


# PROLITE-105

## FTTH TRIPLE LASER SOURCE



## **SAFETY NOTES**

Read the user's manual before using the equipment, mainly "SAFETY RULES" paragraph.

The symbol  on the equipment means "SEE USER'S MANUAL". In this manual may also appear as a Caution or Warning symbol.

Warning and Caution statements may appear in this manual to avoid injury hazard or damage to this product or other property.

## **USER'S MANUAL VERSION**

<b>Version</b>	<b>Date</b>
1.0	June 2016

## SAFETY RULES

- \* **Safety can not be assured if instructions are not closely followed.**
- \* The external DC charger is a **Class I** equipment, for safety reasons plug it to a supply line with the corresponding **ground terminal**.
- \* Use the mains adapter in **Overvoltage Category I** and **Pollution Degree 1** installations. To use **INDOOR**.
- \* When using some of the following accessories **use only the specified ones** to ensure safety:
  - Rechargeable battery.
  - Mains adapter.
  - Power cord.
- \* Observe all **specified ratings** both of supply and measurement.
- \* Use this instrument under the **specified environmental conditions**.
- \* **The user is not allowed** to carry out the following maintenance operations:
  - Any change on the equipment must be carried out exclusively by technical staff.
- \* Follow the **cleaning instructions** described in the Maintenance paragraph.
















### CAUTION



The battery used can present danger of fire or chemical burn if it is severely mistreat.

Do not disassembly, cremate or heat the battery above 100 °C under no circumstances.

\* Symbols related with safety:

	DIRECT CURRENT		ON (Supply)
	ALTERNATING CURRENT		OFF (Supply)
	DIRECT AND ALTERNATING		DOUBLE INSULATION (Class II protection)
	GROUND TERMINAL		CAUTION (Risk of electric shock)
	PROTECTIVE CONDUCTOR		CAUTION REFER TO MANUAL
	FRAME TERMINAL		FUSE
	EQUIPOTENTIALITY		EQUIPMENT OR COMPONENT TO BE RECYCLED
			

### Descriptive Examples of Over-Voltage Categories

**Cat I** Low voltage installations isolated from the mains.

**Cat II** Portable domestic installations.

**Cat III** Fixed domestic installations.

**Cat IV** Industrial installations.

## TABLE OF CONTENTS

1 GENERAL.....	1
1.1 Description .....	1
2 INSTALLATION .....	2
2.1 Power Supply .....	2
2.1.1 Operation Using the Mains Adapter .....	2
2.1.2 Operation Using the Battery.....	2
2.1.3 Battery Charging.....	2
2.1.4 Recommendations using the battery .....	3
3 OPERATION INSTRUCTIONS.....	4
3.1 Description of Controls and Elements.....	4
3.2 Operating Instructions.....	6
3.2.1 Selecting the active Wavelength.....	6
3.2.2 Signal Modulation.....	6
3.2.2 Automatic Sequential Mode Operation .....	7
4 SPECIFICATIONS .....	8
5 MAINTENANCE .....	10
5.1 Instructions for returning by mail.....	10
5.2 Maintenance instructions .....	10
5.2.1 Cleaning the cover .....	10
5.3 Components which user can not replace.....	10
5.3.1 Not replaceable fuses by user .....	10
6 APPENDIX A: OPTICAL ATTENUATION MEASUREMENT IN AUTOMATIC MODE.....	11
6.1 Description .....	11
6.2 Measuring the reference power.....	11
6.3 Attenuation measurement in the optical network.....	12



# *FTTH TRIPLE LASER SOURCE*

## ***PROLITE-105***

### **1 GENERAL**

<b>1.1</b>	<b>Description</b>
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The **PROLITE-105** laser light source emits light at three wavelength that are used to transmit data through optical fibre on FTTx networks: 1310 for Upstream and 1490 and 1550 nm for Downstream. It allows selecting easily the desired wavelength by means of direct access keys, in order to generate a modulated signal or to activate the automatic operation mode.

These light sources may be modulated with 270 Hz, in the case of the wavelength at 1310 nm, 1 kHz at 1490 nm and 2 kHz at 1550 nm. They are modulated at different frequencies to measure the attenuation of the fibre for the three wavelengths in combination with a power meter (such as **PROLITE-63** or **67**). Usually this measure is required to certificate telecommunications infrastructures.

