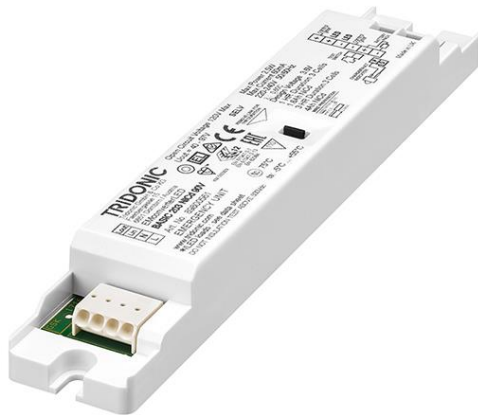


EM converterLED BASIC NiCd 90 V

BASIC version

**Product description**

- _ Emergency lighting LED Driver for manual testing
- _ For LED modules with a forward voltage of 40 – 97 V
- _ SELV for output voltage < 120 V DC
- _ Low profile casing (21 x 30 mm cross-section)
- _ For luminaire installation
- _ 5-year guarantee

Properties

- _ Non maintained operation
- _ 1 or 3 h rated duration
- _ Operating time selectable with plug (duration link)
- _ Compatible with all dimmable and non-dimmable constant current LED Driver (see data sheet, LED Driver compatibility)
- _ 3-pole technology: 2-pole LED module changeover and delayed power switching for the LED Driver
- _ Automatic shutdown of output if LED load is out of range
- _ Constant power output
- _ Maximum light output for all LED modules
- _ Electronic charge system
- _ Deep discharge protection
- _ Short-circuit-proof battery connection
- _ Polarity reversal protection for battery

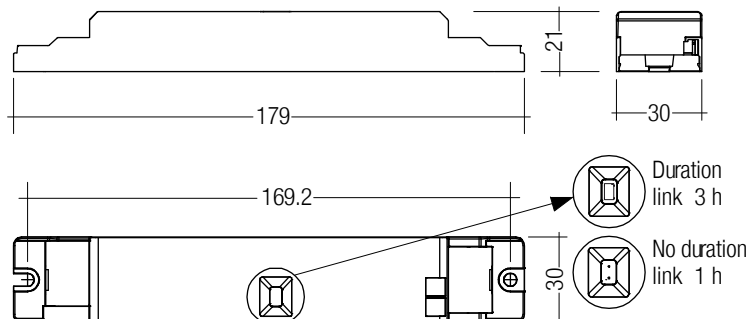
Batteries

- _ High-temperature cells
- _ NiCd batteries
- _ D or Cs cells
- _ 4-year design life
- _ 1-year guarantee
- _ For battery compatibility refer to datasheet

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


EM converterLED BASIC NiCd 90 V

BASIC version



Note: Supply of control gear with duration link in 3 hours position. Remove duration link for duration of 1 h. Duration link must be set before battery and mains connection.

Approval marks**Standards**

Acc. to EN 50172, Acc. to EN 60598-2-22, EN 61347-1, EN 61347-2-13, EN 61347-2-7, EN 55015, EN 61000-3-2, EN 61000-3-3, EN 61547, EN 60068-2-64, EN 60068-2-29, EN 60068-2-30, EN 62384

Test switch EM3

Accessory



Product description

- _ For connection to the emergency lighting unit
- _ For checking the device function
- _ Plug connection

Website

<http://www.tridonic.com/89899956>


Ordering data

Type	Article number	Packaging, bag	Packaging, carton	Weight per pc.
Test switch EM 3	89899956	25 pc(s).	200 pc(s).	0.01 kg

Approval marks

RoHS

Status indication green LED EM CON

Accessory



Product description

- _ A green LED indicates that charging current is flowing into the battery
- _ 0.3 / 1.0 m cable length
- _ Plug connection

