

# Radiar ARD4

Radiar ARD4 is a BLE5.2 controllable, DALI room controller. It operates on 100-277 VAC input voltage range and can be connected to a maximum of 4 DALI LED drivers. It can also be configured in 0-10V mode to control one or two 0-10V controllable LED drivers, or a tunable white LED driver with two 0-10V control interfaces. This device comes with a 3.3VDC input channel can be used to communicate with an external sensor.



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## 1. Features

- DALI supporting up to 4 slave devices
- Optional analog 2 channel (0-10V) independent output to control intensity and CCT
- BLE5.2 based non-flooding intelligent communication
- Input for external AC relay
- Zero downtime Over-the-Air (OTA) firmware updates
- 3.3VDC digital input to communicate with sensors

## 2. Specifications

Electrical	Min.	Typ.	Max.	Unit	Remarks
Input Voltage	100		277	Vac	Rated Input voltage
Input Current		10	30	mA	@ Max RF transmitting
External Relay Input			0.8	A	Input for AC relay @230Vac
Power Consumption			8.3	W	Active Power
Input Frequency	50	-	60	Hz	
Protection Class		Built-in Class II			Suitable for class I and II luminaries
Inrush Current		20		A	
Surge Transient Protection			2	kV	@Line to Line: Bi-Wave
Leakage Current			0.5	mA	@Rated input voltage
ESD			±8	kV	Air: ±8kV, Contact: ± 4kV
Sensor Interface	0-3.3V digital input /UART				
Sensor Voltage Output	3.0		3.3	V	Max current output 30mA
Connection Distance (Device to Device by Mesh)		30		m	In an open office environment (Line of Sight)

DAI	Min.	Typ.	Max.	Unit	Remarks
Number of Slaves			4	pcs	
Bus Supply Voltage	12	16	20	V	
Bus Supply Current			35	mA	
Protocol	101 / 103 / 207 / 209				DALI2.0

Analog Dimming Output	Min.	Typ.	Max.	Unit	Remarks
Dimming Output1	0		10	V	Max output tolerance $\pm 0.5V$
Dimming Output2	0		10	V	Max output tolerance $\pm 0.5V$
Output Current			15	mA	0-10V source current, For dimming max output
Dimming Range	0		100	%	
Dimming Resolution		7		bit	100 steps
Dimming Curve		Linear / Logarithmic			Logarithmic by default
Cut Off Voltage		0		V	Programmable

Bluetooth	Min.	Typ.	Max.	Unit	Remarks
Frequency Range	2402		2480	MHz	
TX Power			7.38	dBm	With 130mm wire antenna
RX sensitivity		-92		dBm	

Environmental	Min.	Typ.	Max.	Unit	Remarks
Ambient Temperature	-20		50	$^{\circ}C$	
Case Temperature			70	$^{\circ}C$	
Relative Humidity	20		85	%	

