

Optical Transmitter OTM

1 General

The OTM Optical Transmitter is used to determine the sensitivity or function of an optical receiver (e.g. photodiode) or to measure the attenuation of an optical fiber in conjunction with an optical power meter. The output of the transmitter is a modulatable current source with selectable forward current, which generates a stabilized optical output power by means of an LED adapter.

The interchangeable adapter system allows the connection of a large number of fiber optic connectors.

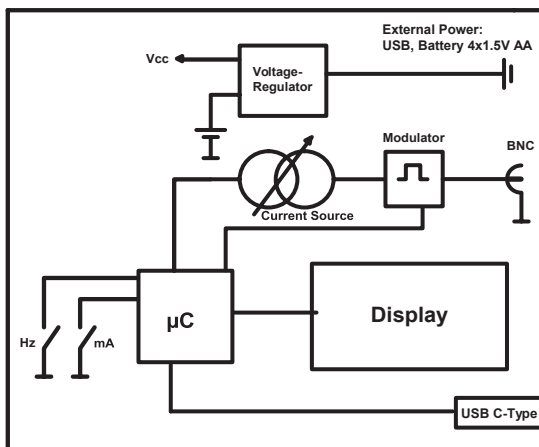
The adapters are available with different wavelengths. The transmitter parameters can be recorded on a microSD card or transferred directly to a text or table file via a USB connection.

2 Applications

The good properties and the precise coupling through the interchangeable adapter system to assembled fiber optic cables enable the transmitter to be used in a variety of applications:

- Laboratory tests
- Installation control
- Quality control
- Check of optical receiver
- Attenuation measurements on optical fibers

3 Block Diagram



Pic.1 Drawing



Pic. 2 Basic Device Optical Transmitter OTM with BNC Socket

4 Features

- Stabilized power source
- Variable forward current 10/20/30/40/50mA
- Variable modulation frequency 0/1/10/20kHz
- USB-C Socket
- microSD card slot
- USB power supply or battery operated
- 36mm x 48mm TFT color display
- Plastic desk case with protective cover
- Metal handle
- Easy handling

5 Order Information














Type	Order number
Basic device (without adapter)	9MMS-OTM1-2020USB-01

Please order suitable interchangeable adapters for the different fiber optic connectors separately.

Attention: For further information please see data sheets of the interchangeable adapters:
909MS660SM001 or **909MS850SM001**

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6 Keyboard/Symbol Description ____

No.	Key / Symbol Display	Function / Description
1		Selection of modulation mode
2		Selection of forward current
3		Storage of the current transmitter parameters on microSD card
4		Transfer of the current forward current value via USB connection
5		Cursor up Key is not used
6		Enter Key is not used
7		Cursor down Key is not used
8		Shift key, activate display
9		ON / OFF button
10		Control-LED
11		Full battery power
12		Low battery power
13		No battery power



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7 Operating


Plug the required change adapter 660nm or 850nm onto the BNC socket.

- 660nm wavelength for measuring plastic fibers (POF)
- 850nm wavelength for measuring multimode glass fibers (GOF)

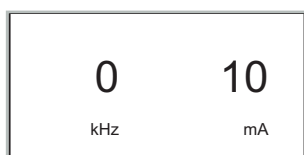
Figure 3 shows the transmitter with the F-ST adapter 909MS660ST001:




Pic. 3 BNC socket with F-ST adapter 909MS660ST001


Press and hold the ON / OFF button  until the green LED lights up. After switching on, the device executes an initialization routine.


After initialization, the transmitter starts with modulation switched off (corresponds to 0 kHz) and a forward current of 10 mA:



Pic. 4 Transmitter display, modulation frequency and forward current

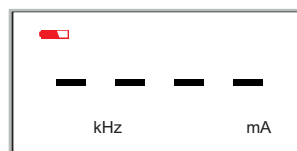
By pressing the  button, the modulation frequency can be switched to 1kHz, 10kHz or 20kHz.

Pressing the button  again after the 20kHz has been switched on will switch off the modulation frequency (corresponds to 0kHz).

