Optical Sampling Modules

80C01 · 80C02 · 80C07B · 80C08C · 80C10 · 80C11 · 80C12

CSA/TDS8000B Series Sampling Oscilloscope Optical Modules

The CSA/TDS8000B Series Sampling Oscilloscopes, when configured with one or more optical sampling modules, provide complete optical test solutions for Telecom (155 Mb/s to 43.018 Gb/s) or Datacom (Fibre Channel, Gigabit Ethernet, 10GbE and InfiniBand) applications, as well as general purpose optical component testing.

Each optical module includes all 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 integrated clock recovery (80C12 clock recovery is provided via the 80A05 Clock Recovery Module – sold separately)
- Universal optical input connector

80C01 Multi-rate Telecom Sampling Module – The 80C01 module supports waveform conformance testing of long-wavelength (1100 to 1650 nm) signals at 622, 2488 Mb/s and 9.953 Gb/s as well as general-purpose testing with up to 20 GHz optical bandwidth. With its clock recovery option, the 80C01 provides 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 to 1650 nm) signals at 9.953 Gb/s (SONET OC-192/SDH STM-64). With its high optical bandwidth of 30 GHz (typical), it is also well-suited for general purpose, high-performance optical component testing. The 80C02 can be optionally configured with clock recovery that supports 9.953 Gb/s telecom standards.

Features & Benefits

10 Gb/s Telecom & Datacom

- 80C08C and 80C12 – Low-noise, High Optical Sensitivity and Broad Wavelength Conformance Testing for 10GbE LAN, WAN, and FEC, 10G Fibre Channel, and 10 Gb/s Telecom Standard and FEC Rates
- 80C11 30 GHz Optical Bandwidth Conformance Testing and Characterization for 10 Gb/s Telecom and Datacom Standards and FEC Rates
- 80C08C and 80C11 Integrated Clock Recovery Supports All Current 10 Gb/s Standards or User Defined Rate from 9.8 to 12.6 Gb/s
- 80C12 Clock Recovery Available Via 80A05 Clock Recovery Module

40 Gb/s Telecom

- 80C10 Provides 65 GHz Optical Bandwidth for Signal Characterization of 40 Gb/s RZ or NRZ Data
- 80C10 Provides Reference Receivers for Conformance Testing of 39.813 Gb/s (OC-768/STM-256) and 43.018 Gb/s (ITU-T G.709 FEC)

Tributary Telecom & Datacom

- 80C07B and 80C12 Provide Excellent Optical Sensitivity and Broad Wavelength Test Capability
- 80C07B, 80C12, 80C01 Multi-rate Telecom Conformance Testing Solutions from 155 Mb/s (OC-3/STM-4) Through 9.953 Gb/s (OC-192/STM-64) and Datacom Conformance Testing Solutions for Fibre Channel, Ethernet and InfiniBand Standards

Applications

High-speed Optical Communications Testing

Extinction Ratio and Q-factor Measurements

Eye-pattern and Pulse Shape Analysis

Relaxation Oscillation Testing

Optical Signal Analysis

Conformance Testing

NRZ and RZ Pulse Characterization

Tektronix
Enabling Innovation

80C07B Multi-rate, Datacom & Telecom Optical Sampling Module – The 80C07B module is a broad wavelength (700 to 1650 nm) multi-rate optical sampling module optimized for testing datacom/telecom signals from 155 to 2500 Mb/s. With its amplified O/E converter design, this module provides excellent signal-to-noise performance, allowing users to examine low-power optical signals. The 80C07B can be optionally configured with clock recovery that supports 155, 622, 1063, 1250, 2125, 2488, 2500 and 2666 Mb/s rates.

80C08C Multi-rate, Datacom & Telecom Optical Sampling Module with 10GbE Forward Error Correction – The 80C08C module is a broad wavelength (700 to 1650 nm) multi-rate optical sampling module providing datacom rate testing for 10GbE applications at 9.953, 10.3125, 11.0957 Gb/s and 10G Fibre Channel applications at 10.51875 Gb/s. The 80C08C also provides telecom rate testing at 9.953, 10.664, and 10.709 Gb/s. With its amplified O/E converter design, this module provides excellent signal-to-noise performance and high optical sensitivity, allowing users to examine low-power level optical signals. The 80C08C can be optionally configured with clock recovery options that can support any standard or user defined rate in the continuous range from 9.8 to 12.6 Gb/s.

