

EM ready2apply SELFTEST Exit 30m

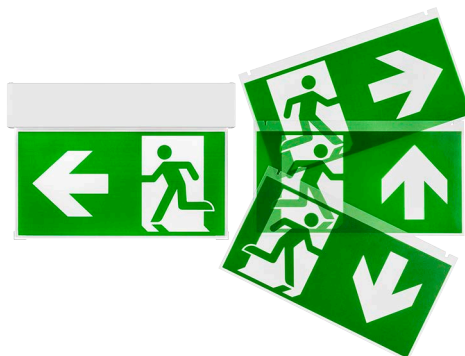
EM ready2apply

Product description

- LED emergency exit sign suitable for various mounting options (ceiling, wall)
- Complete set with integrated electronics, pictograms (5 pcs. included) and battery
- Emergency lighting with self-test function

Properties

- Viewing distance up to 30 m, single and double sided
- Non-maintained and maintained operation
- Very low stand-by power loss
- 3 h rated duration
- Two breakable entrance holes at the back and top
- Simple connection of Lithium Iron Phosphate battery with plug-in system
- Integrated status LED and test switch
- 5 years guarantee (conditions at www.tridonic.com) electronic (LED driver)
- 4 years guarantee battery



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Wiring diagrams and installation examples, page 4

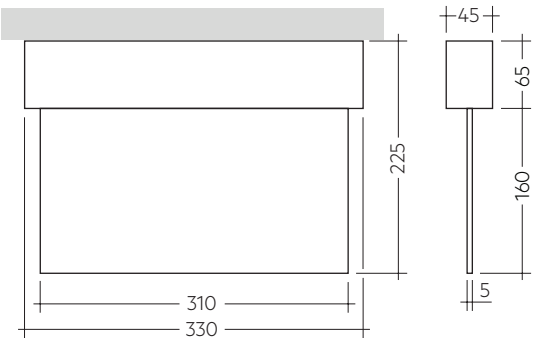


SELV    

EM ready2apply SELFTEST Exit 30m
EM ready2apply

Technical data

Rated supply voltage AC	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)
Time to light (emergency operation)	< 0.5 s from detection of emergency event
Output current tolerance	± 10 %
LF current ripple	± 5 %
Ambient temperature ta	+5 ... +40 °C
Mains voltage changeover threshold	According to EN 60598-2-22
Type of protection	IP40
Impact protection rating	IK03
Protection class	II
Colour temperature	6,500 K
Colour tolerance	Mac Adams 3
Colour rendering index CRI	> 80
Lifetime	up to 50,000 h



Ordering data

Type ^①	Article number	Rated duration	Number of cells	Packaging, carton	Packaging, pallet	Weight per pc.
EM R2A ST Exit 30m	28004647	3 h	2	1 pc(s).	198 pc(s).	1 kg

Specific technical data

Type	Rated duration	Number of LEDs	Typ. λ (at 230 V, 50 Hz)	Forward voltage range LED module ^{②④}	Non-maintained operation		Maintained operation	
					Mains current in charging operation ^②	Mains power in charging operation ^②	Mains current in charging operation ^②	Mains power in charging operation ^②
EM R2A ST Exit 30m	3h	1	0.55C	2.6 – 3.4 V	21/11 mA	21/0.9 W	31/23 mA	4.0/2.8 W

① EM = Emergency

② For LiFePO4 batteries voltage dependent constant current charging is used. The values displayed are for charging on / charging off.

③ When exceeding the rated power of 1 respectively 2 W the LED current is reduced proportionally.

④ Tolerance range for electrical data: ±10 %.

Lithium Iron Phosphate Battery pack 3.0 Ah

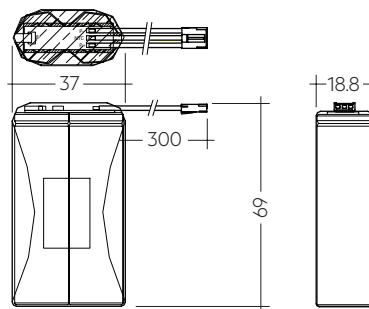
Batteries

Product description

- High temperature LiFePO₄ cells for the use with EM ready2apply exit signs
- 6-year design life (up to 30°C ambient temperature)
- 4-year design life (up to 40°C ambient temperature)
- 3 years guarantee

Properties

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



Ordering data

Type	Article number	Packaging, carton	Weight per pc.
ACCU-LiFePO ₄ 3.0Ah 2B CON	28002319	1 pc(s).	0.1 kg

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 61000-3-3
EN 61347-1
EN 61347-2-7
EN 61347-2-7/A1
EN 61347-2-13
EN 61347-2-13/A1
EN 61547
EN 62384
IEC 62133 (related to Lithium Iron battery)
UN 38.3 (related to Lithium Iron battery)
EN 62031
EN 62471
ISO 3864-1
ISO 7010

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 ST is defined to meet this requirement.