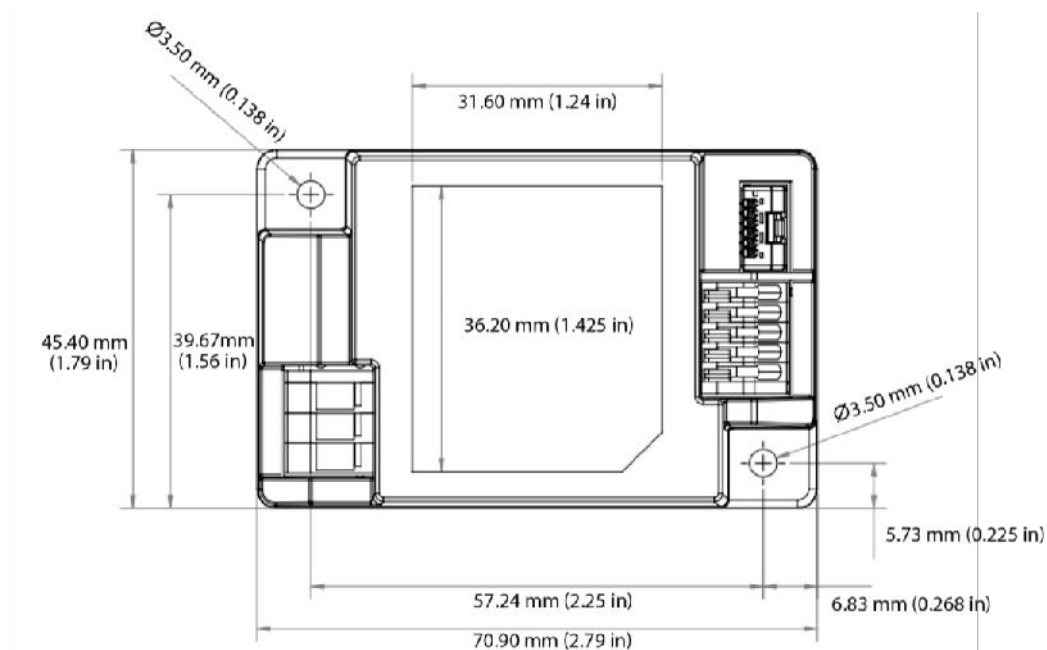
Mechanical	Min.	Typ.	Max.	Unit	Remarks
Dimensions		70.9×45.4×26.1		mm	L x W x H
Dimensions		2.8×1.8×1.0		inch	L x W x H
Net Weight		50.0		g	In gram
Net Weight		1.76		oz	In ounce

Certifications	Details
CE	Article 3, RED 2014/53/EU EMC test standards: ETSI EN 301 489-1 V2.2.3 (2019-11) ETSI EN 301 489-17 V3.2.4 (2020-09) EN 55032: 2015/A11: 2020 EN 55035: 2017+A11: 2020 Radio test standard: ETSI EN 300 328 V2.2.2 (2019-07) Health test standard: EN 50663: 2017 Safety test standard: IEC 62368-1:2014+A11: 2017
RoHS 2.0	RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU
REACH	Regulation (EC) No 1907/2006 of REACH
WEEE	under the WEEE Directive: 2012/19/EU

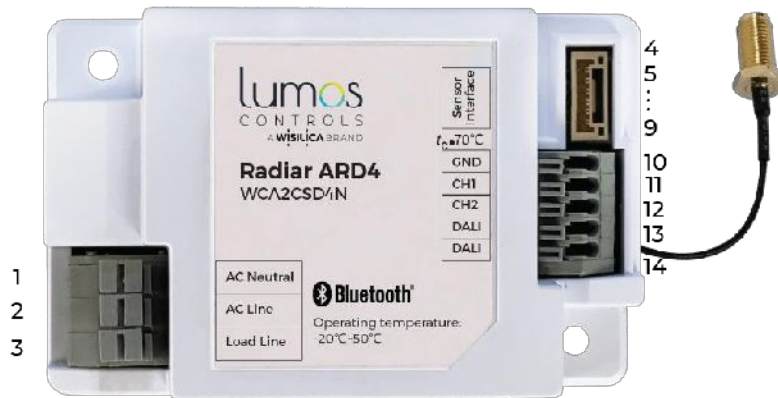
### 3. Device Dimensions

Radiar ARD4 Top View: 70.9mm x45.4mm x 26.1mm (L x W x H).

Case Material: White coloured V0 PC



## 4. Connector Description



PIN	NAME	I/O	A/D	FUNCTION
1	AC-Neutral	Input	Analog	Vac common neutral
2	AC-LINE	Input	Analog	Vac input line
3	LOAD-LINE	Output	Analog	Vac output line

PIN	NAME	I/O	A/D	FUNCTION
4	3V3	Output	-	DC 3.3V aux supply
5	GND	Output	-	DC GND
6	TX	Output	Digital (3.3V)	UART transmitter
7	RX	Input	Digital (3.3V)	UART receiver
8	Din 1 (NC)	NC	NC	No Connection
9	Din 2	Input	Digital (3.3V)	Digital sensor input

PIN	NAME	I/O	A/D	FUNCTION
10	GND	Input	-	DC GND
11	CH1	Output	Analog	0-10V Analog dimming
12	CH2	Output	Analog	0-10V Analog dimming
13	DALI	Output	Digital	DALI+
14	DALI	Output	Digital	DALI-

