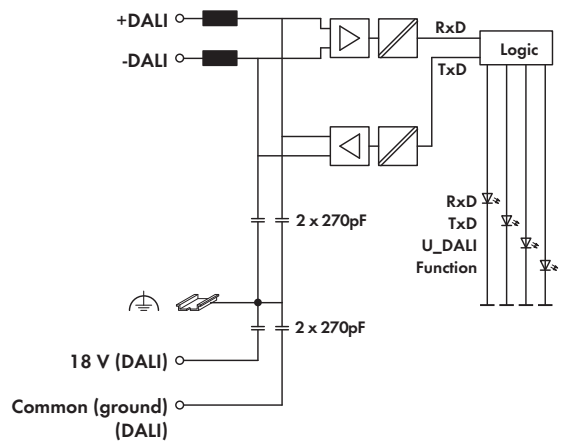
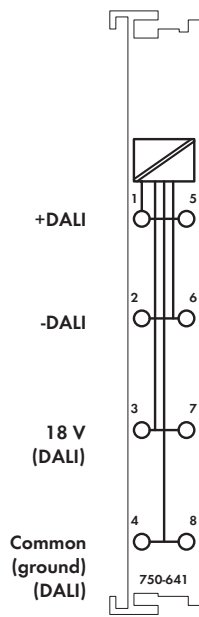
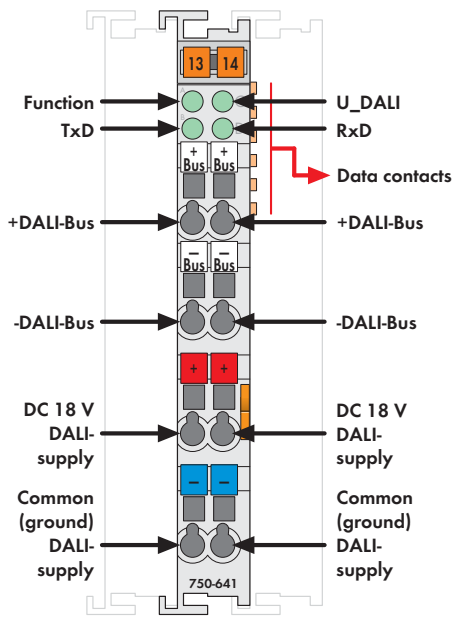


# DALI/DSI Master Module



Delivered without miniature WSB markers

The DALI standard (IEC 60929), a protocol across all manufacturers, ensures the interoperability of electronic ballasts in lighting applications. This new standard is substitute for the 1-10V dimmer interface. The DALI/DSI Master for the WAGO-I/O SYSTEM 750 is a 12mm wide I/O module that fits all controllers of the 750 series. A DALI Master can control up to 64 slaves. Each slave can be assigned to 16 individual groups and 16 individual settings. Any combinations of DALI controls with other groups are possible with the WAGO-I/O-SYSTEM 750. Several DALI Masters can be connected to a single fieldbus node. The maximum number of modules within a controller depends on the memory requirements of the application. The WAGO-I/O-PRO 32 software is used to program the fieldbus nodes. WAGO supports simple application programming with pre-programmed function blocks for DALI.

