DALI-2 HF Sensor

HCD405D2/H
DALI-2 command

HYTRONIK ®

DALI 2 CE UK CA RED CB

Product Description

HCD405D2/H built-in microwave sensor has been certified as DALI-2 input device with daylight sensor instance and HF motion sensor instance. It is a high-bay motion sensor, with capability of 12m installation height. HCD405D2/H is suitable for any typical indoor applications such as office, classroom, car park, warehouse and other commercial/industrial areas.

Features

- DALI-2 multi-sensor input device
- Compliant to IEC62386_101, 103, 303, 304
- Robust HF antenna design against wireless interference
- High-bay (up to 12m height)
- 5-Year Warranty

Technical Data

Input Characteristics

Model No.	HCD405D2/H
Input	220-240VAC 50/60Hz
Current Consumption	Max. 2mA from DALI Bus
Power Consumption	<1W
Output	DALI-2 Command
Warming-up	20s

Safety and EMC

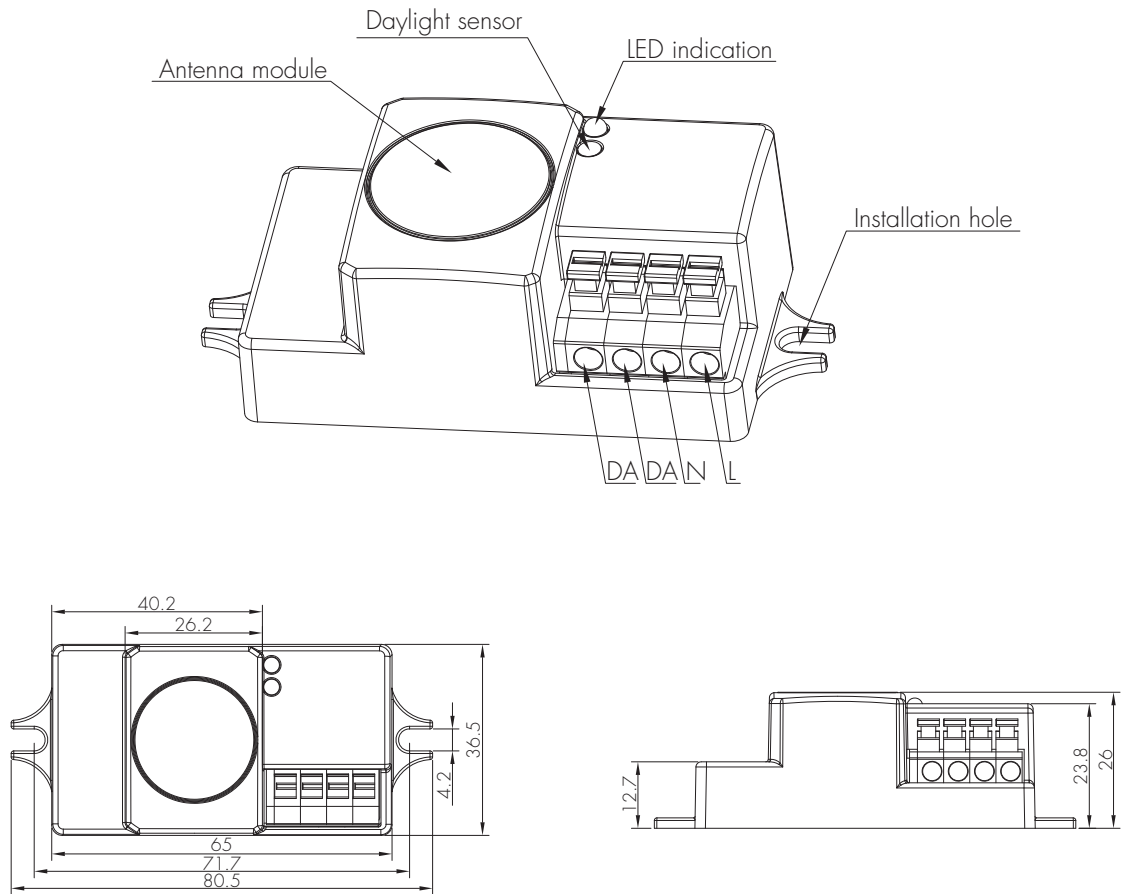| EMC standard (EMC)	EN55015, EN61547, EN61000-3-2, EN61000-3-3
Safety standard (LVD)	EN61347-1/-2-11
Radio Equipment (RED)	EN300440, EN301489-1/-3, EN50663
Certification	CB, CE , EMC, RED, RCM
Compliance	IEC62386_101, 103, 303, 304

Sensor Data

| Model No.	HCD405D2/H
Sensor principle	High Frequency (microwave)
Operation frequency	5.8GHz +/- 75MHz
Transmission power	<0.5mW
Detection range(Max.)	Max installation height: 12m (human) Max detection range：11m (diameter)
Detection angle	$30° \sim 150°$

Environment

Operation temperature	Ta: -20°C ~ +70°C
Case temperature (Max.)	Tc: +75°C
Storage temperature	-40°C ~ 70°C
Relative humidity	20 ~ 90%
IP rating	IP20
Insulation	Class II