## 5. Antenna Information

### 130mm wire antenna

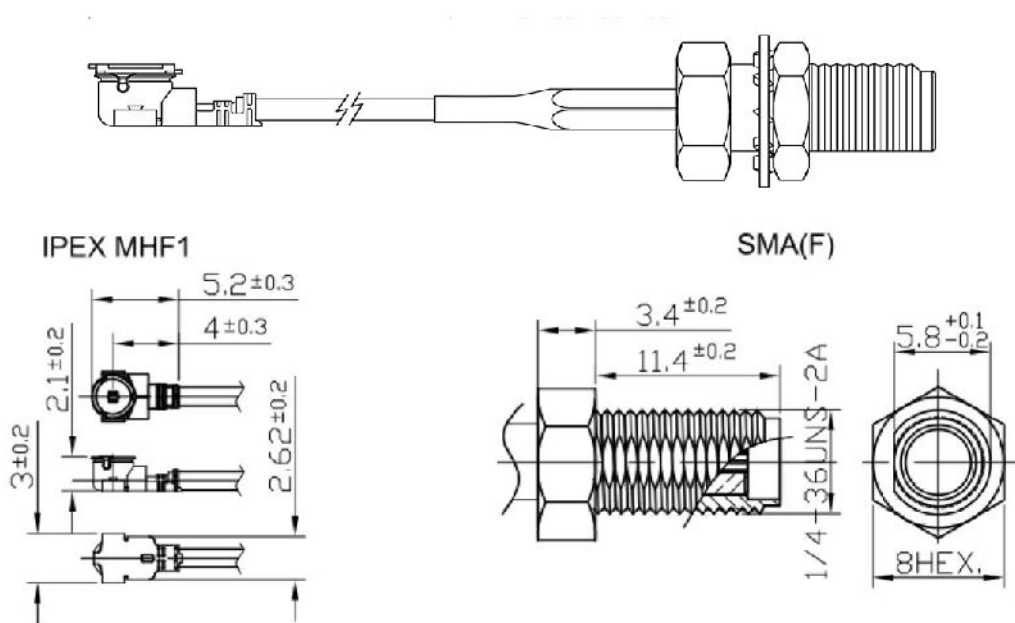


Wire antenna

Antenna Properties	
Frequency range	2.4 GHz-2.5GHz
Impedance	50 $\Omega$ Nominal
VSWR	1.92:1 Max
Return loss	-10 dB Max
Gain(peak)	2 dBi
Cable loss	0.3 dBi Max
Polarization	Linear vertical

### Connector Dimensions

All dimensions are in mm



Connector Description	
SMA connector type	Female
VSWR (0-6 GHz)	Max 1.3
Nominal Impedance	50 ± 3 Ohms
Insulation Resistance:	1000 MEGA OHM-KM Min
Conductor Resistance:	545 OHM/KM/20°C Max.
Dielectric Strength:	AC 1.0 KV/minute
Rating Temp Voltage	105°C 30V UL 1979

