PORTABLE STM-16 ANALYZER

MP1656A

2488.32 Mb/s

CE GPIB

The MP1656A was designed for use with the MP1550A/B PDH/SDH Analyzer to allow analysis of section, H-path (AU), L-path (TU), PDH, etc. for STM-16 layers. The MP1656A is a compact, lightweight, low-cost solution if you need to add STM-16 capability to your MP1550A/B. The MP1656A can also be used alone to perform regenerator section tests.

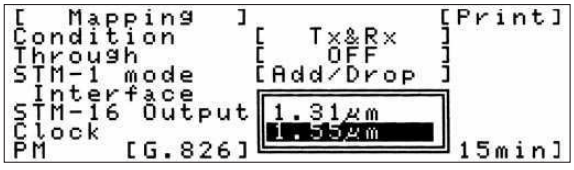
Features

- Controls and operation similar to MP1550A/B for ease of use
- DFB-LD 1.31/1.55 µm switchable output (Option 02)
- High-sensitivity optical input (–29 dBm)
- Add/Drop mode: With MP1550A/B PDH/SDH Analyzer
- Internal mode: Stand alone MP1656A
- Section trace: J0
- G.826 performance monitor: B1
- Built-in floppy disk drive

Functions

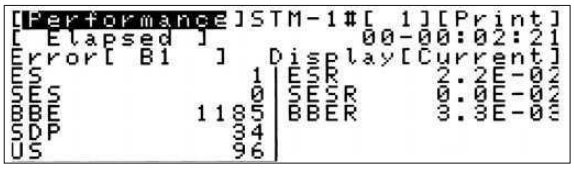
• Pop-up menus

The MP1656A uses the same pop-up menus as the MP1550A/B PDH/SDH Analyzer, so even a first-time user can quickly operate the analyzer.



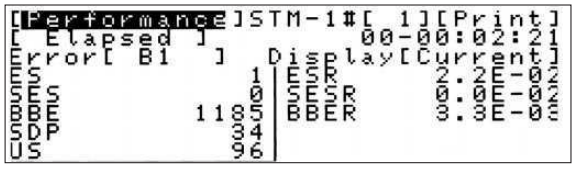
• Error performance monitoring

The error performance (G.826) of repeater sections (B1) can be measured and each parameter confirmed simultaneously.



• Section trace setting

The J0 byte can be set for either 64 or 16 bytes (with CRC-7 processing)

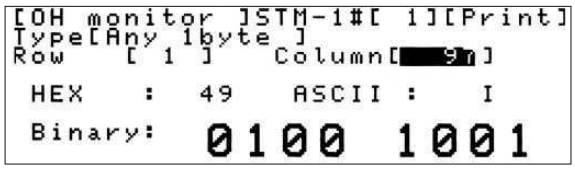


• OH monitor

In addition to being able to monitor any 1 byte or SOH byte, section trace (J0) CRC-7 evaluation is also easy.

• Zoom-in display

Usually, all errors and alarms can be seen at a glance, but the zoom-in function also expands the measurement result display.



9

Specifications

• Add/Drop mode: With MP1550A/B PDH/SDH Analyzer

Bit rate	2488.32 Mb/s
Optical output	Wavelength: 1550 nm (Option 01), 1310 nm and 1550 nm switchable (Option 02), 1310 nm (Option 03) Power: +5 to –2 dBm, IEC CLASS 1, FDA CLASS III b LASER PRODUCT Connector: FC-SPC (on front panel)
Optical input	Wavelength: 1310 ±20 nm, 1550 ±20 nm Sensitivity: –9 to –29 dBm (with internal 10100101 at BER of 10^{-11}) Connector: FC-SPC (on front panel)
Clock	MP1550A/B internal (accuracy: ±3.5 ppm), lock (2 MHz), receive, external
Multiplexing structure	See Fig. 1
Through	Loop-through
Test pattern	PRBS: 2^{11}–1, 2^{15}–1, 2^{20}–1, 2^{23}–1 (O.151) Word: 16 bit program, all 0, all 1 ∗All 16 channels (STM-1 x 16) have same test pattern.
Error addition	Bit all, bit info, B1, B2, B3, BIP-2, HP-FEBE, LP-FEBE Timing: single, 10^{-3}, 10^{-4}, 10^{-5}, 10^{-6}, 10^{-7}, 10^{-8}, 10^{-9}, all
Alarm addition	LOS, LOF, MS-AIS, MS-FERF, AU-AIS, AU-LOP, HP-FERF, TU-AIS, TU-LOP, HP-LOM, LP-FERF Timing: all
OH preset data	SOH, VC3/VC4 POH, VC1 POH, K1/K2, pointer, path trace
Measurement	Mode: single, repeat, manual Error: B1, B2 (one selected channel of STM-1), B3, BIP-2, HP-FEBE, LP-FEBE, bit Alarm: power fail, LOS, LOF, OOF, MS-AIS, MS-FERF, AU-AIS, AU-LOP, HP-FERF, TU-AIS, TU-LOP, HP-LOM, LP-FERF, sync loss Performance (G.826): B1, B2, B3, BIP-2, FEBE, FAS, bit/ES, SES, ESR, SESR, BBER, US, BBE, SDP
Justification	AU-PTR, TU-PTR, C, C1/C2 Measurement: NDF, +PJC, –PJC, 3 times consecutively
LED	Power fail, LOS, LOF, OOF, MS-AIS, MS-FERF errors, clock loss (MP1656A)
Monitor	MP1550A/B: SOH, VC3/VC4 POH, VC1 POH, K1/K2, pointer, path trace MP1656A: K1/K2, AU-pointer, RSOH, MSOH, any one byte, section trace (J0, CRC7)
Pointer sequence	Single of opposite polarity, double of opposite polarity, regular with double, regular with missing (G.783)
Trouble search	Scans all channels in STM-1 and detects errors/alarms automatically. Displays results for every channel.
Delay measurement	0 to 10.00 s

