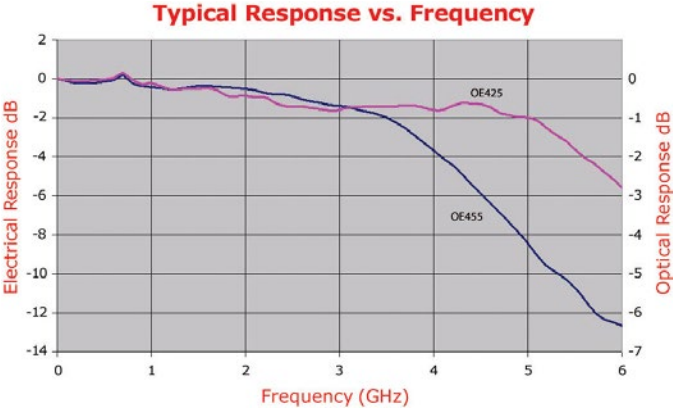


Specifications	OE425/525	OE455/555
Wavelength Range	500–870 nm / 460–870 nm (0.1 V/mW)	950–1630 nm / 800–1630 nm (0.1 V/mW)
Conversion Gain	0.5 V/mW	1.1 V/mW
Bandwidth	4.5 GHz (6 GHz optical)	3.5 GHz (4.5 GHz optical)
Equivalent Noise	2.2 µW rms	1.0 µW rms
Maximum Optical Power (at 5% saturation)	2.2 mW	1.0 mW
Rise Time (typical)	90 ps	108 ps
Maximum Safe Input	5.5 mW	2.5 mW
Temperature Drift	0.00275 dB/deg. C	
Frequency Response Ripple	1.1 dB	
Connector Type	FC/PC	
Temperature (Operating)	5 °C to 40 °C	
Temperature (Storage)	-20 °C to 60 °C	
Humidity (Operating):	5% to 80% RH (non-condensing), 50% RH above 30 °C	
Humidity (Storage)	5% to 95% RH* (non-condensing) * 75% RH above 30 °C and 45% RH above 40 °C	
Certifications	Conforms to IEC/EN 61010-031:2015 (Safety) and IEC/EN 61326-1:2013 (EMC)	



CAUTION. Use only within operational environment listed. Do not remove probe casing. Observe all terminal ratings. Use product only as specified.



Cleaning

Clean only the exterior of the converter with a soft cloth moistened with water or 75% isopropyl alcohol solution. Under no circumstances should moisture be allowed to penetrate the converter. The fiber connectors can be cleaned by blowing residue-free air into the connector to remove loose particles.



CAUTION. The converter’s fiber connectors should be mated only to other well cleaned connectors.

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Operator’s Manual

OE4x5 / OE5x5

Optical-to-Electrical Converters

Overview

The OE4x5 and OE5x5 are optical-to-electrical converters with multimode fiber inputs. They are specifically designed for the measurement of optical telecommunication signals. DC, AC, and impulse light intensities can be measured as cursor or parameter measurements are being made, with the oscilloscope automatically converting units to Watts.

The converters are compatible with most Teledyne LeCroy oscilloscopes equipped with ProBus or ProLink connectors*:

- OE4x5 models fit ProBus connectors, or ProLink connectors when using a BNC adapter.
- OE5x5 models fit ProLink connectors.

* Some legacy models not supported. Contact your Teledyne LeCroy sales representative or local service center for compatibility.



CAUTION. The fiber cable is fragile, handle with care.

Application as Optical Reference Receiver

With the OE4x5 and OE5x5, you can filter the optical signal in a precise way, in accordance with ITU-T G.957 and other optical standards (such as IEEE802.3) so that the oscilloscope and probe chain will constitute an Optical Reference Receiver, per Annex B of G.957.

When used with a Teledyne LeCroy oscilloscope, the converters have a response vs. frequency that follows a 4th order Bessel-Thompson lowpass filter whose -3 dB cutoff frequency is set by the user-adjustable data rate. This filter adapts to the probe automatically, so it remains calibrated regardless of the channel on which it is used.

