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Multisensor MS

For automatic opening and closing of windows depending on indoor air quality parameters, i.e. temperature, humidity and CO₂-level.

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Multi sensor MS

Equipment

- display of temperature, relative humidity and quality of air
- programming of min./max. values
- potential-free switches for min./max. values
- integrated ventilation pushbutton
- switch off MS possible, so that by reaching the treshold evels no release

Functional description

By determining the treshold levels, the functioning of a pushbutton will be simulated: min. = "Window CLOSE", max. = "WINDOW OPEN".

If a value exceeds or falls below a defined adjusted value, a smoke and heat exhaust ventilation system (SHEV) or ventilation system, which is connected via potential-free contacts, opens or closes.

Scope of delivery

- 1 x Multi sensor MS
- 1 x Wall mount
- 1 x Screw fixing
- 1 x Manual

Safety instructions

Documentation: This documentation is exclusively valid for the product or product range as stated in the type designation on the cover and must be applied comprehensively. This technical documentation must be read carefully before installation. Follow the guidelines. Contact the manufacturer if you have any questions or problems. This documentation should be retained for future reference.

User: This documentation is aimed at trained, professional electricians with safety awareness, who are familiar with mechanical and electrical equipment installation, accident prevention regulations and industrial compensation laws, and contains important information for operators and users.

Please observe the following safety instructions which are emphasized by special symbols.



Caution: Danger to persons due to electricity.



Attention: Danger to persons due to risks arising from the operation of the equipment.



Warning: Non-observance leads to destruction. Danger to material due to incorrect handling.



Important information



Use according to regulations: The product may only be used for the functions and applications detailed, and in accordance with the accompanying documentation. Unauthorised electrical and mechanical modifications are not permitted and will invalidate warranty and liability.

Transport and storage: The product may only be transported and stored in its original packaging. It must not be knocked, dropped, or exposed to moisture, aggressive vapours or harmful environments. More detailed transport and storage instructions provided by the manufacturer must be observed.

Installation: Installation and assembly may only be carried out by trained professional electricians, in accordance with the recognised rules of engineering as well as the technical documentation provided here. This will guarantee that the product will function safely during operation. Care should be taken that all mechanical components are fixed. Immediately after installation the electrical and mechanical components should be checked to ensure that they function correctly, and the tests and the results thereof should be documented.

Operation: Safe operation is guaranteed if the acceptable rated values and guidelines regarding maintenance information stated in this documentation, as well as supplementary information provided by the manufacturer, are followed.

Malfunction: If a malfunction is identified in the course of installation, maintenance, inspection etc., immediate action should be taken to rectify the problem.

Repair and maintenance: Defective equipment must only be repaired by the manufacturer, or by companies authorised by the manufacturer. Only original spare parts may be used. Repairs may only be carried out by trained professional electricians, in accordance with the recognised rules of engineering as well as the technical documentation provided here and supplementary advice from the manufacturer. This will guarantee that the product will function safely during operation. Care should be taken that all mechanical components are fixed. Immediately after repair the electrical and mechanical components should be checked to ensure that they function correctly, and the tests and the results thereof should be documented.

Maintenance: If the product is used as part of a safety system such as a smoke and heat extraction system (SHE), it must be tested, maintained and if necessary repaired at least once a year as specified by the manufacturer or in line with DIN EN 18232-2 Smoke and heat control systems for instance. This is also recommended for systems used purely for ventilation. If the product is to be used in other safety systems, shorter maintenance intervals may be necessary. With systems composed of control units, opening devices, control-sections etc., all components that interact directly with each other are to be included in maintenance. Maintenance must be carried out comprehensively following the manufacturer guidelines and the accompanying documentation. Components requiring maintenance must be accessible. Defective equipment must only be repaired by the manufacturer, or by companies authorised by the manufacturer. Only original spare parts may be used. All components that have a specified maximum operation time (such as batteries) must be replaced within this time (see technical specification) with original parts or manufacturer-approved parts. Regular inspection is necessary to ensure that the equipment is ready for operation. A maintenance contract with a recognised contractor is recommended.