Website

<http://www.tridonic.com/89800269>


Ordering data

Type	Article number	Packaging, bag	Packaging, carton	Weight per pc.
LED EM green, 1.0 m CON	89800269	25 pc(s).	200 pc(s).	0.015 kg
LED EM green, HO 1.0 m CON	89800271	25 pc(s).	200 pc(s).	0.015 kg
LED EM green, 0.6 m CON	89800472	25 pc(s).	200 pc(s).	0.009 kg
LED EM green, HO 0.6 m CON	89800473	25 pc(s).	200 pc(s).	0.009 kg
LED EM green, 0.3 m CON	89800270	25 pc(s).	200 pc(s).	0.005 kg
LED EM green, HO 0.3 m CON	89800272	25 pc(s).	200 pc(s).	0.005 kg

1. Standards

- according to EN 50172
- according to EN 60598-2-22
- EN 61347-1
- EN 61347-2-13
- EN 61347-2-7
- EN 55015
- EN 61000-3-2
- EN 61000-3-3
- EN 61547
- EN 60068-2-64
- EN 60068-2-29
- EN 60068-2-30
- EN 62384

1.1 Glow-wire test

according to EN 61347-1 with increased temperature of 850 °C passed.

1.2 Isolation and electric strength testing of luminaires

Electronic LED-Drivers can be damaged by high voltage. This has to be considered during the routine testing of the luminaires in production.

According to IEC 60598-1 Annex Q (informative only!) or ENEC 303-Annex A, each luminaire should be submitted to an isolation test with 500 Vdc for 1 second. This test voltage should be connected between the interconnected phase and neutral terminals and the earth terminal. The isolation resistance must be at least 2 MΩ.

As an alternative, IEC 60598-1 Annex Q describes a test of the electrical strength with 1,500 VAC (or 1,414 x 1,500 Vdc). To avoid damage to the electronic devices this test **must not be conducted**.

2. Thermal details and life-time

2.1 Life-time

Average life-time 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 life-time

Type	t _a	40 °C	50 °C	55 °C
EM converterLED BASIC 203 NiCd 90V	t _c	65 °C	70 °C	75 °C
	life-time	> 100,000 h	93,000 h	66,000 h
EM converterLED BASIC 204 NiCd 90V	t _c	65 °C	70 °C	75 °C
	life-time	> 100,000 h	79,000 h	55,000 h

3. Installation / Wiring

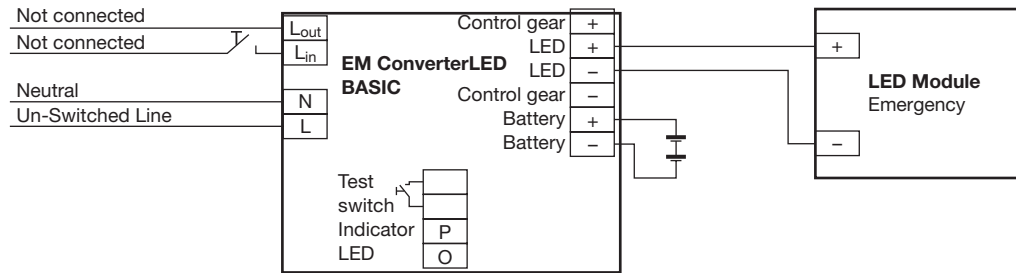
3.1 Wiring diagram

One or more LED modules with a total forward voltage of 40 to 97 V can be connected to the EM converterLED 90V module. These LED module(s), marked with "Emergency" are operated in emergency mode from the associated battery. In normal mains mode all LED modules are operated by the mains LED Driver.

