

EM ready2apply BASIC 2 – 3 W

EM ready2apply



Product description

- _ LED emergency module suitable for direct installation in ceilings
- _ Complete set with integrated electronics, LED module, optics and battery
- _ Emergency lighting function for manual testing
- _ Small size ceiling hole, 68 – 72 mm diameter, 100 mm height
- _ IP65 protection rating (in installed state)
- _ EM = Emergency

Properties

- _ Output power 2 – 3 W
- _ Very low stand-by power loss
- _ Replaceable bezel, black as an option
- _ Non-maintained variants
- _ 3 h rated duration
- _ Plug-in Lithium Iron Phosphate battery
- _ 5 years guarantee electronic (LED driver) (conditions at <https://www.tridonic.com/en/int/services/manufacture-guarantee-conditions>)
- _ 5 years guarantee for LiFePO4 batteries (conditions at <https://www.tridonic.com/en/int/services/manufacture-guarantee-conditions>)

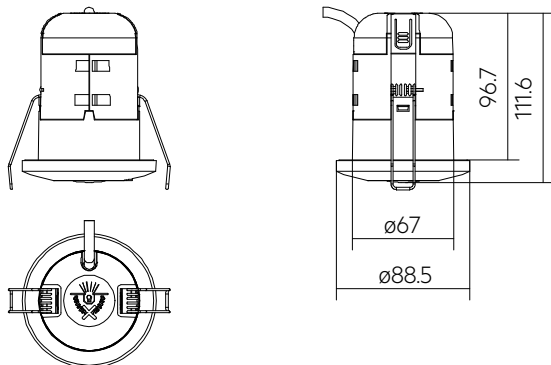
Website

<http://www.tridonic.com/89801220>



EM ready2apply BASIC 2 – 3 W

EM ready2apply

**Ordering data**

Type	Article number	Operating mode	Rated duration	Number of cells	Packaging, carton	Packaging, pallet	Weight per pc.
EM R2A 68mm BASIC NM 132 AP	89801220	Non-maintained	3 h	1	1 pc(s).	180 pc(s).	0.375 kg
EM R2A 68mm BASIC NM 133 AP	89801226	Non-maintained	3 h	3	1 pc(s).	180 pc(s).	0.415 kg
EM R2A 68mm BASIC NM 132 ER	89801221	Non-maintained	3 h	1	1 pc(s).	180 pc(s).	0.375 kg
EM R2A 68mm BASIC NM 133 ER	89801227	Non-maintained	3 h	3	1 pc(s).	180 pc(s).	0.415 kg

Technical data

Rated supply voltage	220 – 240 V
Input voltage range AC (tolerance for safety)	198 – 264 V
Input voltage range AC (tolerance for performance)	198 – 254 V
Mains frequency	50 / 60 Hz
Overvoltage protection	320 V (for 48 h)
Starting time (Emergency operation)	< 0.5 s from detection of emergency event
Output current tolerance	± 5 %
LF current ripple	± 5 %
Ambient temperature ta	5 ... +40 °C
Mains voltage changeover threshold	According to EN 60598-2-22
Type of protection	IP20
Impact protection degree	IK03
Protection class	II
Colour temperature	6,500 K
Colour tolerance	3 SDCM
Colour rendering index CRI	> 80
Lifetime	up to 50,000 h
EoFI	1

Approval marks**Standards**

according to EN 50172, EN 55015, EN 60068-2-29, EN 60068-2-30, EN 60068-2-64, EN 60598-1, EN 60598-2-2, EN 60598-2-22, EN 61000-3-2, EN 61347-1, EN 61347-2-7, EN 61347-2-13, EN 61547, EN 62384, IEC 62133 (related to Lithium Iron battery), UN 38.3 (related to Lithium Iron battery), EN 62031, EN 62471

