

**Aumictech**

Test & measurement • bought, sold, repaired, calibrated

Data Sheet

July 28, 2026

TEKTRONIX

Tektronix ORR24 2.488Gb/s SDH/SONET Optical Reference Receiver

The amplified design of the ORR24 converts the incoming optical light into a high gain, low noise electrical signal. This allows easy testing of optical designs as well as repeatable measurements. The ORR24 is DC coupled which is required for accurate extinction ratio measurements. The controlled frequency design of the ORR24 optical reference receiver ensures that the measurements correctly represent the true transmitted signal for the purpose of pulse shape analysis or eye-pattern measurements. The controlled frequency design of the ORR24 optical reference receiver ensures that the measurements correctly represent the true transmitted signal for the purpose of pulse shape analysis or eye-pattern measurements. A certificate of calibration and a frequency response graph are supplied with the ORR24 for performance documentation. The compact SD-xx form factor enables the ORR24 to conveniently plug into the Tektronix 11800 or CSA 803 Series sampling oscilloscopes for complete compliance testing. An optional power supply is available for other instrument applications.



MODEL

Tektronix ORR24

CALIBRATION

Available on request

CONDITION

Used

STATUS

In stock

RFQ / SKU

ORR24

LISTING

<https://aumictechlabs.com/products/orr24-2/>

NIST-traceable cal

SAM registered

30-day returns

NAICS 423690 • 811210 • 541380

This unit

The Tektronix ORR24 is a precision optical-to-electrical converter designed for SDH/SONET systems operating at 2.488 Gb/s (STM-16/OC-48). This optical reference receiver transforms

calibrated optical signals into low-noise electrical outputs, enabling accurate characterization of optical transmitters, receivers, and transmission links. The instrument delivers high-gain amplification with DC coupling, supporting extinction ratio measurements and eye-pattern analysis essential for compliance testing. Its 4th Order Bessel-Thompson frequency response and polarization-independent design ensure repeatable measurements across the 1100 nm to 1650 nm wavelength range.

Technical Specifications

Optical Interface Input connector: FC/PC Wavelength range: 1100 nm to 1650 nm Optical return loss: >30 dB minimum (>45 dB with PC mating fiber) Polarization dependence: 20 dB Coupling: DC coupled

Performance Characteristics

Data rate: 2.488 Gb/s Bandwidth: DC to 2.0 GHz Frequency response: 4th Order Bessel-Thompson

Standards compliance: SDH/SONET, ITU-T G.957

Key Features

High-gain, low-noise amplified design for accurate measurements DC coupling enables extinction ratio characterization Wavelength range covers C-band and extended infrared regions >30 dB optical return loss with standard PC connectors

Typical Applications

Compliance testing of SDH/SONET optical transmission products Optical transmitter and receiver characterization Eye-pattern and pulse shape measurements Extinction ratio analysis

Compatibility & Integration

The ORR24 functions as a plug-in module for Tektronix 11800 Series Digital Sampling Oscilloscopes and CSA 803 Communications Signal Analyzers. Recommended configuration includes the SD-22 sampling head with 015-0560-00 cable for OC-48 compliance testing. Optional external power supply (016-1609-00) enables stand-alone operation. Module dimensions: 132 mm × 216 mm × 44 mm; weight: 1.5 kg.

Features & description

From manufacturer datasheet · https://www.aaatesters.com/pub/media/datasheets/tektronix_orr24_specifications_spec_sheet_5t01.pdf

Features

• Data Rate: SONET/SDH 2.488 Gb/s • ITU-T G.957 Compliance • 4th Order Bessel-Thompson Frequency Response • Bandwidth: DC to 2.0 GHz • High Gain: 0.7 V/mW • Wavelength: 1310 nm / 1550 nm • Compatible with Tektronix 11800 or CSA 803 Series Sampling Scopes • Assortment of Fiber Optic Mating Adapters (standard) • Optional External Power Supply (016-1609-00) Applications • Standards Compliance: SONET/SDH 2.488 Gb/s • Accurate Extinction Ratio Measurements • Eye-Pattern and Pulse Shape Measurements Verification of SONET/SDH Signals The Synchronous Data Hierarchy (SDH) and the Synchronous Optical Network (SONET)

