Art. No. 11151

USER GUIDE

MSP 110

1-WIRE MULTISENSOR PRO I FOR TEMPERATURE, AIR HUMIDITY AND AIR QUALITY (VOC-SENSOR)

- Professional temperature and humidity sensor for private, schools, public buildings and companies
- Highly accurate temperature, humidity and air quality Sensor with 12Bit resolution
- Universal surface mounting
- Elegant and high quality sensor housing
- Connection via screw terminals
- Simple power supply
- LED-Display "air quality traffic light“

Application:

- Temperature sensor for heating control (single room control)
- Control sensor for ventilation system
- Monitoring of living spaces for mold

Note
Before you start assembling the device and put the product into operation, read these operating instructions carefully to the end, especially the section of the safety instructions

1 PRODUCT DESCRIPTION

With the ESERA 1-Wire Multisensor Pro I you have purchased a professional and highly accurate Multisensor. Due to the new technology of the ESERA 1-Wire PRO sensors, the accuracy of the measured values is on average 200 - 300% higher, compared to most sensors on the market. In addition, the evaluation of the delivered measured values is enormously simplified.
The 1-Wire Multisensor Pro I enables simple climate monitoring of rooms and buildings.

With the help of the air quality sensor a statement about the current air quality and a hint for ventilation can be given. The air quality of the living space is additionally signaled by an LED "traffic light" (green, yellow and red) on the sensor. The air humidity sensor provides information on the humidity conditions in the living space and can be used to prevent mold growth.
For all types of radiator and heating controls, an accurate temperature sensor is an important actual value transmitter.

In combination with 1-Wire ESERA switching modules / binary outputs, a very effective and energy-saving heating control (single room control) is possible.

The 1-Wire Multisensor Pro I is intended for use in normal living spaces. For outdoor use and in damp rooms, such as sauna, steam bath or winter garden, a suitable sensor is available via the ESERA website.
The Multisensor is housed in an attractively designed surface-mounted housing and blends harmoniously into modernly furnished living and business spaces.
Due to the generous ventilation openings, the 1-Wire Multisensor Pro I very directly detects the ambient conditions in rooms.

The 1-Wire Multisensor Pro I has a warm-up time for the air quality value. This is approx. 15 hours for a new 1-Wire Multisensor; after initial startup, this is reduced to minutes or hours, depending on how long the Multisensor was without power. The warm-up phase is indicated by the red LED flashing. During the warm-up phase, the air quality is output with the value 0. For further details, see item 12.
The 1-Wire Multisensor Pro I is equipped with screw terminals for the electrical connection of the 1-Wire bus interface and can be operated in standard mode (3 cables for ground, data and 5V).
Due to the use of high-quality internal sensors with 12-bit resolution, the 1-Wire Multisensor Pro I provides very accurate values for temperature, relative humidity and air quality. In addition, the evaluation of the delivered measured values is enormously simplified.

Note
Basics and tips for the 1-Wire bus system can be found in the ESERA Online Shop at
https://www.esera.de/1-wire-grundlagen/
or please refer to our eBook in the store under Training/Documentation.

2 AUTO-E-CONNECT SUPPORT

The Multisensor Pro I with production date as of 06/2021 supports Auto-E-Connect Level I, II and III.

3 AUTO-E-CONNECT® SYSTEM

With the launch of the ECO Controller, the ESERA Auto-E-Connect® 1-Wire Plug and Play system for the 1-Wire bus is now introduced and supported.
This now enables fully automatic configurations of 1-Wire devices (sensors and actuators) on the 1-Wire bus. It is optimized for commercial and industrial applications and enables significant added value beyond sensor and chip data.

The Auto-E-Connect function is built up in three levels. Currently there are Level I, Level II and Level III available.
Please refer to the "Technical data" to find out which Auto-E-Connect functionality this sensor supports.
With Auto-E-Connect Level III, fully automatic configurations of the 1-Wire devices on the 1-Wire Bus are possible. It is optimized for industrial and IoT applications and enables significant added value beyond sensor and chip data.
With the Auto-E-Connect function, ESERA devices are detected fully automatically, suitable libraries are started and ready-formatted data is output.
The Auto-E-Connect functionality will be available for the ECO Controller and ESERA-Station 200 Pro from 2021.

Auto-E-Connect Level I
OWD Detect: Detection of new sensors and actuators and automatic start of adapted libraries.

