S S REGELTECHNIK FSHKM Room Light Intensity Sensor and Measuring Transducer Instruction Manual

Contents

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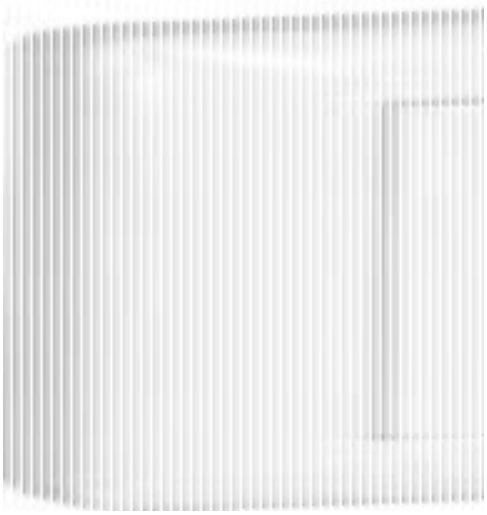


Product Information: The product is a room light intensity and measuring transducer that is designed to be installed in-wall in the panel switch program. It has an active output and is used for controlling luminaires, lighting systems, Venetian blinds, canvas blinds, and monitoring lighting conditions. The sensor is most sensitive in the range of 350 nm to 820 nm and is suitable for measuring daylight exposure and artificial light of high color temperature. The product is used indoors in workplaces, corridors, offices, residential and business premises, as well as industrial and storage halls.

Technical Data:

- Power supply: AC 24V~ 0V / DC 15-36V = GND
- Power consumption: Not specified
- Brightness sensor: Photodiode
- Measuring range: 0…1 kLux
- Measuring accuracy: Not specified
- Output: 0 -10 V
- Mounting: In-wall installation
- Electrical connection: Not specified
- Ambient temperature: Not specified
- Permitted humidity: Not specified
- Protection class: Not specified
- IP rating: Not specified
- Standards: Not specified
- Manufacturer: GIRA
- Housing: Plastic, standard color is pure glossy white (similar to RAL 9010)

Product Usage Instructions:

1. **Power**

   Supply Connection:

   1. Connect the product to a power supply with AC 24V~ 0V or DC 15-36V = GND.
   2. Ensure correct wiring according to the provided schematic diagram.
2. **Installation:**

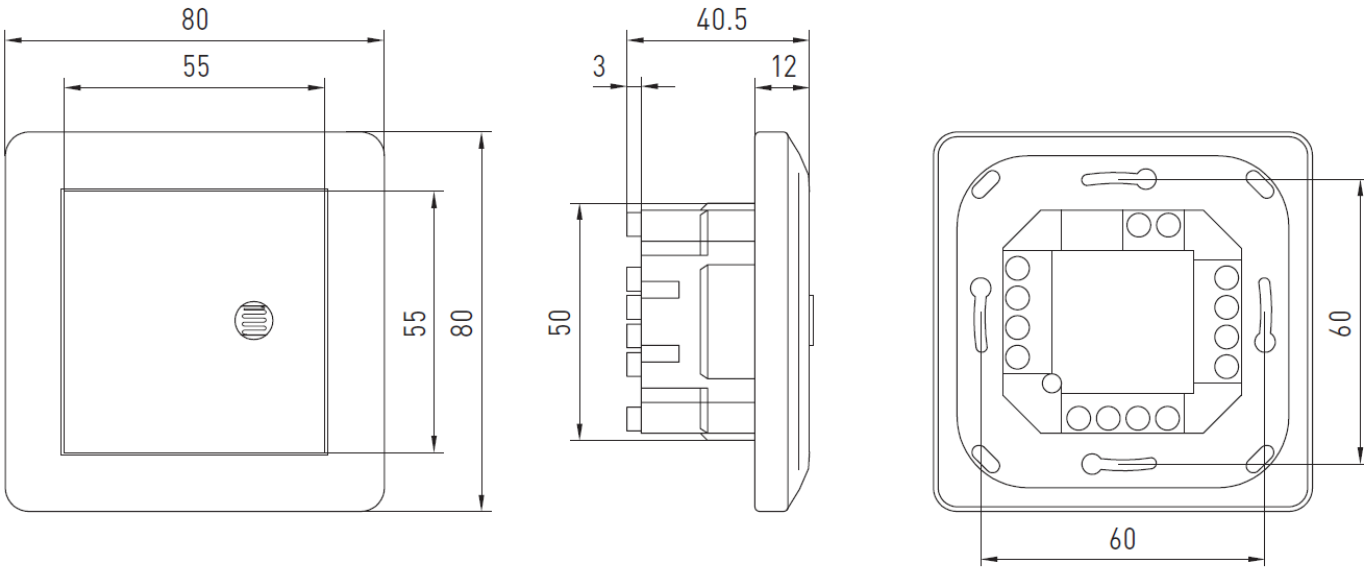
1. Install the product in-wall in the panel switch program.
2. Follow the provided dimensional drawing for proper placement.
3. Ensure proper mounting and secure installation.