Safety instructions



Disposal: Packaging is to be disposed of appropriately. Electrical equipment is to be disposed of at recycling collection points for scrap electrical and electronic equipment. The Electrical and Electronic Equipment Act relating to disposal of electrical equipment does not apply in this instance. Rechargeable and single-use batteries are to be disposed of in line with § 12 of the Battery Ordinance (BattV), either via the manufacturer or at an appropriate collection point. Electrical equipment and batteries must not be disposed of with household waste.

Compatibility: When putting together a system consisting of various devices made by different manufacturers, the system compatibility must be tested and approved by the constructor to ensure safe function during operation. Equipment modification to achieve compatibility must be authorised by the manufacturer.

Conformity: This confirms that the equipment complies with the recognised rules of engineering. For electrical equipment a declaration of EC conformity can be requested from the manufacturer. Note: if the equipment (e.g. drive unit) is part of a machine in terms of the Machinery Directive 2006/42/EC, this does not render the supplier/contractor exempt from informing the customer with regard to the necessary installation instructions, labelling, documentation and certificates relevant to this directive.

Guarantee: The ZVEI "Green Supply Conditions" are taken as agreed. The guarantee period for material supply is 12 months. Any intervention with the equipment or system that is not authorised by the manufacturer will result in invalidation of liability, guarantee and service.

Liability: Product changes and settings may be modified without advance notice. Illustrations are not binding. No liability will be held for contents despite maximum care being taken.

Electrical safety

Wiring and electrical connections must only be done by an electrician. Mains 230 / 400 V AC must be secured separately on site. The appropriate laws, specifications and standards must be observed, such as the directive relating to fire safety of conduit installations (MLAR / LAR / RbALei), VDE 0100 (specifications for high-voltage circuits up to 1000 V), VDE 0815 (installation cables and wiring), VDE 0833 (fire, burglary and attack alarm systems). If necessary, cable types must be defined in conjunction with the local approval bodies, power supply companies or fire safety authorities.

Cabling for extra-low voltages (e.g. 24 V DC) is to be laid separately from low-voltage line (e.g. 230 V AC). Flexible cables must be laid in such a way that they cannot be sheared off, twisted or snapped during operation. Power supplies, control units and junction boxes must be accessible for maintenance work. Cabling types, lengths and cross-sections are to comply with technical guidelines.



Before work is carried out on the system, the mains current and emergency power supply (eg. rechargeable batteries) is to be disconnected from all-poles and secured to prevent accidental switch-on. Never operate the drive units, control units, operator elements and sensors on supply voltage and connections in such a way as to contravene the guidelines in the operator manual. There is a risk of fatal injury, and it can cause components to be destroyed!

Mechanical safety

Falling window casements: Window casements are to be mounted in such a way that even if one of the suspension elements fails, the design prevents the unit from falling or moving in an uncontrolled way, e.g. by double hanging, security stay, safety catch. Please note: to prevent obstruction/falling of the window, the security stay/safety catch must be compatible with the intended opening span and mechanism of the window. See also the directive for power-operated windows, doors and gates (BGR 232) and the ZVEI brochure "RWA Update No. 3, power-operated windows".

Fittings and fixing material: any fixing materials required or supplied with the product must be adapted to the building and load, and if necessary supplemented.