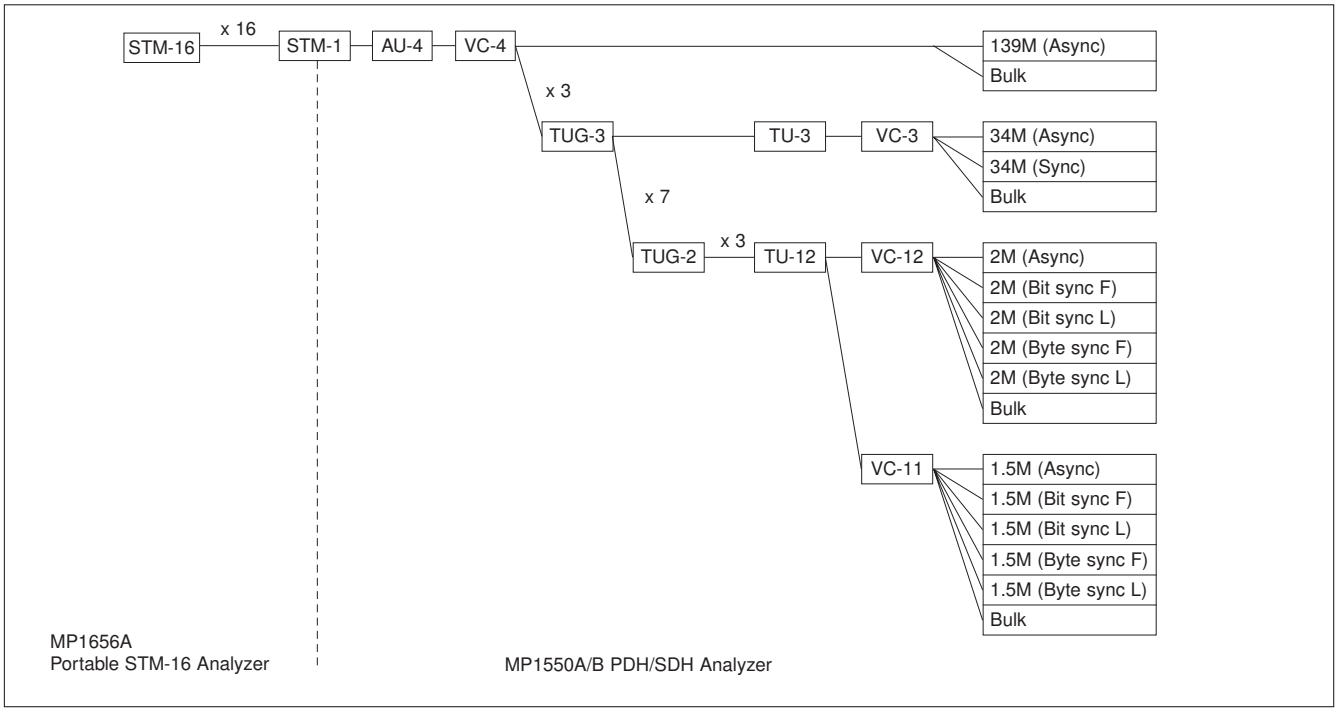


Fig. 1 Multiplexing structure (with MP1550A/B)