3. **Electrical Connection:**
    1. Connect the electrical wires according to the provided schematic diagram.
    2. Follow the specified connections for the output and light intensity.
4. **Usage:**
    1. The product is used for controlling luminaires, lighting systems, Venetian blinds, and canvas blinds.
    2. It can also be used for monitoring lighting conditions.
    3. The sensor measures light intensity in the range of 0 to 1 kLux.
    4. The output is in the range of 0 -10 V.
    5. Other individual measuring ranges, such as 100 kLux, can be optionally selected.

Note: For more information on specific installation, electrical connections, and usage scenarios, refer to the complete user manual provided with the product.

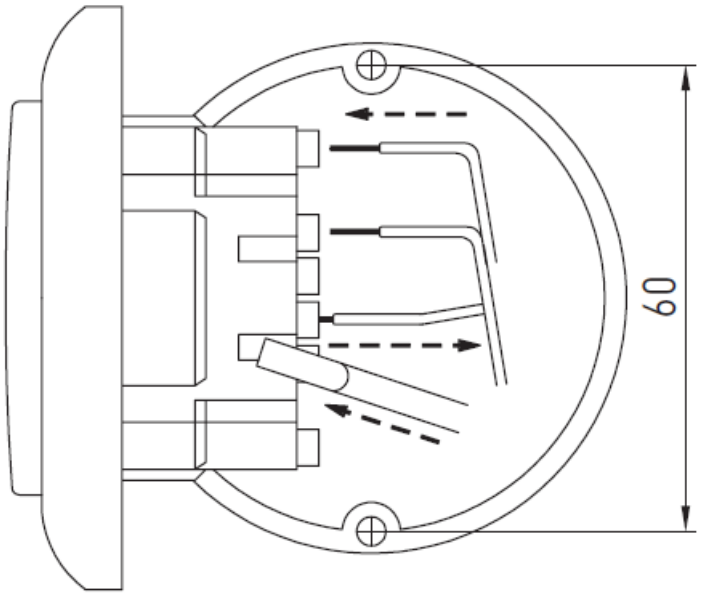
Dimensional drawing [mm]

FSHKM



Installation scheme
[mm]

FS xx



PHOTASGARD® FSHKM

Maintenance-free light intensity sensor PHOTASGARD® FSHKM with active output, in in-wall housing, to determine the illuminance (0…1kLux). The measuring transducer converts the measured variables into a standard signal of 0 -10 V. The in-wall sensor is mounted in high-quality panel switch programmed, ideally of the brands Gira, Berker, Merten, Jung, Siemens or Busch-Jaeger (using in-wall adapters) either individually or in combination with light switches, socket outlets, etc.
The sensor is used to control luminaires, lighting systems, Venetian blinds and canvas blinds and for monitoring the lighting conditions.
It is used indoors at workplaces, in corridors, offices, residential and business premises as well as industrial and storage halls as daylight- dependent constant light control, as brightness or twilight sensor and to control sun protection hoods to avoid unnecessary room heating.

The light sensor (photodiode) was specifically adapted to the sensitivity of the human eye. It is most sensitive in the range of 350 nm to 820 nm. With its special filter, the sensor is therefore ideally suited to exposure measurement of daylight and / or for measuring artificial light of high color temperature (similar to sunlight).