The **PROLITE** series has been designed for starting up and maintaining fibre optic installations. This series consists of the **PROLITE-67** (xPON tester), the **PROLITE-63** (OPM) and the **PL330** and **PL360** (optical attenuators).




## 2 INSTALLATION

### 2.1 Power Supply

The **PROLITE-105** is a portable instrument powered by a rechargeable Li-Ion battery. The instrument comes with a mains adapter which enables the **PROLITE-105** to be plugged to the mains for operation and battery charging.

#### 2.1.1 Operation Using the Mains Adapter

Connect the mains adapter to the **PROLITE-105** through the external power connector [7] placed at the right side of the instrument. Then, connect the adapter to the mains to start up battery charging. Next, press the **ON/OFF**  [3] key. Then the instrument starts working.

#### **CAUTION**

*Before using the mains adapter make sure that it is the appropriate one for your mains voltage.*

*The mains adapter is designed for indoor use.*

#### 2.1.2 Operation Using the Battery

Press the key **ON/OFF**  [3]. to start the instrument powered by the battery. When the battery is full loaded, the **PROLITE-105** has an autonomy aprox. of 25 hours of continuous work in SEQ mode.

When the battery is flat, the instrument will not start up or, if working, will switch off. The **LOW BATT** indicator [1] will be lit whenever the battery charge is low. Then a charge process is required.

#### 2.1.3 Battery Charging

First switch off the **PROLITE-105** in order to charge the battery. Then connect the power input to the mains adapter. Now connect the adapter to the mains. Now you can observe that the indicator CHARGE CHG [6] is lit in amber which indicates the battery is charging. Charging time depends on the state of the battery. If the battery is flat, the battery charging time is 3 hours aprox. When battery is full loaded, the charge indicator CHG [6] changes to green.



#### 2.1.4 Recommendations using the battery

If anticipating a long period of inactivity for your instrument, it is advisable to store it with the battery fully charged and at temperatures below 25 °C.

It is also advisable in these cases to carry out a cycle of charging/discharging and a subsequent half charge (i.e. 50 %) every 3 months.

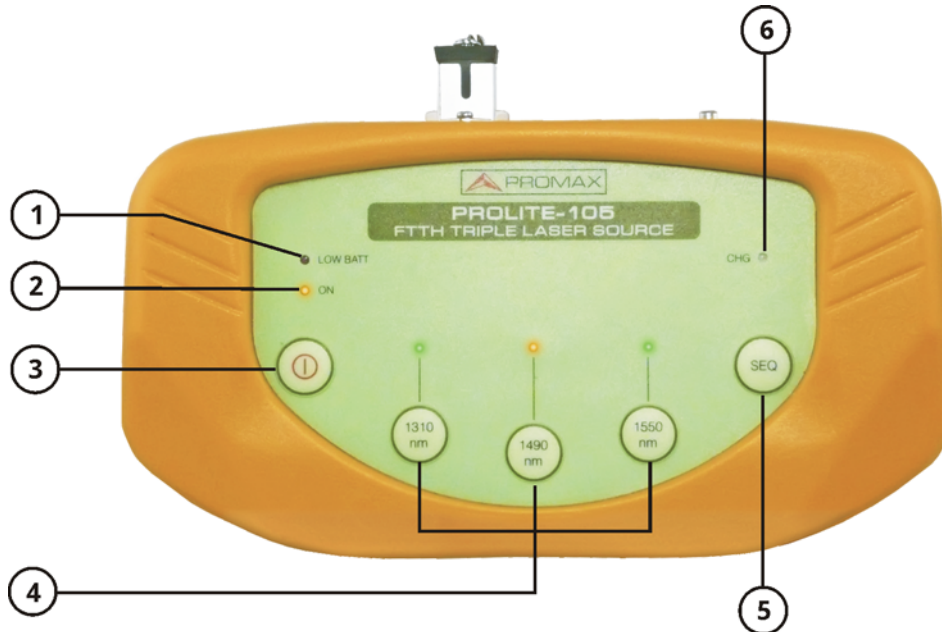




### 3 OPERATION INSTRUCTIONS

#### 3.1 Description of Controls and Elements

##### Front Panel



**Figure 1.-** Front View of the PROLITE-105.

#### 1 BATTERY STATUS.

It indicates the status of the battery charge.

When it is illuminated, it indicates that the battery level is low and it is going to switch off.

