



Operating Instructions

NANOCALC-XR NANOCALC-VIS

Revision 092010

Read this manual before you attempt to use this instrument



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1 Safety Instructions

Instructions: All the safety and operating instructions should be read before the unit is operated. Before using the power supply for the first time check for transport damage.

Warning: All warnings on the unit and in the operating instructions should be adhered to.

Caution: The NANOCALC-XR version produces ultra violet radiation which can be harmful to the eyes. **DO NOT LOOK INTO THE LIGHT BEAM. THIS CAN CAUSE PERMANENT EYE DAMAGE - WEAR PROTECTIVE EYE WEAR - CALL YOUR LOCAL LAB SUPPLY HOUSE FOR GLASSES OR GOGGLES.**

Operating Environment:

Moisture:

The unit is designed for operation in dry rooms only

Ventilation:

The unit should be situated so that its location or position does not interfere with its proper ventilation

Heat:

The unit should be situated away from radiators, hot bodies, ovens or other heat sources

Power sources:

The unit should be connected to a power supply only of the type described in the operating instructions or as marked on the unit

Object and liquid entry:

Care should be taken that objects do not fall, or liquids spilled into the enclosure through openings.

Contents:

Your package should contain

- 1x NanoCalc system
- 1x Power Supply 12VDC
- 1x USB Interface cable
- 1x Fiber probe
- 1x NanoCalc Software Operating Instructions
- 1x NanoCalc Operating Instructions
- 1x Software CD

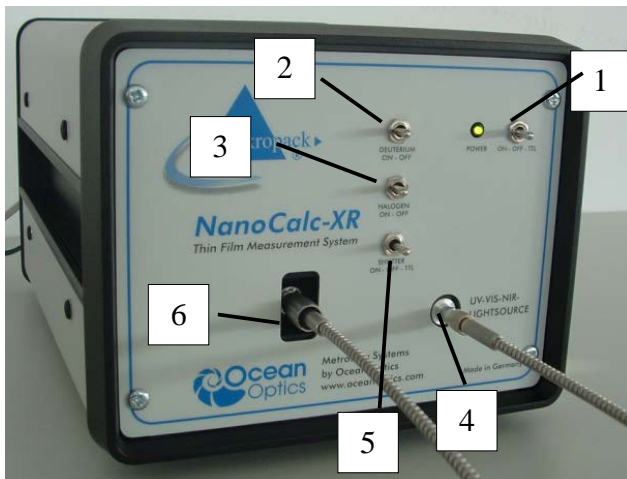
Unpacking:

1. Unpack your new assembly carefully. Dropping this instrument can cause permanent damage
2. Inspect the outside of the instrument and make sure that there is no damage to your unit. In case of damage contact the dealer immediately and **DO NOT USE THE INSTRUMENT!**
3. Use this instrument in a clean laboratory environment

2 Designations and Functions of Panel Controls

2.1 Front Panel

NANOCALC-XR



NANOCALC-VIS



(1) Power Switch ON/OFF/TTL

When the power switch is turned ON, power is supplied to the unit. The power LED indicator is lighted up at this time. When switch is turned ON, the lamps start by turning lamp switches ON. In OFF position the circuit is in power status, but the deuterium and halogen-light bulbs do not work. When switch is turned to TTL, the lamp could be controlled by the SUB-D connector

PIN 10= GND / PIN 5= Halogen ON/OFF
PIN 1= Deuterium ON/OFF

(2) Deuterium ON/OFF

Turns the deuterium light on and off.

(3) Halogen ON/OFF

Turns the halogen light on and off.

(4) Light source

Light output - SMA connector
SMA-Connector / Protection Cap is only to avoid that the user could not unintentional look direct into the fiber optic connector. The connector is for use with SMA-Fiber connectors.

Connect your Fiber optic Cable first before starting the Deuterium Lamp. Please be sure to avoid direct radiation of skin and eyes.

(5) Shutter ON/OFF/TTL

Open (ON) or close (OFF) the Shutter. When switch is turned to TTL, the lamp could be controlled by the SUB-D connector. PIN 13 = Shutter Open/Close,

(6) Spectrometer

Signal input - SMA connector

(1) Power Switch ON/OFF

When the power switch is turned ON, power is supplied to the unit. Halogen light ON and OFF

(2) Shutter ON/OFF/TTL

Open (ON) or close (OFF) the Shutter When switch is turned to TTL, the lamp could be controlled by the SUB-D connector.