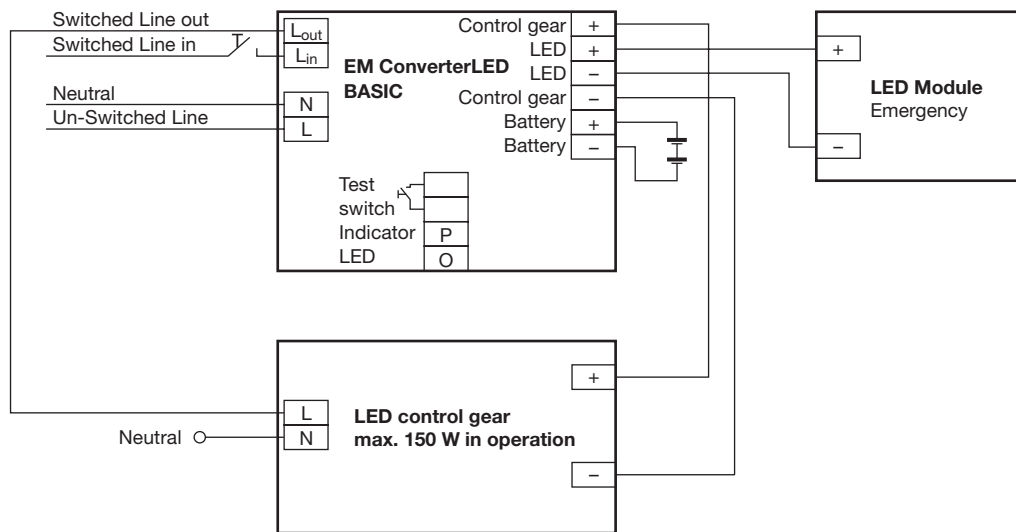
Use of the test switch:

For checking the device function press the test switch for a minimum of 3 seconds.

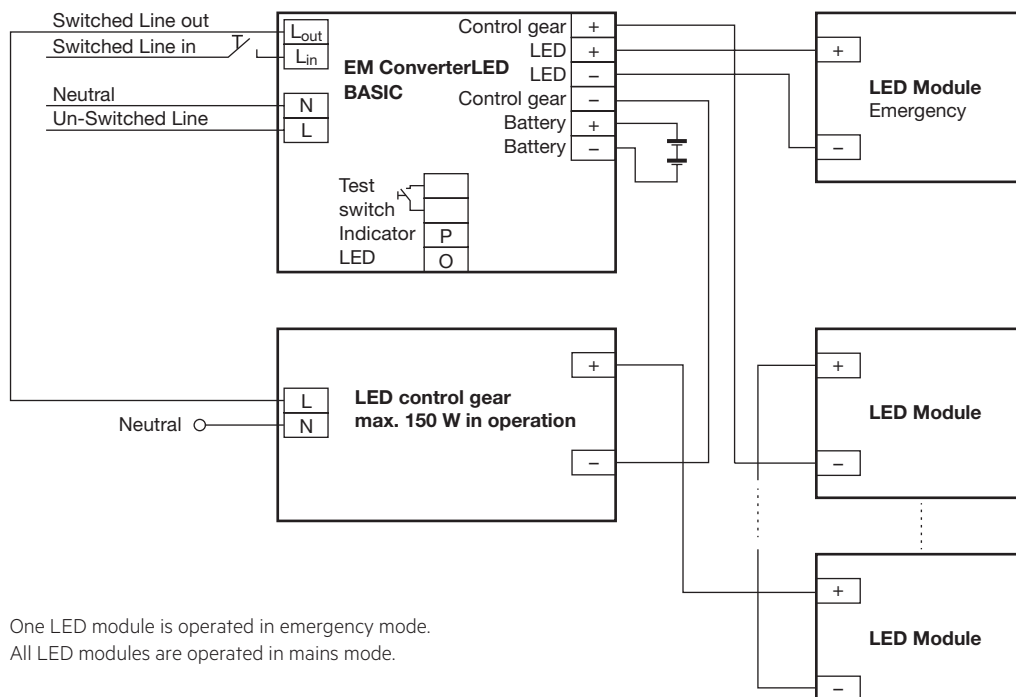
EM converterLED BASIC with one LED module for non-maintained emergency operation



EM converterLED BASIC with a standard LED Driver and one LED module for mains and emergency operation



EM converterLED BASIC with a standard LED Driver and series operation of LED modules



One LED module is operated in emergency mode.
All LED modules are operated in mains mode.

The diagram illustrates the wiring for the EM Converter LED BASIC in emergency mode. It features three main components: the EM Converter LED BASIC unit, an LED control gear unit, and multiple LED modules.

EM Converter LED BASIC Unit:

- Inputs:** Switched Line out, Switched Line in, Neutral, and Un-Switched Line.
- Outputs:** L_{out}, L_{in}, N, and L.
- Control gear:** LED, LED, Control gear, Battery, and Battery.
- Test switch Indicator LED:** P and O.