80C10 65 GHz 40 Gb/s Optical Sampling Module with 43 Gb/s ITU-T G.709 Forward Error Correction – The 80C10 module provides integrated and selectable reference receiver filtering, enabling conformance testing at either 1310 nm or 1550 nm for 39.813 Gb/s (OC-768/STM-256) and 43.018 Gb/s (43 Gb/s ITU-T G.709 FEC) rates. In addition to the filter rates, the user may also choose selectable bandwidths of 30 GHz or 65 GHz for optimal noise vs. bandwidth performance for accurate signal characterization. The 80C10 is optionally available in a bundled ordering configuration which includes a 70+ GHz electrical sampling channel.

80C11 Multi-rate, Datacom & Telecom Optical Sampling Module – The 80C11 module is a long wavelength (1100 to 1650 nm) multi-rate optical sampling module optimized for testing 10 Gb/s datacom and telecom standard rates at 9.953, 10.3125, 10.51875, 10.664, 10.709, and 11.0957 Gb/s. With its high optical bandwidth of up to 30 GHz (typical) it is well-suited for general purpose high-performance 10 Gb/s optical component testing. The 80C11 can be optionally configured with clock recovery options that can support any standard or user defined rate in the continuous range from 9.8 to 12.6 Gb/s.

80C12 Multi-rate, Datacom & Telecom Optical Sampling Module – The 80C012 module is a broad wavelength (700 to 1650 nm) multi-rate optical sampling module providing 1G, 2G, and 4G telecom and datacom testing. This highly flexible module can be configured to support either lower data rate applications (1 to 4 Gb/s) or a wide variety of 10 Gb/s applications. The low data rate applications include: 1, 2, and 4 Fibre Channel and “by 4” wavelength division multiplex standards such as 10G Base-X4 and 4-Lane 10 Gb/s Fibre Channel. The supported 10 Gb/s application includes both datacom and telecom application. The supported 10 Gb/s datacom applications include 10GbE applications at 9.953, 10.3125, 11.0957 Gb/s and 10G Fibre Channel applications at 10.51875 Gb/s. The 80C12 also provides telecom rate testing at 9.953, 10.664, and 10.709 Gb/s. With its amplified O/E converter design, this module provides excellent signal-to-noise performance and high optical sensitivity, allowing users to examine low-power level optical signals. Clock recovery for the 80C12 is provided via the 80A05 (sold separately).

▶ Optical Modules

Module	80C01		80C02		80C07B										
Option		CR		CR	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	CR1
Bandwidth (GHz)	20	20	30	30	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Wavelength Range (nm)	1100-1650	1100-1650	1100-1650	1100-1650	700-1650	700-1650	700-1650	700-1650	700-1650	700-1650	700-1650	700-1650	700-1650	700-1650	700-1650
Fiber Input (µm)	9	9	9	9	9 & 62.5	9 & 62.5	9 & 62.5	9 & 62.5	9 & 62.5	9 & 62.5	9 & 62.5	9 & 62.5	9 & 62.5	9 & 62.5	9 & 62.5
Mask Test Sensitivity (dBm)	–8	–8	–9	–9	–22	–22	–22	–22	–22	–22	–22	–22	–22	–22	–22
Number of Channels	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Rates Supported: ■=Filter, ◆=Optical Clock Recovery, ⊕=Electrical Clock Recovery															
155 Mb/s					■	■	■	■							◆
622 Mb/s	■	◆			■				■	■	■			■	◆
1063 Mb/s						■			■			■	■		◆
1250 Mb/s							■			■		■		■	◆
2125 Mb/s								■			■		■	■	◆
2488 Mb/s					■	■	■	■	■	■	■	■	■	■	◆
2500 Mb/s	■	◆			■	■	■	■	■	■	■	■	■	■	◆
3.125 Gb/s															
3.188 Gb/s															
3.32 Gb/s															
4.25 Gb/s															
9.95 Gb/s	■		■	◆											

