Anritsu

MP1801A/MP1802A

43.5G MUX/43.5G DEMUX
25G - 43.5G bit/s

MP1801A 43.5G MUX (25G - 43.5G bit/s)
MP1802A 43.5G DEMUX (25G - 43.5G bit/s)

MP1801A Multiplexer Overview

The Anritsu MP1801A is a frequency agile 4:1 multiplexer that supports bit rate from 25 Gbit/s to 43.5 Gbit/s (up to 48 Gbit/s with Opt-11). The MP1801A MUX unit generates a serial data stream of up to 43.5 Gbit/s from 4 parallel input signals of maximum 10.875 Gbit/s each and an external clock (1/4 Clock) for 4-channel PPG (Pulse Pattern Generator). Two independent phase delay controls are available for both 1/1 and 1/4 clock outputs. It features a unique 1/1 clock output (4 times of input data rate) with high resolution phase delay capability which enables easy measurement of DUT's margin. The MP1801A has an optional 2.6Vp-p data output function which can be used to drive modulators directly. With this function, cross-point of the data eye-pattern can also be adjusted flexibly. Innovation is built into the MP1801A multiplexer providing excellent waveform quality with low jitter and low distortion that is essential for testing signals at ultra-high data rates.

MP1802A Demultiplexer Overview

The MP1802A is a frequency agile 1:4 demultiplexer that supports bit rate from 25 Gbit/s to 43 Gbit/s (up to 48 Gbit/s with Opt-11). The MP1802A DEMUX unit demultiplexes a serial data and clock input signal of 43.5 Gbit/s to 4 parallel data and clock signals of 10.875 Gbit/s each. Independent control for phase delay of 1/1 Clock input part and 1/4 Clock output part is available. The MP1802A features high resolution threshold voltage of 0.001V (with Opt-10) which allows Q-factor measurement when combined with MP1776A error detector (The MX180400A software is optionally available that saves time measuring Q-factor and Eye Diagram automatically). Anritsu's both MP1764 series single channel or MP1776A 4-channel Error Detector is best compliment to the MP1802A for analyzing the demultiplexed signals.

Key Features:

- Ultra high-speed operation up to 43.5 Gbit/s (up to 48 Gbit/s with Opt-11)
- Independent Clock Delay and Threshold Voltage adjustment controls for data, 1/1 clock input and 1/4 clock output
- High resolution variable (0.1 ps) 1/1 Clock phase delay function (with Opt-10)
- Q-factor measurement with high resolution threshold voltage setting (resolution: 0.001 V with Opt-10)
- Unique 1/1 serial clock output on the MUX unit
- Front panel access to phase and threshold controls
- Variable amplitude 2.6Vp-p data output with Cross-Point adjustment function (with Opt-12)
- Wide range of frequency support for MUX/DEMUX and BER testing when integrated in Anritsu's ME7750A or ME7760A BER Test System

Benefits:

- **High quality output waveform**

  D-type flip-flop is used on the MUX unit that gives excellent waveform quality with low jitter, low distortion and symmetric crossing-points. Output waveform is highly stable over time.

- **Ability to evaluate DUT's margin between the clock and data**

  A single 1/1 serial clock as high as 48 Gbit/s can be supplied to the DUT which allows easy evaluation of DUT's margin. Variable amplitude and offset can be supplied to the DUT which allows easy evaluation of DUT's margin. (with Opt-12)

- **Flexibility with phase adjustment**

  Individual delay adjustment capability for both 1/1 and 1/4 clocks provide flexibility in measurement.

- **Simplified testing**

  Operation is very simple; no additional parameter setting is required when operating frequency is changed (i.e. it is not required to adjust internal threshold voltage and internal phase delay).

