



OPT 80 – User Manual



OPTICAL/RF Converter

1. NOTICE	2
1.1. SAFETY STANDARDS	2
1.2. PRECAUTIONS	2
1.3. MAINTENANCE	3
1.4. NOTES.....	3
2. INTRODUCTION	4
3. TECHNICAL SPECIFICATIONS	4
4. DESCRIPTION.....	5
5. INSTRUCTIONS FOR USE WITH UNAOHM FIELD METERS.....	6
6. MODE OF USE	7
6.1. ACTIVATION/DEACTIVATION OF THE OPTICAL MEASUREMENTS FUNCTION	7
6.2. OPTICAL STRENGTH MEASUREMENT	7
6.3. MEASUREMENT OF OPTICAL STRENGTH LOSSES	8
6.4. DATA LOGGER	8

1. NOTICE



MARKING This equipment is in conformity with the following standards and documents:

- **ELECTROMAGNETIC COMPATIBILITY (EMC)** EN55011, EN61000-3-2, EN61000-3-3, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-8, EN61000-4-11, ENV50204
- **SAFETY:** EN61010-1

WARNING: The safety standards and precautions listed below must be applied scrupulously during all phases of use and maintenance of the instrument in order to prevent damage to persons, animals and objects

UNAOHM S.r.l. will not be liable for any incorrect use of the instrument or any use other than that specified.

1.1. SAFETY STANDARDS

- Power the instrument with a voltage which falls within the limits specified in the characteristics.
- Do not use the equipment without the relative locks.
- The instrument is intended for use in covered areas. Therefore do not expose it to rain or drips.
- Do not use the equipment in an explosive atmosphere constituted by flammable gases, vapours, smoke and powders.
- Do not turn on the equipment immediately after moving it from a very cold area to a very hot area in order to avoid condensation forming inside it.
- Do not obstruct any cooling slots and do not place the equipment close to heat sources.
- Do not apply DC voltage, RF or optical signals greater than those prescribed to the intake/output connectors.

1.2. PRECAUTIONS

- Keep the equipment in a location with temperatures between the prescribed minimum and maximum.
- One of the most frequent causes for technical support intervention is due to internal short circuits due to foreign bodies, even very small ones, which enter the equipment despite all of the measures taken to prevent this possibility. It is therefore recommended in particular when joining coaxial cables not to do it in the immediate vicinity of the equipment because even very small pieces of the mesh shielding could penetrate the equipment and cause occasional short circuits which are not easily detected by technical support engineers.

1.3. MAINTENANCE

- To clean the external parts:

1° Remove the power supply cable.

2° Use soft cloths. Use non-aggressive detergents and do not use hydrocarbon based substances.

3° Do not allow liquids or other substances to penetrate inside the instrument.

Opening the instrument and any operations must be done exclusively by qualified personnel or at least by personnel with basic electro-technical and electrical safety knowledge.

- Be careful not to come into contact with circuits which, even though not powered, still maintain an electrical charge (condensers).
- Use suitable measures against accumulation of electrostatic charges. Do not touch circuits inside the equipment before applying an appropriate antistatic bracelet.

1.4. NOTES

- The specified explanations are understood to be with the equipment at running temperature (in other words, 10 minutes after start up).
- Do not drop the equipment or subject it to strong shocks. If the instrument is transported in a vehicle, place it on a non-rigid support in order to avoid strong vibrations.
- Before using the instrument read the instructions contained in this user manual carefully.
- It is strongly recommended to regularly perform (at least annually) the periodic functional test on the instrument, accompanied by any necessary calibration.



This symbol indicates that the instruction manual must be consulted for supplementary information.



This symbol indicates parts of circuits where dangerous voltage may be present.

UNAOHM S.r.l. reserves the right to make changes to the described product at any time for technical or commercial reasons as well as for compliance with legal requirements in the various countries.

For this reason the information contained in this manual may not be up to date.

2. INTRODUCTION

The OPT 80 is an auxiliary device which, used with the UNAOHM DG OHM Compact, AP01 series, AP301 series, AP201 Plus, EP4000, EP3000 new series, it allows measurements to be taken of optical parameters in the distributions realised using fibre optic technology instead of the classic coaxial cable.

The main points of its characteristics are:

- Calibrated measurement of the optical strength of satellite and terrestrial TV signals in fibre optics
- Calculation of the optical signal loss on distribution
- Measurement of the digital parameters (BER - MER - NM etc.) of the optical signals converted into RF
- Display of the carriers converted by optics into RF on the spectrum analyser of the field meter
- Management of the optical meter through the field meter menus
- Display of the optical measurements on the field meter monitor
- Power through RF connection with the field meter (LNB power)
- Optical LNB power 13V 500mA with short circuit and overload management
- Acquisition of optical measurements through the field meter Data Logger
- **As option: calibration certification of the OPT80 and of the optical power measurements**

Using a complete range of accessories, available on request, the OPT 80 connection can be adapted to various types of distribution devices and connectors.