PIN 13 = Shutter Open/Close, PIN 10= GND

(3) Attenuation screw

Attenuating the optical power output

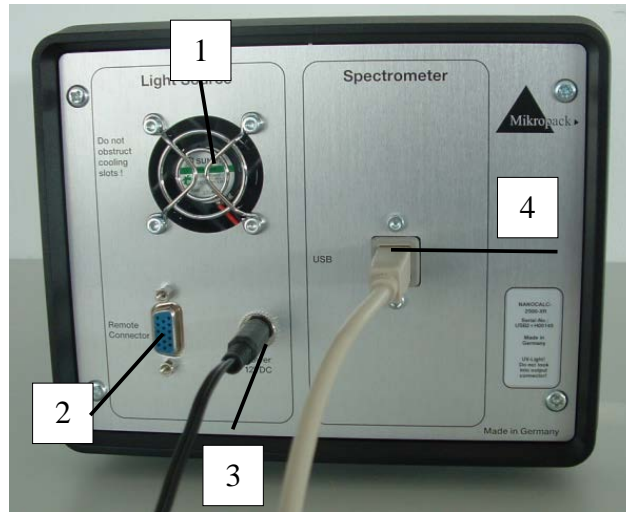
(4) Light source

Light output - SMA connector
SMA-Connector / Protection Cap is only to avoid that the user could not unintentional look direct into the fiber optic connector. The connector is for use with SMA-Fiber connectors.