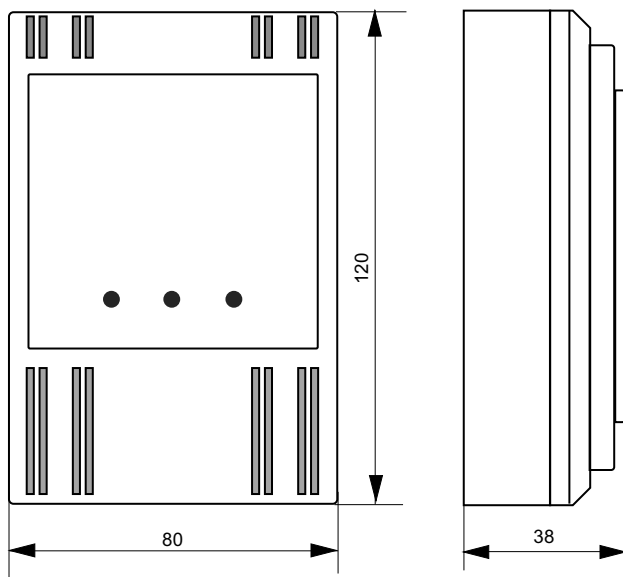


Crush and shear points: Power-operated windows, doors and gates: Any crush and shear hazard areas, for instance between the casement and frame or skylight and base, must be secured against trapping using appropriate measures to prevent injury. See also the directive for power-operated windows, doors and gates (BGR 232) and the ZVEI brochure "RWA Update No. 3, power-operated windows".

Accident prevention regulations and industrial compensation laws: For works to, on or in a building or part thereof, the appropriate accident prevention regulations (UVV) and industrial compensation laws (BGR) are to be observed.

Environmental conditions: The product must not be knocked, dropped, or exposed to vibration, moisture, aggressive vapours or harmful environments, unless the manufacturer has authorised one or more of these environmental conditions.

Drawing



Mounting

- ▶ Choose a suitable location for measurement of air values.
The Multi sensor MS should be installed within the room at those positions, where the desired values have to be reached. It shouldn't be fixed near a heat source.
- ▶ Fix wall holder in required position (A) with screws delivered ("TOP" shows to top).
- ▶ Lead the connecting cable sideways into the housing (B).

In case of installation onto an outlet socket, the following steps have to be carried out:

- ▶ unscrew the circuit board.
- ▶ make an opening at the back side of the housing (B.1).
- ▶ lead the cable into the housing.
- ▶ screw up tight again the circuit board.
- ▶ Connect the cable to the Multi sensor MS according to the scheme (C).
- ▶ Clip the housing cover onto the housing case and position it onto the wall holder in such a way, that the corresponding letterings "TOP" face each other at the top. Then push the housing in the direction of the release lever (D) for approx. 8 mm, until it clicks into place.

Remove the housing from the wall holder:

- ▶ press the release lever and push the housing for approx. 8 mm into the opposite direction.