Specific technical data

Type	Number of battery cells	Rated duration	Mains current (230 V, 50 Hz), non-maintained		Typ. λ (at 230 V, 50 Hz, charging)	Typ. output current	Typ. forward voltage	Output power
			Charging	Charger off				
Normal operation								
EM R2A 68mm BASIC NM 132 AP	1	3 h	15 mA	5 mA	0.66C	-	-	-
EM R2A 68mm BASIC NM 132 ER	1	3 h	15 mA	5 mA	0.66C	-	-	-
EM R2A 68mm BASIC NM 133 AP	3	3 h	15 mA	5 mA	0.66C	-	-	-
EM R2A 68mm BASIC NM 133 ER	3	3 h	15 mA	5 mA	0.66C	-	-	-
Emergency operation								
EM R2A 68mm BASIC NM 132 AP	1	3 h	-	-	-	170 mA	12 V	2.0 W
EM R2A 68mm BASIC NM 132 ER	1	3 h	-	-	-	170 mA	12 V	2.0 W
EM R2A 68mm BASIC NM 133 AP	3	3 h	-	-	-	225 mA	12 V	2.6 W
EM R2A 68mm BASIC NM 133 ER	3	3 h	-	-	-	225 mA	12 V	2.6 W

LiFePO₄ Battery pack 3.3 – 4.8 Ah

Accessory

Product description

- _ High-temperature LiFePO₄ cells only for use with Tridonic emergency lighting units
- _ 6 year design life (up to 30 °C ambient temperature)
- _ 4 year design life (up to 40 °C ambient temperature)
- _ 5 years guarantee (conditions at <https://www.tridonic.com/en/int/services/manufacture-guarantee-conditions>)

Properties

- _ Certified quality manufacturer
- _ Charge efficiency > 90 %
- _ Low self discharge
- _ Simple connection with plug-in system
- _ Protection and monitoring circuit built into battery enclosure
- _ Deep discharge protection
- _ Suitable for emergency lighting equipment as per IEC 60598-2-22

Website

<http://www.tridonic.com/28005687>



Ordering data

Type	Article number	Capacity	Packaging, carton	Packaging, outer box	Weight per pc.
ACCU-LiFePO ₄ 4.8Ah 3B CON R2A 68MM	28005687	4.8 Ah	25 pc(s).	50 pc(s).	0.125 kg
ACCU-LiFePO ₄ 3.3Ah 1A CON R2A 68MM	28005688	3.3 Ah	20 pc(s).	80 pc(s).	0.232 kg

EM r2a 68mm Bezel

Accessory



Product description

- _ Replaceable bezel
- _ Suitable for the use with EM r2a 68mm
- _ Black (RAL 9005)
- _ Polycarbonate

Website

<http://www.tridonic.com/28006212>



Ordering data

Type	Article number	Colour	Packaging, carton
EM r2a 68mm B	28006212	Black	50 pc(s).

1. Standards

according to EN 50172
 EN 55015
 EN 60068-2-6
 according to EN 60068-2-30
 EN 60598-1
 EN 60598-2-2
 EN 60598-2-22
 EN 61000-3-2
 EN 61347-1
 EN 61347-2-7
 EN 61347-2-13
 EN 61547
 EN 62384
 IEC 62133 (related to Lithium Iron battery)
 UN 38.3 (related to Lithium Iron battery)
 EN 62031
 EN 62471

1.1 Glow-wire test

according to EN 60598-1 with increased temperature of 850 °C passed.

2. Thermal data

2.1 Temperature range

According to the standard IEC 60598-1 a LED Driver for remote installation has a max. case temperature of 90 °C. The ambient temperature range t_a for the EM R2A BASIC is defined to meet this requirement.

2.2 Expected lifetime

2.2.1 Electronics

Average lifetime 50,000 hours under rated conditions with a failure rate of less than 10 %. Average failure rate of 0.2 % per 1000 operating hours.

Expected lifetime

Type	t_a	25 °C	30 °C	40 °C
EM R2A BASIC	lifetime	> 100,000 h	> 100,000 h	> 100,000 h

2.2.2 Lifetime, lumen maintenance and failure rate for LED module

The light output of an LED module decreases over the lifetime, this is characterized with the L value.

L70 means that the LED module will give 70 % of its initial luminous flux. This value is always related to the number of operation hours and therefore defines the lifetime of an LED module.

As the L value is a statistical value the lumen maintenance may vary over the delivered LED modules.

The B value defines the amount of modules which are below the specific L value, e.g. L70B10 means 10 % of the LED modules are below 70 % of the initial luminous flux, respectively 90 % will be above 70 % of the initial value.

Lifetime declarations are informative and represent no warranty claim.

t_a temperature	L90 / B50	L80 / B50	L70 / B10
25 °C	50,000 h	–	50,000 h
30 °C	–	50,000 h	–
40 °C	–	50,000 h	–

2.3 Storage conditions

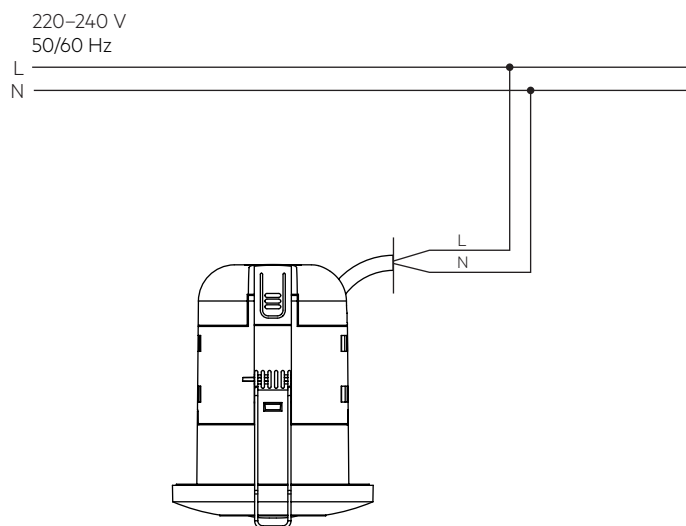
- Humidity 45 % up to max. 85 %, not condensed (max. 56 days/year at 85 %)
- Storage time / temperature: max. 6 months at -20 °C up to +45 °C (< 3 months at +45 °C)

Note: The devices have to be within the specified temperature range (t_a) before they are operated.

- Store batteries within the specified temperature range in low humidity conditions. Optimal storage conditions are:
 - Temperature: -20 ... +35 °C for up to 15 months
 - Relative humidity: 65 % $\pm$ 5 %
- Avoid atmosphere with corrosive gas
- Disconnect batteries before store or delivery
- Avoid storage of discharged batteries

3. Installation / Wiring

3.1 Wiring diagrams



Note: Battery must be connected before mains connection.

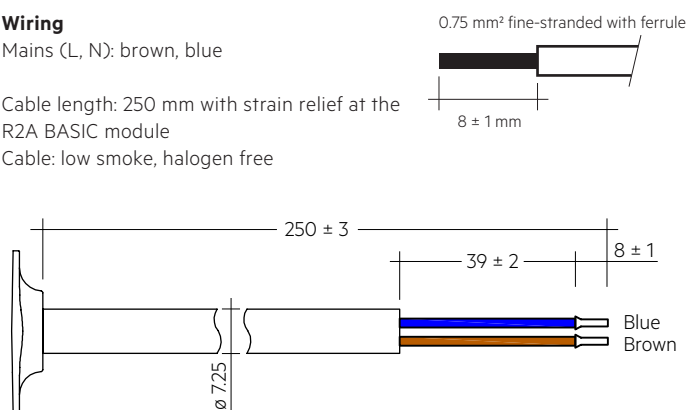
3.2 Wiring type and cross-section

Wiring

Mains (L, N): brown, blue

Cable length: 250 mm with strain relief at the R2A BASIC module

Cable: low smoke, halogen free



Recommended connector with strain-relief (plug and socket):
Wieland GST18

No terminal block included. The installation of the terminal block has to be done by a qualified person.

Only a terminal complying with EN 60998-2-1 or EN 60998-2-2 shall be used

Note: If mains cable or battery strap are damaged the luminaire must be disposed.