Among the available accessories is a calibrated optical attenuator which allows the full scale of measurement to be extended to +12 dBm.

3. TECHNICAL SPECIFICATIONS

CALIBRATED WAVE LENGTH	1310 nm – 1490 nm – 1550 nm
OPTICAL FIELD OF MEASUREMENT	-20dBm ~ +2dBm
MEASURING UNCERTAINTY	0.2dB
READING RESOLUTION	0.01dB
OPTICAL CONNECTOR	FC / APC – SINGLE MODE TYPE FIBRE
POWER SUPPLY	VIA FIELD METER "LNB" POWER
LNB OPTICAL POWER	13V 500 mA OUTPUT (BNC LNB SUPPLY CONNECTOR)
RF OUTPUT	BNC CONNECTOR
RF OUTPUT IMPEDANCE	75 Ω
RF PASSBAND	47 ~ 2250 MHz
RF OUTPUT LEVEL	94 dBμV (-15 dBm) MEASURED WITH INPUT OPTICAL STRENGTH -3 dBm
FREQUENCY RESPONSE	± 2 dB
RETURN LOSS	< 15 dB
OPERATING TEMPERATURE	- 5 + 50 °C
RELATIVE HUMIDITY	MAX 90%



4. DESCRIPTION

The OPT80 optical adaptor has an optical input which receives the optical signals in the 1310 nm, 1490 nm, 1550 nm wave lengths which belong to the terrestrial and satellite TV frequencies (47 ~ 2250 MHz) coming from the converted RF signals.

The optical signal received from the OPT80 is also demodulated and sent to the RF OUT output. By connecting this to the RF input of the field meter, the quality parameters, BER, MER, NM of the digital passbands can be measured.

The OPT80 transmits the optical strength measurement to the UNAOHM field meter, predisposed with a special menu for the optical functions, thus allowing the measurements to be viewed on the monitor.

The OPT80 power supply arrives through the same RF coaxial cable, using the field meter LNB power. The same power supply is available on the LNB PWR SUPPLY connector to power the optical LNBs

5. INSTRUCTIONS FOR USE WITH UNAOHM FIELD METERS

For use with field meter models DG OHM Compact - AP01 series AP 301 series – AP 201 Plus connect the module with meter as in Figure 1.

Fig. 1 illustrates an example of the connection diagram using field meter DG OHM Compact