TECHNICAL DATA

- Power supply: 24 V AC / DC (± 10 %)
- Power consumption: typically < 2.0 VA / 24 V AC; typically < 1.0 W / 24 V DC

BRIGHTNESS

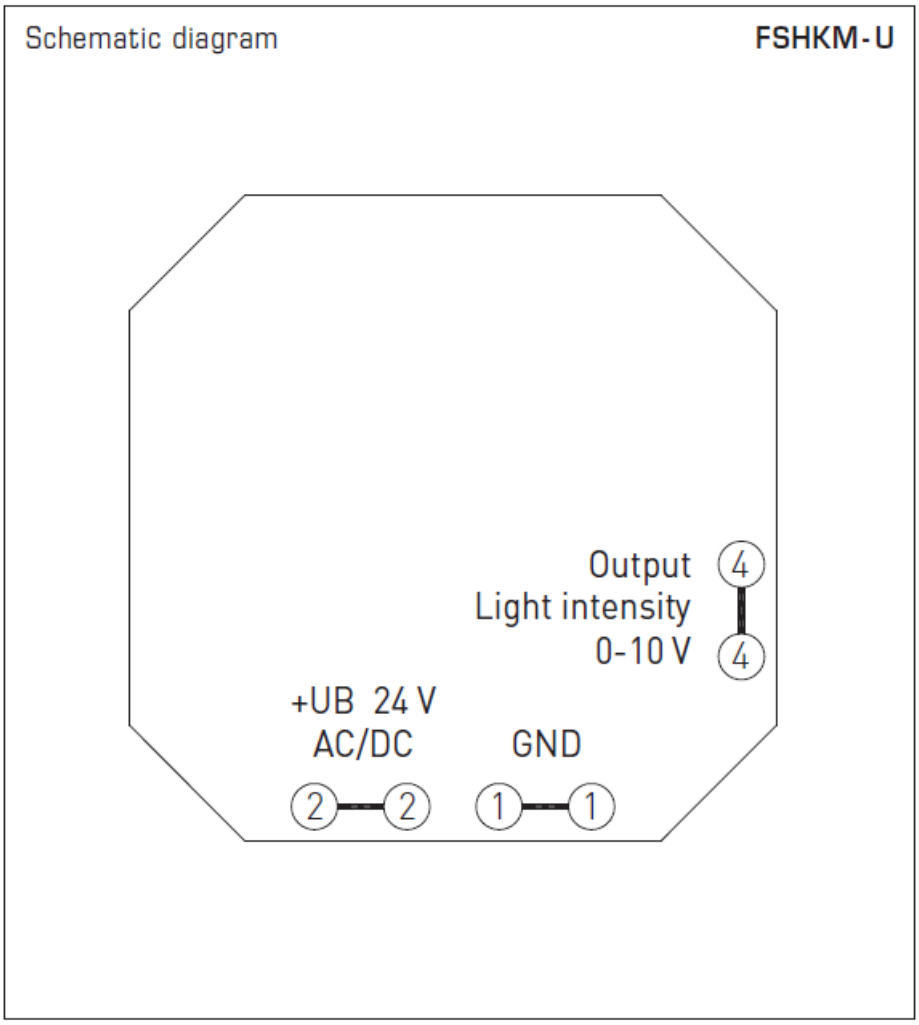
- Sensor: Light sensor (photo diode)
- Measuring range: 0…1 kLux (optionally other individual measuring ranges, e. g. 100 kLux)
- Measuring accuracy: typically ± 10 % final value
- Output: 0 – 10 V (linearized)
- Mounting: in-wall flush box Ø 55 mm
- Electrical connection: max. 1.5 mm², via push-in terminals
- Ambient temperature: Storage –20…+50 °C;

- Operation 0…+50 °C
- Permitted humidity: max. 95 % RH, non-condensing air
- Protection class: III (according to EN 60 730)
- IP rating: IP 20 (according to EN 60 529)
- Standards: CE-conformity, electromagnetic compatibility according to EN 61 326, EMC Directive 2014 / 30 / EU

SWITCH PROGRAMME

- **Manufacturer:** GIRA System 55 (other switch programmes, manufacturers, colors as well as prices available upon request)
- **Housing:** plastic, the standard color is pure glossy white (similar to RAL 9010) (other colors are available upon request with color variants depending on the respective light switch programme)