▶ Optical Modules (continued)

Module	80C08C				80C10	80C11				
Option		CR1	CR2	CR4			CR1	CR2	CR3	CR4
Bandwidth (GHz)	10	10	10	10	65	30	30	30	30	30
Wavelength Range (nm)	700-1650	700-1650	700-1650	700-1650	1290-1330 1530-1570	1100-1650	1100-1650	1100-1650	1100-1650	1100-1650
Fiber Input (µm)	9 & 62.5	9 & 62.5	9 & 62.5	9 & 62.5	9	9	9	9	9	9
Mask Test Sensitivity (dBm)	–15	–15	–15	–15	0	–9	–9	–9	–9	–9
Number of Channels	1	1	1	1	1	1	1	1	1	1
Rates Supported: ■ = Filter, ◆ = Optical Clock Recovery, ⊕ = Electrical Clock Recovery										
9.95 Gb/s	■	◆		◆		■	◆	◆	◆	◆
10.31 Gb/s	■	◆	◆	◆		■				◆
10.52 Gb/s	■		◆	◆		■				◆
10.66 Gb/s	■			◆		■				◆
10.71 Gb/s	■			◆		■			◆	◆
11.1 Gb/s	■			◆		■				◆
39.81 Gb/s					■					
43.02 Gb/s					■					

▶ Optical Modules (continued)

Module	80C12									
Option	F1	F2	F3	F4	F5	F6	FC	10G	CR*1	CR*2
Bandwidth (GHz)	4.25	9	9	4.25	9	9	9	10		
Wavelength Range (nm)	700-1650	700-1650	700-1650	700-1650	700-1650	700-1650	700-1650	700-1650		
Fiber Input (µm)	9 & 62.5	9 & 62.5	9 & 62.5	9 & 62.5	9 & 62.5	9 & 62.5	9 & 62.5	9 & 62.5		
Mask Test Sensitivity (dBm)	–15	–15	–15	–15	–15	–15	–15	–12		
Number of Channels	1	1	1	1	1	1	1	1		
Rates Supported: ■=Filter, ◆=Optical Clock Recovery, ⊕=Electrical Clock Recovery										
155 Mb/s									◆	◆
622 Mb/s									◆	◆
1063 Mb/s	■		■						◆	◆
1250 Mb/s									◆	◆
2125 Mb/s	■	■	■	■		■			◆	◆
2488 Mb/s									◆	◆
2500 Mb/s									◆	◆
3.125 Gb/s				■	■	■	■		◆	◆
3.188 Gb/s				■	■	■	■		◆	◆
3.32 Gb/s							■		◆	◆
4.25 Gb/s	■	■		■	■				◆	◆
9.95 Gb/s								■		◆
10.31 Gb/s								■		◆
10.52 Gb/s								■		◆
10.66 Gb/s								■		◆
10.71 Gb/s								■		◆
11.1 Gb/s								■		◆

*1 With 80A05.

*2 With 80A05 Option 10G.

▶ Electrical Clock Recovery

Module	80A05	
Option		10G
Rates Supported: ⊕=Electrical Clock Recovery		
155 Mb/s	⊕	⊕
622 Mb/s	⊕	⊕
1063 Mb/s	⊕	⊕
1250 Mb/s	⊕	⊕
2125 Mb/s	⊕	⊕
2488 Mb/s	⊕	⊕
2500 Mb/s	⊕	⊕
3.125 Gb/s	⊕	⊕
3.188 Gb/s	⊕	⊕
3.32 Gb/s	⊕	⊕
4.25 Gb/s	⊕	⊕
9.95 Gb/s		⊕
10.31 Gb/s		⊕
10.52 Gb/s		⊕
10.66 Gb/s		⊕
10.71 Gb/s		⊕
11.1 Gb/s		⊕

▶ Electrical Modules

Module	80E01	80E012	80E03	80E04	80E06
Bandwidth (GHz)	50	12.5	20	20	70
Number of Channels	1	2	2	2	1

