OLC-65

Optical Level Controller

Key Features

- Variable optical attenuator and high performance optical power meter combined in a rugged handheld instrument
- Automatic stabilization of the output power even if the launched input signal fluctuates
- Direct setting of the output power
- In-service optical power meter
- User-programmable test cycles for various attenuation values
- Data memory with real time clock.
- Remote control via RS-232 or Ethernet

Designed for economic and flexible use in optical testing

The OLC-65 Optical Level Controller is an outstanding instrument of the new premium class of optical handheld instruments designed for optical system installation, maintenance, and troubleshooting.

In fact three instruments are combined in just one handy box.

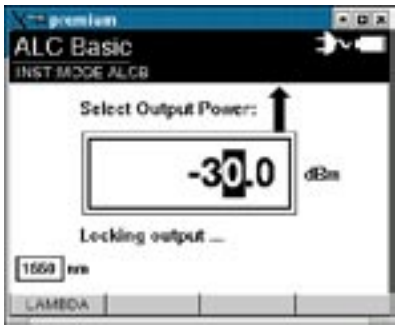
- Automatic level controller
- Power meter with in-service measurement function
- Variable attenuator

Wide range of applications – 5 in 1 value proposition

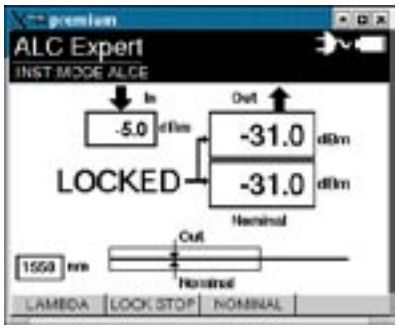
JDSU's new OLC-65 is much more than just the combination of an optical attenuator and an optical power meter. The five instrument modes are:

- Optical Level Controller -> direct output power setting, not the attenuation
- Optical Level Stabilizer -> controls the output power automatically
- Optical Power Meter -> 80 dB dynamic range
- Optical In-line Power Meter -> built-in coupler for in-service measurements
- Optical Attenuator

The OLC-65 simplifies test procedures by minimizing connect/disconnect procedures, avoids measurement errors by direct power setting and will decrease test time.



1. ALC Basic Mode: This easy-to-use automatic level control mode needs only the output power, that's it



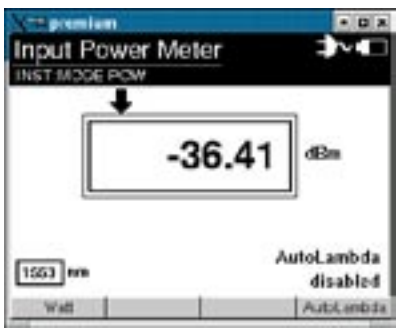
2. ALC Expert Mode: Like ALC Basic mode with additional functionalities

– Start and stop of active level control possible

– Shows the selected nominal output power and the actual value (locked: nominal = out, unlocked: nominal ≠ out)

– Information on control margin

– Input power



3. Power Meter Mode: shows the optical power launched tot he instrument; 80 dB dynamic range of the in-line power meter

Automatic level controller mode

Most applications require a definite power level rather than a definite attenuation. A normal attenuator only allows the setting of an attenuation value. In the Automatic Level Controller (ALC) mode the OLC-65 allows direct setting of a definite and precise optical power level when connected to an optical source. It integrates the function of an attenuator and a power meter and therefore avoids extra steps to adjust the power level with a separate power meter. In the ALC-mode the attenuator is automatically counterbalancing the changes of varying input power level and provides a stable output level.

Two ALC-modes are provided:

- ALCBasic mode: direct output power level setting with active control.
- ALCExpert mode: more detailed information and settings for the expert user

Optical power meter mode

In this mode any wavelength between 1280 nm and 1650 nm can be selected with a resolution of 1 nm. The measurement results can be displayed in an absolute or relative value.

For identification of a fiber the OLC-65 has a tone detector indicating frequencies of 270/330/1k/2kHz. In "Twin Test mode " the unit offers a auto wavelength detection for fast power measurements at two different wavelengths (e.g. 1310 nm and 1550 nm).

Even for in-service power measurements the OLC-65 can be used in its through mode.