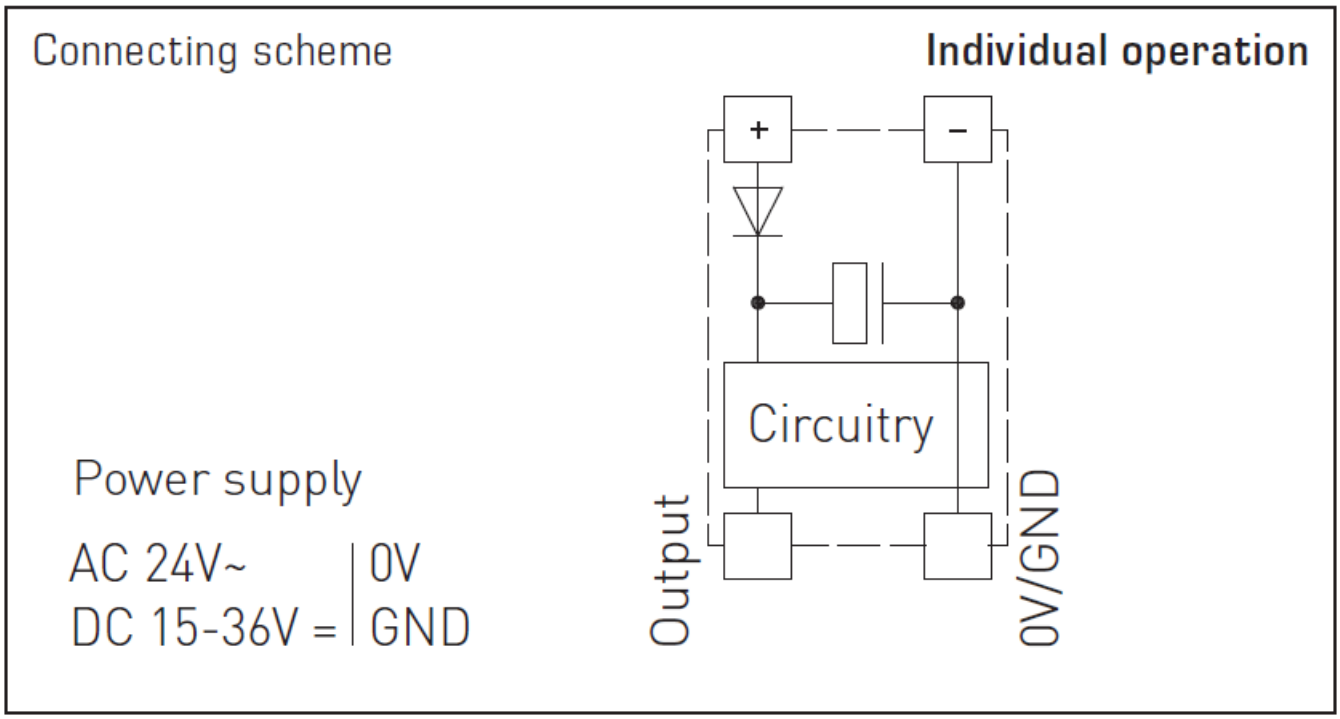
Type / WG01	Measuring range light intensity	Output light intensity	Item No.
FSHKM			
FSHKM-U 1K	0...1 kLux	0-10 V	1601-5121-7000-162
Extra charge:	optionally other individual measuring ranges, e. g. 100 kLux		on request