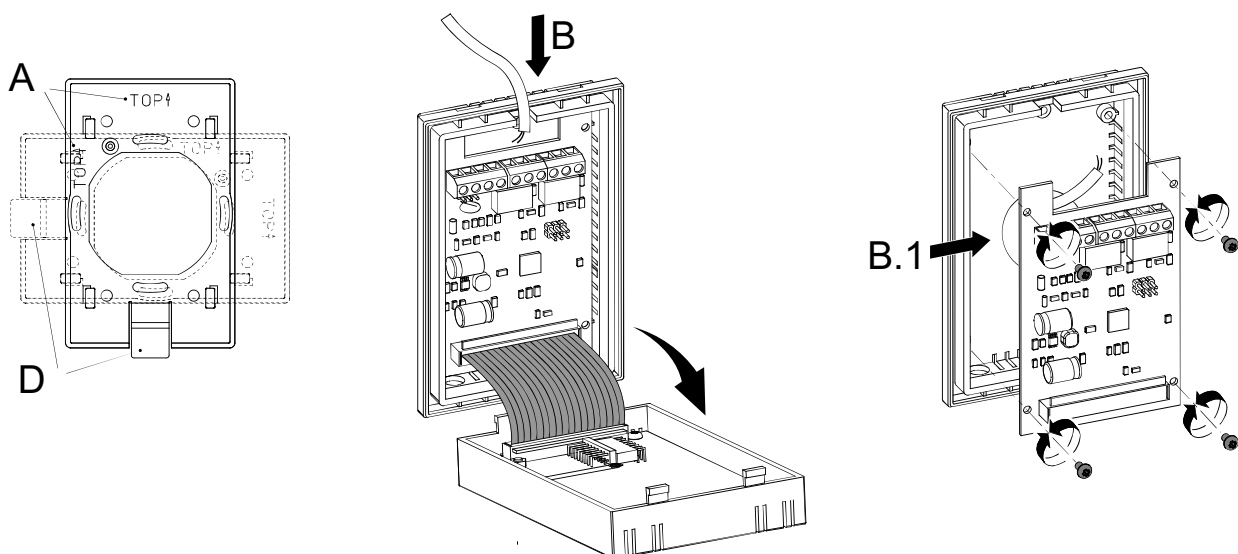


Abb.: mounting

Operation modes

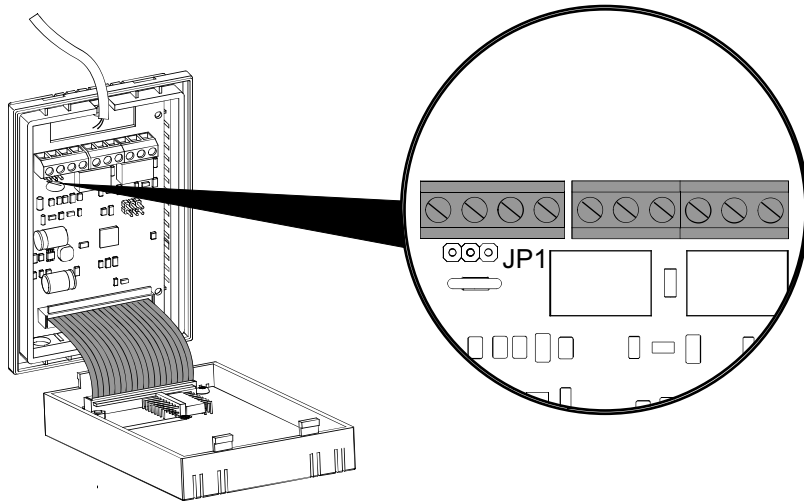


Abb.: jumper JP1

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Operation modes

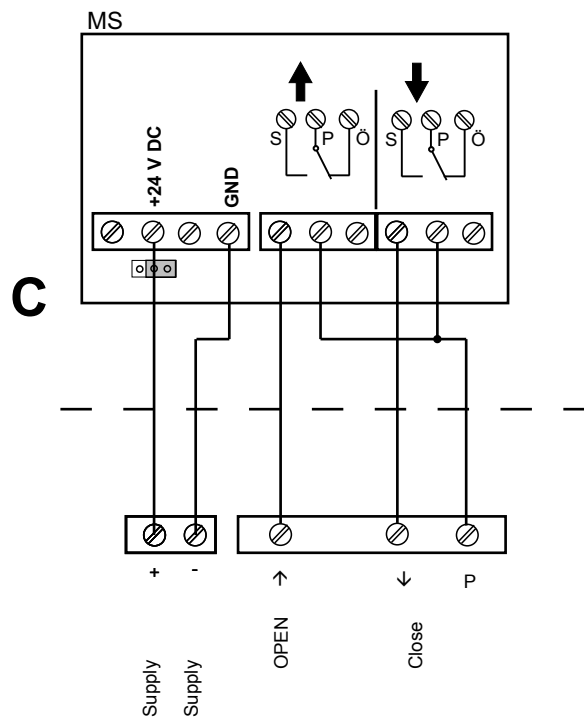
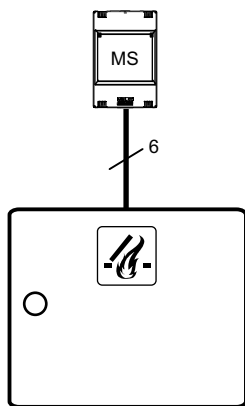


Special application



Standard setting for SHE and ventilation control panels with wind and rain sensor connection.