#### 2 POWER LED.

When it is ON indicates that the unit is working.

#### 3 ON / OFF.

It turns ON or OFF the unit.

#### 4 LASER LIGHT SOURCES

It activates in an individual way a source of light of 1310 nm, 1490 nm or 1550 nm. There is a button to activate each one.

At first press on one of these buttons it turns on the corresponding source of continuous light. LED is GREEN.

At second press again on the same button it switches to the same source of light but modulated. LED is AMBER.

At every press it switches between continuous and modulated light.

When pressing for more than one second it turns off the light and the LED.

These three light sources can work simultaneously.



**5 SEQUENCING.**

Button with three states:

**First press:** All laser sources without modulation are activated.

**Second press:** All laser sources are activated sequentially in modulated mode.

**Third press:** It disables all laser sources.

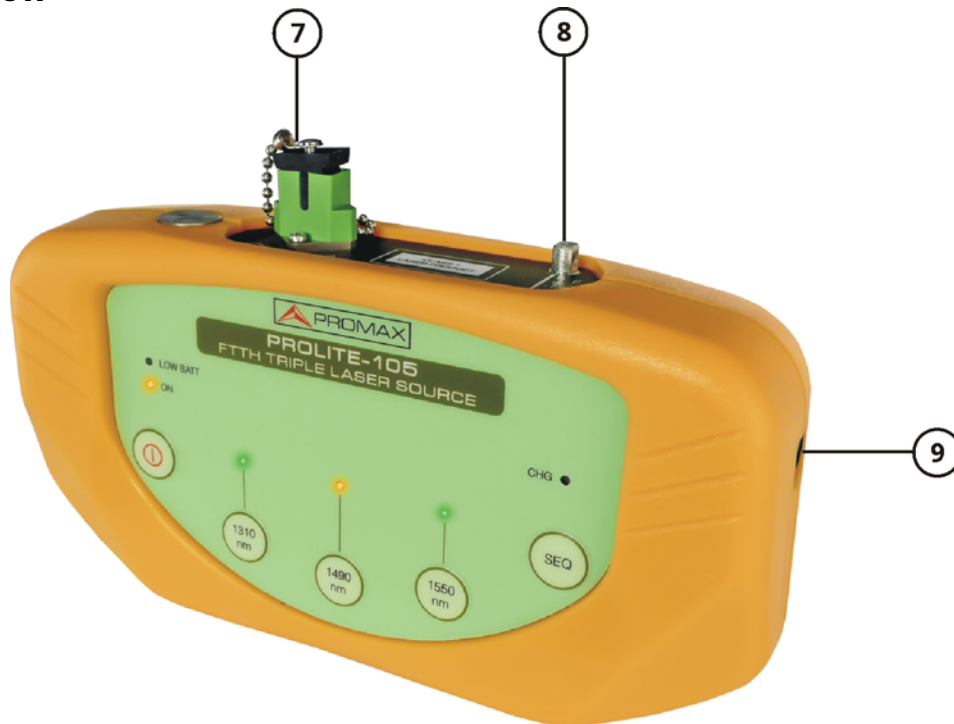
**6 CHARGE LED**

It indicates the state of the battery charge.

When the **LED** is in **AMBER** means that is charging.

When the **LED** is in **GREEN** means that is in full charge and it is being powered through the means.

**Side view**



**Figure 2.-** Side view PROLITE-105.

- 7** Connector SC / APC Fibre signal output or active signals.
- 8** Anchor Point conveyor belt.
- 9** External power input of 12 V.



## 3.2 Operating Instructions

The **PROLITE-105** is a device easy to use that can be operate using only three keys: one to select the wavelength and to turn on / off the modulation of the laser, one key to activate the sequencing mode and the key to turn **on/off** the instrument.

### 3.2.1 Selecting the active Wavelength

The **PROLITE-105** is a source of laser that can emit in three different wavelengths: 1310 nm, 1490 nm and 1550 nm. It can emit these three wavelengths simultaneously.

The **LED** corresponding to the active source wavelength is in green. When it is modulated it is in amber.

Pressing on any of the wavelength keys repeatedly, it switches between continuous and modulated laser light.

To switch off the laser light you have to press for few seconds the key corresponding to the active wavelength until the **LED** turns off.

### 3.2.2 Signal Modulation

The **PROLITE-105** can modulate the three wavelengths with an internal signal.