(5) Spectrometer

Signal input - SMA connector

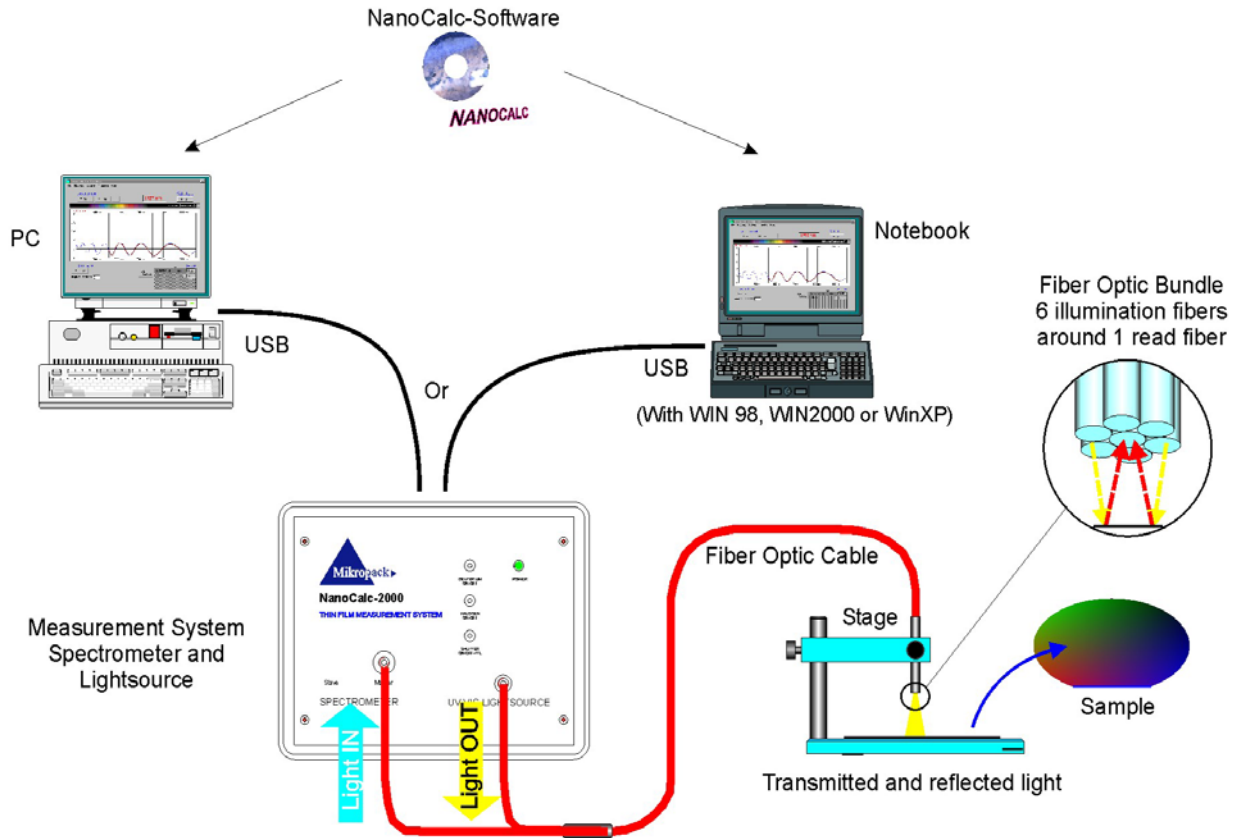
2.2 Rear Panel



- (1) Cooling Fan**
Do not obstruct cooling fan openings
- (2) SUB-D15 remote connector**
For automatic TTL-shutter control and TTL lamp controls
PIN 1= Deuterium ON/OFF
PIN 5= Halogen ON/OFF
PIN 10= GND
PIN 13= Shutter Open/Close
- (3) Power socket 12V/DC**
inside pin + / outside jacket -
- (4) USB Interface**

3 System Setup

3.1 Connecting to PC or Notebook



3.2 Connecting the Fiberprobe

NANOCALC-XR



Connect the illumination fiber to the SMA-adapter of the light source (1)

Connect the detection fiber to the SMA-adapter of the spectrometer (2).

NANOCALC-VIS



Connect the illumination fiber to the SMA-adapter of the light source (1).

Connect the detection fiber to the SMA-adapter of the spectrometer (2).

4 Bulb Replacement

4.1 NANOCALC-XR



1. Disconnect the fibers from the spectrometer and lightsource
2. Open the four slotted screws and take off the front cover
3. Pull out the Deuterium-Halogen lamp electronic board



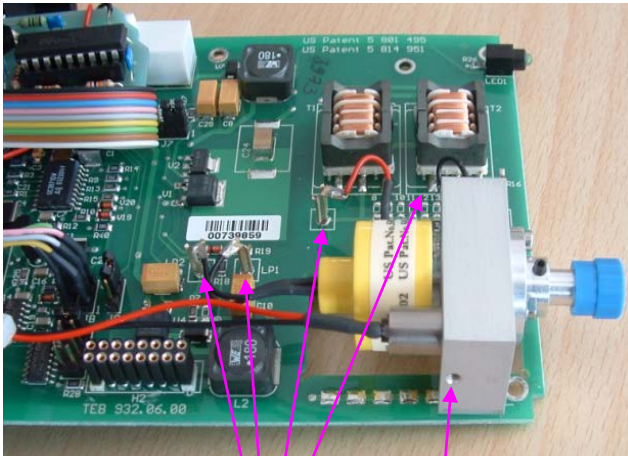


Figure 1

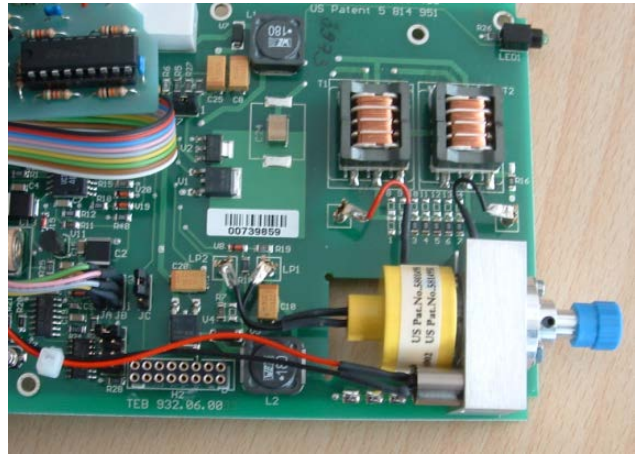


Figure 2

4. 5.

4. Disconnect the four (4) cables of the Deuterium-Halogen lamp
5. Loosen the screw at the bulb housing by the tool delivered with the spare bulb (see figure 1)
6. Pull the bulb softly in back direction (see figure 2)

