155 MHz, Resolution: 1 Hz
		Waveform	NRZ
		Tr/Tf (20 to 80%)	ECL: ≤1 ns, TTL: ≤1.5 ns
	Clock	Frequency	1 kHz to 155 MHz, Resolution: 1 Hz Accuracy: ±10 ppm
		Duty	50% ±10%
		Tr/Tf (20 to 80%)	ECL: ≤1 ns, TTL: ≤1.5 ns
		Output Phase	 

Item			Specifications
Input Signal	Signal Type		Data/Clock/Enable
	Common to Data/Clock Enable	Level	<ECL> High: 0 to –1.0 V, Low: –1.5 V to –2.5 V <TTL> High: +1.8 V to +5.0 V, Low: 0 to +1.0 V <Variable> Shown below
		Termination Voltage Conditions	ECL: –2 V, TTL: GND Variable: –2.5 V to +3.3 V (user-defined) Resolution: 0.1 V
		Threshold Voltage Conditions	ECL: –1.3 V, TTL: +1.4 V Variable: –2 V to +3 V (user-defined) Resolution: 0.1 V
		Termination	75 Ω/1 MΩ
		Polarity Switching	Data: Positive, Negative Clock: Rise, Fall Enable: Positive, Negative, Off 
	Data/Enable	Waveform	NRZ
	Clock	Frequency	1 kHz to 155 MHz, Accuracy: ±100 ppm
		Duty	50 ±10%
		Pulse Width	≥3 ns
		Input Phase	 

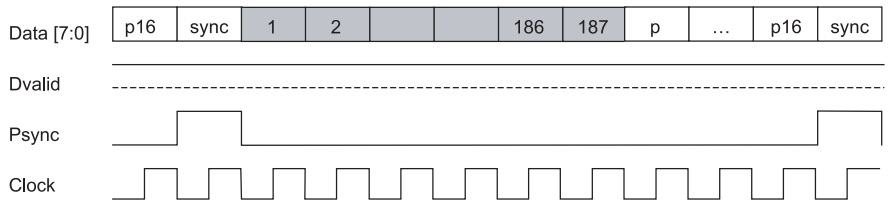
(3) DVB-SPI interface

<table>
<tr><th colspan="3">Item</th><th>Specifications</th></tr>
<tr><td rowspan="4">Common (I/O)</td><td colspan="2">Connector</td><td>D_Sub 25 (Female)
Table: Pin Contact Assignment
<table>
<tr><th>Pin</th><th>Signal</th><th>Pin</th><th>Signal</th><th>Pin</th><th>Signal</th></tr>
<tr><td>1</td><td>Clock A</td><td>10</td><td>Data 0 A</td><td>18</td><td>Data 5 B</td></tr>
<tr><td>2</td><td>System GND</td><td>11</td><td>DVALID A</td><td>19</td><td>Data 4 B</td></tr>
<tr><td>3</td><td>Data 7 A (MSB)</td><td>12</td><td>PSYNC A</td><td>20</td><td>Data 3 B</td></tr>
<tr><td>4</td><td>Data 6 A</td><td>13</td><td>Cable shield</td><td>21</td><td>Data 2 B</td></tr>
<tr><td>5</td><td>Data 5 A</td><td>14</td><td>Clock B</td><td>22</td><td>Data 1 B</td></tr>
<tr><td>6</td><td>Data 4 A</td><td>15</td><td>System GND</td><td>23</td><td>Data 0 B</td></tr>
<tr><td>7</td><td>Data 3 A</td><td>16</td><td>Data 7 B (MSB)</td><td>24</td><td>DVALID B</td></tr>
<tr><td>8</td><td>Data 2 A</td><td>17</td><td>Data 6 B</td><td>25</td><td>PSYNC B</td></tr>
<tr><td>9</td><td>Data 1 A</td><td></td><td></td><td></td><td></td></tr>
</table>
Logical conversion
1: Voltage of A is higher than that of B
0: Voltage of A is lower than that of B</td></tr>
<tr><td colspan="2">Termination</td><td>100 Ω</td></tr>
<tr><td colspan="2">Signal Type</td><td>Data [7:0], Clock, Dvalid, Psync</td></tr>
<tr><td colspan="2">Packet Type</td><td>[1] 204: (1) +187 + (16) packets
[2] 188: (1) +187 packets
[3] 204: (1+3) +184 + (16) packets
[4] 188: (1+3) +184 packets
[5] 204: (1) + 203 packets
[6] 204: (1+3) + 200 packets</td></tr>
<tr><td rowspan="6">Output Signal</td><td rowspan="2">Common to Clock, Data DVALID, PSYNC</td><td>Level (LVDS)</td><td>Offset Voltage: 1.125 V to 1.35 V
Differential Output Voltage: 247 mV to 454 mV</td></tr>
<tr><td>Tr/Tf (20 to 80%)</td><td>≤T/7</td></tr>
<tr><td>Data</td><td>Enable/Disable</td><td>Enable/Disable (fixed to Low) setting</td></tr>
<tr><td>DVALID</td><td>Data Out of PN Range</td><td>“Sync”: 47 h (fixed)
“16 Valid extra bytes”, “PID”: ALL1 (fixed)</td></tr>
<tr><td rowspan="3">Clock (Byte clock)</td><td>Level</td><td>Fixed to “High”</td></tr>
<tr><td>Frequency</td><td>10 kHz to 13.5 MHz, Resolution: 1 Hz</td></tr>
<tr><td>Duty</td><td>50 ±10%</td></tr>
<tr><td>Output Phase</td><td> 
</td></tr>
<tr><td rowspan="6">Input Signal</td><td rowspan="2">Common to Clock, Data DVALID, PSYNC</td><td>Level (LVDS)</td><td>0.1 Vp-p to 2.0 Vp-p</td></tr>
<tr><td>Data</td><td>Data Out of PN Range</td><td>Data are not compared for “Sync,” “16 Valid extra bytes” or “PID”</td></tr>
<tr><td rowspan="3">Clock (Byte clock)</td><td>Frequency</td><td>10 kHz to 13.5 MHz</td></tr>
<tr><td>Duty</td><td>50 ±10%</td></tr>
<tr><td>Input Phase</td><td> 
</td></tr>
<tr><td colspan="3">Monitor Output</td><td>Enable/Disable (high-impedance) setting</td></tr>
</table>