Connection example



Connetion: Rain sensor
Wind and Rain sensor
altanativ or 24V DC
200mA power supplies

Connection: ventilation button

Adjustment

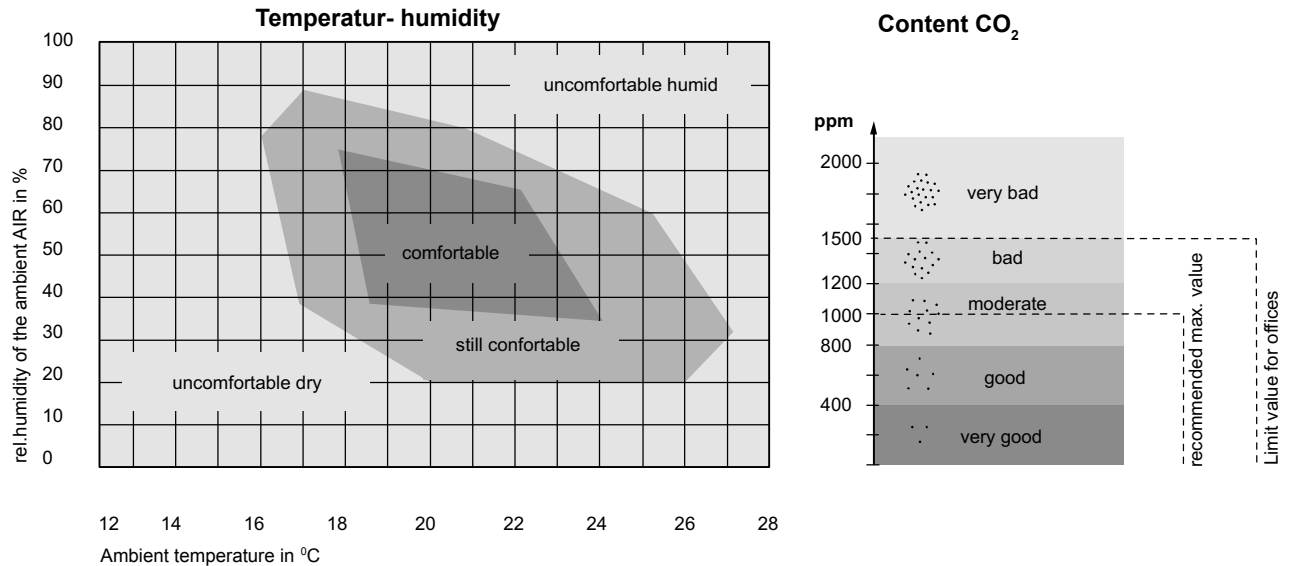
At delivery of the Multi sensor MS, the following limit values are pre-adjusted:

- Temperature: min. 21 °C max. 25 °C
- Humidity: min. 40% max. 60%
- Content CO₂: min. 800 ppm max. 1600 ppm



Attention: In case of setting-up operation, the connected drive could open or close according to these limit values!

The following diagrams are to be used as a guide to determine the reference values that have to be adjusted by the user:



Display / Operation

After initialization of the device, the actual air values temperature, relative humidity and air quality will be displayed. These values represent the reference for automatic ventilation. In addition to automatic ventilation, a manually released ventilation is possible by means of the integrated Ventilation pushbutton.



Attention: A ventilation should be carried out after 1 week at the latest. Otherwise the sensor for air quality will be readjusted (refer to "Intended use").