Optical attenuator mode

The OLC-65 attenuator mode enables continuous and variable attenuation of optical signals transmitted at wavelengths between 1280 nm and 1650 nm. Two operating modes are available – **Normal** and **Sweep**. In normal mode, the input signal gets attenuated by the amount of dB entered on the display. Whereas the sweep mode includes predefined attenuation sequences, that can be performed by a "start/stop" function.

Data storage

An integrated data memory allows to store up to 1000 measurement results with real time stamps on the OLC-65.

In combination with the PC software OFS 355 the user is able to easily generate measurement reports

Remote control

The OLC-65 provides remote control via SCPI commands over RS-232

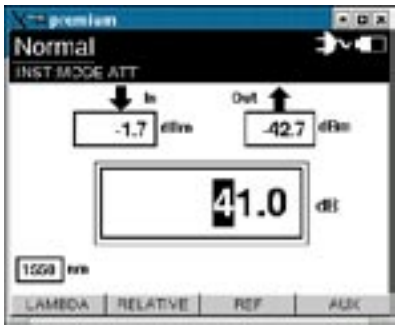
Power supply

The OLC-65 can be operated with either an AC line adapter or with standard dry or rechargeable AA batteries. Its compact size makes the OLC-65 ideal for field use. All units have robust housing that provides excellent protection of the optical ports and ensures reliable operation particularly in field conditions.

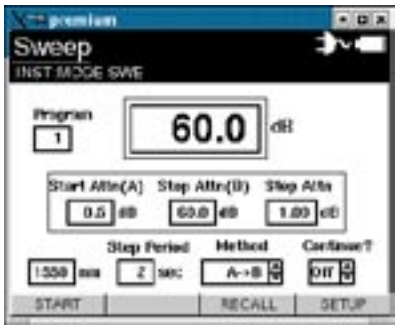
Applications example – receiver sensitivity testing

Receiver sensitivity is the minimum acceptable value of the average received power at a receiver input that is required to achieve a 1×10^{-10} or 1×10^{-12} bit error ration (BER) as recommended in ITU-T G. 957. This test aims to guarantee certain error levels at extremely low input power levels to meet systems design objectives.

A general test set-up can be seen in figure 1 below.



4. Attenuator Normal Mode: Standard attenuator setting with absolute and relative display mode as well as input and output power



5. Attenuator Sweep Mode: Linear sweep of the attenuator with selected parameters:

– Sweep time for attenuator step

– Single or continuous

– Min. attenuation

– Max. attenuation

– Method

The OLC-65 is used to control the power of the test signal at the input of the receiver under test. By an automatic degradation of the signal power the minimum power level at the DUT can easily be identified that meets the ITU-T recommendation mentioned above.

Service ValuePak for OLC-65

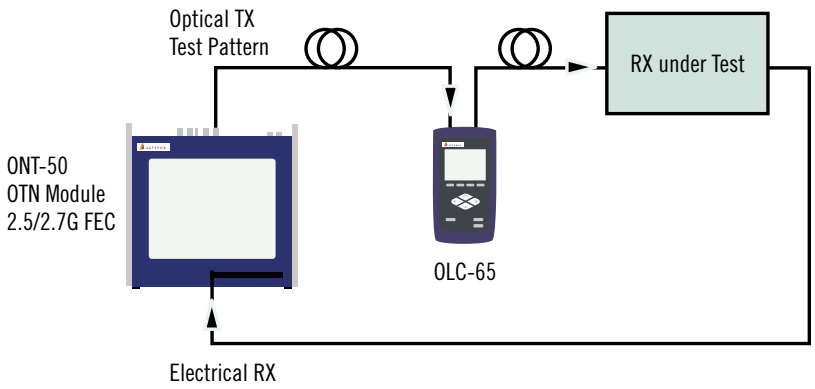
The JDSU Service ValuePak combines a range of services to ensure long-term protection, maintenance and support to prolong the life of your OLC-65. It includes an extended 3 year warranty, one certified calibration, proactive calibration management, preventive maintenance and technical phone support.

Service ValuePak offers both investment and user protection by ensuring:

- Predictable cost of ownership throughout the lifetime of the OLC-65
- Correct functionality and conformance to international standards

By purchasing the Service ValuePak directly with the OLC-65, the cost of buying extended warranties or calibration separately at a later stage can be substantially reduced.