The forward current can be set from 10mA to 20mA, 30mA, 40mA or 50mA by pressing the  button.


If the supply voltage of the batteries drops below 4.8V **in battery operation**, a **flashing warning message appears on the display**.


The diode of the transmitter adapter can no longer be supplied with sufficient power:




Pic. 5 Transmitter display, battery power too low

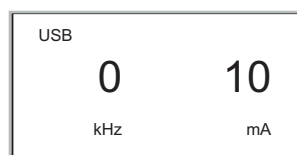
The display switches off automatically **in battery mode** if no key commands have been entered for more than 2 minutes.

In this operating state, the red control LED  flashes, but the measuring mode is still active in the background.

The display can then be reactivated using the shift key .

The device switches off completely if no keyboard commands are entered for 30 minutes and must then be switched on again with the ON / OFF button .

If the transmitter is connected to a PC or to a power source with an appropriate USB cable, the battery supply is interrupted and the power is supplied via the USB connection. The display shows:



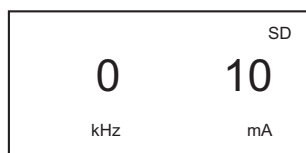
Pic. 6 Device display USB mode



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The set transmitter parameters can be saved on a microSD card or transferred directly to an active text or table file field via a USB connection.

When the microSD card is inserted, the display shows the following:





Pic. 7 Device display microSD card mode



Pic. 8 USB interface and microSD card slot

Storage of parameters:

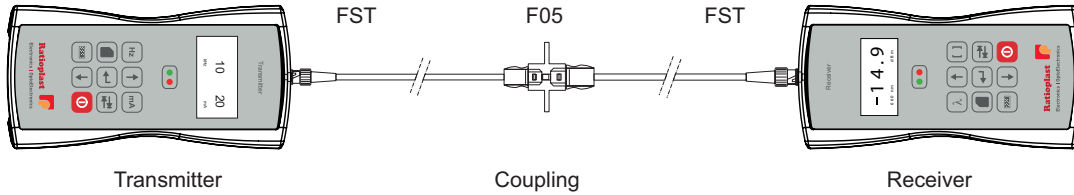
- Press the memory button  to save the transmission parameters such as date, time, modulation frequency and forward current on the inserted microSD card.
- Press the transfer key  to transfer the set forward current value into the active text or table file field.



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8 Measurement Setup

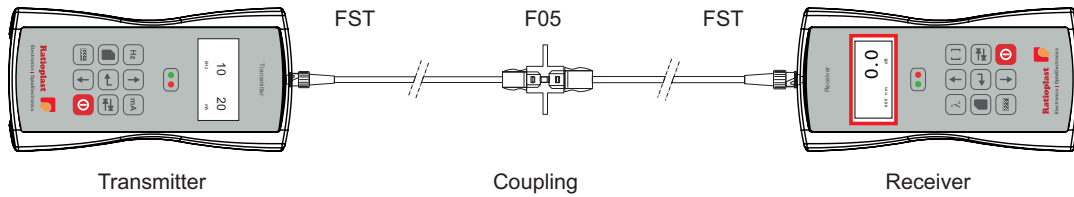
Test sequence step 1: Reference cable



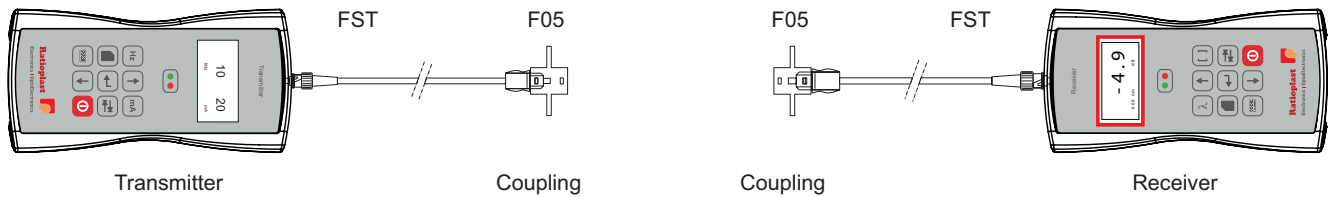
Representation of measured values of the receiver, as well as modulation frequency and forward current of the transmitter are only examples!