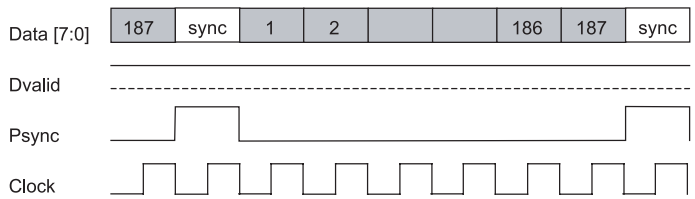
∗: An external clock (byte clock) can be used when this interface is selected.

Timing

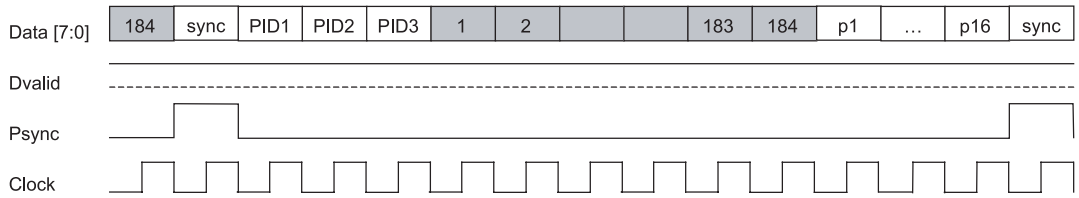
[1] When 187 bytes of 204-byte packet are measurement target: (1) + 187 + (16)



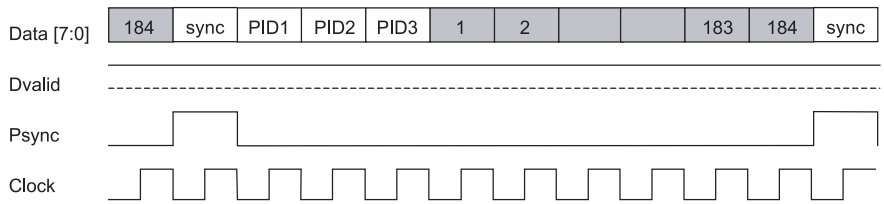
[2] When 187 bytes of 188-byte packet are measurement target: (1) + 187



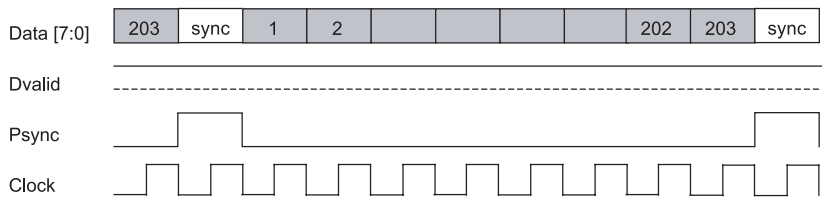
[3] When 184 bytes of 204-byte packet are measurement target: (1+3) + 184 + (16)