DO NOT TURN THE BULB

Replace bulb by going back the described steps

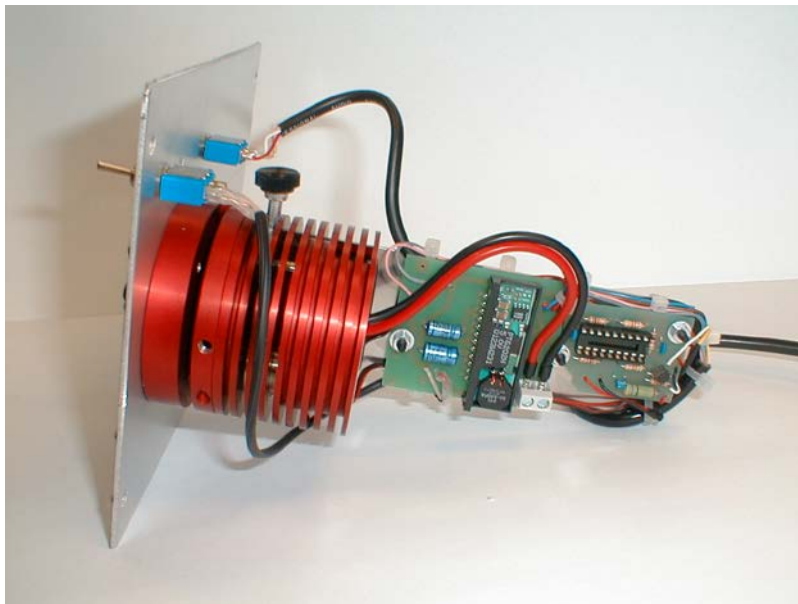
Ordering Information:

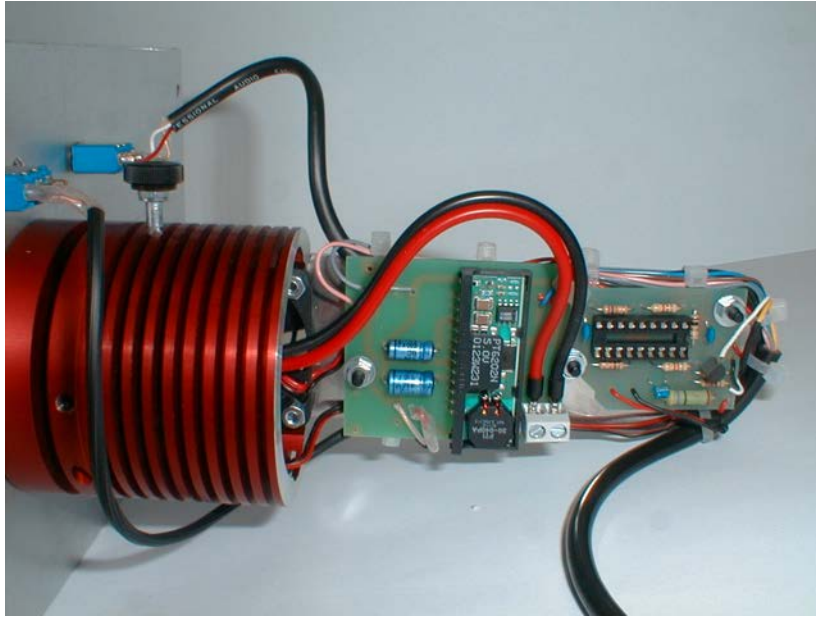
RB-UV/VIS/NIR-2

4.2 NANOCALC-VIS



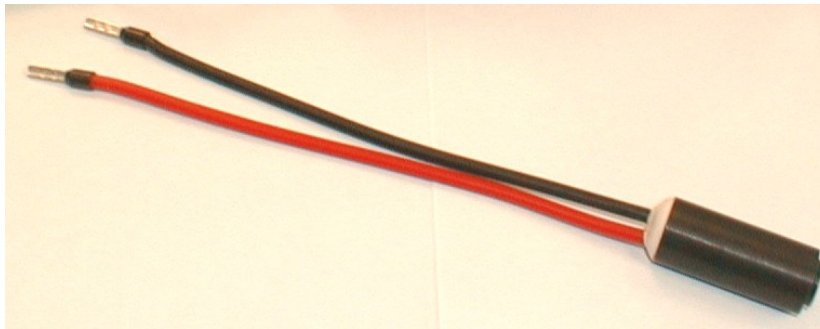
1. Disconnect the fibers from the lightsource and the spectrometer
2. Open the attenuation screw completely
3. Open the four slotted screws and take off the front cover