Auto-E-Connect Level II
Visualize product data: Readout and visualization of Auto-E-Connect and manufacturer data of sensors and actuators, such as article number, date of manufacture, firmware and hardware version.

Auto-E-Connect Level III
Extended Plug and Play system for 1-Wire Bus

- **Pre Configuration**: The OWD number for the next installation can be written to the 1-Wire **d**evice.
- **Automatic Positioning:** The device logs on to any ECO Controller with Auto-E-Connect III with the new request OWD number. This automatic login works up to the maximum possible OWD number of the ECO controller
- **Sensorfinder Function**: The ECO Controller can activate a status LED within the ESERA 1-Wire Pro sensors. The status LED flashes or lights up permanently for a certain time. This makes the detection of a device in a 1-Wire network much easier. A faster detection saves a lot of time and therefore money when searching for a 1-Wire device.
- **Classes Assignment**: ESERA 1-Wire devices are assigned to OWD classes with the same properties. This assignment enables fully automatic visualization and data evaluation in control systems. A class list is available from ESERA**.**

For further information about the ESERA Auto-E-Connect System please refer to the ESERA website and the ESERA Config Tool 3.
Auto-E-Connect is registered as a German and European Patent by ESERA GmbH.

4 TECHNICAL DATA

Function	Multisensor for temperature and rel. air humidity and air quality monitoring of operating voltage
Temperature Sensor	high-precision digital temperature sensor with 12-bit measured value resolution
Auto-E-Connect Feature	**Pre Configuration**, desired OWD Storage **Automatic Positioning**, OWD extended Plug And Play **Sensorfinder Function**, LED display for sensor detection **Classes Assignment**, OWD class via ECO Controller the sensor supports Auto-E-Connect Level I, II and III
measuring range temperature:	-40°C to + 85°C (Sensor element: -40°C to +85°C)
accuracy temperature:	0,2°C in the range from 5°C to 60°C (better than DS18B20 sensor)
resolution	12 Bit, 0,06°C/Bit depending on selected resolution
air humidity sensor	capacitive digital humidity sensor with high accuracy
measuring range humidity	0-100% rel. humidity
acccuracy humidity	+/-2 % at 20-80% relative humidity at 25°C
data output	0-10V corresponds 0-100% relative humidity, 0,1V = 1% rF
air quality sensor (VOC)	mixed gas sensor (VOC)
measuring range	400 - 1800 ppm (CO2 Äquivalent)
accuracy	+/- 10%, depending on air composition
data output	30-250mV corresponds to 400-2900ppm, 1mV output voltage corresponds to 11,6ppm. Lowest output value: 30,51mV corresponds to 405ppm.
protection circuit	- 1-Wire data cable with overvoltage protection up to 28VDC - overvoltage protection for power supply - double ESD protection of data line
1-Wire connection	3 - conductor connection, data, ground and 5V parasitic operation not supported
connection	screw terminal

1-Wire interface	based on DS2438 instruction set
operating voltage	5 V= (+10%/-20%)
current consumption	ca. 45mA

5 AMBIENT CONDITIONS

protection system	IP20
protection class	III
temperature, operation	-25°C to 50°C, (limitation of max. temperature by air quality sensor and sensor housing)
air quality sensor	0 to 50°C
air humidity	10 - 90% (non condensing)
storage temperature	-25°C to 50°C
dimensions (outside)	71 x 71 x 32mm (LxWxH)

6 CONFORMITY

EN 50090-2-2
EN 61000-4-2, ESD
EN 61000-4-3, HF
EN 61000-4-4, Burst
EN 61000-4-5, Surge
EN 61000-6-1, interference immunity
EN 61000-6-3, interference radiation
RoHS/REACH

7 LED DISPLAY

The "LED traffic light" switches from green to yellow from approx. 800ppm and to red from approx. 1200ppm. The switching thresholds of the LED display are permanently programmed.
You can activate the "night function" of the traffic light function permanently by pressing the calibration button on the instrument connection side for a long time. In the delivery state, the night function for the LED traffic light is not active, which means that the LED traffic light lights up regardless of the ambient brightness.
If the night function is activated, the LED display is switched off by an internal light sensor at darkness, e.g. in order to be able to sleep undisturbed during the night. The light sensor is only intended to control the brightness of the LEDs and cannot be read out externally.
Even when the LEDs are switched off, all sensor functions remain in operation. When mounting the sensor, it must be ensured that it is not darkened, otherwise the LED display may be permanently off.