Light UA
[lux] [V] 0 0.0
50 0.5

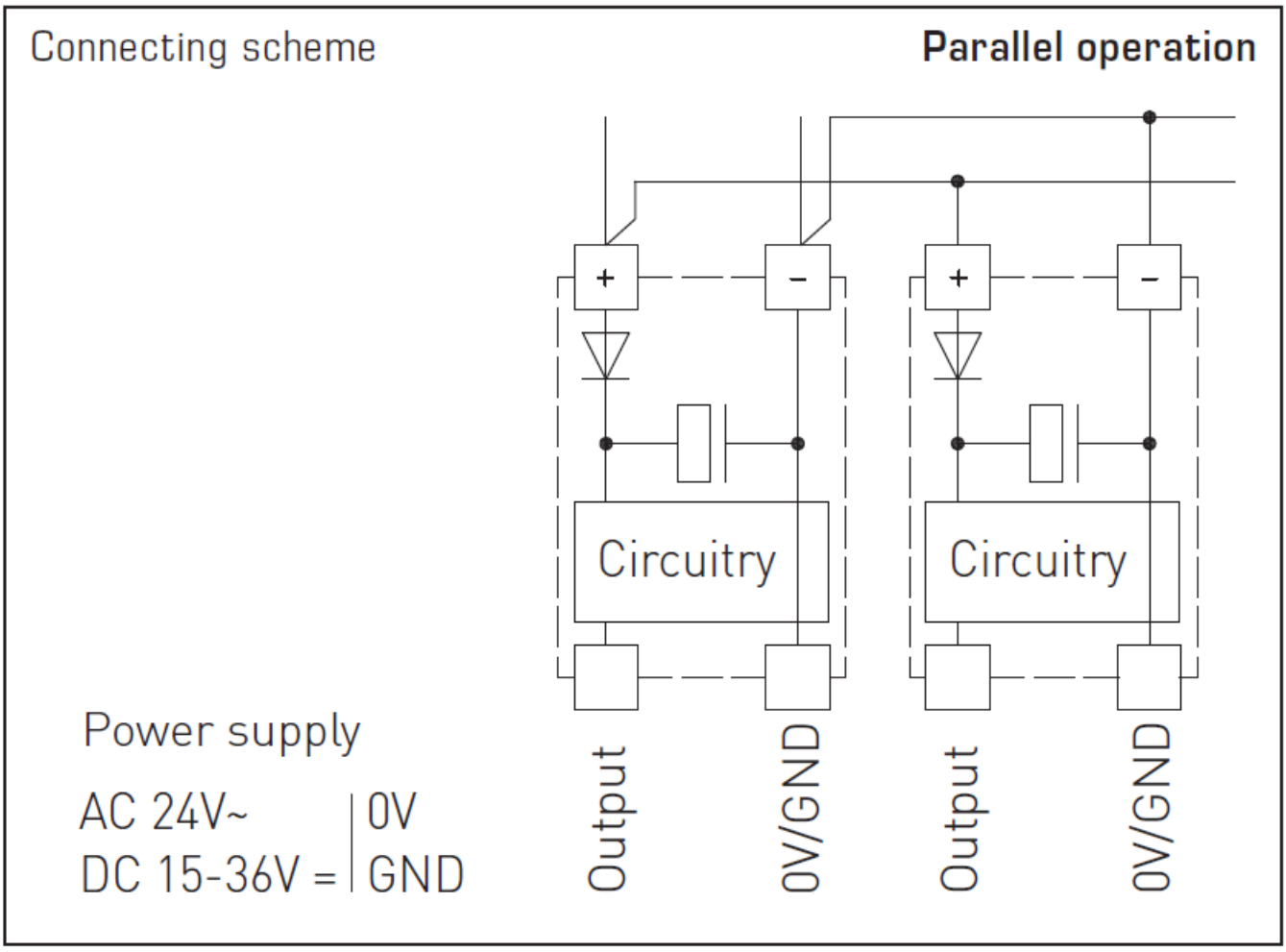
100 1.0
150 1.5
200 2.0
250 2.5
300 3.0
350 3.5
400 4.0
450 4.5
500 5.0
550 5.5
600 6.0
650 6.5
700 7.0
750 7.5
800 8.0
850 8.5
900 9.0
950 9.5
1000 10.0

SUPPLY VOLTAGE :
For operating voltage reverse polarity protection, a one-way rectifier or reverse polarity protection diode is integrated in this device variant. This internal one-way rectifier also allows operating 0 – 10 V devices on AC supply voltage.
The output signal is to be tapped by a measuring instrument. Output voltage is measured her against zero potential (O V) of the input voltage!
When this device is operated on DC supply voltage, the operating voltage input UB+ is to be used for 15…36 V DC supply and UB – or GND for ground wire!

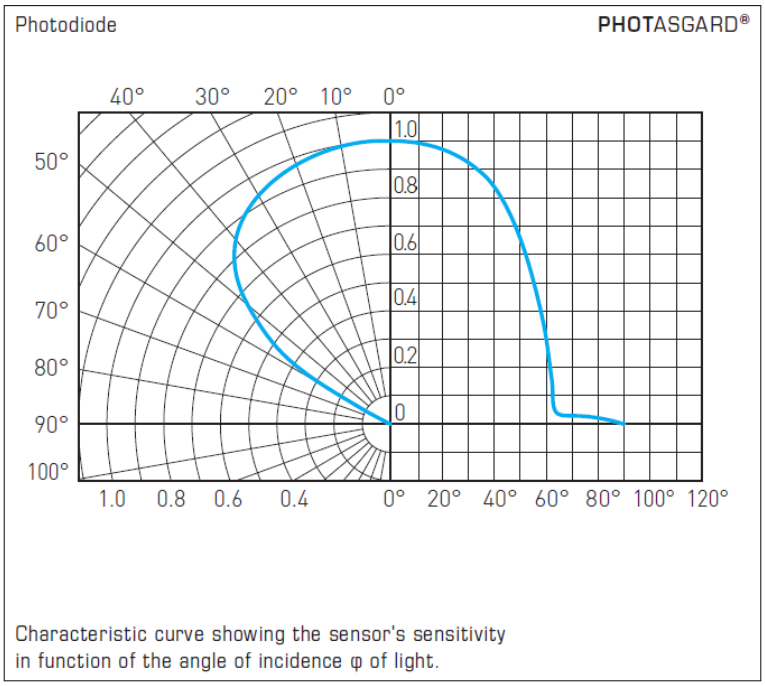


When several devices are supplied by one 24 V AC voltage supply, it is to be ensured that all ”positive“ operating voltage input terminals (+) of the field devices are connected with each other and all ”negative“ operating voltage input terminals (–) (= reference potential) are connected together (in-phase connection of field devices). All outputs of field devices must be referenced to the same potential!
In case of reversed polarity at one field device, a supply voltage short- circuit would be caused by that device. The consequential short-circuit current flowing through this field device may cause damage to it.

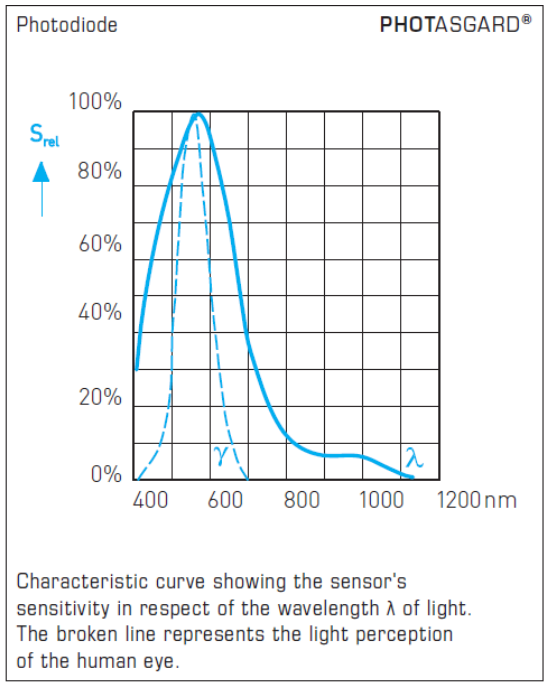
Therefore, pay attention to correct wiring!



Photodiode



Characteristic curve showing the sensor's sensitivity in function of the angle of incidence φ of light.



Characteristic curve showing the sensor's sensitivity in respect of the wavelength λ of light. The broken line represents the light perception of the human eye.

The sensor used in PHOTASGARD® light intensity sensors (photodiode) was specifically adapted to the sensitivity of the human eye. Its greatest sensitivity is in the range of 350 nm to 820 nm. Therefore with its special filter the sensor is predestined for exposure measurement of daylight and / or for measuring artificial light of high color temperature (similar to sunlight).

General notes

- The sensor is installed in the enclosure cover of the housing.
  When opening the housing, make sure that the sensor does not get damaged.
- The sensor surface must be protected from any dirt and / or damage.
- Scratches, dirt or even partial obstruction distort the measurement result.
- When several sensors are connected to one voltage supply of 24 V AC (alternating voltage), the correct polarity must be ensured as otherwise the alternating voltage source may be short-circuited.
- The outputs are short-circuit proof; applying overvoltage or voltage supply to the output will destroy the unit.
- If this unit is operated beyond the specified range, all warranty claims are forfeited.

Notes regarding mechanical mounting and attachment:
Mounting shall take place while observing all relevant regulations and standards applicable for the place of measurement (e.g. such as welding instructions, etc.). Particularly the following shall be regarded:

- VDE / VDI directive technical temperature measurements, measurement set – up for temperature measurements.
- The EMC directives must be adhered to.
- It is imperative to avoid parallel laying of current-carrying lines.
- We recommend to use shielded cables with the shielding being attached at one side to the DDC / PLC.

Before mounting, make sure that the measuring device technical parameters comply with the actual conditions at the place of utilization, in particular in respect of:

- Measuring range
- Permissible maximum temperature and humidity
- Protection type and Protection class
- Oscillations, vibrations, shocks are to be avoided (< 0.5 g)