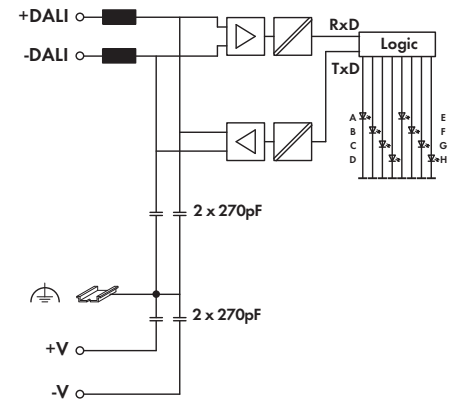
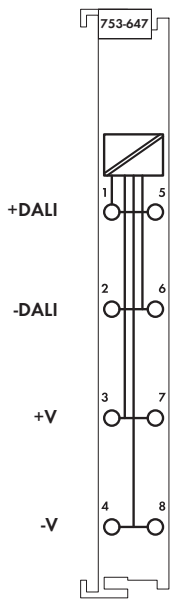
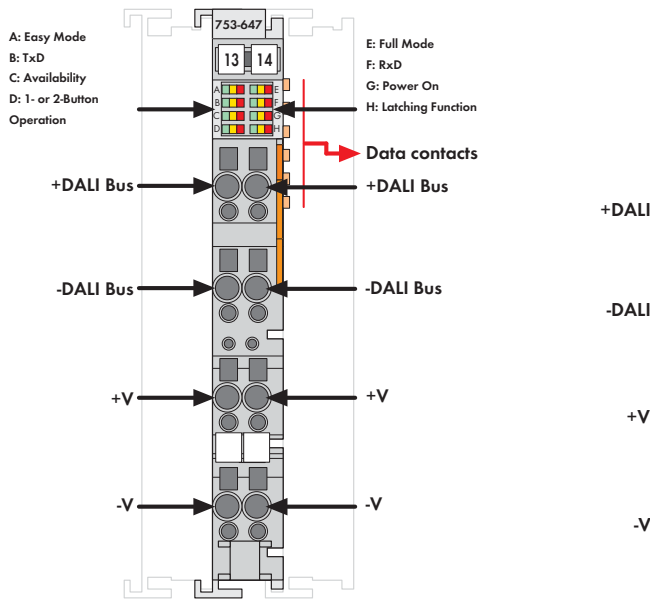
The DC/DC converter 288-895 is required to supply the DALI Master. The DC/DC converter delivers up to 400mA and can supply 3 DALI lines each with up to 130mA (see also "DALI/DSI Master Module" manual in section 1.1.1.7.3 "DALI Bus Line"). \*Documentation available in German and English. DSI is a proprietary interface which was developed by the TRIDONIC ATCO company. As with DALI, electronic ballasts can be digitally controlled by the DSI. However, compared to DALI, the slaves of the DSI module cannot be addressed individually and no feedback signals can be sent to the master. The maximum number of slaves controlled by the module is limited to 100 participants per line (100 participants \* 2 mA = 200 mA). Just as for DALI, the DC/DC converter 288-895 is required to supply the DSI.

Description	Item No.	Pack. Unit
DALI/DSI Master Module	750-641	1
<b>Accessories</b>		
Miniature WSB Quick marking system		
plain	248-501	5
with marking	see pages 352 ... 353	
<b>Approvals</b>		
Also see "Approvals Overview" in Section 1		
Conformity marking	CE	
Shipbuilding	ABS, DNV, GL, KR	
UL 508		
ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4	
EN 60079-0, -15	I M2 / II 3 GD Ex nA IIC T4	
EN 61241-0, -1		

Technical Data	
DALI specification	DIN IEC 60929 (VDE 0712 Part 23)
	Only in conjunction with 288-895 DC/DC Converter
DSI specification	TRIDONIC ATCO SPECIFICATION 2.0
Number of slaves (DALI)	64
Number of slaves (DSI)	100
Max. current output (DALI/DSI)	200 mA
Voltage supply (DALI/DSI)	18 V via 288-895 DC/DC Converter
Transmission channel	1
Current consumption (internal)	30 mA
Power supply	via internal system supply
Isolation	1500 V DC DALI-bus/K-bus
Internal bit width	1 byte control/status, 5 byte data
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	8 ... 9 mm / 0.33 in
Width	12 mm
Weight	52.2 g
EMC: CE - immunity to interference	acc. to EN 61000-6-2 (2005) *
EMC: CE - emission of interference	acc. to EN 61000-6-3 (2007) *
	* Only in conjunction with 288-895 DC/DC Converter
EMC: marine applications	
- immunity to interference	acc. to Germanischer Lloyd (2003)
EMC: marine applications	
- emission of interference	acc. to Germanischer Lloyd (2003)