Table 7.1:

LED	function	description
green <800ppm	lights at CO2 good air conditions	- if the voltage supply was only briefly interrupted, the sensor starts directly with normal operation without warm-up time. - the LED lights up at good air conditions up to approx. 800 ppm CO2 in the air.
yellow CO2 > 800ppm	- commissioning: flashes during the start phase for approx. 2 hours - operation: sufficient air conditions	- the LED flashes as a sign of the start phase. - a constant 0% of the air quality value is output via the 1-Wire interface. - after the warm-up period, the sensor switches to normal operation.
red CO2 > 1200ppm	- commissioning: flashes during the start phase for approx.15 hours. - operation: LED flashes, poor air conditions.	- the LED flashes as a sign of the start phase. - a constant 0% of air quality value is output via the 1-Wire interface. - after the warm-up period, the sensor switches to normal operation.

8 COMMISSIONING AND WARM-UP

Calibration of the temperature and humidity sensor within the 1-Wire Multisensor Pro I is not necessary. The air quality sensor within the 1-Wire Multisensor Pro is pre-calibrated.
After applying the supply voltage, the integrated sensor controller checks after which warm-up time the air quality sensor starts. The three possible stages of the warm-up phases are indicated by the three LEDs on the front.

It is normal for the 1-Wire air quality sensor to require a "warm-up time" after the supply voltage is connected. During commissioning, the integrated sensor controller checks with which warm-up stage the sensor starts. The three possible warm-up stages are indicated by the three LEDs on the front.
Level 3, red LED: new condition or after a long operating pause.
In the new state or after a long operating pause, the sensor starts with a warm-up time of approx. 15 hours. During this time, the red LED flashes and 0% air quality is constantly output via the 1-Wire interface.

Level 2, yellow LED: voltage interruption of several hours.
After a voltage interruption of several hours or days, the sensor starts with a warm-up time of approx. 2 hours. During this time, the yellow LED flashes and 0% of the max. air quality value is constantly evaluated via the 1-wire interface (DS2438, Current Sens).

Level 1, green LED: short voltage interruption
After short voltage interruptions, the sensor starts directly in normal operation.
The sensor switches automatically to normal operation after the warm-up phase has been completed.

A light sensor is installed in the area of the upper ventilation opening, which automatically switches off the LEDs in the dark. The sensor function is not affected by this. The brightness sensor cannot be read out.

9 CALIBRATION / ADJUSTMENT

The air quality sensor is delivered with factory settings. During the first days of operation, the air quality sensor calibrates itself automatically several times. To support the automatic calibration, expose the sensor several times to fresh air (at least 15 minutes of fresh air at 18 - 25°C). After a few calibration cycles, the 1-Wire Multisensor Pro I provides real air quality values.
The calibration starts automatically or can be started by pressing the calibration button for min. 2 seconds.
The calibration process starts with a slow flashing of the red LED. This signals that you should move away from the sensor and that the calibration process will start shortly.
During the calibration process, the red LED flashes quickly. After the calibration has been completed, the sensor automatically switches to normal operation.
The sensor is very sensitive and already reacts to the presence of people, therefore keep away from the sensor during calibration.
Due to the system, the air quality sensor is subject to slight aging, which is compensated for with an annual manual calibration and the automatic calibration.
Note: Please remove yourself at the beginning of the calibration process. Your presence may cause the sensitive sensor to record incorrect calibration values.

10 NIGHT FUNCTION FOR LED TRAFFIC LIGHT

If the calibration button is pressed for at least 10 seconds, the night function for the LED traffic light is activated permanently.
When the night function is activated, the LED display is switched off by an internal light sensor in the dark, e.g. to allow undisturbed sleep during the night. The night function has no influence on other functions of the device.
For details, see "LED display" earlier in this manual. Pressing the CAL button again for at least 10 seconds permanently deactivates the night function.
In the delivery state, the night function for the LED traffic light is not active, this means the LED traffic light lights up regardless of the ambient brightness.

11 SOFTWARE / CONTROL

The 1-Wire Multisensor Pro I is read out by 1-Wire command for DS2438 devices. The sensor is supported in many computer programs, such as ESERA-Station, Loxone, IP-Symcon, OWFS, FHEM, (Linux) or microcontroller applications.

For ESERA 1-Wire Multisensor of the Pro Series no complex formulas are necessary anymore.
A sensor controller takes over the preprocessing of all measured values and thus simplifies the integration into 1-Wire systems enormously.
Also, the measured values are no longer dependent on the operating voltage of the 1-Wire Multisensor.