## 6. Antenna Installation Guideline

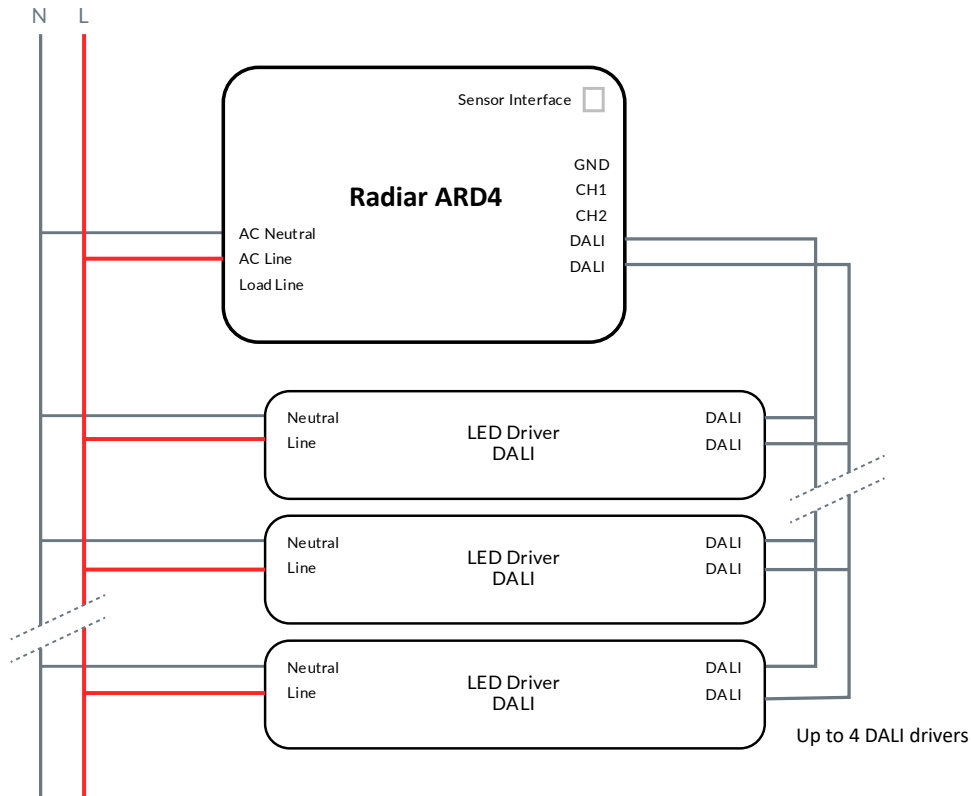
Antenna transmit and receive radio signals which are susceptible to RF obstructions and common sources of interference that can reduce throughput and range of the device to which they are connected. Follow these guidelines to ensure the best performance.

- ✓ Install the antenna vertically and mount it with the cables pointing towards the ground.
- ✓ Keep the antenna away from metal obstructions such as heating and air-conditioning ducts, large ceiling trusses, building superstructures, and major power cabling runs. If necessary, use a rigid conduit to lower the antenna away from these obstructions.
- ✓ The density of the materials used in a building's construction determines the number of walls the signal can pass through and still maintain adequate signal strength. Consider the following rule of thumb before choosing the location for your antenna.
  - Signals penetrate paper and vinyl walls with little change to signal strength.
  - Signals penetrate only one or two solid and pre-cast concrete walls without degrading signal strength.
  - Signals penetrate three or four wood block walls without degrading signal strength.
  - Signals will likely reflect off a thick metal wall and may not penetrate it at all.
- ✓ Install the antenna away from microwave devices. These products can cause signal interference because they operate in the same frequency range as the device to which your antenna is connected.