# 1 DALI Multi-Master Module

AUTOMATION



The 753-647 DALI Multi-Master Module complies with DALI standard according to IEC 62386. This manufacturer-independent protocol ensures interoperability of DALI devices in lighting applications. The 1/2 inch (12 mm) wide module is a DALI interface used in combination with WAGO 750 Series Controllers and Modules (e.g., BACnet, KNX, EnOcean, LON, MODBUS). Each DALI Multi-Master Module supports 64 addresses for electronic control gears (ECGs) and 64 addresses for DALI sensors. Each DALI ECG can be assigned to 16 groups and 16 scenes. The 753-647 Module also offers 16 additional virtual groups on the DALI bus. Using the WAGO-I/O-SYSTEM, DALI control devices are seamlessly integrated with all supported BA and fieldbus protocols. Several DALI masters can be connected to a single fieldbus node. The maximum number of modules that can be connected to a controller depends on the memory required by the application. Fieldbus nodes are programmed via WAGO-I/O-PRO software. WAGO provides a comprehensive IEC-61131-3 library of function blocks, simplifying the creation of complex lighting applications.

Alternatively an "Easy Mode" allows lighting functions to be easily controlled without any complicated PLC programming. The 753-647 Module is future-proof and upgradable to the latest DALI release. A comprehensive and easy-to-use commissioning and maintenance tool is available as stand-alone application or as integrated WAGO-I/O-CHECK software component.

- The two following power supply options are available for the 753-647 Series:
1. The 753-620 DALI Multi-Master DC/DC Converter is used to supply one single module.
  2. The 787-1007 Power Supply is used to supply several modules.

Description	Item No.	Pack. Unit
<b>DALI Multi-Master Module</b>	<b>753-647</b>	
<b>Accessories</b>		
<b>DALI Configurator</b>	see page 33 or download: <a href="http://www.wago.com">www.wago.com</a>	
<b>WAGO-I/O-CHECK, RS-232 kit</b>	<b>759-302</b>	1
<b>Miniature WSB Quick marking system</b>		
plain	<b>248-501</b>	5
with marking	see Full Line Catalog AUTOMATION 2012/2013	
<b>753 Series Connectors</b>	<b>753-110</b>	25
<b>Coding fingers</b>	<b>753-150</b>	100
753 Series pluggable connectors and coding fingers are included.		
<b>Approvals</b>		
Conformity marking	CE	
UL 508	pending	
EN 60079-0, -15	pending	
EN 61241-0, -1		