▶ Characteristics

▶ Optical Sampling Module Characteristics (Refer to Optical Sampling Modules User Manual for more detailed information)

	Application Type	Standards and Supported Filtering Rates	Number of Input Channels	Effective Wavelength Range	Calibrated Wavelengths
80C01	Tributary Telecom	OC-12/STM-4 (622 Mb/s), OC-48/STM-16 (2.488 Gb/s), OC-192/STM-64 (9.953 Gb/s)	1	1100 nm to 1650 nm	1310 nm and 1550 nm (±20 nm)
80C02	10 Gb/s Telecom	OC-192/STM-64 (9.953 Gb/s) 10GBase-W (9.953 Gb/s)	1	1100 nm to 1650 nm	1310 nm and 1550 nm (±20 nm)
80C07B	Tributary Datacom/Telecom	Standard Included: OC-48/STM-16 (2.488 Gb/s), InfiniBand, 2 GbE (2.500 Gb/s); Optional (choose any two): OC-3/STM-1 (155 Mb/s), OC-12/STM-4 (622 Mb/s), Fibre Channel (1.063 Gb/s), GbE (1.250 Gb/s), 2G Fibre Channel (2.125 Gb/s)	1	700 nm to 1650 nm	780 nm, 850 nm, 1310 nm, and 1550 nm (±20 nm)
80C08C	10 Gb/s Datacom/Telecom	OC-192/STM-64 (9.953 Gb/s), 10GBase-W (9.953 Gb/s), 10GBase-R (10.31 Gb/s), 10G Fibre Channel (10.52 Gb/s), ITU-T G.975 FEC (10.664 Gb/s), ITU-T G.709 (10.709 Gb/s), 10GbE FEC (11.1 Gb/s)	1	700 nm to 1650 nm	780 nm, 850 nm, 1310 nm, and 1550 nm (±20 nm)
80C10	40 Gb/s Telecom	OC-768/STM-256 (39.813 Gb/s), ITU-T G.709 FEC (43.018 Gb/s)	1	1310 nm and 1550 nm	1310 nm and 1550 nm (±20 nm)
80C11	10 Gb/s Datacom/Telecom	OC-192/STM-64 (9.953 Gb/s), 10GBase-W (9.953 Gb/s), 10GBase-R (10.31 Gb/s), 10G Fibre Channel (10.52 Gb/s), ITU-T G.975 FEC (10.664 Gb/s), ITU-T G.709 (10.709 Gb/s), 10GbE FEC (11.1 Gb/s)	1	1100 nm and 1650 nm	1310 nm and 1550 nm (±20 nm)
80C12	1 to 4.5 Gb/s Datacom/Telecom	Fibre Channel (1.063 Gb/s), 2G Fibre Channel (2.125 Gb/s), 4G Fibre Channel (4.250 Gb/s) 10GBase-X4 (3.125 Gb/s) 10GFC-X4 (3.1875 Gb/s) VSR5-3318 (3.318 Gb/s)	1	700 nm to 1650 nm	850 nm, 1310 nm, and 1550 nm (±20 nm)
	10 Gb/s Datacom/Telecom	OC-192/STM-64 (9.953 Gb/s), 10GBase-W (9.953 Gb/s), 10GBase-R (10.31 Gb/s), 10G Fibre Channel (10.52 Gb/s), ITU-T G.975 FEC (10.664 Gb/s), ITU-T G.709 (10.709 Gb/s), 10GbE FEC (11.1 Gb/s)			

▶ Optical Sampling Module Characteristics (continued)