LED control gear max. 150 W in operation:

- Inputs:** L and N.
- Outputs:** + and -.

LED Modules:

- Each module has a + and - terminal.
- The diagram shows three modules, with vertical ellipses indicating additional modules.

Wiring Connections:

- The Switched Line in is connected to the L_{in} terminal of the EM Converter LED BASIC.
- The Neutral line is connected to the N terminal of the EM Converter LED BASIC and the N terminal of the LED control gear.
- The Un-Switched Line is connected to the L terminal of the EM Converter LED BASIC.
- The L_{out} terminal of the EM Converter LED BASIC is connected to the + terminal of the LED control gear.
- The + terminal of the LED control gear is connected to the + terminal of each LED module.
- The - terminal of the LED control gear is connected to the - terminal of each LED module.

Two or more LED modules are operated in emergency mode.
All LED modules are operated in mains mode.

Two or more LED modules are operated in emergency mode.
All LED modules are operated in mains mode.

Switched Line out

Switched Line in

Neutral

Un-Switched Line

L_{out}

L_{in}

N

L

Control gear LED +

Control gear LED -

Control gear -

Battery +

Battery -

Test switch

Indicator LED P

Indicator LED O

LED control gear max. 150 W in operation

L

N

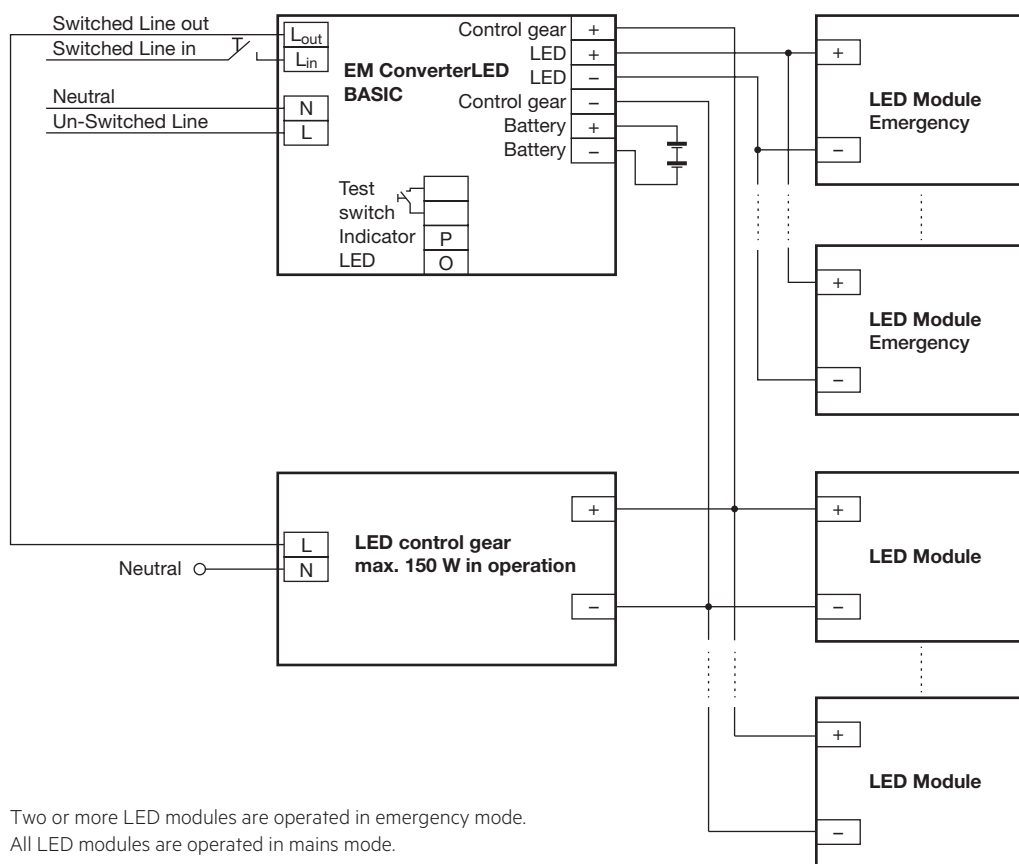
LED Module Emergency

LED Module

LED Module

One LED module is operated in emergency mode.
All LED modules are operated in mains mode.

