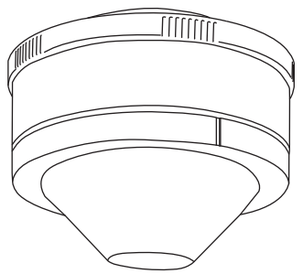
ON-MRD-734SZ series

SmartDALI OS-NET Sensor

INSTALLATION INSTRUCTIONS



w/Lens A/B/C

Zhaga base
(Zhaga Book 18 socket)

*More lens options are available for this sensor.
Please refer to the Lens Datasheet for more details.

APPLICABLE REMOTE (order separately)

Model	Description	Remarks
SRP-281	OS-NET Remote Programmer	Full functionality
URP-100	User Remote	Manual ON/OFF/DIM TIME/LUX setting

LENS OPTIONS

Different lenses can be applied to provide specific coverage at different mounting heights. Please refer to the lens datasheet attached for more details.

⚠ WARNING & CAUTION

- **Do NOT touch the square window of infrared sensor under the lens assembly.**

OVERVIEW

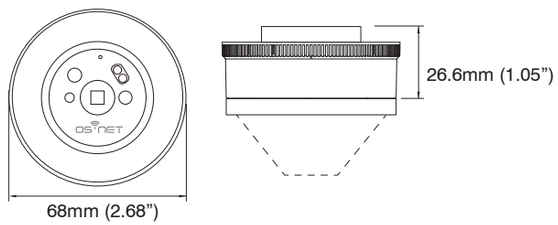
The ON-MRD-734SZ is a Zhaga Book 18 compatible OS-NET Sensor (ONS) packed with all functionalities, including occupancy/vacancy sensing, daylight harvesting, bi-level StepDIM or continuous SmartDIM control, and state-of-the-art wireless mesh networking capability required to enable smart lighting control.

Through an easy twist and lock connection with standard Zhaga Book 18 receptacle (type A) on the luminaire, the sensor not only controls the integrated luminaire in the programmed scheme by sensing the motion of occupant/vehicle and ambient light level, but also functions as a network node to broadcast wireless commands for group control. Network linking, grouping and all control settings; including group assignment, control scheme, delay time, ambient light level threshold, day/night sync, ramp up/fade down speed, sensitivity, burn-in duration…etc. can be easily and intuitively done via a 2-way handheld remote programmer (SRP-281) from the ground.

IP66 and IK08 protections allow the sensor to be used for high bay, parking lots, pedestrian areas, public parks, outdoor display and playgrounds. Multiple lens options offer different detection coverage to detect the motions with various orientations. Adjustable mask can be applied on the lens to avoid detecting the unwanted motions. By connecting the ON-MRD-734SZ to a DALI driver* with AUX, an energy efficient IoT-based smart lighting control can be effortlessly achieved.

*References including Signify SR, OSRAM DEXAL, and other D4i drivers certified by DiiA.

DIMENSIONS



APPLICATION NOTES

1. Actual radio range may differ depending on environmental conditions. Always do a site survey to understand existing Wi-Fi usage.
2. Ensure to place the sensor at least at 1.5m (5 ft.) away from any Wi-Fi router as they can mask or delay signals.
3. The sensor is more sensitive to the movements “crossing” the detection zones than “toward” or “away” the sensor unit. If possible, avoid placing the sensor in line with occupant path.

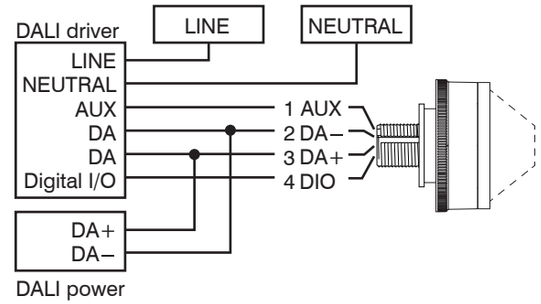
4. The closer the movement is to the sensor, the easier for sensor to pick up. The higher the sensor is, the larger movement is required.
5. Ensure to place the sensor at least at 1.5m (5 ft.) away from air supply ducts as strong wind may cause false detection.
6. To obtain optimal wireless communication range, avoid enveloping the sensor with a metallic enclosure.