4. Loosen the three screws for bulb connection and replace the bulb

Ordering Information:
RB-VIS/NIR
or **RB-VIS/NIR-LL** for longlife



5 Specifications

	NanoCalc-VIS	NanoCalc-XR	NanoCalc-DUV	NanoCalc-NIR
Wavelength:	400 - 850 nm	250 - 1050 nm	190 - 1100 nm	900 - 1700 nm
Thickness range:	50 nm - 20 μ m	10 nm - 70 μ m	1 nm - 100 μ m	100 nm - 250 μ m
Resolution:	0.1 nm	0.1 nm	0,1nm	0,1nm
Repeatability:	0,3 nm	0,3 nm	0,3nm	1nm
Angle of incidence:	90° or 70°			
Number of layers:	up to 10			
Refractive Index:	yes			
Filmthickness of:	transparent or semitransparent materials			
Reference needed:	yes, bare substrat			
Measurement mode:	Reflection and Transmission			
Rough materials:	yes			
Measurement speed:	100ms to 1s			
On-Line possibilities:	yes			
Mechanical tolerance(hight)	with collimation (COL-UV-6.35)			
Spot size:	Standard: 200 μ m or 400 μ m, optional 100 μ m on request			
Microspot:	yes, in combination with mikroscope			
CCD color:	yes, in combination with mikroscope			
Mapping option:	6" or 12" xy-scanning stage			
Vacuum possibilities:	yes			

6 Trouble Shooting

6.1 NANOCALC-XR

<i>Fault</i>	<i>Possible Cause</i>	<i>Remedy</i>
Power switch on, but no reaction	Power supply is not present	Check line voltage and power supply
Deuterium Lamp does not ignite.	Deuterium Lamp starts for the first time or was not in use for a longer time, it will take a little while before it will ignite	It goes faster if the halogen-lamp is additionally switched on
	Lifetime of Deuterium Lamp is over	Replace Deuterium-Halogen Lamp Spare Part: RB-UV/VIS/NIR-2
	Deuterium Lamp internal connection plugs is not closed right	Open Unit and close connector plugs
Halogen Lamp does not work after switching on	Halogen Lamp defective	Replace Deuterium-Halogen Lamp Spare Part: RB-UV/VIS/NIR-2

6.2 NANOCALC-VIS

<i>Fault</i>	<i>Possible Cause</i>	<i>Remedy</i>
Power switch on, but no reaction	Power supply is not present	Check line voltage and power supply
Halogen Lamp does not work after switching on	Halogen Lamp defective	Replace Halogen Lamp Spare Part: RB-VIS/NIR

7 Accessories

MFA - Microscopefiberadapter



Stage – Single point reflection measurement



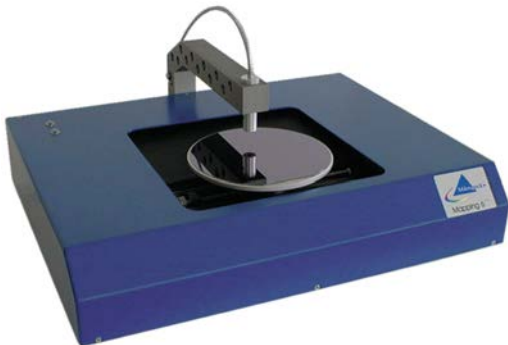
Stage RTL-T Measurement of transparent samples



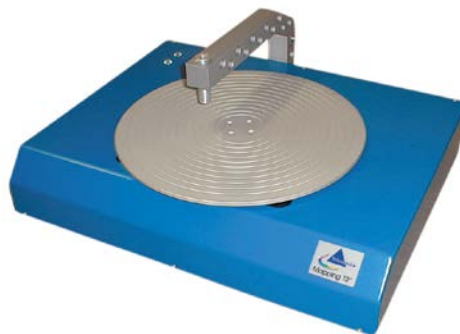
CSH – Probe holder for curved sample



Mapping 6"



Mapping 12"





8 Appendix A: Mapping Table Operating Instructions

8.1 Safety Instructions

Instructions: All the safety and operating instructions should be read before the unit is operated. Before using the power supply for the first time check for transport damage.

Warning: All warnings on the unit and in the operating instructions should be adhered to.

Warning: Keep your hands away from moving parts

Operating Environment:

Moisture:

The unit is designed for operation in dry rooms only

Ventilation:

The unit should be situated so that its location or position does not interfere with its proper ventilation

Heat:

The unit should be situated away from radiators, hot bodies, ovens or other heat sources

Power sources:

The unit should be connected to a power supply only of the type described in the operating instructions or as marked on the unit

Object and liquid entry:

Care should be taken that objects do not fall, or liquids spilled into the enclosure through openings.

