Optical Sampling Modules

80C01 • 80C02 • 80C03

Features and Benefits

80C01

20 GHz Optical Bandwidth

Switchable Filter Design

Long Wavelength (1100-1650 nm) Accepts Single-mode Fiber Input

Optional Clock Recovery

80C02

30 GHz Optical Bandwidth

SONET/SDH 9.953 Gb/s Filter (OC192/STM64)

Long Wavelength (1100-1650 nm) Accepts Single-mode Fiber Input

Optional Clock Recovery (9.953 Gb/s)

80C03

2.5 GHz Optical Bandwidth

Switchable Filter Design

Broad Wavelength (700-1650 nm) Accepts Either Single-mode or Multi-mode Fiber Input

Amplified Design

Optional Clock Recovery

Applications

High-Speed Optical Communications Testing

Extinction Ratio and Q-Factor Measurements

Eye-Pattern and Pulse Shape Analysis

Relaxation Oscillation Testing

Optical Signal Analysis

8000 Series Sampling Oscilloscopes configured with one or more Optical Sampling Modules provide complete optical test solutions for Telecom (622 Mb/s to 9.953 Gb/s) or Datacom (FibreChannel and Gigabit Ethernet) applications, as well as general purpose optical component testing.

Each optical module includes all of the elements necessary for optical testing.

- Optical to electrical converter
- Average power monitor
- One or more reference receiver filters
- A Full bandwidth optical path
- A low-noise electrical sampler
- Optional clock recovery
- Universal optical input connector

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80C01 – MULTI-RATE TELECOM SAMPLING MODULE

The 80C01 module supports waveform compliance testing of long wavelength (1100-1650 nm) signals at 622, 2488, and 9953 Mb/s as well as general purpose testing w/up to 20 GHz optical bandwidth.

With its clock recovery option (Opt. CR), the 80C01 provides complete testing solutions for 622 and 2488 Mb/s telecom applications.

80C02 – HIGH-PERFORMANCE TELECOM SAMPLING MODULE

The 80C02 module is optimized for testing of long-wavelength (1100-1650 nm) signals at 9.953 Gb/s (SONET OC-192/ SDH STM-64). With its high optical bandwidth (> 30 GHz), it is also well suited to general purpose high-performance optical component testing.

The 80C02 can be optionally configured with clock recovery (Opt. CR) that supports 9.953 Gb/s telecom standards.

80C03 – MULTI-RATE, HIGH-SENSITIVITY DATACOM SAMPLING MODULE

The 80C03 module supportswaveform compliance testing of both short and long wavelength (700-1650 nm) signals at 1.063, 1.250, and 2.488 Mb/s, as well as general purpose testing with up to 2.3 GHz optical bandwidth. Its amplified optical to electrical converter design enables the user to examine very low-level optical signals.

The 80C03 can be optionally configured with clock recovery (Opt. CR) that supports Fibre Channel 1063 (1.063 Gb/s), Gigabit Ethernet (1.250 Gb/s) and OC48/STM16 (2.488 Gb/s) standards.