The sensor measured values are assigned to the standard DS2438 device values as follows:
VDD = operating voltage (5V), VAD = humidity, Xsens = air quality.

Calculations
Temperature
Standard output according to DS2438 device

Operating voltage
Standard output according to DS2438 device

Air Humidity
To obtain the rel. humidity in percent, multiply the output value (Vas) by a factor of 10.
0.1V corresponds to 1% relative humidity.

Air Quality
The air quality is output in accordance (equivalent) to CO2 sensors.
After start-up, the sensor outputs 0V for a few minutes. This means that the air quality sensor is in the start-up phase.
In normal operation, the lowest output value is 30.5mV, which is 405 ppm equivalent CO2.
The increase in output voltage is in the ratio of 1mV per 11.6ppm CO2.
As an example, an output voltage of 60.2mV corresponds to 698.3ppm CO2.

12 DATA OUTPUT 1-WIRE CONTROLLER / 1-WIRE GATEWAY

For the 1-Wire Multisensor Pro I, the following measured values are output via the 1-Wire Controller / 1-Wire Gateway.

Data output:
1_EVT|12:27:40
1_OWD1_1|2008 => Controller No._module No._data set|temperature(°C) example: 20,08 °C
1_OWD1_2|100 => Controller No._module No._data set|Power Good, 0= fault, 100 = OK
1_OWD1_3|850 => Controller No._module No._data set|humidity (rF) example: 85,0%
1_OWD1_4|1200 => Controller No._module No._data set|dew point (°C) example: 12,00 °C
1_OWD1_4|80000 => Controller No._module No._data set|air quality (ppm CO2) example: 800,00 ppm

For further information on the options and commands, refer to the current documentation 1-Wire Controller/ 1-Wire Gateway.

13 INTEGRATION IN IP-SYMCON / ESERA-STATION

On our website we provide ESERA IP-Symcon software modules for reading in the 1-Wire Multisensor in IP-Symcon via 1-Wire Controller / 1-Wire Gateway. So no scripts are necessary. Details can be found on the ESERA website under "Compatible controllers / control units/IP- Symcon-Integration“ https://www.esera.de/kompatible-steuerungen-zentralen/ip-symcon-integration/

For the conventional connection via 1-Wire Bus Coupler the sensor values have to be calculated according to the given formulas.

14 INTEGRATION IN LOXONE

Via the shop we provide a sample project among others for reading in the 1-Wire Multisensor via ESERA 1-Wire controller. Details see here:
https://www.esera.de/kompatible-steuerungen-zentralen/loxone-integration/demo-1-wire-controller-1-loxone-integration/

15 INTEGRATION IN FHEM

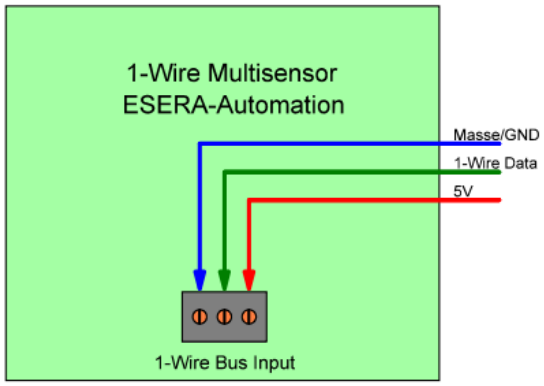
For integration into the open source automation software FHEM, we provide a software module for reading in the 1-Wire Multisensor via 1-Wire Controller / 1-Wire Gateway. This means that evaluation scripts are no longer necessary.
Details can be found on the ESERA website under "Compatible controllers - control units / FHEM integration"
https://www.esera.de/kompatible-steuerungen-zentralen/fhem-integration/

16 MEASURING ACCURACY

The sensor elements within the 1-Wire Multisensor Pro I are pre-calibrated. Please note that the measuring accuracy may possibly be reduced to the measuring range limits and at very high and low operating temperatures.

17 TERMINAL ASSIGNMENT

The 1-Wire Multisensor Pro is connected via screw terminals. screw terminals. The connection terminal is intended for solid cables with a cross-section of 0.2 to 2.5qmm or fine-stranded cables with a cross-section of 0.2 to 1.5qmm. For connection we recommend a slotted screwdriver of size 2.5x75.
The pin assignment is printed on the printed circuit board.
It is necessary to pay attention to the correct polarity when connecting.
The Multisensor is to be connected with three cables (ground, 1-Wire Data and 5V). The parasitic mode is not supported



Note:
The module may only be operated at the voltages and under the ambient conditions intended for it. The operating position of the device is arbitrary.
The modules may only be commissioned by a qualified electrician.