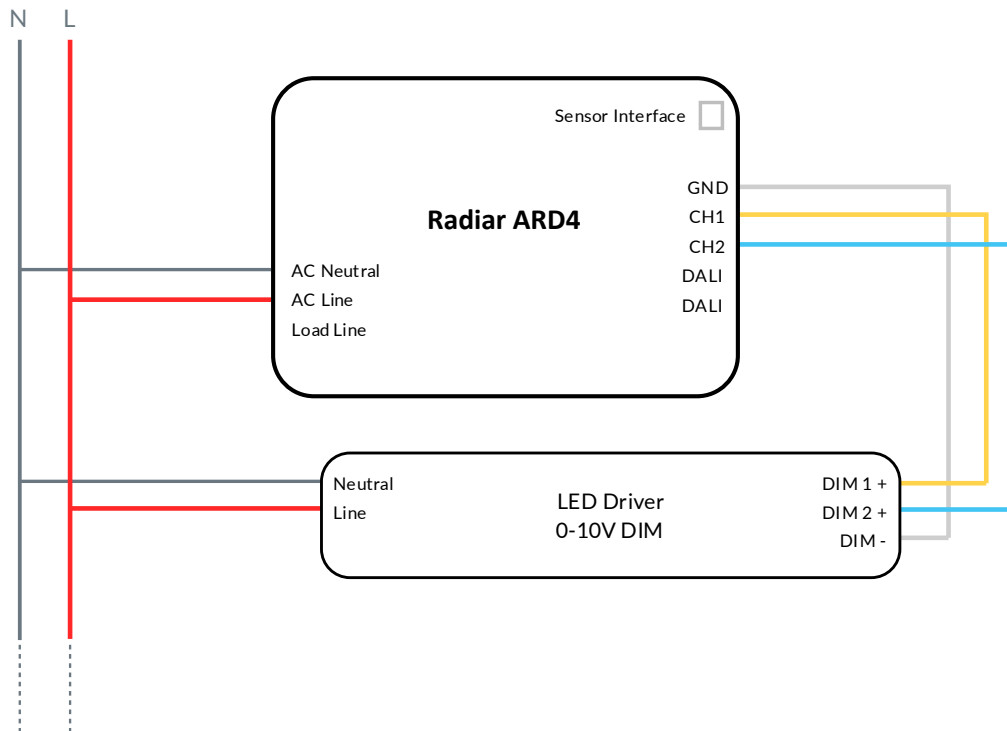


## 7. Wiring Diagram

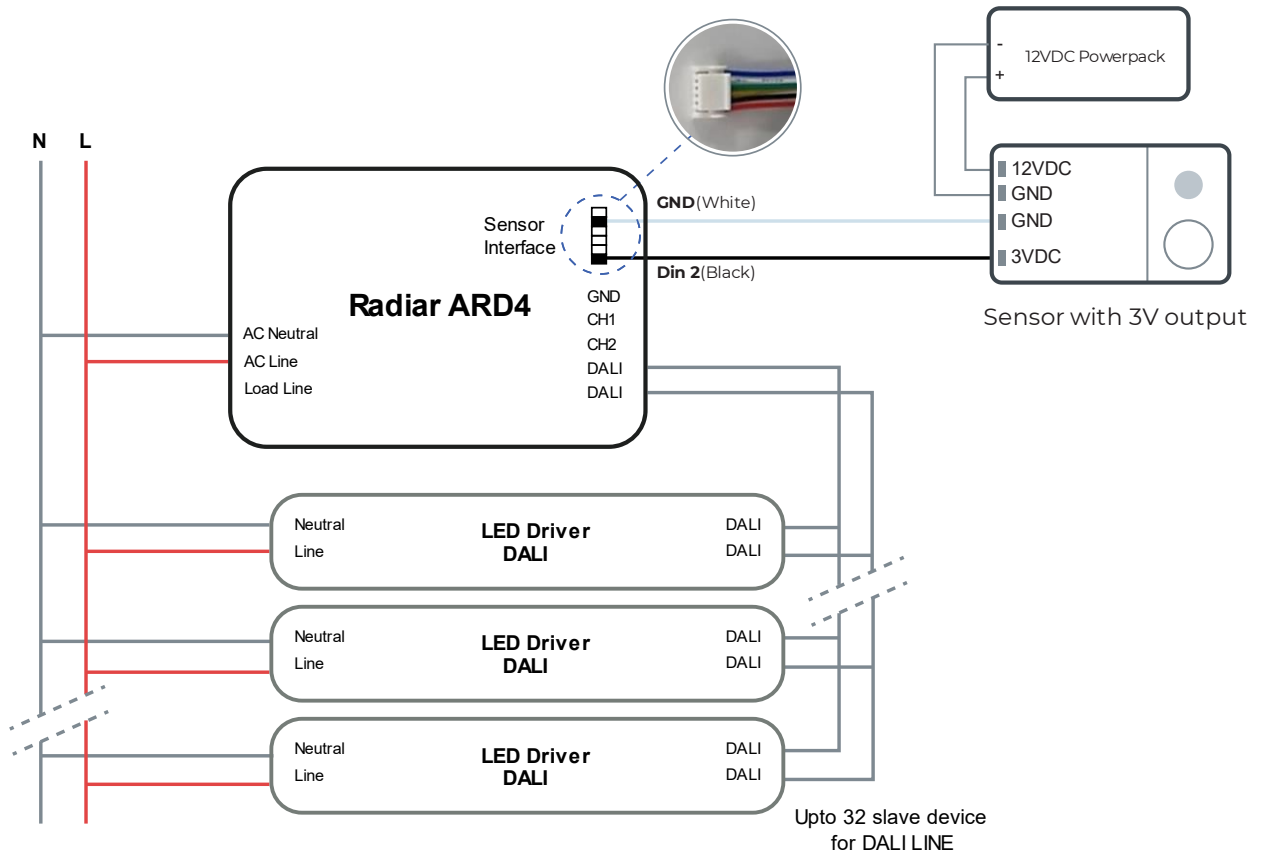
1) Connecting DALI drivers to the Radiar ARD4 controller