For the **1310 nm** wavelength it uses a modulation frequency of 270 Hz. For the **1490 nm** and **1550 nm** corresponds a modulation of 1 kHz and 2 kHz respectively.

In order to activate the modulation of the output signal, you should press twice the key corresponding to the wavelength. When the signal is modulated, the LED is AMBER.

To disable the signal modulation you should press again the activation key. The **LED** corresponding to the active wavelength will turn to green, indicating the output signal is no longer being modulated.



### 3.2.3 Automatic Sequential Mode Operation


When pressing the **SEQ**  [5] key, the **PROLITE-105** passes sequentially through three operating modes:

- 1 Simultaneous activation of all sources without modulation.
- 2 Sequential activation of modulated sources.
- 3 It deactivates all sources.

In sequential mode, at the optical output [9] will appear the 1310 nm signal. After few seconds appears the 1490 nm signal, after the same time appears the 1550 nm signal and then again the 1310 nm signal. This process is repeated cyclically.

These three signals have been codified independently, in order to allow a simultaneous analysis through a proper optical meter (like the **PROLITE-67** of **PROMAX**). Then it is not necessary to select each time the wavelength you want to measure.

During operation in sequential mode the signals are modulated.

When pressing the **SEQ**  [5] key at the sequential mode, the unit switches to normal mode, at which the three laser sources can be used independently.



## 4 SPECIFICATIONS

<b>Wavelengths (<math>\lambda</math>) generated</b>	1310 nm, 1490 nm and 1550 nm.
<b>Tolerance</b>	$\pm 10$ nm to 25 °C.
<b>Spectral width (DFB laser)</b>	< 1 nm.
<b>Spectral drift</b>	0,1 nm/°C t�p.
<b>Output connector</b>	Type SC / APC.
<b>Output power</b>	0 dBm $\pm$ 1dB on SM fibre.
<b>Stability / time</b>	(10 min Warmup).
<b>1 h</b>	0.1 dB at temperatures $\pm 1$ °C from 0 to 40 °C.
<b>8 h</b>	0.2 dB at 25 °C.
<b>Stability / temperature</b>	1 dB typ from 0 °C to 40 °C (10 min Warmup).
<b>Internal modulation</b>	
<b>1310 nm</b>	270 Hz.
<b>1490 nm</b>	1 kHz.
<b>1550 nm</b>	2 kHz.
<b>POWER SUPPLY</b>	
<b>Battery</b>	Li-Ion battery.
<b>Low Battery Indicator</b>	LED light indicator.
<b>Autonomy</b>	25 h. Aprox. In SEQ mode.
<b>External</b>	
<b>Voltage</b>	12 V DC.
<b>Power Consumption</b>	12 W.
<b>Network charging adaptor</b>	From 90 V to 250 V; 50-60 Hz (included).
<b>OPERATING ENVIRONMENTAL CONDITIONS</b>	
<b>Altitude</b>	Up to 2000 m.
<b>Temperature range</b>	From 0 to + 40 °C.
<b>Max. Relative humidity</b>	80% (up to 31 °C). Decreasing lineally up to 50 % at 40 °C.
<b>MECHANICAL FEATURES</b>	
<b>Dimensions</b>	180 mm (A) x 95 mm (Al) x 50 mm (Pr).
<b>Weight</b>	500 g.
<b>INCLUDED ACCESORIES</b>	
<b>AA-012</b>	Car lighter adapter.
<b>AL-101B</b>	Mains adapter 90-250 V AC.
<b>CA-005</b>	Power cable CEE-7.
<b>DC-272</b>	Carrying case.
<b>OPTIONAL ACCESORIES</b>	
<b>DC-270</b>	Transport suitcase.

**RECOMMENDATIONS ABOUT THE PACKING**

It is recommended to keep all the packing material in order to return the equipment, if necessary, to the Technical Service.



## 5 MAINTENANCE

This part of the manual describes the maintenance procedures and the location of faults.

### 5.1 Instructions for returning by mail

Instruments returned to repair or calibrate, either within or out of the guarantee period, should be send with the following information: Name of the Company, name of the contact person, address, phone number, receipt (in the case of coverage under guarantee) and a description of the problem or the service required.

### 5.2 Maintenance instructions

The maintenance steps to follow by the user consist of cleaning the cover and changing the battery. All other operations must be carried out by authorised agents or by qualified personnel.