	Clock Recovery (Optional)	Clock Recovery Outputs	Unfiltered Optical Bandwidth*[3]	Absolute Maximum Nondestructive Optical Input	Internal Fiber Diameter
80C01	Option CR: 622 Mb/s, 2.488 Gb/s	±Clock, ±Data	20 GHz	5 mW average; 10 mW peak power at wavelength of highest relative responsivity	9 µm/125 µm single-mode
80C02	Option CR: 9.953 Gb/s	Clock, Clock/16, Data	28 GHz	5 mW average; 10 mW peak power at wavelength of highest relative responsivity	9 µm/125 µm single-mode
80C07B	Option CR1: 155 Mb/s, 622 Mb/s, 1.063 Gb/s, 1.250 Gb/s, 2.125 Gb/s, 2.488 Gb/s, 2.500 Gb/s, 2.666 Gb/s	±Clock, ±Data	2.5 GHz	5 mW average; 10 mW peak power at wavelength of highest responsivity	62.5 µm/125 µm multi-mode
80C08C	Option CR1: 9.953 Gb/s, 10.31 Gb/s; Option CR2: 10.31 Gb/s, 10.52 Gb/s; Option CR4: Continuous from 9.8 Gb/s to 12.6 Gb/s	Clock, Clock/16	10 GHz	1 mW average; 10 mW peak power at wavelength of highest responsivity	62.5 µm/125 µm multi-mode
80C10	Future Upgradeable	Future	65 GHz	20 mW average; 60 mW peak power at wavelength of highest relative responsivity	9 µm/125 µm single-mode
80C11	Option CR1: 9.953 Gb/s; Option CR2: 9.953 Gb/s, 10.664 Gb/s; Option CR3: 9.953 Gb/s, 10.709 Gb/s; Option CR4: Continuous between 9.8 Gb/s to 12.6 Gb/s	CR1: Clock, Clock/16, Data; CR2, CR3, CR4: Clock, Clock/16	28 GHz	5 mW average; 10 mW peak power at wavelength of highest responsivity	9 µm/125 µm single-mode
80C12	Provided by 80A05 (sold separately)	ELECTRICAL SIGNAL OUT	9 GHz (for all options except 10G) 10 GHz (Option 10G)	1 mW average; 10 mW peak power at wavelength of highest responsivity	62.5 µm/125 µm multi-mode

*[3] Values shown are warranted unless printed in an italic typeface which represents a typical value.

▶ Optical Sampling Module Characteristics (continued)

	Optical Return Loss	Fiber Input Accepted	RMS Optical Noise (typical)	RMS Optical Noise (maximum)	Independent Channel Deskew
80C01	>30 dB	Single-mode	8.0 µW at 622 Mb/s, 2.488 Gb/s, 9.953 Gb/s, 12.5 GHz; 15.0 µW at 20 GHz	12.0 µW at 622 Mb/s, 2.488 Gb/s, 9.953 Gb/s, 12.5 GHz; 25 µW at 20 GHz	Standard
80C02	>30 dB	Single-mode	6.0 µW at 9.953 Gb/s, 12.5 GHz; 10.0 µW at 20 GHz; 15.0 µW at 30 GHz	10.0 µW at 9.953 Gb/s, 12.5 GHz mode; 15 µW at 20 GHz; 30 µW at 30 GHz	Standard
80C07B	>14 dB (multi-mode) >24 dB (single-mode)	Single- or multi-mode	0.50 µW at 155 Mb/s, 622 Mb/s, 1063 Mb/s, 1250 Mb/s; 0.70 µW at 2.488/2.500 Gb/s	1.0 µW at 155 Mb/s, 622 Mb/s, 1063 Mb/s, 1250 Mb/s; 1.5 µW at 2.488/2.500 Gb/s	Standard
80C08C	>14 dB (multi-mode) >24 dB (single-mode)	Single- or multi-mode	1.7 µW at all filter rates	3.0 µW at all filter rates	Standard
80C10	>30 dB	Single-mode	40 µW at 39.813 Gb/s, 43.018 Gb/s (1550 nm); 75 µW at 39.813 Gb/s, 43.018 Gb/s (1310 nm); 30 µW at 30 GHz mode (1550 nm); 55 µW at 30 GHz mode (1310 nm); 85 µW at 65 GHz mode (1550 nm); 150 µW at 65 GHz mode (1310 nm)	60 µW at 39.813 Gb/s, 43.018 Gb/s (1550 nm); 110 µW at 39.813 Gb/s, 43.018 Gb/s (1310 nm); 50 µW at 30 GHz (1550 nm); 90 µW at 30 GHz (1310 nm); 120 µW at 65 GHz (1550 nm); 220 µW at 65 GHz (1310 nm)	Standard
80C11	>30 dB	Single-mode	5.5 µW at all filter rates; 10.0 µW at 20 GHz 20.0 µW at 30 GHz	8.0 µW at all filter rates; 14.0 µW at 20 GHz 30.0 µW at 30 GHz	Standard
80C12	>14 dB (multi-mode) >24 dB (single-mode)	Single- or multi-mode	1.7 µW (all filters except Option 10G) 3.4 µW ('Full BW' and Option 10G filters)	3.0 µW (all filters except Option 10G) 6.0 µW ('Full BW' and Option 10G filters)	Standard