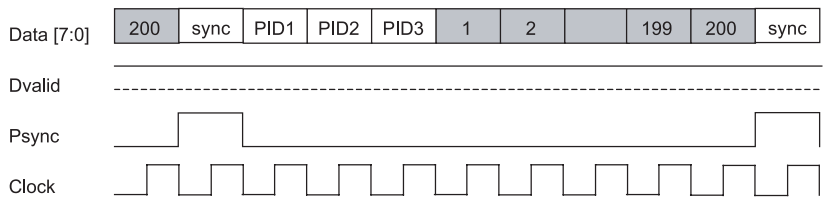
[4] When 184 bytes of 188-byte packet are measurement target: (1+3) + 184



[5] When 203 bytes of 204-byte packet are measurement target: (1) + 203



[6] When 200 bytes of 204-byte packet are measurement target: (1+3) + 200



(4) DVB-ASI Interface

Item		Specifications
Common (I/O)	Connector	BNC (75 Ω)
	Termination	75 Ω
	Frequency	270 MHz (Internal clock)
	Packet Type	[1] 204: (1) + 187 + (16) packets [2] 188: (1) + 187 packets [3] 204: (1+3) + 184 + (16) packets [4] 188: (1+3) + 184 packets [5] 204: (1) + 203 packets [6] 204: (1+3) + 200 packets
Output	Level	800 mVp-p ±10%
	Tr/Tf (20 to 80%)	≤1.2 ns
	Line Rate	270 Mbaud ±100 ppm
	Data Out of PN Range	“Sync”: 47 h (fixed) “16 Valid extra bytes,” “PID”: ALL1 (fixed)
	Output Mode	Packet mode
	Data Rate	1 MHz to 27 MHz, Resolution: 1 MHz When set to 27 MHz: Two “Stuffing Data” are inserted between packets
	Enable/Disable	Enable/Disable (fixed to Low) setting
Input	Level	Min. Sensitivity: 200 mV Max. Input Voltage: 880 mV
	Impedance	75 Ω
	Parity Check (except “Sync”)	Data is not compared for “16 Valid extra bytes” and “PID”
	Frame Sync Establishment Conditions	“Sync” (47 h) detection, successively for three frames
	Frame Sync Loss Conditions	None (ignored)
Monitor Output		Enable/Disable (High impedance) setting

(5) External Clock Input

Item	Specifications
Level	<ECL> High: 0 to −1.0 V, Low: −1.5 V to −2.5 V <TTL> High: +1.8 V to +5.0 V, Low: 0 to +1.0 V
Terminal Voltage Conditions	ECL: −2 V, TTL: GND
Threshold Voltage Conditions	ECL: −1.3 V, TTL: +1.4 V
Termination	75 Ω/1 MΩ
Frequency	ECL: 1 kHz to 155 MHz, TTL: 1 kHz to 100 MHz Accuracy: ±100 ppm
Duty	50 ±10%
Pulse Width	≥3 ns

Ordering information

Please specify the model/order number, name and quantity when ordering.
The names listed in the chart below are Order Names. The actual name of the item may differ from the Order Name.

Model/Order No	Name	
	Main frame	
MP8931A	Bit Error Rate Tester	
	Standard accessories	
	Power Cord:	1 pc
F0012	Fuse, 3.15 A:	1 pc
W2249AE	MP8931A Operation Manual:	1 copy
	Optional parts	
B0329A	Front Cover for 1MW 2U (Protective Cover)	
J1011	D-Sub 25 Cable	
J0026A	Coaxial Cord, 1 m	
J0007	408JE-104, GPIB Cable (1 m)	
J0008	GPIB Cable, 2 m (408JE-102)	
J1256A	RS-232C Cable (1.5 m)	

Anritsu

Specifications are subject to change without notice.