#### 5.2.1 Cleaning the cover

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#### **CAUTION**

***Do not use scented hydrocarbons or chlorized solvents. Such products may attack the plastics used in the construction of the cover.***

***The cover should be cleaned by means of a light solution of detergent and water applied with a soft cloth. Dry thoroughly before using the system again.***

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#### **CAUTION**

***Do not use for the cleaning of the front panel and particularly the viewfinders, alcohol or its derivatives, these products can attack the mechanical properties of the materials and diminish their useful time of life.***

### 5.3 Components which user can not replace

#### 5.3.1 Not replaceable fuses by user

F1	FUS 2,5 A	T 125 V
F2	FUS 7 A	T 125 V



## 6 APPENDIX A: OPTICAL ATTENUATION MEASUREMENT IN AUTOMATIC MODE

### 6.1 Description

Next it is described the procedure to take attenuation measurements for an optical communications network at the wavelengths of 1310 nm, 1490 nm and 1550 nm by using the **PROLITE-67** and the automatic mode of the **PROLITE-105**.

The attenuation or losses in a cable or optical device corresponds to the difference between the input coupled power and the output obtained power.

### 6.2 Measuring the reference power

Before initiating the network attenuation measurement process, it is advisable to register first the power measurement generated by the light source in combination with a **PROLITE-67** and saving them in the memory. By this way when measuring later the attenuation of the optical network, the **PROLITE-67** will indicate directly the value of the attenuation.

Next, the procedure is described (see figure 3).

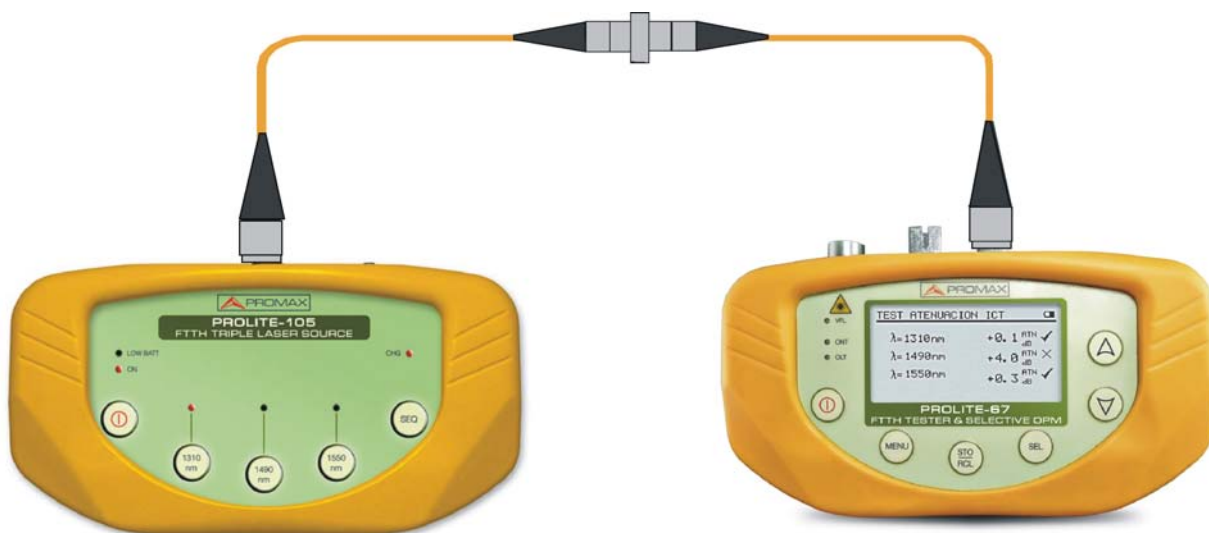



Figure 3.- Measurement of the reference power.





- 1 Connect the light source to the power level meter by means of an optical fibre patch cord.
- 2 Configure the **PROLITE-67** to measure only at the wavelengths: 1310 nm, 1490 nm and 1550 nm, by means of the function **ATTENUATION TEST** (see that section on the **PROLITE-67** user's manual).
- 3 Press the **SEQ**  [5] key on **PROLITE-105** to activate the simultaneous mode for signal output.
- 4 From the menu **ATTENUATION TEST** of the **PROLITE-67**, catch the power reference by pressing simultaneously both arrow keys.

### 6.3 Attenuation measurement in the optical network

Next the procedure to take the measurement is described (see figure 4).