- **Wide range frequency coverage**

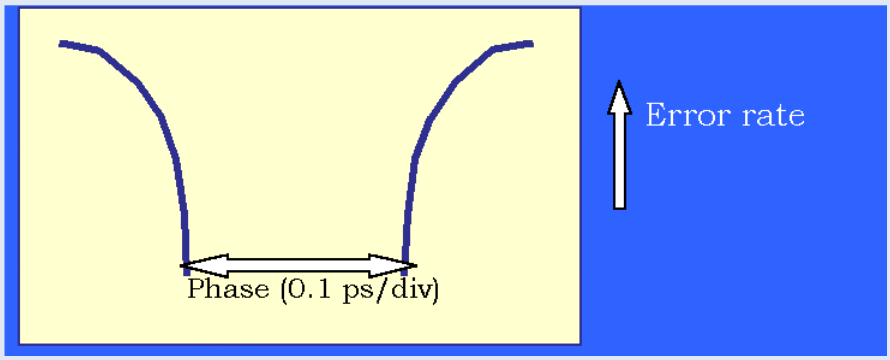
  Covers bit rates from 25 Gbit/s up to 48 Gbit/s (with opt-11). Industry's only MUX/DEMUX units that operate up to this high data rate without sacrificing the quality.

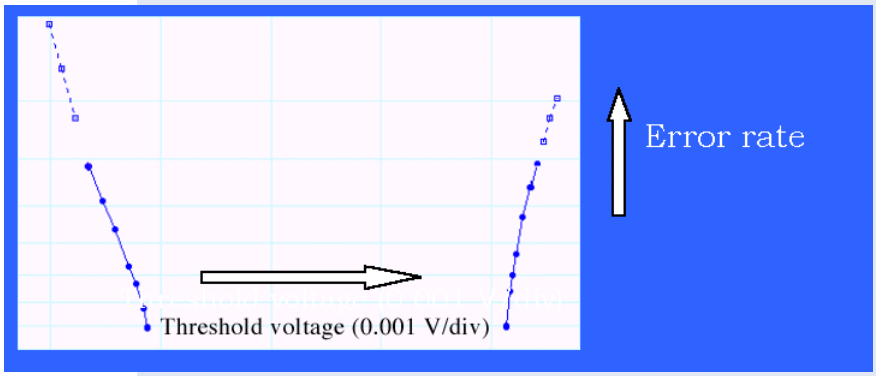
Both the MP1801A and MP1802A are small in size and feature front panel keys. These MUX/DEMUX units are integral part of the Anritsu's 43.5G BER Test System (ME7750A or ME7760A) which is perfect for accurate evaluation and verification of long-haul, extended long-haul and ultra-long-haul transmission systems, sub-systems, MUX/DEMUX devices and components beyond 40 Gb/s covering FEC, Non-FEC and Super FEC rates up to 48 Gbit/s.

Application:

High resolution phase adjustment enables "High accuracy Bathtub Curve"

"High resolution variable delay unit" is required to measure the error rate change of phase direction. Anritsu MP1802A DEMUX unit's "Phase Delay" resolution of 0.1 ps provides measurement reproducibility which is vital for the measurement of "Bathtub Curve" with high accuracy.



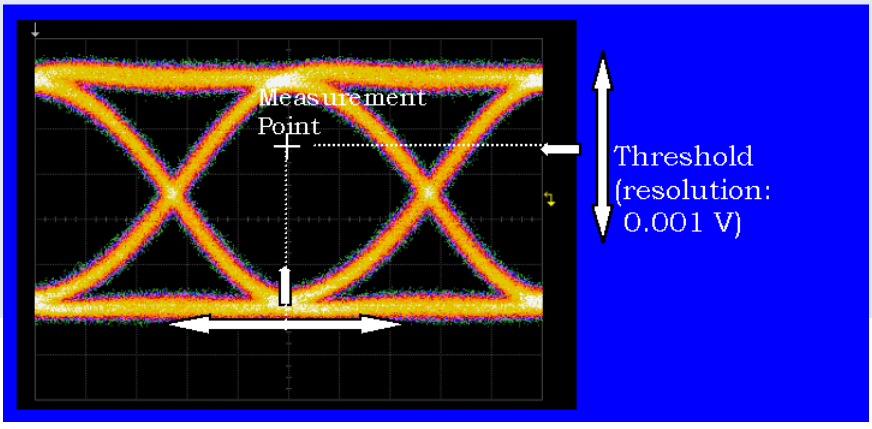


Auto Q-factor measurement function

Q-factor can be measured by setting up "Threshold Voltage" with high accuracy when used in combination with MX180400A software and MP1776A Error Detector.

Auto-search function

The best point of "Threshold and Phase" can be measured remotely from a PC when combined with the Anritsu MP1776A Error Detector. Measurement reproducibility is also possible by setting up high precision value for threshold (0.001 V) and phase (0.1 ps).



MP1801A — 43.5G MUX

Front Panel

Phase adjust dial for 1/4 clock output (max. 120ps)

Phase adjust dial for 1/1 clock output (max. 120ps)

1/1 Clock output (V-connector)

1/1 Inverted data output (V-connector)

1/1 Data output (V-connector)

1/1 Clock input (V-connector)

Power switch

Rear Panel

Main power switch

Fuse

1/4 Data inputs (K-connector)

Power supply

1/4 Clock output (K-connector)

1/64 Clock output (K-connector)

MP1802A 43.5G DEMUX

Front Panel

Phase adjust dial for 1/4 clock outputs

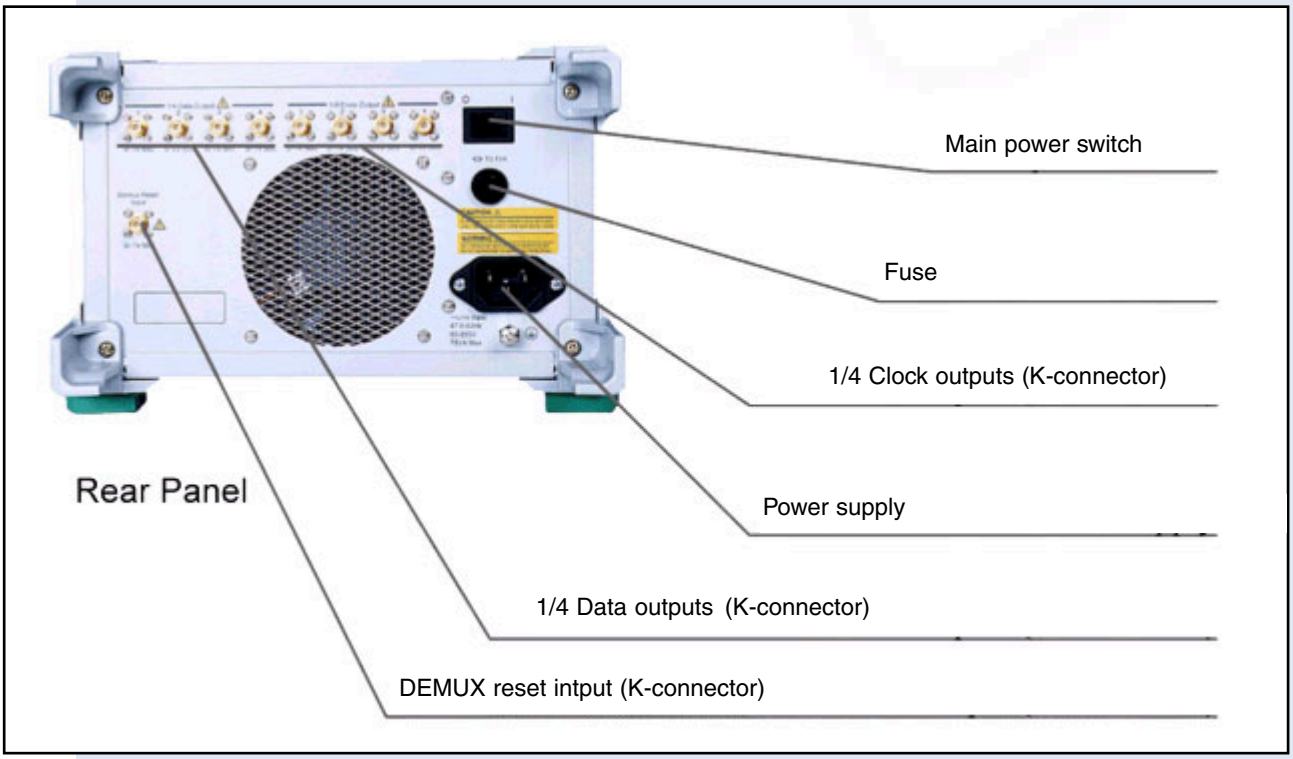
Phase adjust dial for 1/1 clock intput (max. 120ps)