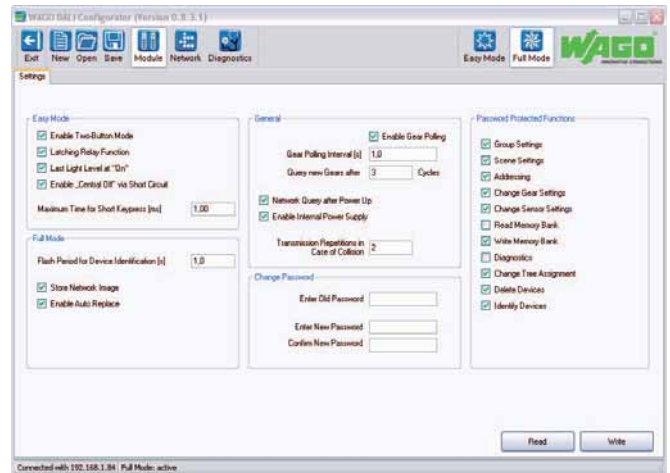
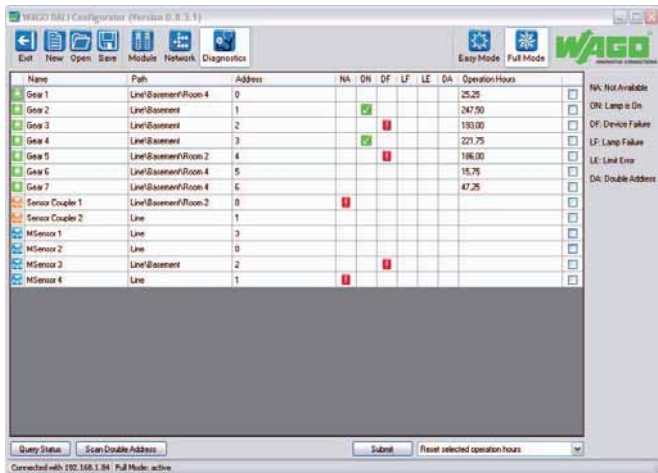
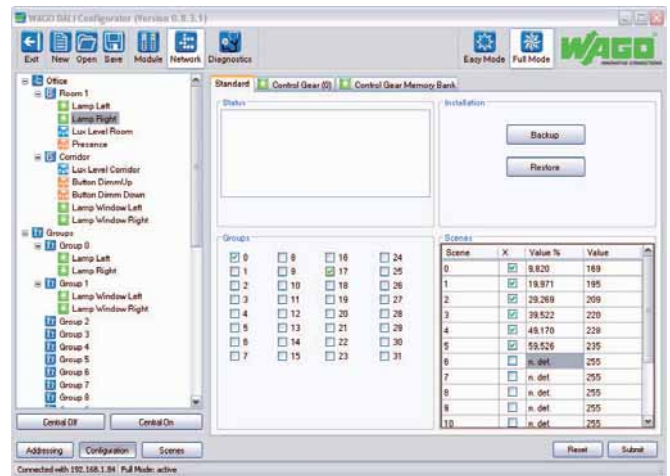
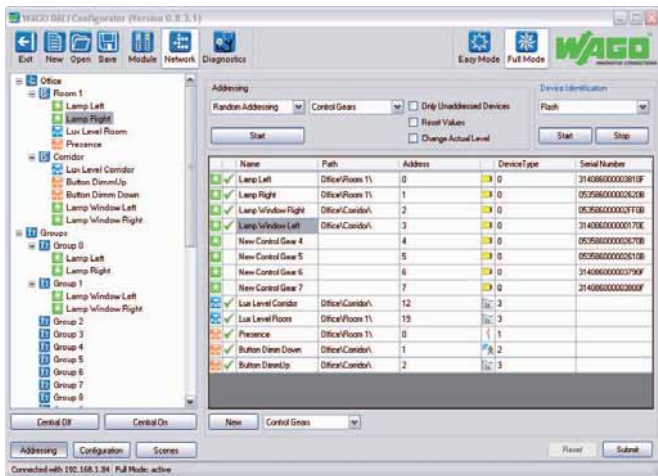
Technical Data	
DALI specification	DIN IEC 62386 only in conjunction with 753-620 or 787-1007 Power Supplies
Number of slaves (DALI)	addressable: 64 control devices + 64 control gears
Module power supply at +V and -V	18 V via 753-620 / 787-1007 Power Supplies
Transmission channel	1
Technical information acc. to DALI specification	
Maximum supply current	250 mA
Guaranteed supply current	200 mA
Current consumption (internal)	30 mA
Power supply	via system voltage (DC/DC)
Isolation	1500 V DC DALI bus/Internal data bus
Internal bit width	24-byte data
Commissioning	via WAGO-I/O-CHECK
Configuration	with WAGO DALI Configurator
Programming	via WAGO-I/O-PRO
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	9 ... 10 mm / 0.37 in
Width	12 mm
Weight	55 g
EMC: CE - immunity to interference	acc. to EN 61000-6-2 (2005) *
EMC: CE - emission of interference	acc. to EN 61000-6-3 (2007) *
	* Only in conjunction with 753-620 / 787-1007 DC/DC Converter
EMC: marine applications	
- immunity to interference	acc. to Germanischer Lloyd (2003)
EMC: marine applications	
- emission of interference	acc. to Germanischer Lloyd (2003)

# DALI Configurator

The DALI Configurator allows easy commissioning of a DALI network via 753-647 DALI Multi-Master Module. The configurator is available as stand-alone Windows application or for use with WAGO-I/O-CHECK software. It provides the following functions: easy commissioning, configuration, service, support and maintenance of a DALI network. Comprehensive backup & restore features, as well as offline configuration option for the entire DALI network (including ECGs and sensors) are available.