Anritsu Corporation
5-1-1 Onna, Atsugi-shi, Kanagawa, 243-8555 Japan
Phone: +81-46-223-1111
Fax: +81-46-296-1238

● **U.S.A.**
Anritsu Company
1155 East Collins Blvd., Suite 100, Richardson,
TX 75081, U.S.A.
Toll Free: 1-800-267-4878
Phone: +1-972-644-1777
Fax: +1-972-671-1877

● **Canada**
Anritsu Electronics Ltd.
700 Silver Seven Road, Suite 120, Kanata,
Ontario K2V 1C3, Canada
Phone: +1-613-591-2003
Fax: +1-613-591-1006

● **Brazil**
Anritsu Eletrônica Ltda.
Praça Amadeu Amaral, 27 - 1 Andar
01327-010 - Bela Vista - São Paulo - SP - Brasil
Phone: +55-11-3283-2511
Fax: +55-11-3288-6940

● **Mexico**
Anritsu Company, S.A. de C.V.
Av. Ejército Nacional No. 579 Piso 9, Col. Granada
11520 México, D.F., México
Phone: +52-55-1101-2370
Fax: +52-55-5254-3147

● **U.K.**
Anritsu EMEA Ltd.
200 Capability Green, Luton, Bedfordshire, LU1 3LU, U.K.
Phone: +44-1582-433200
Fax: +44-1582-731303

● **France**
Anritsu S.A.
12 avenue du Québec, Bâtiment Iris 1- Silic 612,
91140 VILLEBON SUR YVETTE, France
Phone: +33-1-60-92-15-50
Fax: +33-1-64-46-10-65

● **Germany**
Anritsu GmbH
Nemetschek Haus, Konrad-Zuse-Platz 1
81829 München, Germany
Phone: +49-89-442308-0
Fax: +49-89-442308-55

● **Italy**
Anritsu S.r.l.
Via Elio Vittorini 129, 00144 Roma, Italy
Phone: +39-6-509-9711
Fax: +39-6-502-2425

● **Sweden**
Anritsu AB
Borgafjordsgatan 13, 164 40 KISTA, Sweden
Phone: +46-8-534-707-00
Fax: +46-8-534-707-30

● **Finland**
Anritsu AB
Teknobulevardi 3-5, FI-01530 VANTAA, Finland
Phone: +358-20-741-8100
Fax: +358-20-741-8111

● **Denmark**
Anritsu A/S (Service Assurance)
Anritsu AB (Test & Measurement)
Kirkebjerg Allé 90, DK-2605 Brøndby, Denmark
Phone: +45-7211-2200
Fax: +45-7211-2210

● **Russia**
Anritsu EMEA Ltd.
Representation Office in Russia
Tverskaya str. 16/2, bld. 1, 7th floor.
Russia, 125009, Moscow
Phone: +7-495-363-1694
Fax: +7-495-935-8962

● **United Arab Emirates**
Anritsu EMEA Ltd.
Dubai Liaison Office
P O Box 500413 - Dubai Internet City
Al Thuraya Building, Tower 1, Suit 701, 7th Floor
Dubai, United Arab Emirates
Phone: +971-4-3670352
Fax: +971-4-3688460

● **Singapore**
Anritsu Pte. Ltd.
60 Alexandra Terrace, #02-08, The Comtech (Lobby A)
Singapore 118502
Phone: +65-6282-2400
Fax: +65-6282-2533

● **India**
Anritsu Pte. Ltd.
India Branch Office
3rd Floor, Shri Lakshminarayan Niwas, #2726, 80 ft Road,
HAL 3rd Stage, Bangalore - 560 075, India
Phone: +91-80-4058-1300
Fax: +91-80-4058-1301

● **P.R. China (Hong Kong)**
Anritsu Company Ltd.
Units 4 & 5, 28th Floor, Greenfield Tower, Concordia Plaza,
No. 1 Science Museum Road, Tsim Sha Tsui East,
Kowloon, Hong Kong
Phone: +852-2301-4980
Fax: +852-2301-3545

● **P.R. China (Beijing)**
Anritsu Company Ltd.
Beijing Representative Office
Room 2008, Beijing Fortune Building,
No. 5, Dong-San-Huan Bei Road,
Chao-Yang District, Beijing 100004, P.R. China
Phone: +86-10-6590-9230
Fax: +86-10-6590-9235

● **Korea**
Anritsu Corporation, Ltd.
8F Hyunjuk Building, 832-41, Yeoksam Dong,
Kangnam-ku, Seoul, 135-080, Korea
Phone: +82-2-553-6603
Fax: +82-2-553-6604

● **Australia**
Anritsu Pty. Ltd.
Unit 21/270 Ferntree Gully Road, Notting Hill,
Victoria 3168, Australia
Phone: +61-3-9558-8177
Fax: +61-3-9558-8255

● **Taiwan**
Anritsu Company Inc.
7F, No. 316, Sec. 1, Neihu Rd., Taipei 114, Taiwan
Phone: +886-2-8751-1816
Fax: +886-2-8751-1817

1010

Please Contact: