Light Sensor, FM
LF/U 2.1, 2CDG 110 089 R0011

The ABB i-bus® light sensor LF/U 2.1 is a brightness sensor for closed rooms. The light sensor is mounted in a standard installation box in the ceiling.
The cover (white) of the sensor is stuck firmly onto the device. The complete unit is then screwed into a flush-type box.
On the Light Controller LR/S x.16.1 (x = 2 or 4) up to 2 or 4 Light Sensors LF/U 2.1 can be connected. The light sensor measures brightness values in closed rooms. When combined with the detected values, the Light Controller is used for constant light control.
It is possible to combine the brightness values from several Light Sensors for the calculation of an individual control circuit.

It is thus possible to achieve control of the lighting in rooms with difficult lighting conditions.
The electrical connection to the Light Sensor on the Light Controller is carried out with a twin core MSR cable (SELV), e.g. KNX bus cable. The total length of this cable may not exceed 100 m.
The Light Sensor is supplied with a Plexiglas rod which snaps into the sensor housing. The detection range can be limited using the Plexiglas rod with the white coating.
The Light Controller and the connect Light Sensor are supplied with power via the KNX and do not require any additional power supply.

Technical data

Supply	SELV	via LR/S x.16.1 (x = 2 or 4)
Connections	to LR/S x.16.1 **Note:** Not suitable for Light Controller LR/S 2.2.1 and Light Controller Module LR/M 1.6.1	1 connecting terminal white/yellow (connecting terminals are supplied with the device)
	Max. cable length per sensor	100 m, Ø 0.8 mm, P-YCYM or J-Y(ST)Y cable (SELV), e.g. shielded KNX bus cable
Brightness detection	Lighting control operating range	Optimised for 500 Lux. 200...1200 Lux for rooms with average furnishing level (reflection 0.5) max. 860 Lux in a very brightly furnished room (reflection 0.7) max. 3000 Lux in a very darkly furnished room (reflection 0.2) The Lux values are measured values on the work surface (reference surface)[1)]
	Optimum installation height	2-3 m
Enclosure	IP 20	to DIN EN 60 529
Safety class	II	to DIN EN 61 140
Isolation category	Overvoltage category	III to DIN EN 60 664-1
	Pollution degree	2 to DIN EN 60 664-1
Temperature range	Operation	-5 °C ... +45 °C
	Storage	-25 °C ... +55 °C
	Transport	-25 °C ... +70 °C
Environmental conditions	Humidity	Max. 93 %, moisture condensation should be excluded
Design	Flush mounted device	For installation in 60 mm flush mounted box
	Dimensions	54 x 20 (Ø x H)
Weight	in kg	0.040
Mounting position	as required	

Housing, colour	Plastic housing, grey	
Approvals	KNX to EN 50 090-2-2	Certificate, in conjunction with LR/S x.16.1
CE mark	in accordance with the EMC guideline and low voltage guideline	

[1] Rooms are lit up differently by the incidental daylight and the artificial lighting of the lamps, and not all surfaces in the rooms (walls, floor, furniture, etc.) reflect the light which falls on them in the same manner. Accordingly, even though there is an exactly calibrated constant lighting control in daily operation, deviations to the set target value may occur. These deviations may be up to +/- 100lx should the current ambient conditions in the room, and accordingly the reflection properties of the surfaces (paper, persons, reorganized or new furniture), differ significantly from the original ambient conditions at the time of calibration. Deviations may also occur if the Light Sensor is influenced by direct or reflected light falling on it which is not influenced or only slightly influenced by the surfaces in the detection range of the Light Sensor.

Note

For a detailed description of the application program see “Light controller LR/S x.16.1 and light sensor LF/U 2.1” product manual. It is available free-of-charge at www.ABB.de/KNX.

When positioning the Light Sensor in the room, it is important to ensure that the individual control circuits do not interfere with one another. The Light Sensor should be mounted above the area in which the actual lighting intensity is to be measured.

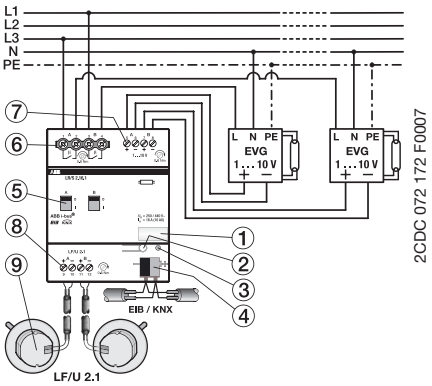
The luminaries or sunlight may not shine directly into the brightness sensor. Pay attention to unfavourable reflections, for example, from mirrored or glass surfaces.