**Features:**

- Stand-alone software or for use with WAGO-I/O-CHECK
- Commissioning functions:
  - Addressing
  - Formation of scenes and groups
  - Control gear configuration
  - Offline configuration option
- Service, support and maintenance functions:
  - Backup & restore
  - Status messages from defective ECGs/lamps
  - Identification of double addresses
  - Operating hours display
- Windows-conform user interface:
  - Multiple selection for time-optimized configuration
  - Displays network in a clear tree structure
  - Supports different commissioning workflows

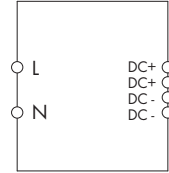


DALI Configurator is available as part of WAGO-I/O-CHECK (Version 3.4.1.9 and higher) or as a stand-alone application ([www.wago.com](http://www.wago.com)).



## Power Supply

for 753-647 DALI Multi-Master Module



The 787-1007 Primary Switch Mode Power Supply is specially designed to supply the 753-647 DALI Multi-Master Module. The 787-1007 features a 54mm-wide DIN-rail mount enclosure with input voltage range of 85 to 264VAC (120 - 373VAC). The power supply provides an output voltage of 18VDC and a maximum output current of 1100mA – enough to supply up to five parallel modules. The maximum current per DALI line is limited to 200mA in each DALI Multi-Master Module.

- Supplies up to five 753-647 DALI Multi-Master Modules\*
- Prepared for class II equipment
- Natural convection cooling when horizontally mounted
- Stage profile, ideal for distribution boards or distribution boxes

## Technical Data

## Input:

Nominal input voltage $V_{i \text{ nom}}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 373 VDC
Frequency	44 ... 66 Hz; 0 Hz
Input current $I_i$	0.6 A at 110 VAC / 0.4 A at 230 VAC
Inrush current	< 30 A, NTC
Mains failure hold-up time	> 10 ms at 110 VAC / > 80 ms at 230 VAC

## Output:

Nominal output voltage $V_{o \text{ nom}}$	18 VDC
Output current $I_o$	1.1 A at 18 VDC max. 0.8 A (18 VDC) in any mounting position
Factory preset	18 VDC
Adjustment accuracy	2 %
Residual ripple	< 150 mV (peak-peak)
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operational indication	LED green ( $V_a$ )

## Efficiency / power losses:

Efficiency	80 % typ.
Power loss $P_V$	3 W (no load) / 6 W (rated load)

## Fuse protection:

Internal fuse	2 AT
External fuse	Wire breaking 10 A, 16 A, Characteristic B, C An external DC fuse is required for the DC input voltage

\* **Note:** The 787-1007 Power Supply must be operated in a DALI network with interconnected 753-647 DALI Multi-Master Module. Otherwise the connected DALI devices will be destroyed.

## Description

Primary Switch Mode Power Supply,  
18 VDC / 1.1A

## Item No.

787-1007

Pack.  
Unit

1

## Technical Data

## Environmental requirements:

Ambient operating temperature	-25 °C ... +55 °C
Storage temperature	-25 °C ... +80 °C
Rel. humidity	30 % ... 85 % (no condensation)
Degree of pollution	2 (acc. to EN 50178)
Climatic category	3K3 (acc. to EN 60721)

## Safety and protection:

Enclosure	Plastic, light gray, Flammability class V0 acc. to UL94
Test voltage pri. - sec.	4.2 kV DC
Protection class	Prepared for class II equipment
Degree of protection	IP20 (acc. to EN 60529)
No-load proof	yes
Feedback voltage	max. 20 VDC
Short circuit protection	yes
MTBF	500000 h

