» LDF+ RS485 BACnet

Ceiling sensor light-

Thermokon®
HOME OF SENSOR TECHNOLOGY

Datasheet

Subject to technical alteration
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USEapp ✓

ASHRAE **BACnet™**

»APPLICATION

The brightness sensor for ceiling installations detects indoor and outdoor light levels in living rooms, offices or at workplaces depending on the type of prism. The sensor is adapted to the spectral sensitivity of the human eye and serves together with control systems for an on-demand light or sun protection control. The remote sensor is connected to the enclosure via conventional RJ45 cables, making it easy to install in hardly accessible places. If two sensors are used, the individual values, the mean, minimum or maximum value can be provided through both output signals (configurable via Thermokon USEapp).

»TYPES AVAILABLE

Ceiling sensor light – active BUS

LDF+ RS485 BACnet L1500 straight prism
LDF+ RS485 BACnet L1500 diagonal prism

Dual ceiling sensor light – active BUS

LDF+ Dual RS485 BACnet L1500 straight prism
LDF+ Dual RS485 BACnet L1500 diagonal prism

»SECURITY ADVICE – CAUTION

The installation and assembly of electrical equipment should only be performed by authorized personnel.

The product should only be used for the intended application. Unauthorised modifications are prohibited! The product must not be used in relation with any equipment that in case of a failure may threaten, directly or indirectly, human health or life or result in danger to human beings, animals or assets. Ensure all power is disconnected before installing. Do not connect to live/operating equipment.

Please comply with
- Local laws, health & safety regulations, technical standards and regulations
- Condition of the device at the time of installation, to ensure safe installation
- This data sheet and installation manual

»NOTES ON DISPOSAL

As a component of a large-scale fixed installation, Thermokon products are intended to be used permanently as part of a building or a structure at a pre-defined and dedicated location, hence the Waste Electrical and Electronic Act (WEEE) is not applicable. However, most of the products may contain valuable materials that should be recycled and not disposed of as domestic waste. Please note the relevant regulations for local disposal.

»CONFIGURATION

The Thermokon bluetooth dongle with micro-USB is required for communication between USEapp and USE-M / USE L (Item No.: 668262). Commercial bluetooth dongles are not compatible.

Application-specific reconfiguration of the devices can be performed using the Thermokon USEapp. The configuration can be performed only when the device is powered.

The configuration-app and the app description can be found in the Google Play Store or in the Apple App Store.

»APPLICATION NOTICE

The housing cover must be completely closed in order to ensure the accuracy and reproducibility of the measured values during a test or service log via USEapp.

The Bluetooth dongle snaps into the socket easily. When removing, please fix the plug-in card (option PCB) so that it is not unintentionally pulled out.

»MOUNTING ADVICES

The ceiling flush mounted sensor is installed in a 26 mm diameter hole.

It is important to mount the light sensor in a suitable position for daylight regulation.

It should be positioned where an average daylight level will be reached. (center of the room or in the vicinity of the light control to be measured). The sensor should not be positioned too close to window surfaces or too far in the room. Ideally, the sensor should be positioned over the measuring surface, such as the work surface of a desk. In contrast to the straight prism, the version with oblique prism can be individually positioned in the room. The measurement area should preferably have a medium reflectance. Reflecting objects such as glass or polished metal surfaces should not be present. The influence of extraneous light sources, eg lights, windows, skylights must be excluded or reduced as much as possible

»TECHNICAL DATA

| Measuring values	light	
Output voltage	1x/2x 0..10 V or 0..5 V (adjustable via jumper; live-zero configuration via Thermokon USEapp), min. load 10 kΩ	
Network technology	RS485 BACntet MS/TP	
Power supply	15..35 V = or 19..29 V ~ SELV	
Power consumption	typ. 0,6 W (24 V =)	1,5 VA (24 V ~)	
Measuring range light	0..200 Lux	0..1000 Lux (default)	0..2 kLux	0..10 kLux	0..20 kLux	0..50 kLux, selectable at the device	
Accuracy light	±5% of measuring range	
Sensor	Ambient light sensor with precise optical filtering appropriate to the human eye	
Prism (optional)	acrylic glass clear, straight	acrylic glass clear, diagonal
Enclosure	enclosure USE-M, PC, pure white	
Protection	IP65 according to EN 60529	
Cable entry	M25, for wire max. Ø=7 mm, seal insert for fourfold cable entry	
Connection electrical	**Mainboard** removable plug-in terminal, max. 2,5 mm²	**Plug-in card** removable plug-in terminal, max. 1,5 mm²
	Sensor wire length=1,5 m (default), max. 10 m, plug RJ45	
Ambient condition	-30..+70 °C, max. 85% rH short term condensation	

»PRODUCT TESTING AND CERTIFICATION

CE

Declaration of conformity

The declaration of conformity of the products can be found on our website https://www.thermokon.de/.