1/1 Clock input (V-connector)

Threshold adjust dial for 1/1 data input

1/1 Data input (V-connector)

Power switch



Specifications: MP1801A — 43.5G MUX	
Operation Frequency	25 GHz - 43.5 GHz *(External clock)*
Clock Input	Input waveform : Sine or square wave *(duty : 50%)* Input amplitude : 0.7 to 1.5 Vp-p Impedance: 50 Ω/GND *(AC coupled)* Connector : V-connector
Data Output *(25 Gbit/s - 43.5 Gbit/s)*	Number of output : 2 *(DATA, inverted DATA)* Output waveform : NRZ Output amplitude : 2.0 Vp-p *(fixed)*, *(1.0 to 2.6 Vp-p with Opt-11)* Cross-Point adjustment : Around 30% to 70% *(with Opt-01)* Tr/Tf (10-90%) : Less than or equal to 18 ps *(typical)* Jitter : <10 ps Impedance : 50 Ω/GND *(AC coupled)* Connector : V-connector
Clock Output *(25 GHz - 43.5 GHz)*	Number of output : 1 (CLOCK) Output amplitude : 1.0 Vp-p +0.6V/-0.3V *(fixed)* Clock/Phase delay range : from -60.0 to +60.0 ps *(Analog)* Impedance : 50 Ω/GND *(AC coupled)* Connector : V-connector
1/4 Data Input *(6.25 Gbit/s - 10.675 Gbit/s)*	Number of input : 4 (D1, D2, D3, D4) Input voltage/level : V_{IH} = 0 V, V_{IL} = -1.0 V Impedance : 50 Ω/GND *(DC coupled)* Connector : K-connector
1/4 Clock Output *(6.25 GHz - 10.675 GHz)*	Number of output : 1 (CLOCK) Output voltage/level : V_{OH} = 0 V ±0.4 V, V_{AMP} = -1.40 V ±0.4 V Clock/Phase delay range : from -60 to +60 ps *(Analog)* Impedance : 50 Ω/GND (DC coupled) Connector : K-connector
Sync. Output	Number of output : 1 *(1/64 Clock Output)* Output voltage/level : V_{OH} = 0 V ±0.2 V, V_{OL} = -1.0 V ±0.2 V Impedance : 50 Ω/GND *(DC coupled)* Connector : K-connector
Control Interface	GPIB *(optional)*
Dimensions	Height: 132.5 mm/5.22 inches Width : 213 mm/8.39 inches Depth : 350 mm/13.78 inches
Mass	<8 kg or 17.64 lbs
Power	AC 85 V to 265 V, 47 Hz to 63 Hz, <75 VA
Operating Temperature	20˚C to 30˚C (68˚F to 86˚F)