SPECIFICATIONS

Power supply	AUX (+24V)
Power consumption	<50 mA
Infrared sensor	Omni-directional pyroelectric
Photo sensor	Digital ambient light sensor
Control protocol	DALI Broadcast
Wireless protocol	Modified Zigbee Light Link (ZLL)
Radio frequency	2,405~2,475 MHz
Radio range	*15/100 m @indoor/outdoor, open space
Digital output	16V, 5mA max @pin #4
Detectable speed	0.15 ~ 3 m/sec. (0.5~10 ft./sec.)
Mounting height	Subject to the lens applied
Detection range	Subject to the lens type and mounting height
Remote range	10 m (33 ft) typical, indoor, no backlight
Op. humidity	Max. 95% RH
Op. temperature	-40°C~70°C (-40°F~158°F)
Dimensions	Ø68 x H29mm (Ø2.68”x H1.14”)

*Actual radio range may differ depending on environmental conditions.

WIRING DIAGRAM

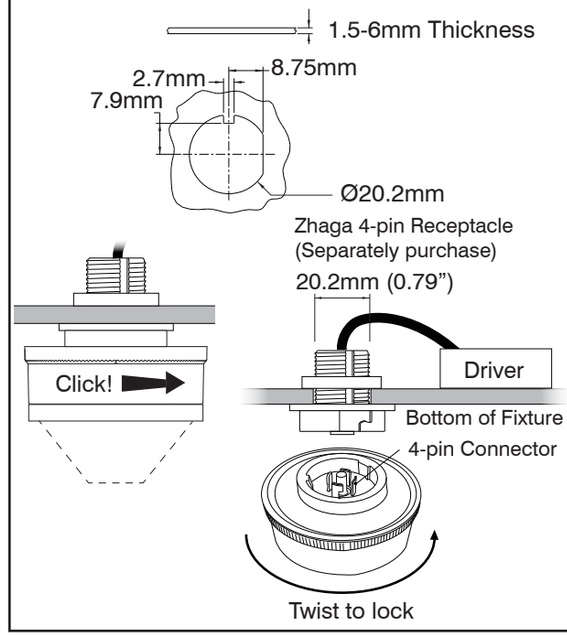


Pin definition

No.	Definition
1	AUX power (+24V)
2*	DALI bus (DA-, GND for AUX power)
3*	DALI bus (DA+)
4	Digital I/O (Occ. status output)

* Follow Zhaga Book 18.

FIXTURE INTEGRATION



www.irtec.com P/N: 058-73401-005 Printed in Taiwan

SETTING

All sensor settings can be configured, in individual or group basis, by SRP-281 OS-NET Remote Programmer. Following table highlights the setting items and options available with ON-MRD-734SZ. For detailed setting operation, please refer to the OS-NET Programming Guide available for download from www.irtec.com.