Applications

• Standards Compliance: SONET/SDH 2.488 Gb/s • Accurate Extinction Ratio Measurements • Eye-Pattern and Pulse Shape Measurements Verification of SONET/SDH Signals The Synchronous Data Hierarchy (SDH) and the Synchronous Optical Network (SONET)

ORR24 Characteristics / Specifications

PARAMETER	VALUE
Bandwidth	DC to 2.0 GHz. Rise Time –205 ps.
Conversion Gain (typical)	0.7 V/mW (1310 nm/1550 nm). Maximum Input Optical Power – Maximum average linear response power: 100 μ W (–10 dBm).
Noise Equivalent Power	≤ 15 pW per Hz. Aberrations $\leq 5\%$ peak-peak. Optical Return Loss 2 ≥ -30 dB. Output Termination Impedance $50\ \Omega \pm 4\%$. Internal Fiber Size $9\ \mu\text{m}$. ENVIRONMENTAL CHARACTERISTICS Operating Temperature (Class VI) 3 $\rightarrow +10^\circ\text{C}$ to $+40^\circ\text{C}$.
Wavelength range	1100 nm to 1650 nm.
Rise Time	205 ps.
Conversion Gain	(typical) – 0.7 V/mW (1310 nm/1550 nm). Maximum Input Optical Power – Maximum average linear response power: 100 μ W (–10 dBm).
Maximum Input Optical Power	Maximum average linear response power: 100 μ W (–10 dBm).
Aberrations	$\leq 5\%$ peak-peak.
Optical Return Loss	2 ≥ -30 dB. Output Termination Impedance $50\ \Omega \pm 4\%$.
Output Termination Impedance	$50\ \Omega \pm 4\%$.
Internal Fiber Size	$9\ \mu\text{m}$.
Operating temperature	(Class VI) 3 $\rightarrow +10^\circ\text{C}$ to $+40^\circ\text{C}$.
Non-operating Temperature	(Class VI) -40°C to $+70^\circ\text{C}$. Humidity –75% non-condensing.
Humidity	75% non-condensing.
Return loss	2 ≥ -30 dB. Output Termination Impedance $50\ \Omega \pm 4\%$.

Environmental Characteristics

PARAMETER	VALUE
ENVIRONMENTAL CHARACTERISTICS	
Operating Temperature (Class VI)	+10° C to +40° C. Non-operating Temperature (Class VI) —40° C to +70° C. Humidity –75% non-condensing. CHARACTERISTICS _____ 1 Optical bandwidth (–6 dB electrical power). 2 Single-mode fiber input. 3 Reference receiver performance over 25° C ±10° C.
Operating temperature	(Class VI) 3 –+10° C to +40° C.
Non-operating Temperature	(Class VI) —40° C to +70° C. Humidity –75% non-condensing.
Humidity	75% non-condensing.

General Specifications & Supplementary Characteristics

PARAMETER	VALUE
Operating temperature	(Class VI) 3 –+10° C to +40° C.
Operating Temperature	(Class VI) 3 –+10° C to +40° C.
Non-operating Temperature	(Class VI) —40° C to +70° C. Humidity –75% non-condensing.
Humidity	75% non-condensing.
ENVIRONMENTAL CHARACTERISTICS Operating Temperature (Class VI)	+10° C to +40° C. Non-operating Temperature (Class VI) —40° C to +70° C. Humidity –75% non-condensing. CHARACTERISTICS _____ 1 Optical bandwidth (–6 dB electrical power). 2 Single-mode fiber input. 3 Reference receiver performance over 25° C ±10° C.

Full OEM specifications

Complete technical content extracted from the manufacturer datasheet

(https://www.aaatesters.com/pub/media/datasheets/tektronix_orr24_specifications_spec_sheet_5t01.pdf). Structured tables above summarize key parameters; this appendix preserves the full OEM text.

performance documentation.

The compact SD-xx form factor enables the ORR24 to conveniently plug into the Tektronix 11800 or CSA 803 Series sampling oscilloscopes for complete compliance testing. An optional power supply is available for other instrument applications.