4. Mechanical data

4.1 Housing properties

- Polycarbonate white RAL 9016
- Polycarbonate black RAL 9005
- Polycarbonate blue, RAL 5002

4.2 Fixing

Spring fixing through hole in ceiling

- Hole diameter: 68 – 72 mm
- Ceiling thickness: 1 – 25 mm
- Ceiling void height: > 100 mm



Device not suitable for covering with thermally insulating material

5. Electrical data

5.1 Maximum loading of automatic circuit breakers

Automatic circuit breaker type	C10	C13	C16	C20	B10	B13	B16	B20	Inrush current	
Installation Ø	1.5 mm ²	1.5 mm ²	2.5 mm ²	4 mm ²	1.5 mm ²	1.5 mm ²	2.5 mm ²	4 mm ²	I_{max}	time
EM R2A BASIC	180	260	260	260	90	130	130	130	10 A	120 µs

5.2 Insulation matrix

	Mains	Battery
Mains	–	• •
Battery	• •	–

- Represents basic insulation
- • Represents double or reinforced insulation

5.3 Battery charge regime / discharge

EM R2A 68mm BASIC 2 – 3 W, 3 h

	Type	EM R2A 68mm BASIC 2 W	EM R2A 68mm BASIC 3 W
	Article no.	89801220, 89801221	89801226, 89801227
	Cells	1 cell	3 cells
	Duration	3 h	3 h
Battery charge time	Initial	24 h	
	Recharge	24 h	
	Trickle charge	continuously and battery voltage controlled	
Typ. charge current ^①	Initial charge	270 mA	270 mA
	Recharge	270 mA	270 mA
	Trickle charge	270 mA / 0 mA	270 mA / 0 mA
Mains power consumption	Initial charge	2.3 W	2.3 W
	Recharge	2.3 W	2.3 W
	Trickle charge	2.3 W / 0 W	2.3 W / 0 W
Discharge current at 3.2 V (nominal)		715 mA	970 mA

^① Automatic recharge when battery voltage falls below 3.4 V.
Charger off (0 mA) when battery voltage exceeds 3.6 V.

Note: Battery protected against operation at excessive temperatures
(charging stopped when battery cell temperature < 0 °C or > 60 °C)

5.4 Battery selection for replacement

EM R2A 68mm BASIC 2 – 3 W, 3 h

				Type	EM R2A 68mm BASIC 2 W	EM R2A 68mm BASIC 3 W
				Article no.	89801220, 89801221	89801226, 89801227
				Cells	1 cell	3 cells
				Duration	3 h	3 h
Technology and capacity	Design	Number of cells	Type	Article no.	Assignable batteries	
Lithium Iron Phosphate 3.3 Ah	single cell	1	ACCU-LiFePO4 3.3Ah 1A CON R2A 68MM	28005688	•	
Lithium Iron Phosphate 4.8 Ah	pyramid	3	ACCU-LiFePO4 4.8Ah 3B CON R2A 68MM	28005687		•

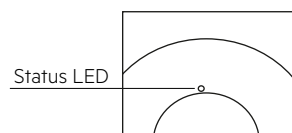
Note: If the rated duration of operation cannot be reached the battery must be replaced. Remove mains during battery replacement.

6. Functions

6.1 Status indication

The indication LED is integrated in the bezel. A green LED indicates that charging current is flowing into the battery.

The battery is protected against operation at excessive temperatures (charging stops and indication LED turns off when battery cell temperature < 0 °C or > 60 °C).



6.2 Testing

Emergency operation can be manually tested by removal of the mains supply.

6.3 Technical data batteries

Accu Lithium Iron Phosphate

Capacity 3.3 Ah

International designation	IFpR 27/67
Battery voltage/cell	3.2 V
Cell type	26650
Single cell dimensions	
Diameter	26 mm
Height	65 mm
Max. short term temperature (reduced lifetime)	70 °C
Max. number discharge cycles	50 cycles total
Max. storage time	15 months
	at -20 °C to +25 °C
Packing quantity	1 pc. per carton

Capacity 4.8 Ah

International designation	IFpR 19/66
Battery voltage/cell	3.2 V
Cell type	18650
Single cell dimensions	
Diameter	18 mm
Height	65 mm
Max. short term temperature (reduced lifetime)	70 °C
Max. number discharge cycles	50 cycles total
Max. storage time	15 months
	at -20 °C to +25 °C
Packing quantity	1 pc. per carton

Only use Tridonic batteries.