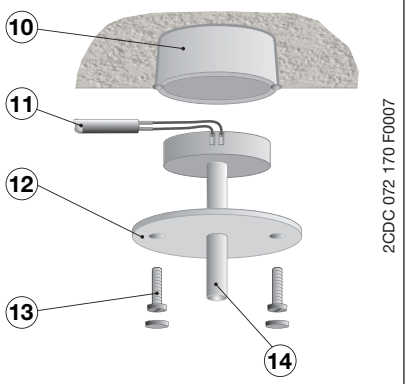
The white fibre-optic rod can limit the detection range and reduce the lateral lighting sensitivity to external lighting sources.

Note

If the Light Sensor is not connected to the Light Controller LR/S, a DC voltage of a few mV can be measured directly with a multi-function measurement device. The measured value is between 0 mV (absolute darkness) and a few 100 mV depending on the brightness. If 0 V is also measured at normal brightness, this is due to an open circuit, short circuit or inverse polarity fault or a defective sensor.

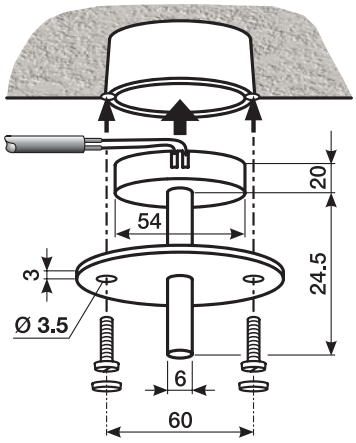
Circuit diagram





1 Label carrier
2 Programming button
3 Programming LED
4 Bus terminal connection
5 Switch position display and manual operation
6 Load circuits
7 Control circuits (1-10 V)
8 Light sensor inputs LF/U 2.1
9 Light sensor LF/U 2.1
10 FM switch box
11 Shielded sensor cable
12 Cover
13 Fixing screw
14 Light sensor rod

Dimension drawing

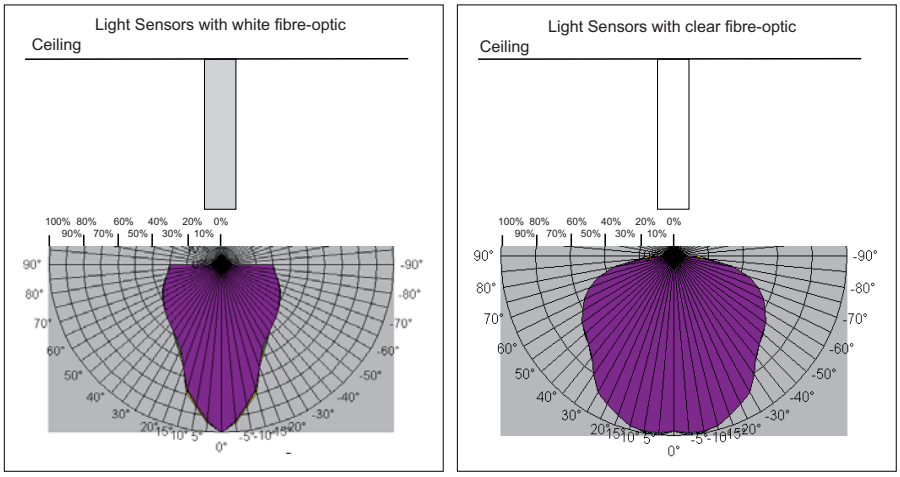


- Flush mounted device	For installation in 60 mm flush mounted box
- Dimensions	54 x 20 (Ø x H)

Polar diagram

The Light Sensors include two light rods. The white fibre-optic rod has a smaller detection range and is less sensitive to lateral lighting influences. This rod can be used if the detection range has to be limited as the reflected light may be influenced, for example, by window sills which affect the large reference area of the clear fibre-optic rod.

Please note that the white rod may not be subject to direct sunlight, artificial light or reflections. This leads to a direct misinterpretation of the brightness in the reference area and thus to incorrect constant lighting control.



The diagrams shows the light sensitivity of the sensors in the room. The percentage values refer to the maximum sensitivity of the light sensor.

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