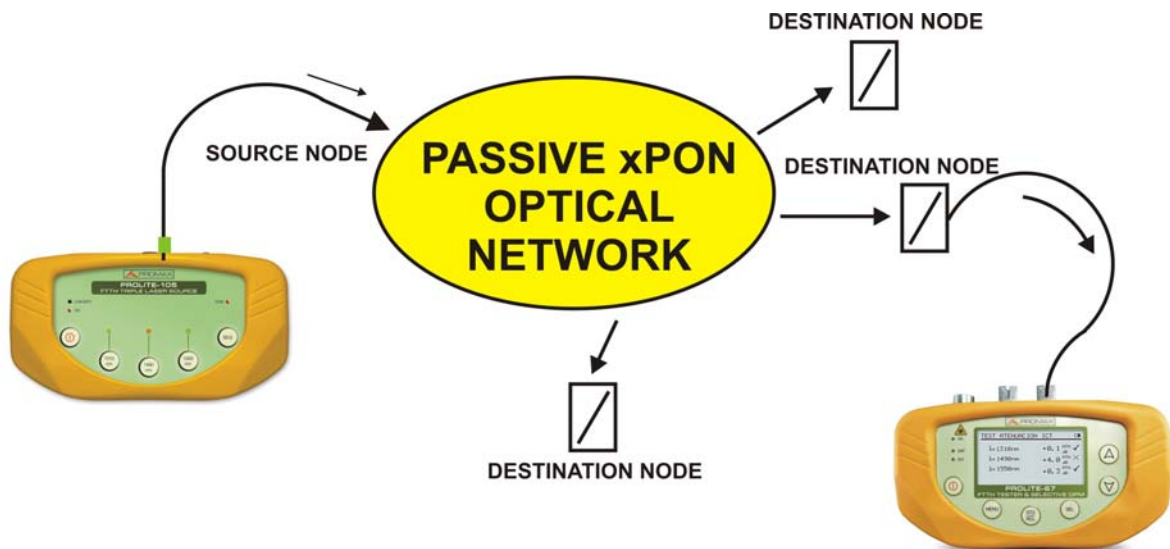
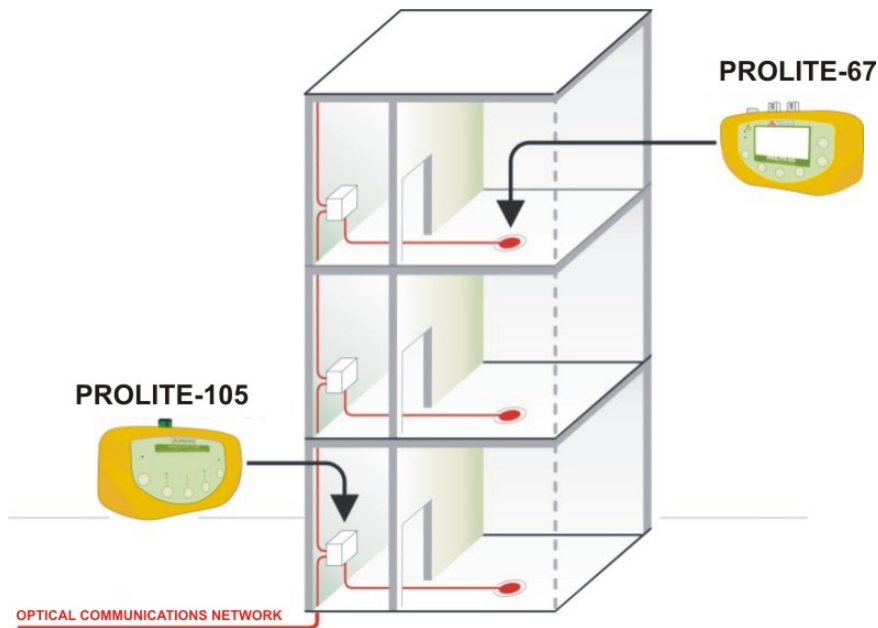


Figure 4.- Attenuation measurement in the optical communications network.



**Figure 5.**

- 1** Connect the **PROLITE-105** to the transmission node from the optical communications network that is desired to verify.
- 2** Connect the **PROLITE-67** to the reception node from the optical communications network.
- 3** Put the **PROLITE-105** in simultaneous signal mode and measure by using the **PROLITE-67**.



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