## Connection and type of mounting:

Wire connection	Input/Output: WAGO Series 740
Cross sections	Input/Output: 0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 12
Stripped lengths	Input/Output: 6 ... 7 mm / 0.24 ... 0.28 in
Type of mounting	DIN-rail mount (EN 60715)

## Dimensions and weight:

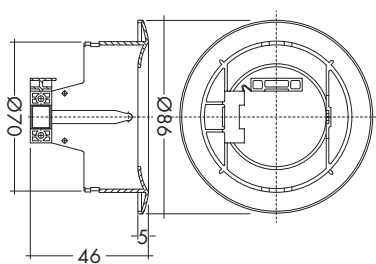
Dimensions (mm) W x H x L	54 x 89 x 59
	Length: 55 mm, from upper-edge of DIN 35 rail
Weight	170 g

## Standards and approvals:

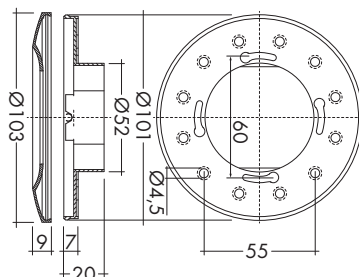
Standards/Specifications	EN 60950 (SELV), EN 61204-3, GL (Environmental Category A, EMC 2), UL 60950**, UL 508** (** pending)
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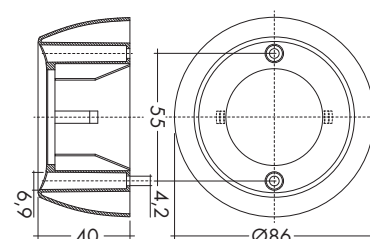
Ceiling Installation



Box Installation



Surface Mounting



The WAGO DALI MSensor 02 is used with WAGO DALI Modules (753-647 DALI Multi-Master Module or 750-641 DALI/DSI Module).

It has been designed for the following principal applications:

- Individual offices
- Open-plan offices
- Training/presentation rooms
- Corridors, passageways and garages

The Multi-Sensor features both motion and light detection. As an option, the sensor can be operated via remote control (from Tridonic). The sensor enables both motion detection and daylight-dependent lighting control; both of which can also be deactivated.

Addressing is performed via rotary switch or WAGO DALI Configurator.

Parameters can be adjusted individually via WAGO DALI Configurator.

Power supply is provided via DALI line.

The number of sensors, which can be operated on a DALI line, depends on the total power consumption of the specific devices and address range for the actuators and sensors. Due to the capacity of the DALI bus, a maximum of 16 DALI sensor couplers must be operated on the DALI Multi-Master Module (753-647).

Installation notes:

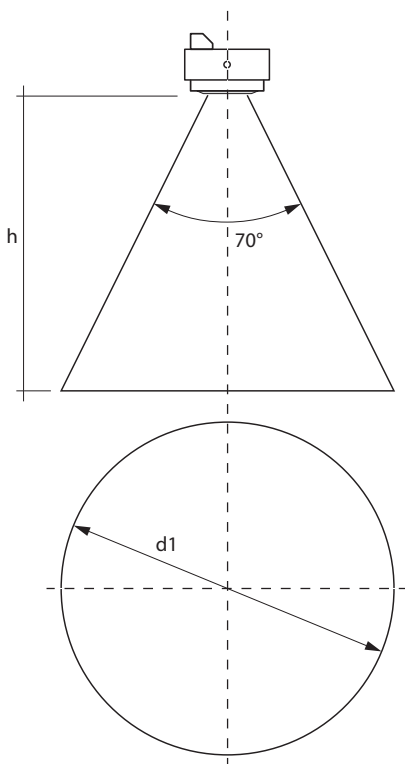
- The DALI MSensor 02 is supplied directly via DALI line.
- DALI is not SELV (Safety Extra Low Voltage). The installation instructions for mains voltage therefore apply.
- The detection range of the sensor must be within the lighting area of the controlled luminaires.
- The detection ranges of the sensors must not overlap as this may influence the lighting control.
- When installed at a height other than the recommended installation height (2.5 m), the presence and light sensor might show different characteristics. When mounted at a higher level, its sensitivity is reduced. If mounted at a lower level, its range is diminished.
- Heaters, fans, printers and copiers located in the detection range may cause incorrect presence detection.