2.2 Expected lifetime

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	35 °C	40 °C
EM R2A ST	lifetime	> 100,000 h	> 50,000 h	50,000 h

2.3 Storage conditions

- Humidity 5 % up to max. 85 %, not condensed (max. 56 days/year at 85 %)

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 ... +25 °C for up to 12 months
 - 20 ... +35 °C for up to 6 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

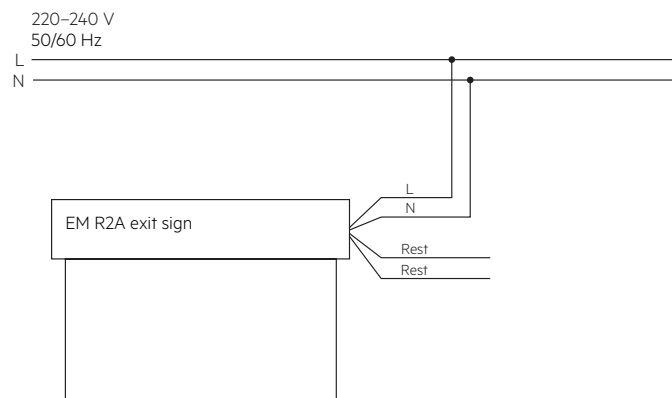
3.1 Luminaire assembly

- Wear gloves when mounting the EM ready2apply Exit.
- Use a screwdriver for opening the front cover of the housing.
- Select mounting option:
 - Ceiling
 - Wall
- The mounting holes on the back plate are prepared and can be drilled through with a screwdriver or a drill.
- The mounting holes for ceiling mounting are on the top side and the mounting holes for wall mounting are on the front side of the back plate.
- Fix the back plate on the ceiling or on the wall.
- Wire the mains and REST terminal block
- Plug the battery into the connector.
- Attach the back plate for the pictograms to the back plate of the housing. Fix the back plate with the hook to the cable ties of the battery to prevent it from falling down.
- Fix the front plate of the housing to the back box. A click will be heard when front plate is inserted correctly.
- Attach a pictogram to the back plate and fix it with brackets at the corners.



Take care when drilling to prevent damage to internal components.

3.2 Wiring diagrams



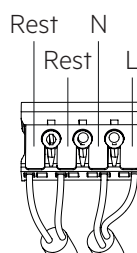
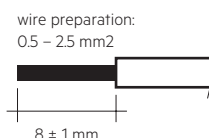
Note: Battery must be connected before mains connection.

3.3 Wiring type and cross-section

Wiring

Mains (N, L)
Rest

Cable: low smoke, halogen free



Installation of the luminaire only by a qualified person.

4. Mechanical data

4.1 Housing properties

- Polycarbonate white, similar to RAL 9016

4.2 Battery connection

Battery pack connection

3-pole plug connection

4.3 Fixing

Several mounting options possible:

- Ceiling
- Wall

Two easy breakable entry holes at rear and upper part for cable entry.

5. Electrical data

5.1 Maximum loading of automatic circuit breakers

Automatic circuit breaker type	B10	B13	B16	B20	C10	C13	C16	C20	Inrush current	
Installation Ø	1.5 mm ²	1.5 mm ²	2.5 mm ²	2.5 mm ²	1.5 mm ²	1.5 mm ²	2.5 mm ²	2.5 mm ²	I _{max}	time
EM R2A ST	90	130	130	130	180	260	260	260	6 A	55 µs

5.2 Insulation matrix

	Mains	Switched Live	Battery, Test switch, Indicator LED	Rest
Mains	–	•	••	•
Switched Live	•	–	••	•
Battery, Test switch, Indicator LED	••	••	–	•
Rest	•	•	•	–

- Represents basic insulation
- Represents double or reinforced insulation

5.3 Battery charge regime / discharge

EM R2A ST Exit 30m, 3 h

	Type	EM R2A ST Exit 30m	
	Article no.	28004647	
	Cells	2 cells	
	Duration	3 h	
Battery charge time	Initial	24 h	
	Trickle charge	continuously and battery voltage controlled	
Typ. charge current ^①	Initial charge	240 – 300 mA	
	Trickle charge ^②	240 – 300 mA / 0 mA	
Discharge current		430 – 530 mA	
Charge voltage range ^③		2.0 – 3.6 V per cell	
Discharge voltage range		2.3 – 3.6 V per cell	

^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)

^② The battery will not be charged below 2.0 V.

5.4 Battery selection for replacement

EM R2A ST Exit 30m, 3 h

				Type	EM R2A ST Exit 30m
				Article no.	28004647
				Cells	2 cells
				Duration	3 h
Technology and capacity	Design	Number of cells	Type	Article no.	Assignable batteries
Lithium Iron Phosphate 3 Ah	side by side	2 x 1	ACCU-LiFePO4 3.0Ah 2B CON	28002319	•

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

System status is indicated by a bi-colour LED. The indication LED is integrated on the bottom left of the housing.