Optical Sampling Module Characteristics (continued)

	Offset Capability	Power Meter	Power Meter Range	Power Meter Accuracy	Mask Test Optical Sensitivity*[4]
80C01	Standard	Standard	+4 dBm to –30 dBm	5% of reading	–8 dBm at 622 Mb/s, 2.488 Gb/s, 9.953 Gb/s; –5.0 dBm at 20 GHz
80C02	Standard	Standard	+4 dBm to –30 dBm	5% of reading	–9 dBm at 9.953 Gb/s; –7 dBm at 20 GHz; –4 dBm at 30 GHz
80C07B	Standard	Standard	+4 dBm to –30 dBm	5% of reading	–22 dBm at 155 Mb/s, 622 Mb/s; –20 dBm at 2488/2500 Mb/s
80C08C	Standard	Standard	0 dBm to –30 dBm	5% of reading	–15 dBm at all filter rates
80C10	Standard	Standard	+13 dBm to –21 dBm	5% of reading	0 dBm at 39.813 Gb/s, 43.018 Gb/s; 0 dBm at 30 GHz; +3 dBm at 65 GHz
80C11	Standard	Standard	+4 dBm to –30 dBm	5% of reading	–10 dBm at all filter rates; –7 dBm at 20 GHz; –4 dBm at 30 GHz
80C12	Standard	Standard	0 dBm to –30 dBm	5% of reading	–15 dBm (for all options except Option 10G) –12 dBm (for Option 10G)

*[4] Smallest power level for mask test. Values represent theoretical typical sensitivity of NRZ eyes for competitive comparison purposes. Assumes instrument peak-peak noise consumes most of the mask margin.

▶ Physical Characteristics for Optical Sampling Modules

	Dimensions (mm/inches)			Weight (kg/lb)
	Width	Height	Depth	Net
80C01	165/6.5	25/1.0	305/12.0	<2.61/<5.75
80C02	165/6.5	25/1.0	305/12.0	<2.61/<5.75
80C07B	165/6.5	25/1.0	305/12.0	<1.36/<3.0
80C08C	165/6.5	25/1.0	305/12.0	<1.22/<2.7
80C10	165/6.5	25/1.0	305/12.0	<2.61/<5.75
80C11	165/6.5	25/1.0	305/12.0	<1.22/<2.7
80C12	165/6.5	25/1.0	305/12.0	<2.61/<5.75

▶ Ordering Information

80C01

Optical Sampling Module.

Includes: User manual, FC/PC optical connector.

Frequency response curves for 622, 2488 and 9953 Mb/s filter rates.

Opt. CR – 622 and 2488 Mb/s clock recovery.

80C02

Optical Sampling Module.

Includes: User manual, FC/PC optical connector.

Frequency response curves for 9.953 Gb/s filter rates.

Opt. CR – 9.953 Gb/s clock recovery.

80C07B

Multi-rate Datacom and Telecom Optical Sampling Module.

Includes: User Manual, FC/PC Optical Connector.

Frequency response curves for 2.488, 2.500 Gb/s data rates plus selected filter option data rates.

Opt. CR1 – 155/622/1063/1250/2125/2488/2500/2666 Mb/s clock/data recovery.

User must select any one (1) of the following filter options:

Opt. F1 – 155, 622 Mb/s.

Opt. F2 – 155, 1063 Mb/s.

Opt. F3 – 155, 1250 Mb/s.

Opt. F4 – 155, 2125 Mb/s.

Opt. F5 – 622, 1063 Mb/s.