Test sequence step 2: Zero adjustment

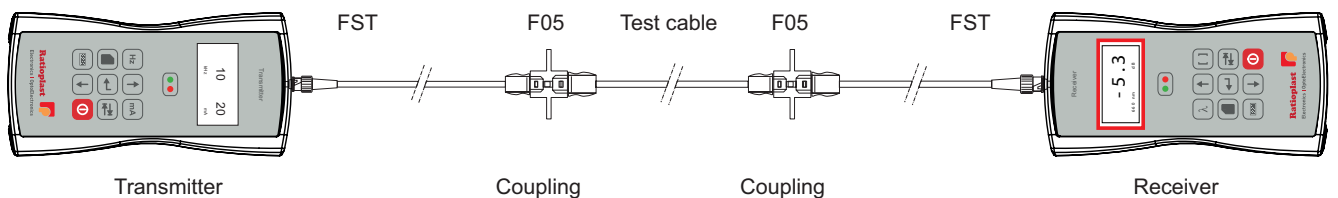
- Carry out measured value adjustment / zeroing of the measuring receiver with the key



Test sequence step 3: Disconnect reference cable and insert second coupling



Test sequence step 4: Attenuation measurement of the test cable



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9 Maximum Ratings

Supply voltage	USB-C 5V / Battery 6V
Output load resistance	min. 10 Ω
Storage temperature	-20...+70°C
Operating temperature	0..+50°C

Stresses beyond those listed under 'Maximum Ratings' may cause permanent damage to the device. Listed values are stress limits only and functional operation of the device at these conditions is not recommended. Exposure to maximum rating conditions for extended periods may affect the device reliability.

10 Technical Data

Signal port: Interchangeable adapter, BNC, for all common fiber optic connectors

Current output: Selectable 10mA
20mA
30mA
40mA
50mA

Frequency modulation: Initial state 0kHz
1kHz
10kHz
20kHz

Current error: max. ±1mA
Temperature drift: 0,02%/°C

Power supply: external power supply via USB-C socket and 4x1,5V AA battery operated

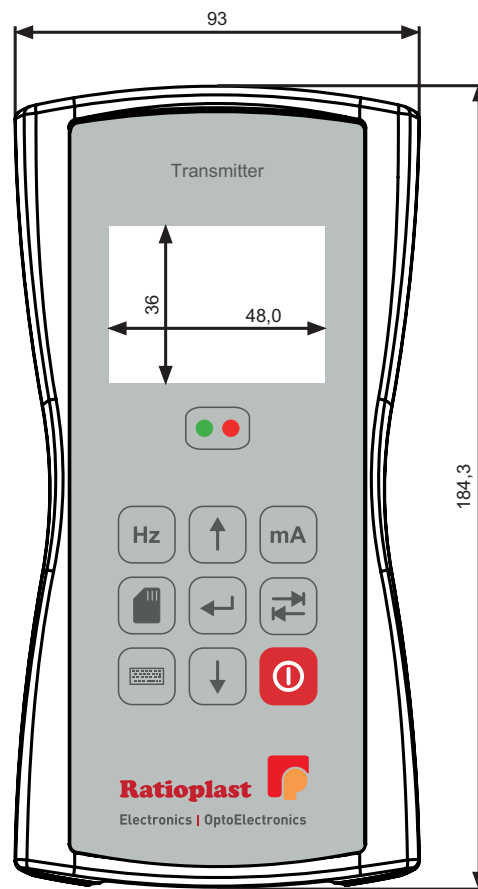
Current consumption (without interchangeable adapter): 350mA
Battery saving mode: 210mA

Case: Plastic, metal handle
Dimensions: 185 x 93 x 51/28 mm (LxWxH), without handle

Protection class: IP20
Weight: 0.35kg without batteries

Temperature range: 0 ... +50°C (Operation)

11 Drawing



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