Quantity of Light

What the oscilloscope displays is actually the voltage resulting from the conversion of the light signal by an optical-to-electrical converter. The efficiency of this conversion (V/W) depends on the wavelength of the incident light.

The converters are designed to operate optimally over different wavelengths:

- OE455 and OE555 operate over 950 to 1630 nm and are calibrated at 1550 nm.
- OE425 and OE525 operate over 500 to 870 nm and are calibrated at 800 nm.

Therefore, when other wavelengths of light are measured, the power displayed by the oscilloscope will differ slightly from the actual value.

Another factor affecting the measurement of power is the insertion loss of cables chained between the light source and the probe. Each optical connection will typically cost between 0.3 and 0.5 dB (7% to 12%) of light output. Oscilloscope calibration is based on light at the probe FC connector.

The detectors are “multimode”; they will remain accurate when used with either single or multimode optical fibers.

Measuring Small Amounts of Light

Through “Enhanced Resolution” and “Averaging” of mathematical functions, it is possible to measure very small signals that represent minute amounts of light. However, the offsets generated by temperature changes can become significant. If the absolute amount of light is to be measured, you should plan for frequent oscilloscope re-calibrations, or minimize temperature variations. But if only the amplitude of light modulation is to be measured, this is not critical.

Operating with an Oscilloscope

The OE4x5 probes use ProBus style connectors. Therefore, an LPA-BNC adapter is required when they are to be used with oscilloscopes that are not equipped with ProBus connectors.

The probe response can be read directly from the oscilloscope **Probe** dialog, which will have the same name as the connected converter. From the **Vertical** drop-down menu, select the channel to which the OE is connected, then click the <probe name> tab. The probe information is listed at the right of the dialog and the reference receiver filter selection is shown at the left. The reference receiver is set to a given standard by selecting it from **Receiver Standard**.

You can also select a user-defined filter from **Receiver Standard**, then enter either the **Receiver Bandwidth** or **Data Rate** in the appropriate field. These two values are related in that the receiver bandwidth is 75% of the data rate. Only one of the two parameters need be entered; the other will be computed automatically.

A selection is also available for disabling the reference receiver filter.

When the probes are used with an oscilloscope in combination with the universal reference receiver, the probe response is automatically matched to the oscilloscope and channel, and the bandwidth response is adjusted to the user-selected data rate.

Calibration

The recommended calibration interval is one year. Calibration should be performed by qualified personnel only.

Certifications

Teledyne LeCroy certifies compliance to the following standards as of the date of publication. For current certifications, see the EC Declaration of Conformity shipped with your product.

EC Declaration of Conformity - Safety

The probe conforms to the applicable European Union requirements per Low Voltage Directive (LVD) 2014/35/EU. Compliance was demonstrated to the following specification as listed in the Official Journal of the European Communities:

IEC/EN 61010-031:2015 Safety requirements for electrical equipment for measurement, control and laboratory use – Part 031: Safety requirements for handheld probe assemblies for electrical measurement and test.

EC Declaration of Conformity - EMC

The probe meets intent of EC Directive 2014/30/EU for Electromagnetic Compatibility. Compliance was demonstrated to the following specifications as listed in the Official Journal of the European Communities:

IEC/EN 61326-1:2013, EMC requirements for electrical equipment for measurement, control, and laboratory use.

EC Declaration of Conformity - RoHS

The probe and accessories conform to the 2011/65/EU RoHS2 Directive.

Environmental



The probe complies with the applicable European Union requirements to Directives 2012/19/EU and 2013/56/EU on Waste Electrical and Electronic Equipment (WEEE) and Batteries.

 The probe is subject to disposal and recycling regulations that vary by country and region. Many countries prohibit the disposal of waste electronic equipment in standard waste receptacles. For more information about proper disposal and recycling of your Teledyne LeCroy product, please visit teledynelecroy.com/recycle.