Comply with UN 38.3 and IEC 62133 (safety testing) protected against over charge, over discharge, charging at excessive temperatures, short-circuit and over current.

For battery data see separate data sheet.

7. Optical properties

7.1 Anti panic

EM R2A BASIC 2W – Max. spacing for >0.5 lux[®]

Height	Centre to end [®]		Centre to centre [®]	
	Trans	Longitudinal	Trans	Longitudinal
2.5 m	4.25 m	4.20 m	11.55 m	11.55 m
3.0 m	4.65 m	4.60 m	12.80 m	12.75 m
4.0 m	4.55 m	4.55 m	14.90 m	14.90 m
5.0 m	4.35 m	4.30 m	16.80 m	16.80 m
6.0 m	4.05 m	4.00 m	17.95 m	17.90 m
8.0 m	–	–	18.15 m	18.10 m
10.0 m	–	–	15.80 m	15.80 m
12.0 m	–	–	12.20 m	12.20 m

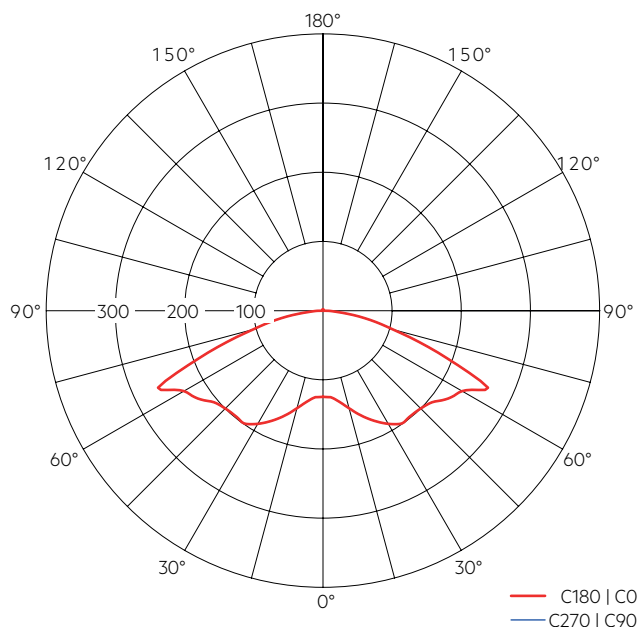
Luminous flux: 264 lm.

[®] Maintainance factor = 0.9, photometric data available on request.

[®] Distance between module and wall.

[®] Distance between two modules.

Light distribution



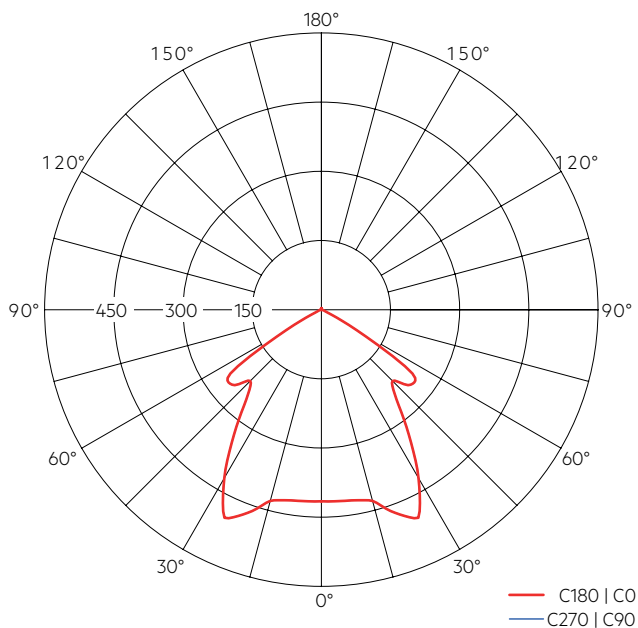
EM R2A BASIC 3W – Max. spacing for >0.5 lux^①

