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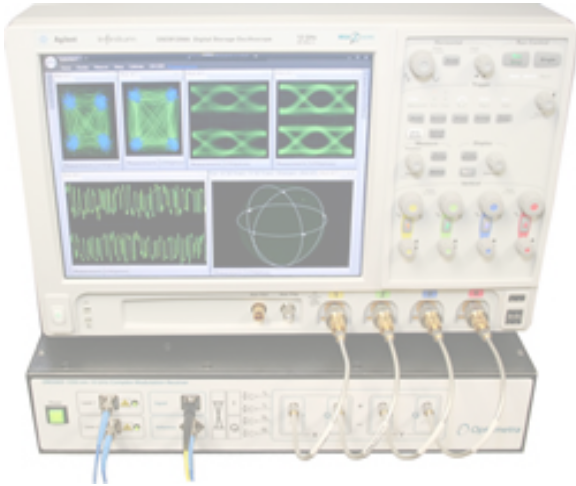
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OM4005/OM4006
Coherent Lightwave Signal Analyzer™/Pro™

*OM4006 Coherent Lightwave Signal Analyzer Pro:
OM3005 Coherent Modulation Receiver driving real-
time oscilloscope running Optametra Signal Analysis
Suite*

Key Features

- Complete coherent signal analysis system for polarization-multiplexed QPSK, differential BPSK/QPSK, and other advanced modulation formats
- Displays constellation diagrams, phase eye diagrams, Q-factor, Poincaré sphere, signal waveform, and extracted laser phase characteristics, with available analysis options (e.g. bit error rate)
- Software tolerates > 1 MHz instantaneous signal laser linewidth—compatible with standard network tunable sources
- OM3005 Coherent Modulation Receiver (CMR™) includes Signal and Reference sources
- No laser phase or frequency locking required
- Smart polarization separation follows signal
- Incorporates Optametra OM3005 Coherent Modulation Receiver (CMR™) for high stability, linear, polarization-diverse, optical field detection
- Runs with Agilent, Tektronix and LeCroy real-time oscilloscopes[1]
- OM4006 CLSA Pro™ enables faster external processor and access to internal functions via its MATLAB interface

Optametra's OM4005/OM4006 Coherent Lightwave Signal Analyzer™ (CLSA™)/Pro™ is a new 1550 nm (C- and L-band) fiber optic test system for visualization and measurement of complex-modulated signals, offering a complete solution to testing both coherent and direct-detected transmission systems. Optametra's hardware includes the OM3005 polarization-diverse Coherent Modulation Receiver™ (CMR™) enabling simultaneous measurement of any modulation format, including dual-polarization (DP) QPSK. Optametra's software performs all calibration and processing functions to enable real-time burst-mode constellation diagram display, eye-diagram display, Poincaré sphere, and bit-error detection. Bit rates up to 43 Gb/s (40G DP-QPSK) are supported today, with simple 112 Gb/s (100G DP-QPSK) upgrades available mid-2009.

Interface:

Line Code	OOK, BPSK, QPSK, DBPSK, DQPSK, DP-BPSK, DP-QPSK
Data	Any PRBS or user supplied pattern
Data Rates	Up to 43 Gb/s (112 Gb/s upgrade available mid-2009)
Control	Built-in Ethernet interface

Measurement:

Display	Eye diagrams, vector modulation (constellation diagrams), Poincaré sphere, decision threshold Q plot
Signal Quality	Bit-error rate (by examination of payload), eye decision threshold Q-factor, tributary skew, constellation

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alignment, eye (sampling, density), MATLAB[2] scripting environment, C- or L-band tunable constellation mask, constellation statistics

Requirements when using external lasers
Instantaneous linewidth < 2 MHz
Short-term stability < 200 MHz
Suggested reference power: +7-13 dBm

Calibration Routines:
Gain, offset, linewidth, receiver path mismatch (hybrid phase angle and state of polarization factory calibrated)

Receiver	C-band (1525 to 1570 nm)
	L-band (1575 to 1630 nm) optional
	Maximum recommended *total* input optical power +20 dBm

Other Characteristics:

Lasers	Power: +13 dBm
	Linewidth: 100-kHz short term
	Accuracy: 5 pm

[1] Requires 4-channel, 12 GHz real-time oscilloscope bandwidth—higher speed upgrades will be available mid-2009
[2] MATLAB is a registered trademark of the MathWorks

General characteristics:

Size:

| Assembled | (H x W x D) 8.9 cm x 43.2 cm x 29.85 cm / 3.5 in x 17.0 in x 11.75 in |

Weight:

| Net | 11.8 kg / 26 lbs |
| Shipping | 15.9 kg / 35 lbs |

Operating temperature range: +10° C to +35° C

Storage temperature range: -20° C to +70° C, non-condensing humidity

Humidity: 15% to 80% relative humidity, non-condensing

Power requirements : 100-240 V~ 50-60 Hz, 1 power cable, Max. 100 VA

Calibration interval: 1 year

Limited warranty: 1 year, extended warranty program available

Model	Description
OM4005 Complex Modulation Analyzer	Polarization-diverse complex receiver system. Purchase includes one (1) license to Signal Analysis Suite. The initial release will include OOK, BPSK, QPSK, DPSK, DQPSK constellation diagram, eye diagram, data and error display, BER calculation, polarization analysis, Q-factor, and will work on PRBS or user-entered data. Includes installation and training. Includes integration of customer's real-time oscilloscope.
OM4006 Complex Modulation Analyzer Pro	OM4005 as above; Professional model further enables external processor, Matlab and Matlab interface with access to all internal variables for custom filters, compensation, analyses and plots.

Please contact Optametra Sales (sales@optametra.com) for a price quote or to arrange a demonstration