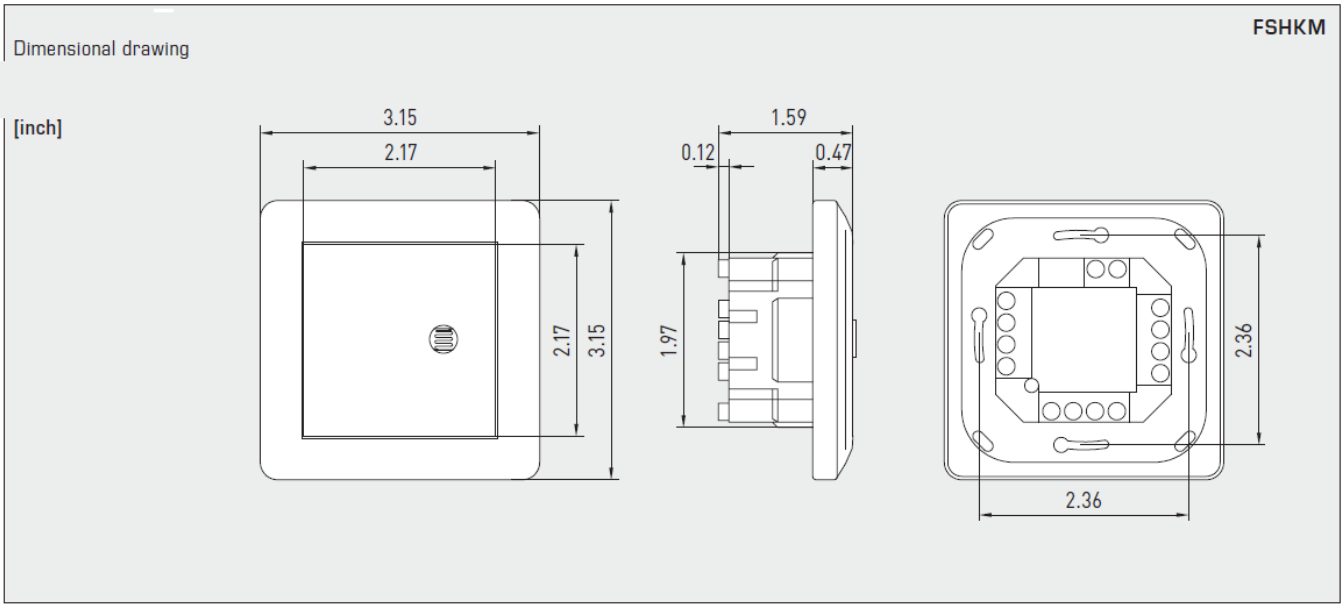
Notes on commissioning:
This device was calibrated, adjusted and tested under standardised conditions. When operating under deviating conditions, we recommend performing an initial manual adjustment on-site during commissioning and subsequently at regular intervals.