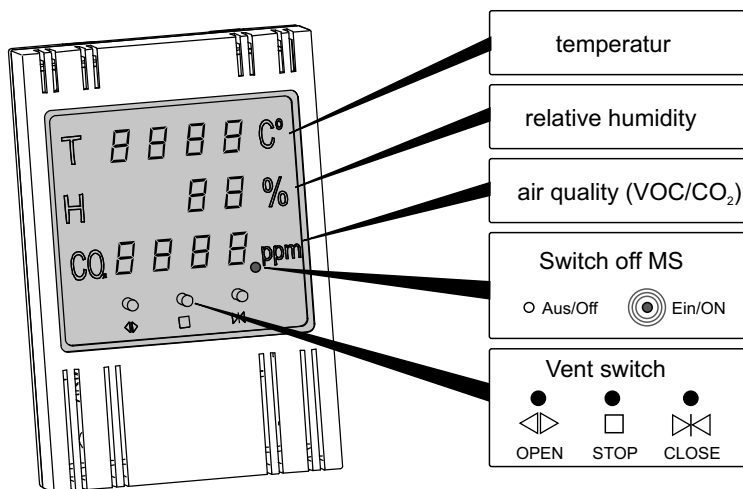



Abb.: Display / Operation

Programming switching values

For setting-up operation, the room shall be ventilated recently. This "standardization" of the device represents the actually aspired quality of air.

 **Note:** The sensor for CO₂ needs about 15 minutes to initialize.

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- ▶ Press buttons "OPEN", "STOP", "CLOSE" at the same time.
- ▶ Choose parameter (line 2) with buttons OPEN or CLOSE:
 - "temperature" window CLOSE
 - "temperature" window OPEN
 - "humidity" window CLOSE
 - "humidity" window OPEN
 - "air quality" window CLOSE
 - "air quality" window OPEN
- ▶ Press button "STOP".
- ▶ Choose value (line 3) with buttons "OPEN" or "CLOSE" Press button "STOP"

When all values are adjusted, finish adjustment via parameter "0" and "STOP".

Switch off MS

Es ist möglich, den Multisensor so abzuschalten, dass weiterhin die Luftwerte gemessen und angezeigt werden, aber bei Erreichen der eingestellten Grenzwerte keine Auslösung erfolgt und die Fenster nicht automatisch öffnen und schließen.

- ▶ Press buttons "OPEN" and "CLOSE" at the same time for approx. 6 seconds.
- ▶ In the third line of the display (CO₂-value) "00" is displayed.
- ▶ After a short time the CO₂-value displays again.
- ▶ Now the Multi sensor is switched off and no point lights in the display right of the CO₂-value.

Switch on the Multi sensor:

- ▶ Press buttons "OPEN" and "CLOSE" at the same time for approx. 6 seconds.
- ▶ In the third line of the display (CO₂-value) "II" is displayed.
- ▶ After a short time the CO₂-value displays again.
- ▶ Now the Multi sensor is switched on and a point lights in the display right of the CO₂-value.

Maintenance/Care

The device ist maintenance-free. Check all devices and cable connections for external damage and dirt. The operability of operating units etc. must not be affected. Use a soft, slightly dampened cloth to clean the housing components. Do not use any caustic chemicals, abrasive cleaners or agents containing solvents. Provide the device with durable protection against water and dirt.

Technical data

Supply voltage:		24 V DC (-20 %, +30 %)
Current Input:		10 ... 50 mA bei 24 V
Range of operation:		0 ... 40 °C, 10 ... 90 % RH non-condensing
Switching current of potential-free switches:		0,5 A DC
Protection class		IP 20
Dimensions:		H 120 x W 80 x D 38 mm
Display temperature	display:	3-digit with resolution 0,1 °C
	display range:	0,0 ... 99,9 °C
	accuracy:	± 0,5 °C at 25 °C, otherwise ± 2,5 °C
Display relative humidity	display :	2-digit with resolution 1 %
	display range:	0 ... 99 %
	accuracy:	± 3 % at 20 to 80 %, otherwise ± 5 %
Display air quality	display:	4-digit with resolution 10 ppm
("= relative air quality measurement")	display range:	350 ... 2000 ppm
	accuracy:	acc. to composition of air; Drift compensation is necessary by cyclic ventilation