Mechanical Structure & Dimensions

Daylight sensor

Antenna module

LED indication

Installation hole

DA DA N L

40.2
26.2
36.5
4.2
65
71.7
80.5

12.7
23.8
26

Note: We recommend the mounting distance between sensor to sensor should be more than 2m to prevent sensors from false-triggering.
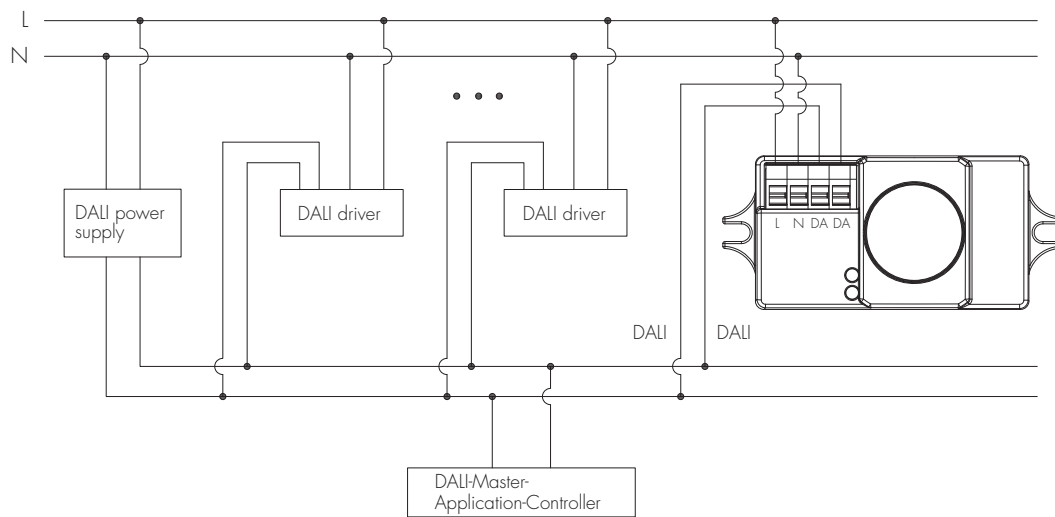
Wire Preparation

0.5~1.5mm

8mm
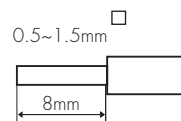
To make or release the wire from the terminal, use a screwdriver to push down the button.

1. 200 metres (total) max. for 1mm² CSA (Ta = 50℃)
2. 300 metres (total) max. for 1.5mm² CSA (Ta = 50℃)

Wiring Diagram

Note: HCD405D2/H has been used as DALI-2 input device to only report DALI instance(light sensor instance and motion sensor instance) to DALI-2 application controller, who is the "main brain" to process the data communication between input devices and the control gear and assign different function.

Detection Pattern

Ceiling mounted detection pattern (m)
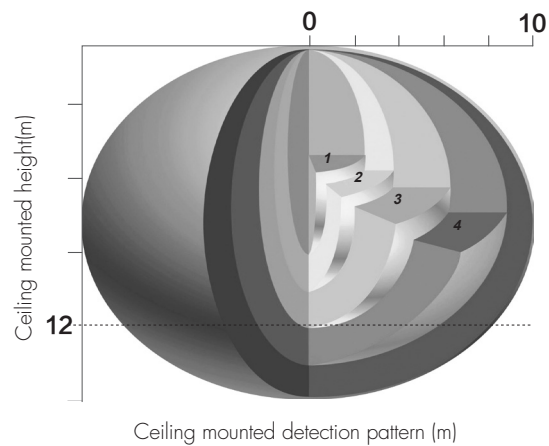
Height (m)	Sensitivity				
	100%	75%	50%	30%	10%
	Diameter (Ø:m)				
12	11	9	6	none	none
8	12	10	6	2	none
5	13	11	7	5	2
3	14	12	8	6	5

Sensitivity Adjustment

Setting the sensitivity can be achieved through the following command combination:

1. **"ENABLE WRITE MEMORY":** Enable BANK write function.
2. **"DTR1:DRT0=0x1:0x2, WRITE MEMORY LOCATION =0x55":** Set the Lock byte of BANK1 to 0x55. Here a total of 2 instructions are used. 0x1(binary) = 1(decimal), 0x2(binary) = 2(decimal), 0x55 (binary) = 85(decimal).
3. **"DTR1:DRT0=0x1:0x11, WRITE MEMORY LOCATION = sensing gear value":** set the sensitivity of BANK1 to "sensing gear value". 0x11(binary) = 17(decimal). Sensing gear value can be selected from 0x1 to 0x4, 0x1 is the weakest, 0x4 is the strongest.

*Before writing to the bank, two locks need to be unlocked to write normally.
• The first lock is the big lock for all banks. Unlock it with the command **"ENABLE WRITE MEMORY"**.
• The second lock is that each bank has its own Lock byte. When the written value is 0x55, the small lock is unlocked.

*BANK is a memory space freely defined by the manufacturer. Writing a value after unlocking has two steps:
• Specify the write address, and pass in the address through DTR0 and DTR1.
• Pass in the written value with the write command **"WRITE MEMORY LOCATION"**. This command will return the written value after the write is successful. Write fails without return value.

The following is an example of an instruction to set the sensitivity to 100%.

Type	Addr	Command	Data	Delay	Answer
DALI24	BCast	ENABLE WRITE MEMORY		100...	
DALI24	BCast	ENABLE WRITE MEMORY		100...	
DALI24		DTR1:DTRO	1:2	100...	
DALI24		WRITE MEMORY LOCATION	85	100...	85
DALI24		DTR1:DTRO	1:17	100...	
DALI24		WRITE MEMORY LOCATION	4	100...	4

Additional Information / Documents

1. Regarding precautions for microwave sensor installation and operation, please kindly refer to
   www.hytronik.com/download ->knowledge ->Microwave Sensors - Precautions for Product Installation and Operation

2. Regarding Hytronik standard guarantee policy, please refer to
   www.hytronik.com/download ->knowledge ->Hytronik Standard Guarantee Policy