LED indication	Status	Comment
Permanent green	System OK	AC mode
Fast flashing green (0,1 sec on – 0,1 sec off)	Function test underway	
Slow flashing green (1 sec on – 1 sec off)	Duration test underway	
Red LED on	Load failure	Open circuit / Short circuit / LED failure
Slow flashing red (1 sec on – 1 sec off)	Battery failure	Battery failed the duration test or function test / Battery is defect or deep discharged / Incorrect battery voltage / Battery is outside of its temperature range for charging (0 – 60 °C)
Fast flashing red (0,1 sec on – 0,1 sec off)	Charging failure	Incorrect charging current
Double pulsing green	Inhibit mode	Switching into inhibit mode via controller
Green and red off	DC mode	Battery operation (emergency mode)

6.2 Testing

Commissioning test

A full commissioning test is carried out automatically after permanent connection of the supply for 5 days. The easy commissioning feature will set the initial test day and time to ensure random testing of units.

Functional test

Functional tests are carried out for 5 seconds on a weekly basis under the control of the Micro controller. Initiation and timing of these tests is set during the commissioning of the luminaire.

Duration test

A full duration test is carried out yearly to check the capacity of the batteries.

For a full description of commissioning and test features please refer to application notes.

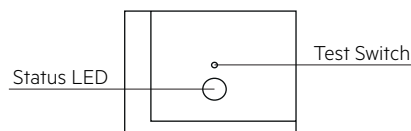
Test switch

Test switch is integrated on the bottom left of the housing.

This can be used to:

- Initiate a 5 seconds function test: press 200 ms < T < 1 s
- Execute function test as long as switch pressed: press > 1 s
- Reset selftest timer (adjust local timing): press > 10 s

To initiate a test use a suitable tool, refer to drawing below.



Note: Press test switch carefully to avoid damaging it.

Timer reset functionality

The timer for function and duration test can be set to a particular time of the day by either pressing the test switch for longer than 10 seconds or cycling the unswitched line supply 5 times within 1 minute. The timer adjustment will enable the test start time to be defined manually at time in day when the timer was reset. It will also disable the adaptive test algorithm thereby forcing the unit to perform the test at the same time rather than it being defined by the adaptive algorithm. This function will only work provided the interval time is greater than zero (automatic test mode enabled). The delay timer

value set when the unit was commissioned will be reloaded in order to randomise the tests between adjacent units.

Rest Mode / Inhibit Mode

Emergency operation is automatically started when the mains supply is switched off. If the Rest Mode is activated, the discharging of the battery will be minimized by switching off the LED output. If the Inhibit Mode has been activated before the mains supply is switched off, Rest Mode will be automatically activated if the mains supply is switched off within 15 minutes. Rest Mode and Inhibit Mode can be initiated by applying a short pulse between 9.5 and 22.5 V_{bc} in amplitude for a period of 150 to 1,000 ms. This pulse shall be applied to terminals marked Rest.

After a mains reset the EM r2a SELFTEST Exit exits the Rest Mode. Rest Mode and Inhibit Mode can both be disabled by applying a voltage pulse of 1,000 to 2,000 ms to the terminals marked as Rest to send the RE-LIGHT/ RESET INHIBIT command.

In combination with a 1-cell battery the EM r2a SELFTEST Exit does not support Rest Mode / Inhibit Mode.

Max. rest mode duration: 21 days from fully charged battery

Pulse/Mode	Standby	Emergency	Rest
150 – 1,000 ms	Inhibit	Rest	–
1,001 – 2,000 ms	Cancel inhibit	–	re-light

6.3 Safety

6.3.1 Deep discharge protection

When the battery remains connected without charging for a long period of time after the battery cut off of the driver the battery voltage can still drop. To make sure the cells are not damaged by this voltage drop, the battery protection prevents the battery from further discharge below 2.0 V.

6.3.2 Overcharge protection

If in case of an error or the use of a wrong driver the battery gets overcharged the battery protection will disconnect the battery from the driver at a voltage of 3.9 V. A discharge of the battery is still possible after the protection circuit was triggered to guarantee emergency operation.

6.3.3 Short-circuit protection

In case of a short circuit the battery protection opens the connection to the driver and the output is therefore free of voltage. The output will be reactivated again when the short circuit is removed.

6.3.4 Temperature protection

The battery is protected against temporary thermal overheating. If the temperature limit is exceeded the further charging of the battery is no longer possible. The temperature protection is activated below approx. 0 °C and above approx. +60 °C. The discharging of the battery is still possible to guarantee emergency operation.

6.4 Technical data batteries

Accu Lithium Iron Phosphate

International designation	IFpR 19/66
Battery voltage/cell	3.2 V
Single cell dimensions	
Diameter	18 mm
Height	65 mm
Capacity two cell pack	3.0 Ah
Max. short term temperature (reduced lifetime)	70 °C
Max. number discharge cycles	50 cycles total
Packing quantity	1 pc. per carton

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. Miscellaneous

7.1 Battery replacement

After a battery replacement and a subsequent full charge cycle (24 h) a duration test is mandatory to prove that with the new battery the rated duration is achieved.



Do not damage battery and other components during battery replacement.

7.2 Black Box data recording

Recording of several parameters only accessible for Tridonic.

7.3 Additional information

Additional 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.