»APPLICATION
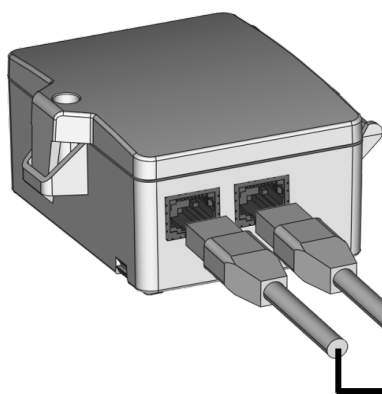
Two RJ45 sockets are integrated, instead of permanently connected cables. This allows 2 light sensors to be connected with a shielded RJ45 cable of up to 10 m in length.
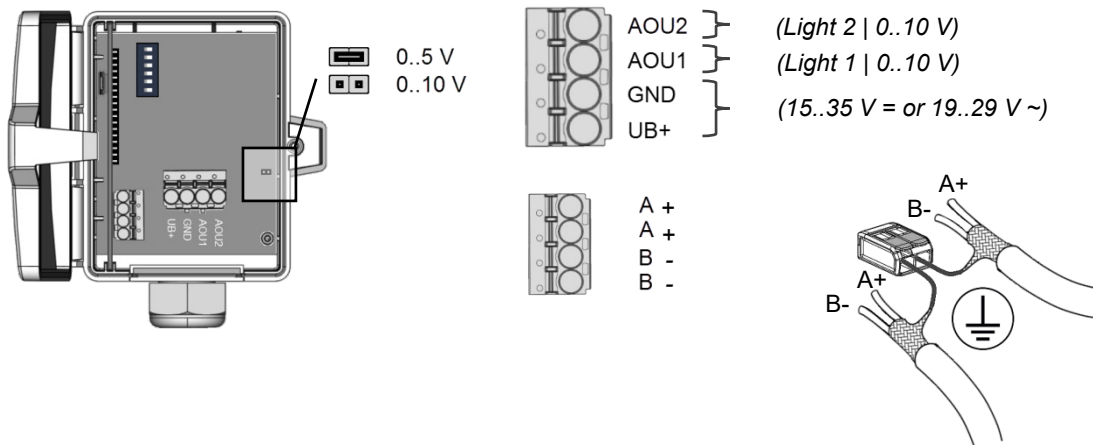
To properly detect the sensors, they must be connected before the unit is powered up.

• Sensor 2 (Output light 2)

• Sensor 1 (Output light 1)

» CONNECTION PLAN

If the RS485 cable is looped through, connect both cable shields using the enclosed 2-pol. Connect terminal as shown.
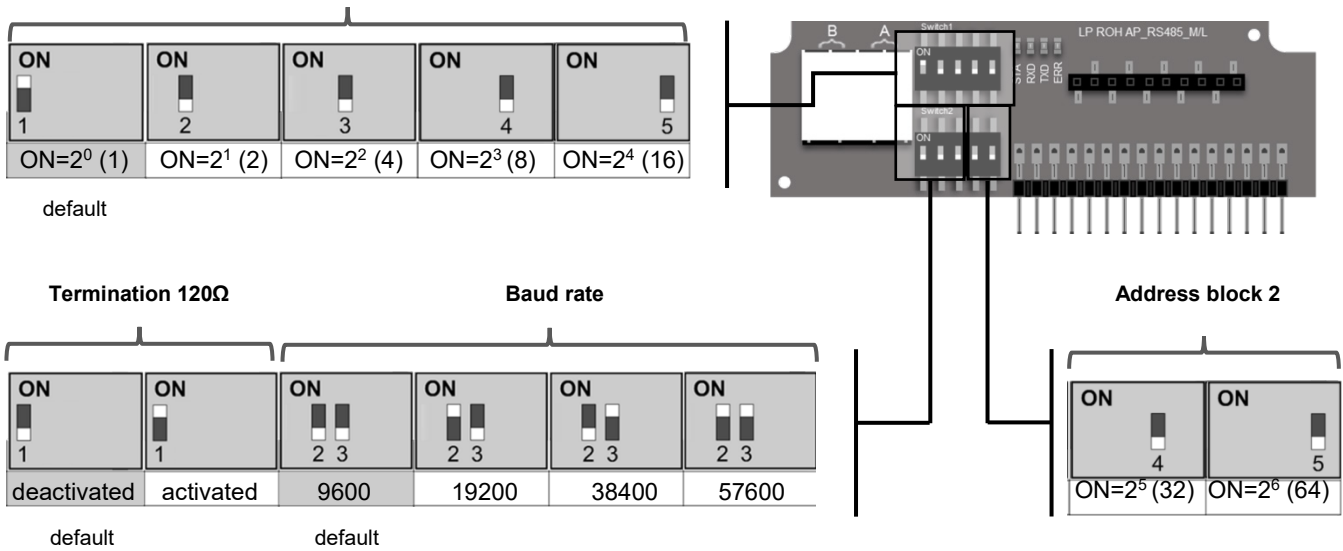
LDF+ RS485 BACnet