Height	Centre to end ^②		Centre to centre ^③	
	Trans	Longitudinal	Trans	Longitudinal
2.5 m	3.10 m	3.05 m	7.10 m	7.08 m
3.0 m	3.55 m	3.50 m	8.20 m	8.20 m
4.0 m	4.40 m	4.35 m	10.30 m	10.25 m
5.0 m	5.10 m	5.05 m	12.20 m	12.20 m
6.0 m	5.20 m	5.15 m	14.05 m	14.00 m
8.0 m	4.75 m	4.70 m	17.40 m	17.40 m
10.0 m	5.00 m	4.95 m	18.30 m	18.30 m
12.0 m	5.05 m	5.05 m	19.55 m	19.55 m

Luminous flux: 308 lm.

^① Maintenance factor = 0.9, photometric data available on request.^② Distance between module and wall.^③ Distance between two modules.

Light distribution

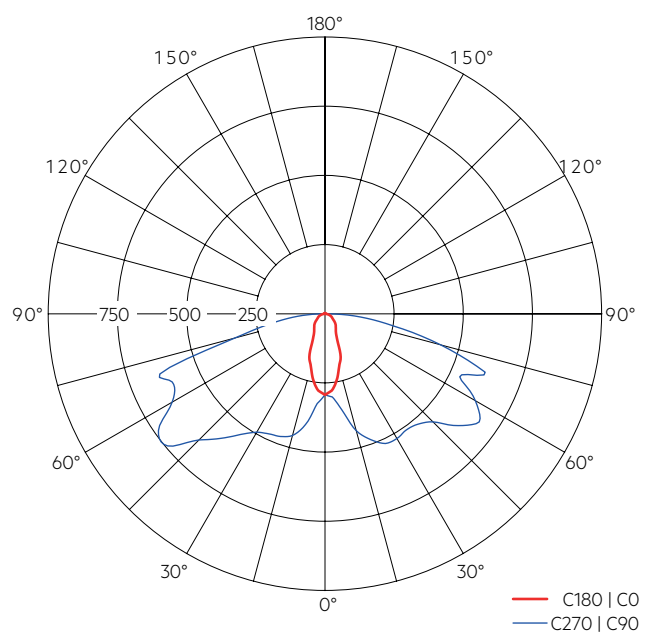
**7.2 Escape route****EM R2A BASIC 2W – Spacing data for 2m escape route^①**

Height	Centre to end ^②		Centre to centre ^③	
	Max. spacing	Diversity	Max. spacing	Diversity
Transversal > 1 lux				
2.5 m	2.00 m	0.102	5.55 m	0.101
3.0 m	1.90 m	0.152	5.70 m	0.146
4.0 m	1.90 m	0.260	5.55 m	0.255
5.0 m	1.95 m	0.421	5.35 m	0.387
6.0 m	1.70 m	0.584	5.40 m	0.546
7.0 m	1.20 m	0.805	5.55 m	0.721
8.0 m	–	–	5.20 m	0.906
9.0 m	–	–	3.95 m	0.917
10.0 m	–	–	2.60 m	0.923
11.0 m	–	–	0.65 m	0.999
12.0 m	–	–	–	–
13.0 m	–	–	–	–
14.0 m	–	–	–	–
Longitudinal > 1 lux				
2.5 m	6.35 m	0.077	15.60 m	0.074
3.0 m	6.30 m	0.109	17.15 m	0.107
4.0 m	7.00 m	0.190	18.10 m	0.193
5.0 m	7.40 m	0.297	19.15 m	0.291
6.0 m	7.00 m	0.425	20.20 m	0.409
7.0 m	5.90 m	0.580	21.00 m	0.545
8.0 m	–	–	20.55 m	0.684
9.0 m	–	–	14.85 m	0.659
10.0 m	–	–	12.55 m	0.717
11.0 m	–	–	8.35 m	0.728
12.0 m	–	–	–	–
13.0 m	–	–	–	–
14.0 m	–	–	–	–

Luminous flux: 235 lm.