Description	DALI MSensor 02 5DPI 41rc (Ceiling Installation)	DALI MSensor 02 5DPI 41w (Box Installation)	DALI MSensor 02 5DPI 41rs (Surface Mounting)
Item Number	2851-8301	2851-8302	2851-8303
<b>Technical Data</b>			
Ø of detection range, mounted at a height of 2.5 m	5 m		
Extension of the detection range	2 m (if mounted at a height of 2.5 m and swivelled through 15°)	2 m (if mounted at a height of 2.5 m and swivelled through 15°)	-
Swivel design	yes	yes	no
Swivel range	± 15°	± 15°	0°
Detection angle	360°		
Light measurement at the sensor head	10 ... 650 lx (The measured value at the sensor head corresponds to approx. 15 to 2,000 lux on the surface measured.)		
Remote control range	5 m		

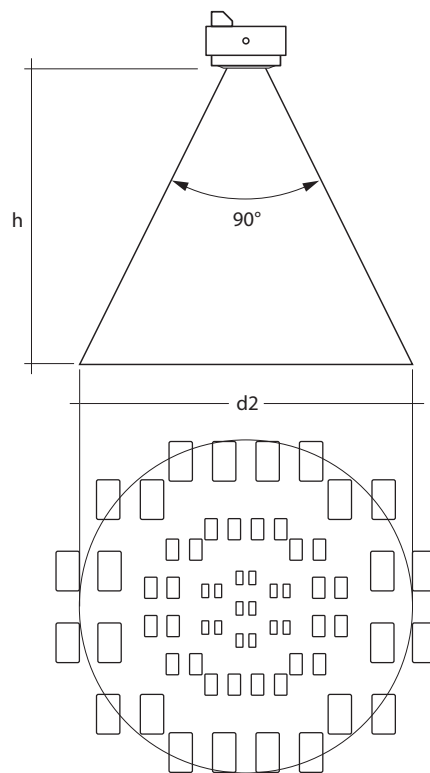
Technical Data	
Power supply	via DALI line
Current consumption	6 mA from DALI line
Operating temperature	0 °C ... +50 °C
Storage temperature	-25 °C ... +55 °C
Degree of protection	IP20
Wire type and cross-section	Solid or fine-stranded wires ranging from 0.5 mm <sup>2</sup> to 1.5 mm <sup>2</sup> (AWG 20-16)

Technical Data	
<b>General settings:</b>	
Motion detection	enabled, on/off
Lighting control	enabled
Setpoint, lighting control	150 lx
Power-on setting	no action
Bright-out timeout	10 min.
Bright-out threshold	150 %
Control speed	4
Switch-on value	auto (calculated)
Rotary switch	0, broadcast
<b>Motion detector settings:</b>	
Fade-in time	< 0.7 s
Presence value	regulated
Run-on time	20 min.
Fade time	5.6 s
Absence value	3 %
Switch-off delay	10 min.
Fade-off time	5.6 s
Manual-off	10 min.

**Light detection**



**Motion detection**



h *	d1	d2
1,7m	2,4m	3,4m
2,0m	2,8m	4,0m
2,3m	3,2m	4,6m
2,5m	3,5m	5,0m
2,7m	3,8m	5,4m
3,0m	4,2m	6,0m
3,5m	4,9m	7,0m
4,0m	5,6m	8,0m

\* The recommended maximum room height for office applications is 3 m and for corridor applications 4 m, for example.

Calculation of the diameter:  
 $d = 2 \times \tan(0.5 \times \alpha) \times h$