0..5 V
0..10 V

AOU2   *(Light 2 | 0..10 V)*
AOU1   *(Light 1 | 0..10 V)*
GND
UB+   *(15..35 V = or 19..29 V ~)*

A +
A +
B -
B -

» DIP SWITCH CONFIGURATION

Measuring range - DIP 1..3			
	#0 (factory default) SI = 0..1 kLux IMP = 0..100 fc		**#1** SI = 0..0,2 kLux IMP = 0..20 fc
	#2 SI = 0..2 kLux IMP = 0..200 fc		**#3** SI = 0..10 kLux IMP = 0..1000 fc
	#4 SI = 0..20 kLux IMP = 0..2000 fc		**#5** SI = 0..50 kLux IMP = 0..5000 fc

DIP 4, 5	
	#0 reserved

System of units - DIP 6			
	#0 (factory default) SI		**#32** IMP

Address block 1

ON	ON	ON	ON	ON
1	2	3	4	5
ON=2^0 (1)	ON=2^1 (2)	ON=2^2 (4)	ON=2^3 (8)	ON=2^4 (16)

default

Termination 120Ω

ON	ON
1	1
deactivated	activated

default

Baud rate

ON	ON	ON	ON
2 3	2 3	2 3	2 3
9600	19200	38400	57600

default

Address block 2

ON	ON
4	5
ON=2^5 (32)	ON=2^6 (64)

Object AV-38 = 1 (Unit SI)

Object	Access	Description	COV Increment	Resolution / Einheit	
AI-12	R	Illumination 1	0..999.999	SI	Lux
Ai-13	R	Illumination 2		SI	Lux

Object AV 38 = 2 (Unit Imperial)

Object	Access	Description	COV Increment	Resolution / Einheit	
AI-12	R	Illumination 1	0..999.999	Imperial	fc
Ai-13	R	Illumination 2		Imperial	fc

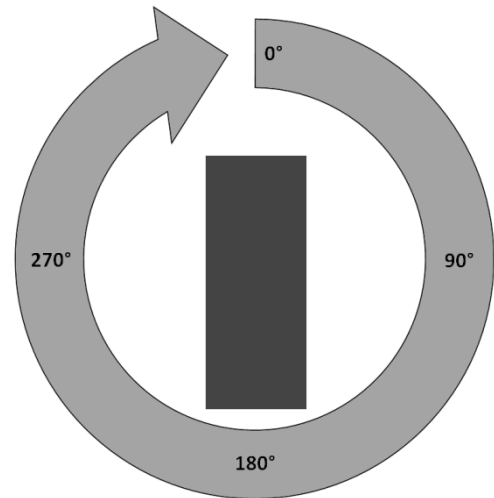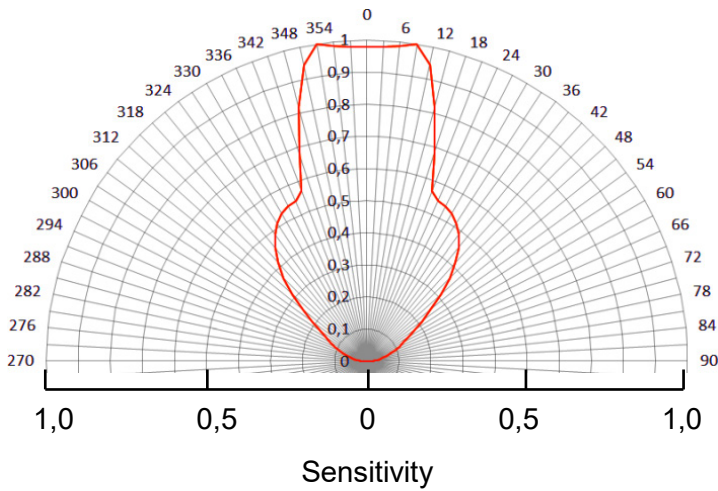The BACnet address of the device is set binary coded in the range of 1 ... 127 via 7 dip-switches. (the address 0 is reserved and cannot be selected).
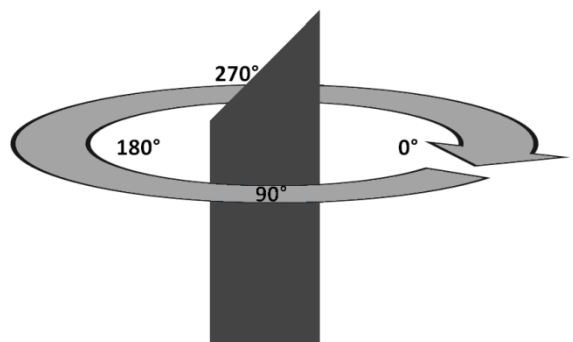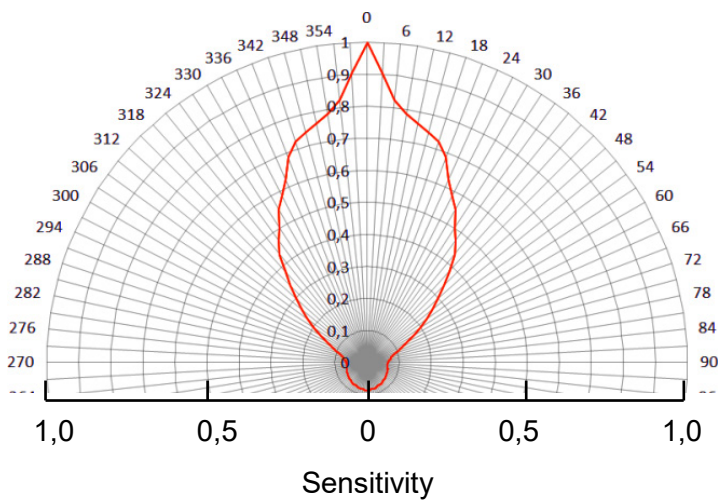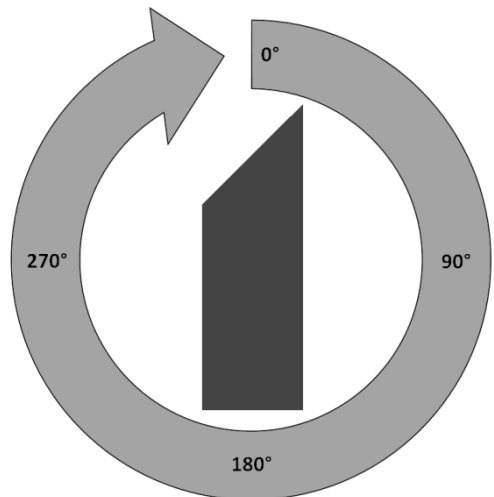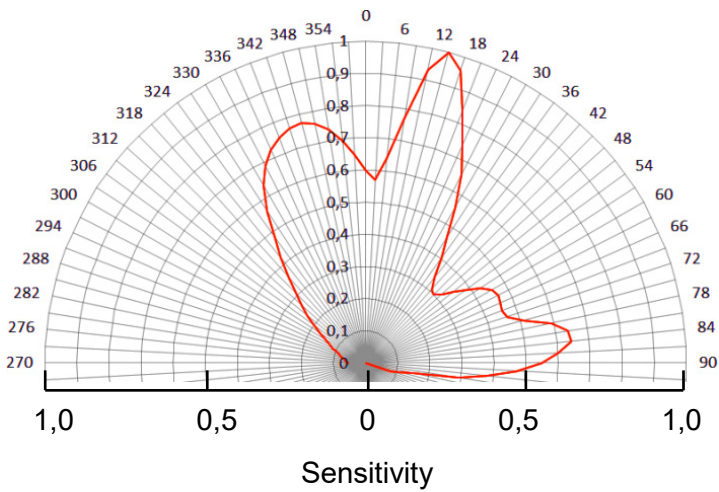
BACnet Objects:
USE-RS485 BACnet interface

A detailed description of the BACnet interface can be found at the following link:
→ **Download**