^① Maintenance factor = 0.9, photometric data available on request.^② Distance between module and wall.^③ Distance between two modules.

Light distribution



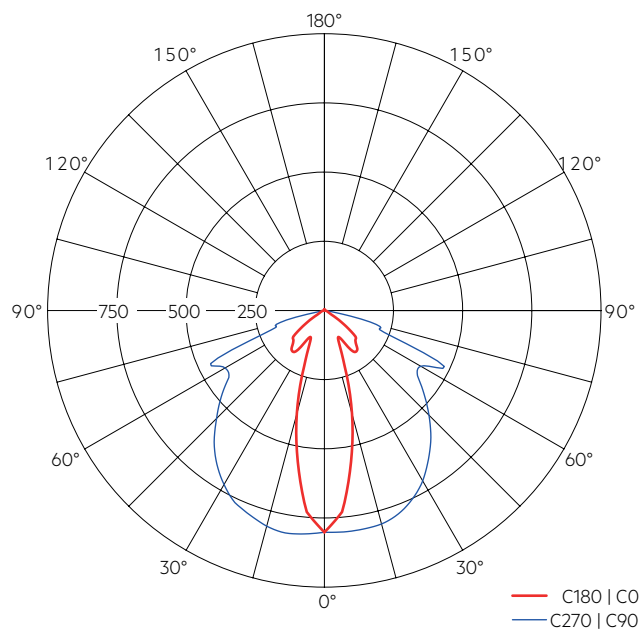
EM R2A BASIC 3W – Spacing data for 2m escape route[®]

Height	Centre to end [®]		Centre to centre [®]	
	Max. spacing	Diversity	Max. spacing	Diversity
Transversal > 1 lux				
2.5 m	3.40 m	0.026	7.65 m	0.026
3.0 m	3.80 m	0.038	8.70 m	0.037
4.0 m	4.15 m	0.065	10.40 m	0.066
5.0 m	2.45 m	0.101	10.75 m	0.101
6.0 m	2.50 m	0.153	10.15 m	0.145
7.0 m	2.65 m	0.201	6.90 m	0.187
8.0 m	2.75 m	0.264	7.05 m	0.237
9.0 m	2.80 m	0.335	7.30 m	0.298
10.0 m	2.80 m	0.406	7.55 m	0.362
11.0 m	2.65 m	0.499	7.75 m	0.439
12.0 m	2.45 m	0.590	7.90 m	0.528
13.0 m	2.15 m	0.691	8.00 m	0.622
14.0 m	1.75 m	0.801	7.90 m	0.734
Longitudinal > 1 lux				
2.5 m	6.00 m	0.026	13.30 m	0.026
3.0 m	6.75 m	0.037	15.05 m	0.037
4.0 m	6.80 m	0.065	18.35 m	0.065
5.0 m	7.00 m	0.102	19.70 m	0.101
6.0 m	7.30 m	0.148	19.45 m	0.145
7.0 m	7.55 m	0.199	19.90 m	0.197
8.0 m	7.65 m	0.260	20.60 m	0.256
9.0 m	7.65 m	0.328	21.15 m	0.320
10.0 m	7.50 m	0.406	21.55 m	0.389
11.0 m	7.20 m	0.494	21.75 m	0.468
12.0 m	6.85 m	0.583	21.85 m	0.552
13.0 m	6.20 m	0.687	21.80 m	0.641
14.0 m	5.30 m	0.795	21.50 m	0.732

Luminous flux: 343 lm.

[®] Maintenance factor = 0.9, photometric data available on request.[®] Distance between module and wall.[®] Distance between two modules.

Light distribution

**8. Miscellaneous****8.1 Black Box data recording**

Recording of several parameters only accessible for Tridonic.

8.2 Additional informationAdditional technical information at www.tridonic.com → Technical Data

The light source of this luminaire is not replaceable; when the light source reaches its end of life replace the whole luminaire. Lifetime declarations are informative and represent no warranty claim. No warranty if device was opened.