Figure 1: General test set-up for receiver sensitivity testing



Specifications[1]

Wavelength

Setting range	1280 nm to 1650 nm
Setting resolution	1 nm
Calibration wavelength	1310, 1550, 1625 nm

Optical input power

Maximum total power[2]	+23 dBm

Optical interfaces

Fiber type	SM, 9/125 µm
Linearity[2]	± 0.06 dB (–50 to +5 dBm)
Return loss	>40 dB
Interchangeable adapters	FC-PC, SC-PC, ST, DIN, LC

Optical power meter function

Photo diode	InGaAs
Display range	–60 dBm to +23 dBm
Display resolution	0.01 dB, 0.001 µW
Measurement range	–60 to +20 dBm
Accuracy[3]	± 0.3 dB ± 3 nW
Linearity[4]	± 0.04 dB ± 2 nW
Measurement units	dB, dBm, µW
Functions	auto-λ[5], auto zeroing
Modulation detection(6)	270 Hz, 330 Hz, 1 kHz, 2 kHz

Variable optical attenuator

Attenuation maximum	60 dB
Insertion loss	typ. 2 dB
Resolution	0.01 dB
Linearity	± 0.2 dB
Accuracy	± 0.5 dB
Repeatability	± 0.1 dB
Functions	simultaneous display of attenuation, input power, pre-programmable attenuation values
Operating modes	abs-att, rel-att normal/sweep mode

(1) all specifications excluding connector uncertainty of input/output connectors, unless otherwise specified

(2) For λ < 1400 nm max. total power = +17 dBm

(3) at 23°C ± 3°C, calibrated wavelengths

Optical level controller

Output power level setting

Control range[7]	–50 to +20 dBm
Accuracy[8]	± 0.25 dB
Display resolution	0.01 dB
Setting time	<2 s

Output power level stabilization

Stability [9]	± 0.15 dB
Functions	direct output power level setting, output power stabilization
Operating modes	Basic/Expert mode

General specifications

Data memory	1000 measurement results

Electrical interfaces

Type	RS-232, USB client[10], Ethernet

Dimensions and weight

Dimensions (w×h×d in mm)	115×255×57
Weight	0.9 kg
Display	1/4 VGA, b/w
Back-light	on/off

Ambient temperature

Nominal range of use	–10°C to +55°C
Storage and transport	–40°C to +70°C

Humidity

Nominal range of use	
Relative humidity, <30°C	5 to 95 %
Absolute humidity, >30°C	1 to 29 g/m³

Power supply

Dry batteries	4 × Mignon (AA size) 1.5 V
NiMH	4 × Mignon (AA size) 1.2 V, 1.8 Ah
AC line operation	separate AC line adapter

Operating time[9]

Dry batteries	typ. 10 hours
NiMH	typ. 10 hours

(9) -45 to +20 dBm

(5) to be used together with JDSU OLS-6 or OLS-15

(6) power range: -50 dBm to +20 dBm

(7) input power level needs to be at least 3 dB higher than selected output power level

(8) at 23°C ± 3°C, calibrated wavelengths, at 1625 nm ± 0.3 dB

(9) input power variations in frequency range <0.5 Hz

(10) USB client for future applications

Software

OFS 355 Optical Fiber Assistant Software Free PC documentation software (available from http://www.jdsu.com/global/customer_care/software_updates/index.html.)

Ordering information

JDSU OLC-65	2276/01
Calibration report for OLC-65	2276/90.97

Delivery contents

JDSU OLC-65	
2 interchangeable adapters	2150/00.xx
NiMH batteries	
AC/DC adapter/charger 9 V	
Operating manual	

Accessories

AC/DC adapter/charger 9 V	2267/90.01
NiMH batteries	2237/90.02
Dry batteries	2229/90.01
Optical connector cleaning tape	2229/90.07
Spare cleaning tape	2229/90.08
Lens tissue	2256/90.04
Connector cleaning sticks	2256/90.05
Null modem cable RS232/V.24	K764
USB connector cable A/B	K804
Carrying strap	0820/00.52
Carrying case	2276/90.05

Detailed information about test adapters, cables and fiber-optic couplers can be found in separate data sheet: "JDSU fiber-optic test adapters and cables".

Services

Service ValuePak for OLC-65

Americas	OLC65-BASIC3
EMEA	2276P001S
Asia Pacific	

Extended HW warranty

Americas	OLC65-EW
EMEA	2276WE0100
Asia Pacific	

Calibration

Americas	OLC65-FRCC
EMEA	2276CI0100
Asia Pacific	

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