»ANGLE-DEPENDENT SENSITIVITY

Sensitivity straight prism
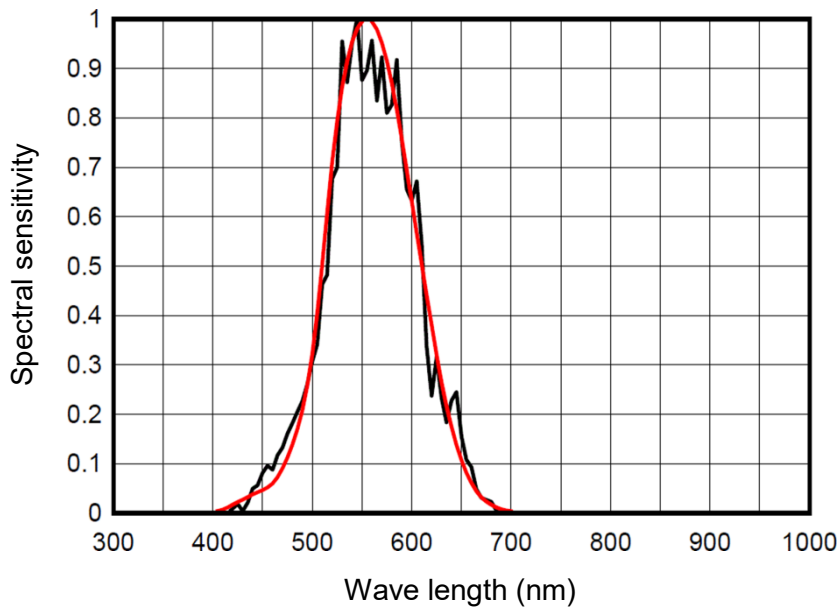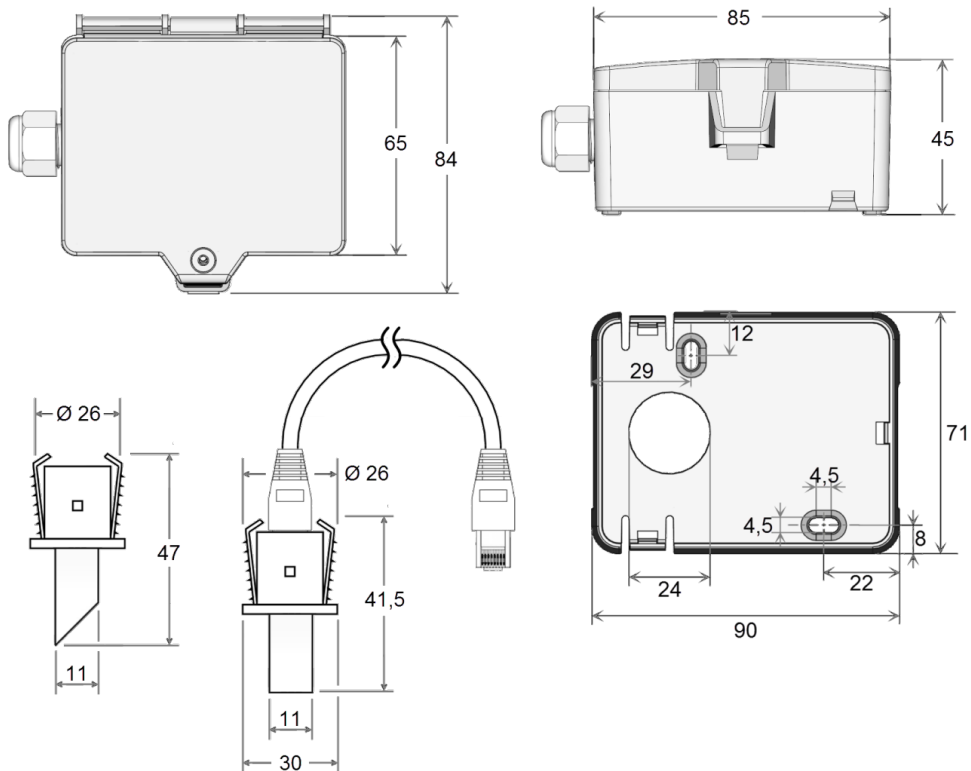

Sensitivity diagonal prism

» SPECTRAL SENSITIVITY

Human Eye — (red line)

LDF+ — (black line)

The adjacent graph shows the sensitivity curve of the human eye - also known as the V-lambda curve - and the spectral sensitivity of an LDF + sensor. The human eye perceives radiation of about 400 to 700nm as light. At about 555nm, the eye is most sensitive.

» DIMENSIONS (MM)

» ACCESSORIES (INCLUDED IN DELIVERY)

Mounting base	Item No. 631228
Mounting kit universal	Item No. 698511
• Cover screw + screw cover• 2 Rawlplugs • 2 Screws (countersunk head) • 2 Screws (rounded head)	

» ACCESSORIES (OPTIONAL)

Bluetooth dongle	Item No. 668262
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	Item No. 641364