Opt. F6 – 622, 1250 Mb/s.

Opt. F7 – 622, 2125 Mb/s.

Opt. F8 – 1063, 1250 Mb/s.

Opt. F9 – 1063, 2125 Mb/s.

Opt. F10 – 1250, 2125 Mb/s.

80C08C

Multi-rate Datacom and Telecom Optical Sampling Module.

Includes: User Manual, FC/PC optical connector.

Frequency response curves for 9.953, 10.31, 10.52, 10.66, 10.71, 11.1 Gb/s filter rates.

Opt. CR1 – 9.953, 10.31 Gb/s clock recovery.

Opt. CR2 – 10.31, 10.52 Gb/s clock recovery.

Opt. CR4 – Continuous rate clock recovery supporting any standard or user-definable rate in the range from 9.8 to 12.6 Gb/s.

80C10

Multi-rate Optical Sampling Module.

Includes: User manual, FC/PC optical connector.

Frequency response curves for 39.813 and 43.108 Gb/s filter rates.

80C10E1 – Bundled ordering configuration includes 80C10 plus one 80E06 single-channel 70+ GHz electrical module.

80C11

Multi-rate Datacom and Telecom Optical Sampling Module.

Includes: User Manual, FC/PC optical connector.

Frequency response curves for 9.953, 10.31, 10.52, 10.66, 10.71, 11.1 Gb/s filter rates.

Opt. CR1 – 9.953 Gb/s clock recovery.

Opt. CR2 – 9.953, 10.66 Gb/s clock recovery.

Opt. CR3 – 9.953, 10.71 Gb/s clock recovery.

Opt. CR4 – Continuous rate clock recovery supporting any standard or user-definable rate in the range from 9.8 to 12.6 Gb/s.

80C12

Multi-rate Datacom and Telecom Optical Sampling Module.

Includes: User Manual, FC/PC optical connector.

Frequency response curves for all included reference receiver filter rates.

Clock recovery is available using the 80A05. The 80C12 Multi-rate Telecom & Datacom Optical Sampling Module is available with a wide variety of factory-configured signal conditioning options. These options provide a variety of reference receiver filtering and unfiltered signal acquisition bandwidths. The user must specify one of the following options when ordering this module:

Opt. F1 – 1063, 2125, 4250 Mb/s Filters, 4.25 GHz Full Bandwidth.

Opt. F2 – 2125, 4250 Mb/s Filters, 9 GHz Full Bandwidth.

Opt. F3 – 1063, 2125 Mb/s Filters, 9 GHz Full Bandwidth.

Opt. F4 – 2125, 3125, 3187.5, 4250 Mb/s Filters, 4.25 GHz Full Bandwidth.

Opt. F5 – 3125, 3187.5, 4250 Mb/s Filters, 9 GHz Full Bandwidth.

Opt. F6 – 2125, 3125, 3187.5 Mb/s Filters, 9 GHz Full Bandwidth.

Opt. FC – 3125, 3187.5, 3318 Mb/s Filters, 9 GHz Full Bandwidth.

Opt. 10G – 9.95, 10.31, 10.52, 10.66, 10.71, 11.1 Gb/s Filters, 10 GHz Full Bandwidth.

Service

Opt. C3 – Calibration Service 3 Years.

Opt. C5 – Calibration Service 5 Years.

Opt. D1 – Calibration Data Report.

Opt. D3 – Calibration Data Report 3 Years (with Option C3).

Opt. D5 – Calibration Data Report 5 Years (with Option C5).

Opt. R3 – Repair Service 3 Years.

Opt. R5 – Repair Service 5 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:

ST/PC – Order 119-4513-00.

D4/PC – Order 119-4514-00.

Biconic – Order 119-4515-00.

FC/APC – Order 119-5115-00.

SMA 2.5 – Order 119-4517-00.

SC/APC – Order 119-5116-00.

DIN/PC 47256 – Order 119-4546-00.

HP/PC – Order 119-4556-00.

SMA – Order 119-4557-00.

DIAMOND 3.5 – Order 119-4558-00.

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Last Update March 01, 2004

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06/04 JS/WWW 85W-15964-8

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