For further information on the operating conditions, see the following instructions under "Operating conditions".

18 ASSEMBLY

The mounting location must be protected from direct sunlight, moisture (e.g. dripping water) and drafts. The device may only be used in dry indoor rooms and in protected outdoor areas. During installation, make sure that the ventilation openings are arranged at the top and bottom. In addition, note the imprint of the direction of the air flow on the connection side of the device.
When mounting, choose a location free of drafts. The device is intended for installation as a stationary device. The 1-Wire Multisensor can be mounted ideally on a flush-mounted box thanks to clever housing cutouts.

19 1-WIRE NETWORK CABLING

The special feature of the 1-Wire system is the "BUS technology". All devices (sensors and actuators) are operated in parallel on a three-wire line, which is used for both power supply and data communication. The 1-Wire bus system joins the list of other successful bus systems such as CAN or Modbus RTU. All of the installation principles recommended for these are also applicable and appropriate to 1-Wire.
The maximum size of a 1-Wire Network is determined by various factors. These are mainly:

- Total cable length and cable type
- Number of 1-Wire devices
- Type of cable installation (topology)
- Number and design of cable connectors (unnecessary connection transitions should be avoided)

All factors in total are summarised and referred to as 1-Wire Bus load. Each increase of a factor increases the total 1-Wire Bus load for the 1-Wire controller and thus reduces the maximum network size.

According to our many years of experience and a lot of feedback from customers, the following conservative recommendation can be made:

- Maximum cable length 50 -120m
- Number of 1-Wire devices no more than 20 -22 pieces
- As linear a topology as possible without T-junctions

The topology in particular plays a major role. If possible, linear topology should be used. The linear topology can be compared like pearls on a pearl necklace. The data line should be laid from one device to the next without T-joints.
Furthermore, the type of cable used can also be mentioned here. We recommend for the cabling CAT5 or CAT6 network cable. It is also possible to use J-Y(St)Y telephone cables and KNX cables. Longer cable runs are possible with CAT5 versus CAT7 cables.

With twisted pair cables, a longer connection length can be achieved in an undisturbed environment, as the capacitive bus load is lower. A total length of 50 m and more can be easily achieved without additional measures. In disturbed, commercial and industrial environments, the cable should always be shielded in order to increase the "robustness" or interference sensitivity of the system

Note
The above statements about 1-Wire are hints and tips and do not describe any product property or represent any warranted product property of the product and the 1-Wire Controller.

20 MEASUREMENT ACCURACY

The sensor elements within the sensor are pre-calibrated. Please note that the measuring accuracy may be reduced to the measuring range limits and at very high and low operating temperatures.

21 OPERATING CONDITIONS

The Multisensor is intended for temperature and humidity measurement of air and gases in indoor areas, such as living rooms, offices, factory halls or public facilities.
The module may only be operated at the voltages and ambient conditions specified for it. If condensation forms, wait for an acclimatization period of at least 2 hours.
Do not operate the module in an environment where flammable gases, vapors or dusts are or could be present.

22 DISPOSAL

Electronic devices must not be disposed of with household waste. According to the directive on waste electrical and electronic equipment, electronic devices must be disposed of at designated local collection points for electronic waste. These collection points are specialized facilities that ensure electronic devices are properly recycled and reused to minimize potential environmental impacts and recover valuable resources.

Please note that the specific collection points and procedures for disposing of electronic devices may vary depending on the region. Therefore, consult local authorities, recycling centers, or waste disposal companies to learn the correct procedure for disposing of electronic devices in your area. By properly disposing of electronic devices, you contribute to environmental protection and the sustainable use of resources.

23 SAFETY INSTRUCTIONS

When dealing with products that come into contact with electrical voltage, it is very important to observe the applicable VDE regulations. The VDE regulations are standards set by the Association for Electrical, Electronic & Information Technologies (VDE) and are designed to ensure safety when working with electrical systems and devices.

Here are some of the relevant VDE regulations to consider when handling electrical voltage:

VDE 0100
This standard defines the general provisions for low-voltage electrical installations, including planning, installation, commissioning, maintenance, and testing.