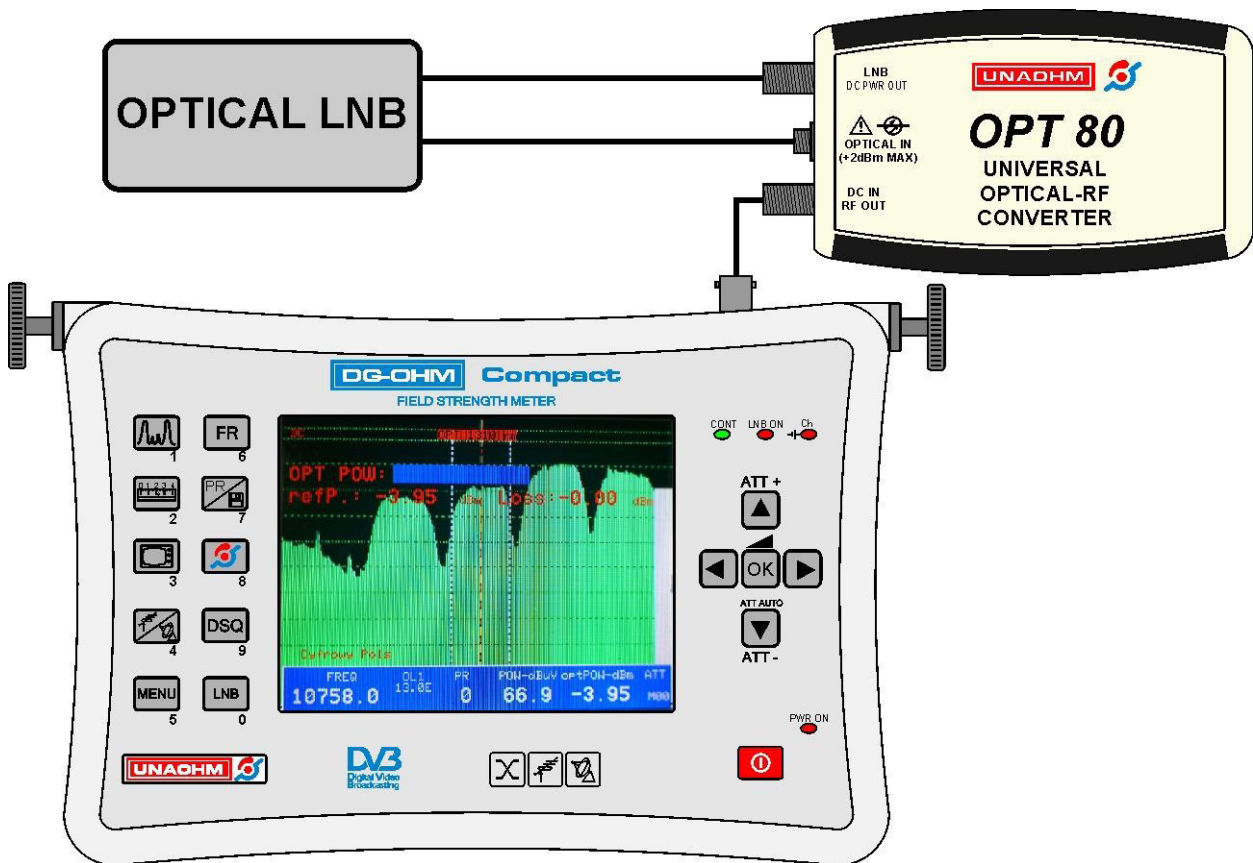


Fig. 1

6. MODE OF USE

Turn on the field meter as usual. Activation of the OPT80 to enable the optical measurements is carried out in the following ways:

6.1. ACTIVATION/DEACTIVATION OF THE OPTICAL MEASUREMENTS FUNCTION

1. Hold the field meter **LNB** button in for about 3 seconds. The relative menu will appear on the monitor.
 2. Select the "OPTICAL" item and press **ENTER**, select **ON (or OFF to deactivate the function)** turning the knob and pressing **ENTER** again. The writing "PLEASE WAIT" will appear on the field meter monitor and after a few seconds the connection will be established between the field meter and the OPT80 adaptor.
- If connection between the field meter and the OPT80 does not occur, the writing "ABSENT" will appear on the field meter monitor and after about 3 seconds normal operating conditions will be re-established.

6.2. OPTICAL STRENGTH MEASUREMENT

NOTE: To view the optical measurements as described below, the field meter must be predisposed in spectrum mode by pressing the **SPECT** button.

When the optical measurement function is active, the indication "Vdc" on the field meter status bar, which normally indicates the LNB power supply voltage, is replaced by "optPOW-dBm". The value represented under this item indicates the measured optical strength.

The following indications also appear on the instrument monitor:

1. in the centre at the top, the indication of the optical window in use (1310 nm, 1490 nm, 1550 nm).
Selection of the window is carried out as follows:
 - ⇒ hold in the **LNB** button for about 3 seconds. The relative menu will appear.
 - ⇒ Turn the knob to select "Optical Menu" and then press **ENTER** to confirm the selection
 - ⇒ Select the desired optical window by turning the knob and then press **ENTER** to confirm the selection
 - ⇒ Press the **LNB** button to exit the menu.
2. OPT POW indication:
on this line a blue coloured bar which is proportionally as long as the optical signal indicates the strength relative to the measured signal, thereby allowing, for example, directing of a satellite dish with an optical LNB.
3. ref POW:
the optical strength value indicated represents the reference level for calculation of the optical strength. To set the reference value proceed as follows:

- ⇒ Connect the primary optical signal source to be measured (LNB, head amplifier, etc.). On the field meter status bar, under the "optPOW2" indication, the strength in dBm of the measured signal will be indicated.
- ⇒ In succession press the **2nd** and **store (PR)**. The value of the optical strength is stored and then indicated in "refPOW". This value represents the reference optical strength value for calculation of the losses.

6.3. MEASUREMENT OF OPTICAL STRENGTH LOSSES

- ⇒ Connect the **OPT80** optical input to the desired point of measurement downstream of the LNB or the head unit. Under the item optPOW on the instrument status bar the strength value of the measured signal is indicated.
- ⇒ OPT Loss:
The optical losses value is indicated on the field meter monitor in the corresponding field. This value is calculated between the "refPOW" reference value and the signal strength value present at that moment at the OPT80 optical input.

6.4. DATA LOGGER

The field meter firmware upgrade activates the optical measurement acquisition function. As described below, after selection of the plans the command item appears which allows selection of the RF or OPTICAL mode. All of the other functions remain the same. For use, please see the field meter manual.

- **DATA LOGGER of AP meters:** selecting this item causes the window to appear which allows the use of the five available plans:

PLAN A
PLAN B
PLAN C
PLAN D
PLAN E

Turn the **knob** to select the plan to be used and then press **ENTER**. For each of the five plans the menu appears on the screen which allows the following actions:

- LOG RF: by selecting this item the settings can be changed to carry out logging of the optical measurements and optical strength measurements converted into RF.
- START LOGGER
- VIEW DATA
- DELETE DATA
- VIEW PLAN
- EDIT PLAN NAME
- DELETE PLAN