Programming Guide

Settings	Description	Options	Default
INDIV-SET	To setup an individual device		
GROUP-SET	To setup all devices of the group with same settings		
CONTROL	Control schemes available for OS-NET sensor.	ON/OFF, OSO, OSLA, OSLATO, DSVM, DSC, VSC, OSB, OFF	OSLATO
HIGH DIM	High dim is the output level set to control the light during occupancy, or when ambient light is lower than the threshold if daylight sensing scheme is selected.	50/55/60/65/70/80/90/100%/SmartDIM	100%
LOW DIM/ SmartDIM	Low dim is the output level set to dim the light when space is vacant for bi-level control. Low dim setting will become SmartDIM bar if SmartDIM control is selected.	0/5/10/15/20/25/30/40%	30%
DAY/NIGHT SYNC	Setting the master OS-NET sensor in charge of sensing the ambient light level and reporting the day/night status to other sensors of the group.	PRIMARY/SECONDARY/DISABLED	DISABLED
AMBIENT LUX	Thresholds of ambient light level for OS-NET sensor to execute the control.	10/20/40/60/80/200/400/600/1000/2000 LUX DISABLED/CURRENT	200 LUX
DELAY	Delay time that sensor will turn off or fade down the light.	30 sec./1/3/5/10/15/20/30/60 min.	10 min.
TIME OFF	Delay time that sensor will keep the light at low dim level after the OFF delay time elapsed.	10/30 sec./3/5/10/15/20/30/45/60 min.	10 min.
RAMP UP	Speed of lighting output increase.	INSTANT/SOFT/SLOW	INSTANT
FADE DOWN	Speed of lighting output decrease.	INSTANT/SOFT/SLOW	SOFT
VM-TB	Time duration BEFORE Virtual Midnight. Only available if DSVM is selected.	0.5/1/1.5/2/2.5/3/3.5/4/4.5/5/5.5/6 hour	2.5 hours
VM-TA	Time duration AFTER Virtual Midnight. Only available if DSVM is selected.	0.5/1/1.5/2/2.5/3/3.5/4/4.5/5/5.5/6 hour	4 hours
SENSITIVITY	Sensitivity of occupancy sensor. To disable the occupancy sensing capability, select OFF.	HIGH/NORMAL/LOW/OFF	HIGH
LED INDICATOR	Enable or disable the LED indicator of the sensor.	ENABLED/DISABLED	ENABLED
DAY O'RIDE	Enable/disable daylight override control. Sensor will shut off the light when ambient lux exceeds the override level set below. Only available if AMBIENT LUX is enabled.	ENABLED/DISABLED	ENABLED
O'RIDE LEVEL	The ambient lux level to enable daylight override. Only available if DAY O'RIDE is enabled.	HIGH(~1.8X)/NORMAL(~1.5X)/LOW(~1.3X)	NORMAL
MIN. DIM	The lowest dim level applicable on the sensor.	12/15%/DISABLED	DISABLED

SETTING ACKNOWLEDGEMENT

The sensor will acknowledge setting success or failure with different indications by device LED or connected lighting.

Indication	Acknowledgement	Remarks
Device LED fast blinking in GREEN and BLUE.	The device is scanning and linking to the network.	The fast blinking (on-off per 0.2 second) only appears during network linking.
Device LED blinks twice every 2-second in GREEN or BLUE.	The sensor detects occupant's motion.	GREEN means the device is network linked. BLUE means the device is unlinked.
Device LED blinks twice every 2-second for 5 minutes, and then 15-second after power applied.	The device is set with daylight sensing control. (DSVM or DSC)	GREEN means the device is network linked. BLUE means the device is unlinked.
Device short beeps twice.	Receiving a single setting or control command.	
Device beeps one long and two short. The connected lights flash twice.	1. Multiple setting data UPLOAD successful. 2. GROUP LINK successful.	
The connected lights flash twice.	1. Factory default setting resumed. 2. SmartDIM setting completed.	

CONTROL MODE

The ON-MRD-734SZ series can be programmed to control the connected lighting in one of the modes as below.