CHARACTERISTICS

	80C01	80C02	80C03
Number of input channels	1	1	1
Effective wavelength range	1100 nm to 1650 nm	1100 nm to 1650 nm	700 nm to 1650 nm
Calibrated wavelengths	1310 nm and 1550 nm	1310 nm and 1550 nm	780 nm, 850 nm, 1310 nm, and 1550 nm
Clock recovery	Optional 622.08 Mb/s, 2.48832 Gb/s	Optional 9.95328 Gb/s	Optional 1.0625 Gb/s, 1.2500 Gb/s, 2.48832 Gb/s, 2.5000 Gb/s
Absolute maximum non-destructive optical input	5 mW average power; 10 mW peak power at wavelength with highest relative responsivity	5 mW average power; 10 mW peak power at wavelength with highest relative responsivity	5 mW average power; 10 mW peak power at wavelength with highest relative responsivity
Internal fiber diameter	9 µm/125 µm single mode	9 µm/125 µm single mode	62.5 µm/125 µm multi-mode
Optical return loss	>30 dB	>30 dB	>14 dB (62.5 µm multi-mode), >24 dB (9 µm single mode)
Minimum optical bandwidth	>20 GHz	>30 GHz	>2.3 GHz (2.5 GHz, typical)
Fiber input accepted	single-mode	single-mode	single- or multi-mode
RMS Optical Noise*[1]			
Typical	<8 µW 622.08 Mb/s 2.48832 Gb/s 12.5 GHz mode <15 µW 20 GHz mode	<6 µW 9.95328 Gb/s 12.5 GHz mode <15 µW 20 GHz mode <20 µW 30 GHz mode	<.75 µW 1.0625 Gb/s 1.2500 Gb/s <1 µW 2.48832 Gb/s
Max.	<12 µW 622.08 Mb/s 2.48832 Gb/s 12.5 GHz mode <25 µW 20 GHz mode	<12 µW 9.95328 Gb/s 12.5 GHz mode <20 µW 20 GHz mode <30 µW 30 GHz mode	<1 µW 1.0625 Gb/s 1.2500 Gb/s <1.5 µW 2.48832 Gb/s
Independent channel deskew	Standard	Standard	Standard
Offset capability at front of module	Standard	Standard	Standard
Power meter	Standard	Standard	Standard
Power Range	+4 dBm to –30 dBm	+4 dBm to –30 dBm	+4 dBm to –30 dBm
Resolution	1%	1%	1%

*[1] *Without Clock Recovery.*

PHYSICAL CHARACTERISTICS

Dimensions	mm	in.
Width	60.66	2.388
Height	262.05	10.32
Depth	368.30	14.50
Weight	**kg**	**lb.**
Net	< 2.61	< 5.75

APPLICATION SUMMARY

Application	Eye Diagram	Pulse Shape
SONET/SDH		
622 Mb/s (OC12/STM4)	80C01	80C01, 80C02
488 Gb/s (OC48/STM16)	80C01, 80C03	80C01, 80C02
9.953 Gb/s (OC196/STM64)	80C01, 80C02	80C02
Fibre Channel		
1.063 Gb/s	80C03	80C03
Gigabit Ethernet		
1.25 Gb/s	80C03	80C03

Ordering Information

80C01
Optical Sampling Module.
Includes: User Manual, FC/PC Optical Connector.
Frequency response curves for 622, 2488 and 9953 Mb/s reference receiver operation.
Option CR – 622 and 2488 MHz clock recovery.

80C02
Optical Sampling Module.
Includes: User Manual, FC/PC Optical Connector.
Frequency response curves for 9953 Mb/s reference receiver operation.
Option CR – 9.953 GHz clock recovery.

80C03
Optical Sampling Module.
Includes: User Manual, FC/PC Optical Connector.
Frequency response curves for 1063, 1250 and 2488 Mb/s reference receiver operation.
Option CR – 1.063, 1.250, 2.488 and 2.500 GHz clock recovery.

OPTICAL SAMPLING MODULE OPTIONS
Option C3 – Three years of calibration service.
Option D1 – Calibration data report.
Option D3 – Three years of calibration data reports.
Option R3 – Extended repair warranty to three years.

OPTICAL CONNECTOR ACCESSORIES
While the FC/PC connector is standard with the 8000 series optical sampling modules, the input connector type can be interchanged with any of the following standard adapters:
D4/PC – Order 119-4514-00.
Biconic – Order 119-4515-00.
FC/PC – Order 119-4516-00.
SMA 2.5 – Order 119-4517-00.
SC/PC – Order 119-4518-00.
DIN/PC 47256 – Order 119-4546-00.
DIAMOND 2.5 – Order 119-4556-00.
SMA – Order 119-4557-00.
DIAMOND 3.5 – Order 119-4558-00.

For further information, contact Tektronix:

Worldwide Web: for the most up-to-date product information visit our web site at: www.tektronix.com/Measurement/scopes/

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CE ISO 9001

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12/99 HB/XBS 85W-13498-0

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