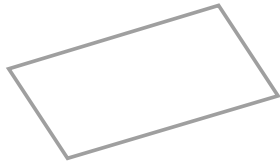
2) Connecting 0-10V drivers to the Radiar ARD4 controller (In 0-10V mode)



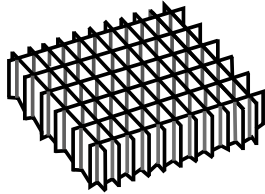
- 3) Connecting an external sensor with 0-3V output to the Radiar ARD4 controller using a Molex connector



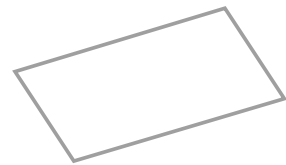
## 8. Packaging Information



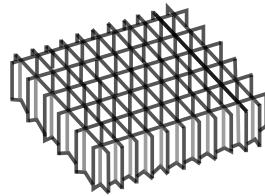
Flat card (x1)



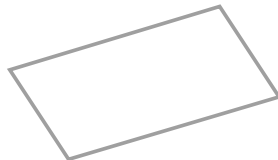
Paper card  
(Tray)



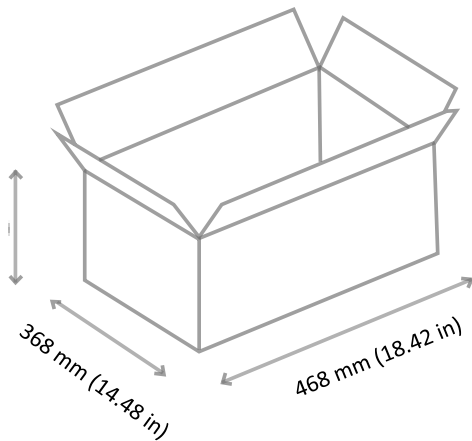
Flat card (x1)



Paper card



Flat card (x1)



Carton box (x1)

Tray / 1 box : 2 tray

Product Quantity / 1 Tray : 50 ea

Product Quantity / 1 Box : 100 ea

## 9. Warning

1. To prevent the device from any defect, please handle and store it with care.
  - Do not drop or give shock.
  - Do not store in very humid location or at extreme temperature.
  - Do not open or disassemble the product.
2. Static electricity or surge voltage may damage the components inside device, as such please observe proper anti-electrostatic working process.
  - People handing the device should be well grounded (e.g. using ESD wrist band) and wear antistatic working clothes and gloves.
  - All related devices and instruments in the production line should be well grounded (e.g. working table, measuring equipment, assembly jigs).
3. Observe the correct polarity of output terminal.
4. Avoid input voltage exceeds the maximum rating, which will cause damage to the circuit and result in malfunction.
5. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
6. Refer all servicing to qualified personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
7. To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture. The apparatus shall not be exposed to dripping or splashing and that objects filled with liquids, such as vases, shall not be placed on apparatus.
8. To prevent injury, this apparatus must be securely attached to the floor/wall in accordance with the installation instruction.

## 10. Ordering Information

Product Code	Product Name	Product Description	Communication	Voltage Rating	Sensor Input	Output Channel
<b>WCA2CSD4N</b>	Radiar ARD4	4 Slave DALI Room Controller	BLE5.2	100-277V AC	3.3V Digital input	DALI / 0-10V 2 Channels

## 11. Compatible Devices

- iOS - iPhone & iPad (version 9.0 and above)
- Android- almost all device (version 6.0 and above)



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