Scheme	Description
ON/OFF	This is a typical **occupancy sensing control** scheme. Lighting will be inhibited when the ambient light level is higher than the set threshold, regardless of occupancy or vacancy. When the ambient light level is lower than the set threshold, the controlled light will be automatically turned on once the sensor detects the presence of occupant, and turned off after the delay time elapsed. **NOTE:** This scheme can be used with **dimmable** or **non-dimmable** lighting, but not for HID lighting.
OSO	This is an **occupancy sensing control** scheme can be applied in areas that require 24-hour lighting. When space is vacant, the lights will be maintained at Low Dim level. Whenever space is occupied, lighting output will be increased to High Dim level or continuously regulated to maintain within the pre-set range by SmartDIM control. **NOTE:** Do **NOT** use this scheme to control **non-dimmable** lighting.
OSLA	This is an **occupancy sensing control** scheme can be applied in spaces that require automatic lighting when the ambient light level is lower than the set threshold. Lighting will be inhibited if the ambient light level is higher than the set threshold, regardless of occupancy or vacancy. When the ambient light level is lower than the set threshold, the sensor will automatically control the light at Low Dim level. When sensor detects the presence of an occupant, lighting output will be increased to the High Dim level or continuously regulated within the pre-set range by SmartDIM control. After the delay time elapsed, lighting output will be reduced to Low Dim level or shut off if the ambient light is higher than the set threshold. **NOTE:** Do **NOT** use this scheme to control **non-dimmable** lighting.
OSLATO	This is an **occupancy sensing control** scheme can be applied in spaces that require maintaining Low Dim lighting for a period of time before shutting off. Lighting will be inhibited if the ambient light level is higher than the set threshold, regardless of occupancy or vacancy. When the ambient light level is lower than the set threshold, and any sensor detects the presence of occupant, lighting output will be increased to High Dim level or continuously regulated to maintain overall lighting level within the pre-set range by SmartDIM control. After the delay time elapsed, lighting output will be reduced to Low Dim level for a period of TIME OFF delay before shut off. **NOTE:** This scheme requires **dimmable** lighting to enable dimming control. If lighting is **non-dimmable**, there will be no dim control and the delay time will be extended with the TIME OFF (TO) delay.
DSVM	This is a **daylight sensing control** scheme can be applied in spaces that require automatically dimming the lighting output to a low level between a certain time before and after virtual midnight. Lighting will be inhibited if the ambient light level is higher than the set threshold. When the ambient light level is lower than the set threshold, the sensor will turn the light to High Dim level or continuously regulate the output to maintain overall lighting level within the pre-set range by SmartDIM control. Lighting output will be reduced to Low Dim level from a certain time before virtual midnight to a certain time after. **NOTE:** This scheme requires **dimmable** lighting to enable dimming control. If lighting is **non-dimmable**, all lights will remain on whenever ambient light level is lower than the set threshold.
DSC	This is a **daylight sensing control** scheme can be applied in spaces that require automatic lighting whenever the ambient light is lower than the set threshold. The sensor will automatically turn on the light to High Dim level or continuously regulate the output to maintain overall lighting level within the pre-set range by SmartDIM control when the ambient light level is lower than the set threshold, and automatically turn off the light when the ambient light level is higher than the set threshold. **NOTE:** This scheme requires **dimmable** lighting to enable dimming control. If lighting is **non-dimmable**, all lights will remain on whenever ambient light level is lower than the threshold.
VSC	This is a **vacancy sensing control** scheme can be applied in spaces that require users to manually turn on the light, and have the sensor turn off the light automatically. The occupant would have to press the OS-NET Button to turn on the lighting group assigned. The sensor will control the lights at High Dim level or continuously regulate the output to maintain overall lighting level within the pre-set range by SmartDIM control. The sensor will control the connected lighting as per OSLATO scheme. **NOTE:** This scheme requires **dimmable** lighting to enable dimming control. If lighting is **non-dimmable**, there will be no dim control and the delay time will be extended with the TIME OFF (TO) delay.
OSB	This is an advanced **occupancy sensing control** scheme can be applied in open offices to provide background light level before the area of entire lighting group is vacant. Lighting will be inhibited if the ambient light level is higher than the set threshold, regardless of occupancy or vacancy. When the ambient light level is lower than the set threshold and the first occupant is detected by a grouped sensor, the output of sensor connected light will be increased to High Dim level or continuously regulated within the pre-set range by SmartDIM control during occupancy, and the unoccupied areas of entire lighting group will brighten up to Low Dim level as background light. The entire lighting group turns off after the last person leaves and delay time elapsed. **NOTE:** Do **NOT** use this scheme to control **non-dimmable** lighting.
OFF	This is a **manual control** scheme can be used when you need the light to be off for a certain period of time. Once this scheme is set, all OS-NET controlled lighting will remain off until another scheme is selected.