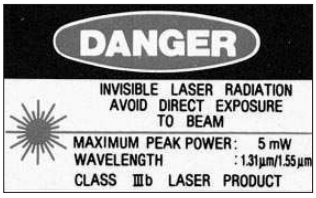
• Internal mode: Stand-alone MP1656A

Bit rate	2488.32 Mb/s
Optical output	Wavelength: 1550 nm (Option 01), 1310 nm and 1550 nm switchable (Option 02), 1310 nm (Option 03) Power: +5 to –2 dBm, IEC CLASS 1, FDA CLASS IIIb LASER PRODUCT Connector: FC-SPC (on front panel)
Optical input	Wavelength: 1310 ±20 nm, 1550 ±20 nm Sensitivity: –9 to –29 dBm (with internal 10100101 at BER of 10^{-11}) Connector: FC-SPC (on front panel)
Clock	Internal, external, receive
Multiplexing structure	STM-16 — x 16 — STM-1 — Bulk
Through	Loop-through
Test pattern	8 bit program ⋆All 16 channels (STM-1 x 16) have same test pattern.
Error addition	Bit all, bit info, B1, B2 Timing: single, 10^{-3}, 10^{-4}, 10^{-5}, 10^{-6}, 10^{-7}, 10^{-8}, 10^{-9}, all
Alarm addition	LOS, LOF, MS-AIS, MS-FERF Timing: all
OH preset data	C1 (#1)⋆1, E1, F1, D1-D12, S1, E2, MDB (media dependent bytes, 00 or FF)
Section trace (J0)	With or without CRC7
K1, K2	Programmable by text or bit
Measurement	Mode: single, repeat, manual Error: B1, B2⋆2, bit⋆2 Alarm: power fail, LOS, LOF, OOF, MS-AIS, MS-FERF Performance (G.826): B1/ES, SES, ESR, SESR, BBER, US, BBE, SDP
LED	Power fail, LOS, LOF, OOF, MS-AIS, MS-FERF, errors, clock loss
Monitor	K1/K2, AU-pointer, RSOH, MSOH, any one byte, section trace (J0, CRC7)
History	Time stamp, alarms and errors
Remote and others	GPIB, RS-232C, FDD, buzzer, real-time clock
General	Dimensions: 320 (W) x 88 (H) x 215 (D) mm Mass: approx. 6.5 kg Power supply: 85 to 132 Vac or 170 to 250 Vac, 47.5 to 63 Hz, ≤300 VA Temperature: 0˚ to 40˚C (operating), –20˚ to 60˚C (storage) EMC⋆3: EN55011 (1991, Group 1, Class A), EN50082-1 (1992) Safety: EN61010-1; 1993 (Installation Category II, Pollution Degree II)

⋆1: Can set only first channel in 16 channels
⋆2: One selected channel of STM-1
⋆3: Electromagnetic compatibility

Laser product safety protection

The MP1656A is laser product, and safety protection conforming to optical safety standards 21 CFR 1040.10 (USA) is incorporated; the following warning label is affixed to the product.



Ordering information

Please specify model/order number, name, and quantity when ordering.

Model/Order No.	Name	
	Main frame	
MP1656A	Portable STM-16 Analyzer (The optical wavelength should be selected as an option.)	
	Standard accessories	
J0670A	AC power cord:	1 pc
F0014	Fuse, 6.3A:	2 pcs
B0398A	Protective cover:	1 pc
J0635B	Optical fiber cord (for SM, both ends with FC connector), 2 m:	1 pc
J0747D	Optical attenuator (20 dB):	1 pc
E0008A	Optical output control key:	2 pcs
W1092AE	MP1656A operation manual:	1 copy
W1093AE	MP1656A remote control operation manual:	1 copy
	Options	
Option 01	1.55 μm optical output (DFB-LD)	
Option 02	1.31/1.55 μm switchable optical output (DFB-LD)	
Option 03	1.31 μm optical output (DFB-LD)	
	Optional accessories	
J0775B	Coaxial cord, BNC-P620•3C-2WS•BNC-P620 (75 Ω), 0.5 m	
J0322A	Coaxial cord, 11SMA•SUCOFLEX104•11SMA, 0.5 m	
J0008	GPIB cable, 2 m	
J0757[ ]	FC/ST conversion cable	
J0760[ ]	FC/DIN conversion cable	
J0763[ ]	FC/HMS-10/A conversion cable	
J0637[ ]	FC/D4 conversion cable	
B0396A	Carrying case (small, for MP1656A only)	
B0397A	Carrying case (large, holds MP1656A and MP1550A/B)	
B0407A	Soft carrying case (for MP1656A only)	
B0408A	Joint plate (holds MP1656A and MP1550A/B)	
	Application equipment	
MP1550A	PDH/SDH Analyzer (color display)	
MP1550B	PDH/SDH Analyzer (monochrome display)	
Option 10	Built-in CMI (156M, for MP1550A/B)	
MP0105A	CMI Unit (for MP1550A/B)	
MP0108A	NRZ Unit (for MP1550A/B)	
HT19C	Optical coupler (9:1) ⋆Recommended product	
HT11C	Optical coupler (1:1) ⋆Recommended product	

[ ]: These lengths are expressed by symbols A, B and C in the order number, where A=1 m, B=2 m, C=3 m.