Contents:

The package should contain:

- 1x Mapping Table
- 1x Power cord
- 1x Serial connection cable
- 1x Injection with lubricant (for service)

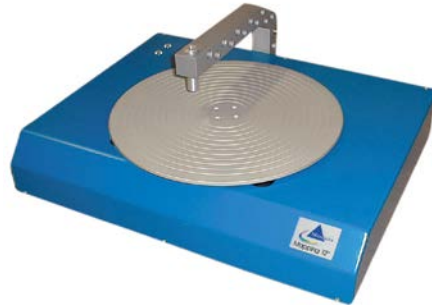
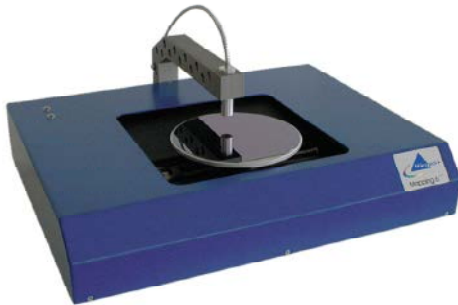
Unpacking:

Unpack your Mapping Table carefully. Dropping this instrument can cause permanent damage.

Inspect the outside of the instrument and make sure that there is no damage to your unit. In case of damage contact your dealer immediately and

DO NOT USE THE INSTRUMENT!

8.2 Description

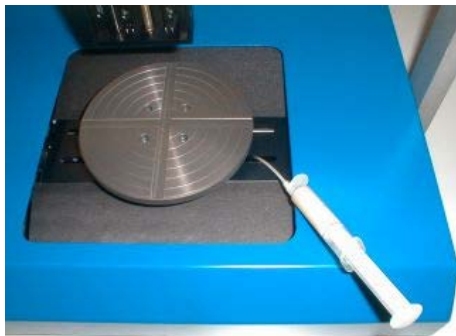


The XY Mapping Table comes with an electric motor and encoder to drive each axis, along with a CNC controller.

The system requires 110-240 VAC to operate and interfaces via RS232 to PCs.

8.3 Service and Maintenance

Though the Ocean Optics Mapping Tables are mainly maintenance free it may become necessary to lubricate the drive screws of all axes with the provided special lubricant (~ once per year).



x-axis:

Drive the x-axis to center-position and bring in the tube of the injection to the drive screw and apply a little bit of lubricant to the drive screw at both sides of the slide.



y-axis:

Put the mapping table in vertical position. At the Bottom is the lubricant filler point. Remove the label and bring in the injection tube.

Caution:

If the y-axis is running while lubricating the drive screw the tube could be destroyed by the slide.



8.4 Mapping Table Specifications

<i>Mechanical Data</i>	<i>XY-150x150, XY-200x150</i>
Slides	2x ball bearings / slide, recirculating ball bearings / table
Travel Range	150 mm x 150 mm, 200 mm x 150 mm
Maximum Speed	20 mm / sec
Resolution	10 μ m
Accuracy	<10 μ m
Dimensions in mm	480 x 370 x 160
Weight in kg	Approx. 15 kg

Electrical Data

Motor Type	Sine wave commutated Servomotor
Motor Voltage	24V
Total Power Consumption	60W
Power Rquirements	90-260VAC 47-63Hz
Interface	RS232



9 Warranty

Ocean Optics Germany GmbH warrants to the Original User of this instrument that it shall be free of any defects resulting from faulty manufacture of this instrument for a period of 12 months from the original date of shipment.

This instrument should not be used for any Clinical or Diagnostic Purposes. Data generated is not warranted in any way by Ocean Optics Germany GmbH. Any defects covered by this Warranty shall be corrected either by repair or by replacement, as determined by Ocean Optics Germany GmbH.

There are no warranties which extend beyond the description.

This Warranty is in lieu of, and excludes any and all other warranties or representation, expressed, implied, or statutory, including merchantability and fitness, as well as any and all other obligations or liabilities of Ocean Optics Germany GmbH, including, but not limited to special or consequential damages. No person, firm, or corporation is authorized to assume for Ocean Optics Germany GmbH. Any additional obligation or liability not expressed provided for herein except in writing duly executed by an officer of Ocean Optics Germany GmbH.

Warranty Handling

1. Clear with your local distributor the problem or fault.
2. In case of warranty your local distributor will give you a RMA number.
3. Send your instrument free of charge and insured to your local distributor.
4. Your distributor will inform you on delivery time. If there is repair out of warranty you will be informed about repair cost. The system will be on hold till you have officially ordered the repair.

The system will be send back to you free of transport cost and insured (in case of warranty)

10 Contact

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