VDE 0550/0551
These standards address the safety of electrical household appliances and similar purposes. They cover requirements for household devices such as hairdryers, irons, coffee machines, etc.

VDE 0700
This standard focuses on the safety of electrical devices in commercial, industrial, and similar environments. It includes requirements for electrical machines, tools, and other devices used in these settings.

VDE 0711

This standard specifies requirements for the electrical safety of medical devices. It applies to medical equipment used for diagnosing, treating, and monitoring patients.

VDE 0860
This standard covers the safety of electronic devices used in office applications, including computers, printers, monitors, etc.

It is important that professionals working with electrical systems and devices are familiar with and follow the relevant VDE regulations to ensure the safety of people and property.

Basic Safety Rules
When working on electrical devices, always observe basic safety rules.

- **All connection** or **wiring work must be carried out in a de-energized** state.
  It is a fundamental safety measure that all connection and wiring work on electrical systems and devices should only be done when they are not live. Never work on electrical devices while they are powered.
- Before starting work, check that the device is disconnected by unplugging it or turning off the relevant power supply.
- Be especially cautious when handling high voltages and be aware of potential hazards.
- Always unplug the device or ensure it is de-energized before opening it.
- Components, assemblies, or devices must only be operated if they are safely enclosed. They must be de-energized during installation.
- Tools may only be used on devices, components, or assemblies when it has been ensured that they are disconnected from the power supply and any electrical charges stored in the device have been discharged.
- Power cables or lines connected to the device, component, or assembly must always be inspected for insulation faults or breaks.
- If a fault is found in the supply line, the device must be immediately removed from service until the faulty line is replaced.
- When using components or assemblies, always strictly adhere to the specified electrical values mentioned in the accompanying documentation.
- If it is unclear which electrical ratings apply to a component or assembly, how external wiring should be carried out, or which external components or accessories may be connected and their connection values, a qualified electrician must be consulted.
- Before commissioning a device, always verify that the device or assembly is suitable for the intended application.
- In case of doubt, always consult experts, professionals, or the manufacturer of the used assemblies.
- We assume no liability for damages resulting from operational or connection errors beyond our control.
- Kits that do not function properly should be returned without the housing and with a detailed description of the error and the corresponding assembly instructions. Repairs cannot be made without an error description. Time-consuming assembly or disassembly of housings will be additionally charged.
- When installing and handling parts that will later carry mains voltage, always observe the relevant VDE regulations.
- Devices operating at voltages greater than 35 VDC/12mA must only be connected and commissioned by qualified electricians.
- Commissioning should only take place if the circuit is installed in an enclosure that prevents accidental contact.
- If measurements must be taken with the housing open, a safety isolating transformer or suitable power supply must be used for safety reasons.
- After installation, a required inspection must be conducted in accordance with DGUV Regulation 3 (formerly known as BGV A3).

  DGUV Regulation 3 is a safety regulation for electrical systems and equipment and defines the requirements for electrical safety.

  The DGUV Regulation 3 inspection includes checking the proper installation, functionality, and safety of the electrical device.

The inspection should be carried out by a qualified electrician or an authorized inspection service. The purpose of the inspection is to identify potential hazards, detect defects, and take appropriate measures to ensure electrical safety.

The DGUV Regulation 3 inspection should be repeated at regular intervals to ensure the continuous safety of electrical systems and equipment.
The DGUV Regulation 3 inspection is legally required in many countries and serves to protect people and property from electrical hazards.

Also, be aware of additional national and local regulations and standards that may apply in your region.

24 WARRANTY

ESERA GmbH warrants that the goods sold are free from material and manufacturing defects at the time of transfer of risk and have the contractually warranted characteristics. The statutory warranty period of two years from the date of invoice shall apply. The warranty does not extend to normal wear and tear. Claims of the customer for damages, e.g. due to non-performance, culpa in contrahendo, breach of secondary contractual obligations, consequential damages, damages in tort and other legal grounds are excluded. ESERA GmbH shall be liable in the absence of a warranted characteristic, in the event of intent or gross negligence. Claims arising from the Product Liability Act are not affected. Should defects occur for which ESERA GmbH is responsible, and if the replacement delivery is also defective in the event that the goods are exchanged, the purchaser shall be entitled to cancel the contract or reduce the purchase price. ESERA GmbH accepts no liability for the constant and uninterrupted availability of ESERA GmbH or for technical or electronic errors in the online offer.
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