Specifications: MP1802A — 43.5G DEMUX	
Operation Frequency	25 GHz - 43.5 GHz
Data Input *(25 Gbit/s - 43.5 Gbit/s)*	Number of input : 1 *(*DATA) Input Waveform : NRZ Input amplitude : 0.1 to 1.0 Vp-p Threshold voltage : from -0.75 V to +0.25 V *(Analog)* Impedance : 50 Ω/GND *(DC coupled)* Connector : V-connector
Clock Input *(25 GHz - 43.5 GHz)*	Number of input : 1 (CLOCK) Input amplitude : 0.7 to 1.5 Vp-p Clock delay range : from -60.0 to +60.0 ps *(Analog)* Impedance : 50 Ω/GND *(AC coupled)* Connector : V-connector
1/4 Data Output *(6.25 Gbit/s - 10.675 Gbit/s)*	Number of output : 4 (D1, D2, D3, D4) Output voltage/level : V_{OH} = 0 V ±0.2 V, V_{OL} = -1.0 V ±0.2V Impedance : 50 Ω/GND *(DC coupled)* Connector : K-connector
1/4 Clock Output *(6.25 GHz - 10.675 GHz)*	Number of output : 4 (C1, C2, C3, C4) Output voltage/level : V_{OH} = 0 V ±0.25 V, V_{OL} = -1.0 V ±0.25 V Clock delay range : from -60 to +60 ps *(Analog)* Impedance : 50 Ω/GND *(DC coupled)* Connector : K-connector
DEMUX Reset Input	Number of input : 1 *(1/64 Clock Output)* Input voltage/level : V_{IH} = 0 V ±0.1 V, V_{IL} = -1.0 V ±0.1 V Impedance : 50 Ω/GND *(DC coupled)* Connector : K-connector
Control Interface	GPIB *(optional)*
Dimensions	Height: 132.5 mm/5.22 inches Width : 213 mm/8.39 inches Depth : 350 mm/13.78 inches
Mass	<8 kg or 17.64 lbs
Power	AC 85 V to 265 V, Frequency : 47 Hz to 63 Hz, <75 VA
Operating Temperature	20˚C to 30˚C (68˚F to 86˚F)

Ordering Information

Model/Order No.	Description		Remark
-Main frame-			
MP1801A	43.5G MUX		
-Standard Accessories-			
J1090	Coaxial Cable	3	V120MM-30CM (30 cm)
J0696E	SMA Cable, 1.5 m	5	AA-165-1500
J1108	Coaxial Cable	1	V120MM-50CM (50 cm)
J1138	Coaxial Cable	1	1.5 m
J1145	Terminator	4	V210
J1137	Terminator	6	HRM-601
J0017	Power Cord, 2.5 m	1	
F0012	Fuse 3.15 A	1	T3.15, 250 V
Z0306A	Wrist strap	1	
B0329M	Front Cover	1	
W1961AE	MP1801A Operation Manual	1	
- Option -			
MP1801A-10	Upgrade to MP1803A		
MP1801A-11	Extension up to 48 Gbit/s		
MP1801A-12	Upgrade to MP1803A with Opt-01		

Model/Order No.	Description		Remark
-Main frame-			
MP1802A	43.5G DEMUX		
-Standard Accessories-			
J1090	Coaxial Cable	2	V-120MM-30CM (30 cm)
J0696D	Coaxial Cable	1	AA-165-2000 (2 m)
J0696E	SMA Cable, 1.5 m	8	AA-165-1500
J1145	Terminator	2	V210
J1137	Terminator	9	HRM-601
J1144	Fixed Coaxial Attenuator	1	41V-6, for MUX-DEMUX connection
J0017	Power Cord, 2.5 m	1	
F0012	Fuse 3.15 A	1	T3.15, 250 V
Z0306A	Wrist strap	1	
B0329M	Front Cover	1	
W1960AE	MP1802A Operation Manual	1	
- Option -			
MP1802A-10	Upgrade to MP1804A		
MP1802A-11	Extension up to 48 Gbit/s		

Specifications are subject to change without notice.

Anritsu
Discover What's Possible™

ANRITSU COMPANY
1155 East Collins Boulevard
Richardson, TX 75081

www.us.anritsu.com

SALES & SUPPORT

UNITED STATES

Tel: 1-800-ANRITSU
Fax: 972-671-1877

CANADA

Tel: 1-800-ANRITSU
Fax: 613-591-1006

SOUTH AMERICA

Tel: 55-21-527-6922
Fax: 55-21-537-1456

JAPAN

Tel: 81-3-3446-1111
Fax: 81-3-3442-0235

ASIA-PACIFIC

Tel: 65-282-2400
Fax: 65-282-2533

EUROPE

Tel: +44 (0)1582-433433
Fax: +44 (0)1582-731303

October 2002
P/N : 80201-00183
Printed in USA

NQA ISO9001 REGISTERED COMPANY
UKAS QUALITY MANAGEMENT 015