Nominal Frequency Performance Values for an Optical Reference Receiver SDH/SONET recommendations define the nominal transfer function for an optical reference receiver as being a fourth-order Bessel-Thompson response. The following table lists the corresponding attenuation at various frequencies, f . In this table f is the transmitted data rate and f_r is the 3 dB cutoff, which is defined as

$f_r = 0.75f_o$. Attenuation f/f_o (dB) f/f_r (dB) 0.15 0.20 0.11 0.01 0.335 0.7 0.30 0.40 0.41 0.51 0.46 0.4 0.45 0.61 0.01 0.21 0.68 0.5 0.60 0.81 0.91 0.351 0.810 0.9 0.75 1.03 0.01 0.52 0.013 0.4 0.91 0.24 0.52 0.02 0.67 0.21 0.5

Note: Allowable deviation from the nominal attenuation in the table is very tightly specified in the SDH/SONET recommendations. The actual allowable deviation values depend on f/f_r and the bit rate.

These values run as low as ± 0.5 dB. Optical Reference Receivers (SONET/SDH) ORR24 See Tektronix on the World Wide Web: <http://www.tek.com> Tektronix Measurement products are manufactured in ISO registered facilities.

Certified for CE Marking. ORR24 with standard accessories and optional power supply.

Tektronix ORR24 Specs Provided by www.AAATesters.com

ORR24 frequency response (typical). ORR24 2.488 Gb/s SDH/SONET Optical Reference Receiver.

Includes: Hard Case, User Manual (English), Assorted Fiber Optic Hybrid Connectors (FC/FC, FC/ST, FC/SC), FC/FC Single-mode Fiber Jumper, 50 Ω SMA Cable, Frequency Response Graph, Certificate of Traceable Calibration.

ORR24 PRODUCT SERVICE OPTIONS Opt. 95 - Calibration Data. Opt. R3 - Three Year Extended Warranty.

Opt. C3 - Three Year Calibration Service.

ORR24 AVAILABLE ACCESSORIES External Power Supply -016-1609-00. Includes: IEC compatible Power Supply, ORR24 Adapter Cable, U.S. Power Cord, Instruction Sheet.

Alternative Power Cords (IEC compatible): European: 161-0066-09. UK: 161-0066-10. Australia: 161-0066-11.

Switzerland: 161-0154-00. 2 m Single-mode Fiber Optic Cables, 8/125 μ m - FC/PC to FC/PC: 174-1387-00.

FC/PC to ST: 174-1386-00. FC/PC to Biconic: 174-1388-00. FC/PC to Diamond (2.5): 174-1497-00.

FC/PC to Diamond (3.5): 174-1385-00. 2 m Multimode Fiber Optic Cables, 62.5/125 μ m - FC/PC to FC/PC: 174-2322-00.

FC/PC to SMA: 174-2324-00. FC/PC to Biconic: 174-2323-00. 90/10, 3-Port Single-Mode Optical Splitter, FC/PC Connectors - 174-3737-00.

10 dB, In-Line Single-Mode Optical Attenuator, FC/PC Connectors - 119-5118-00.

50 Ω Power Dividers, DC to 12 GHz (50% splitter) - SMA Female: 015-0565-00.

SMA Male: 015-1014-00. 2 • Optical Reference Receivers (SONET/SDH) ORR24 OpticalReferenceReceivers ORDERING INFORMATION 10/97TD/XBS60W-10676-1

Ordering Information

OPTION	DESCRIPTION
Opt. 95	Calibration Data. Opt. R3 – Three Year Extended Warranty.
Opt. C3	Three Year Calibration Service.
Includes	Hard Case, User Manual (English), Assorted Fiber Optic Hybrid Connectors (FC/FC, FC/ST, FC/SC), FC/FC Single-mode Fiber Jumper, 50 Ω SMA Cable, Frequency Response Graph, Certificate of Traceable Calibration.

Certified for CE Marking

Available from Aumictech

Used and refurbished unit evaluated in-house. Calibration: Available on request. Used · In stock.

Request a quote: sales@aumictech.com · +1 (484) 841-9341

Aumictech
788 S 500 E, Pleasant Grove, UT 84062
sales@aumictech.com · +1 (484) 841-9341
<https://aumictechlabs.com>

NIST-traceable calibration · SAM registered ·
30-day returns
NAICS 423690 · 811210 · 541380
Generated July 28, 2026

Technical content source: external OEM (oem-pdf) ·
https://www.aaatesters.com/pub/media/datasheets/tektronix_orr24_specifications_spec_sheet_5t01.pdf · Unit photo/stock from Aumictech
listing when available (off-catalog = OEM only). · Specifications subject to OEM documentation and unit condition.