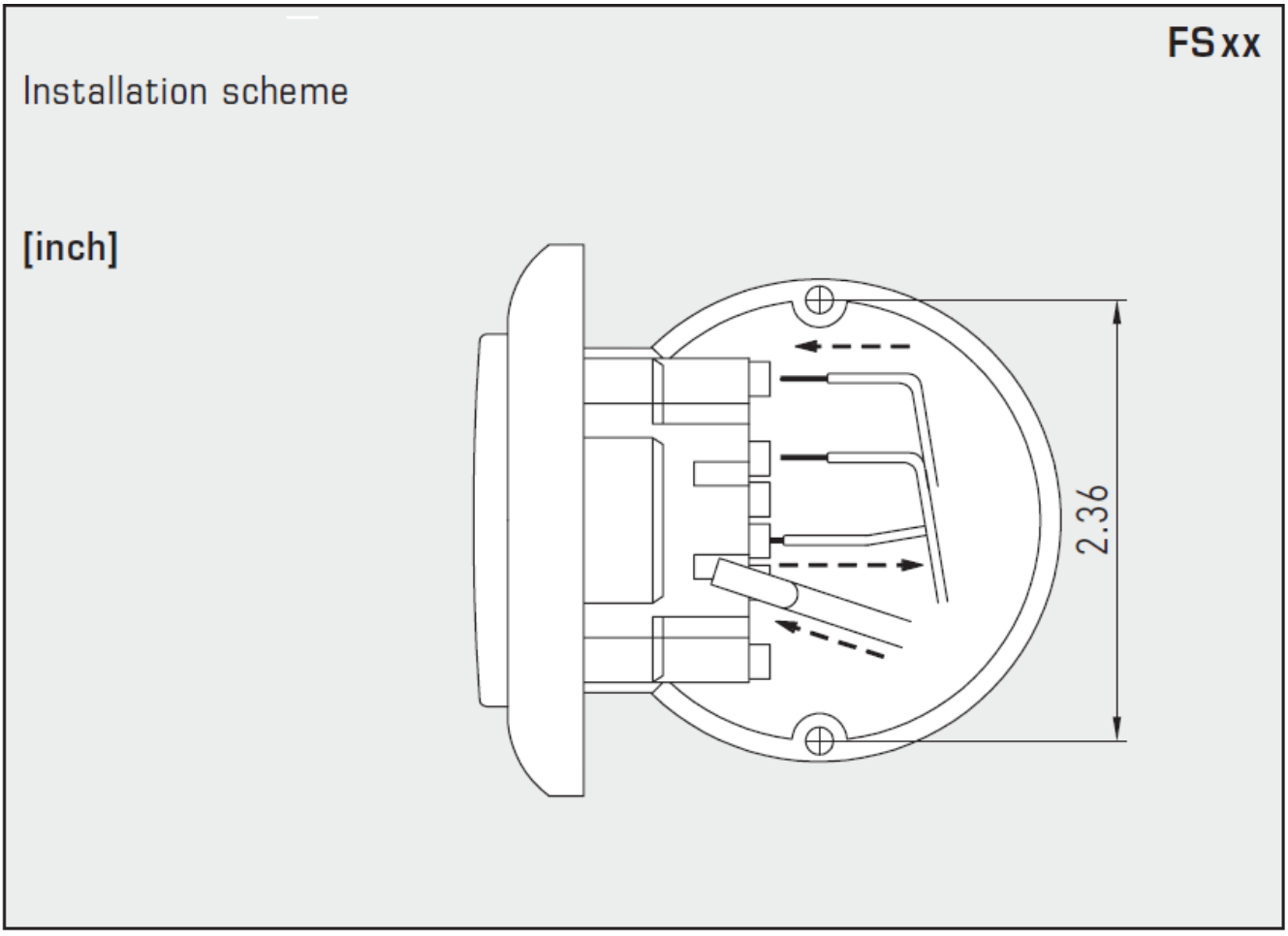
Commissioning is mandatory and may only be performed by qualified personnel!
These instructions must be read before installation and commissioning and all notes provided therein are to be regarded!
Our “General Terms and Conditions for Business“ together with the “General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry“ (ZVEI conditions) including supplementary clause “Extended Retention of Title“ apply as the exclusive terms and conditions.

In addition, the following points are to be observed:

- These instructions must be read before installation and putting in operation and all notes provided therein are to be regarded!
- In order to prevent measuring errors, ensure during installation on an in-wall flush box that the end of the installation pipe is sealed against draught.

- Devices must only be connected to safety extra-low voltage and under dead-voltage condition. To avoid damages and errors the device (e.g. by voltage induction) shielded cables are to be used, laying parallel with current-carrying lines is to be avoided, and EMC directives are to be observed.
- This device shall only be used for its intended purpose. Respective safety regulations issued by the VDE, the states, their control authorities, the TÜV and the local energy supply company must be observed. The purchaser has to adhere to the building and safety regulations and has to prevent perils of any kind.
- No warranties or liabilities will be assumed for defects and damages arising from improper use of this device.
- Consequential damages caused by a fault in this device are excluded from warranty or liability.
- These devices must be installed and commissioned by authorized specialists.
- The technical data and connecting conditions of the mounting and operating instructions delivered together with the device are exclusively valid. Deviations from the catalogue representation are not explicitly mentioned and are possible in terms of technical progress and continuous improvement of our products.
- In case of any modifications made by the user, all warranty claims are forfeited.
    - This device must not be installed close to heat sources (e.g. radiators) or be exposed to their heat flow. Direct sun irradiation or heat irradiation by similar sources (powerful lamps, halogen spotlights) must absolutely be avoided.
- Operating this device close to other devices that do not comply with EMC directives may influence functionality.
- This device must not be used for monitoring applications, which serve the purpose of protecting persons against hazards or injury,
  or as an EMERGENCY STOP switch for systems or machinery, or for any other similar safety-relevant purposes.
- Dimensions of housing or housing accessories may show slight tolerances on the specifications provided in these instructions.
- Modifications of these records are not permitted.
- In case of a complaint, only complete devices returned in original packing will be accepted.





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Documents / Resources

	S S REGELTECHNIK FSHKM Room Light Intensity Sensor and Measuring Transducer [pdf] Instruction Manual FSHKM Room Light Intensity Sensor and Measuring Transducer, FSHKM, Room Light Intensity Sensor and Measuring Transducer, Sensor and Measuring Transducer, Measuring Transducer, Transducer

References

- S+S Regeltechnik | Ihr sensorik Partner