One LED module is operated in emergency mode.
All LED modules are operated in mains mode.

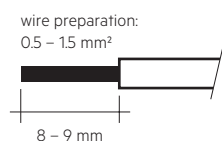
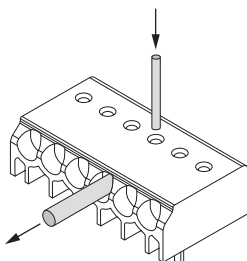
EM converterLED BASIC with a standard LED Driver and parallel operation of LED modules

Two or more LED modules are operated in emergency mode.
All LED modules are operated in mains mode.

3.2 Wiring type and cross section

Solid wire with a cross section of 0.5 – 1.5 mm². Strip 8 – 9 mm of insulation from the cables to ensure perfect operation of terminals.

Wiring: LED module/LED Driver/supply

**3.3 Loose wiring**

Loosen wire through twisting and pulling or using a Ø 1 mm release tool

3.4 Wiring guidelines

- The LED terminals, battery, indicator LED and test switch terminals are classified as SELV (output voltage < 120 V DC). Keep the wiring of the input terminals separated from the wiring of the SELV equivalent terminals or consider special wiring (double insulation, 6 mm creepage and clearance) when these connections should be kept SELV.
- The output to the LED is DC but has high frequency content, which should be considered for good EMC compliance.
- LED leads should be separated from the mains connections and wiring for good EMC performance.
- Maximum lead length on the LED terminals is 3 m. For a good EMC performance keep the LED wiring as short as possible.
- Maximum lead length for the Test switch and Indicator LED connection is 1 m. The test switch and Indicator LED wiring should be separated from the LED leads to prevent noise coupling.
- Battery leads are specified with 0.5 mm cross section and a length of 1.3 m

To ensure that a luminaire containing LED emergency units complies with EN 55015 for radio frequency conducted interference in both normal and emergency mode it is essential to follow good practice in the wiring layout.

Within the luminaire the switched and unswitched 50 Hz supply wiring must be routed as short as possible and be kept as far away as possible from the LED leads. Through wiring may affect the emc performance of the luminaire.

The length of LED leads must not be exceeded. Note that the length of the EM converterLED leads is added to the length of the leads from the LED Driver to the EM converterLED module when considering max. permitted lead length of the LED Driver.

3.5 Maximum lead length

LED	3 m ^①
Status indication LED	1 m
Batteries	1.3 m

^① Note: The length of LED leads to the LED module must not be exceeded. Note that the length of the EM converterLED leads is added to the length of the leads from the LED Driver to the EM converterLED module when considering max. permitted lead length of the LED Driver. Leads should always be kept as short as possible.

3.6 Use of different phases

The use of different phases for switched line and unswitched line is allowed. When using different phases, the unswitched line must fail if the switched line fails. This is required to assure correct switching into emergency mode. It can be realised with a relay.

4. Mechanical values

4.1 Housing properties

Casing manufactured from polycarbonate.

4.2 Mechanical data accessories

LED status indicator

- Green
- Mounting hole 6.5 mm dia
- Lead length 0.3 m / 1.0 m
- Insulation rating: 90 °C
- Plug connection

Test switch

- Mounting hole 7.0 mm dia
- Lead length 0.55 m
- Plug connection

Battery leads

- Quantity: 1 red and 1 black
- Length: 1.3 m
- Wire type: 0.5 mm² solid conductor
- Insulation rating: 90 °C

Battery end termination

Push on 4.8 mm receptacle to suit battery
spade fitted with insulating cover

Module end termination

8.0 mm stripped insulation

Two-piece batteries are supplied with a 200 mm lead with 4.8 mm receptacle at each end and insulating covers to connect the separate sticks together.

5. Electrical values

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	1.5 mm ²	2.5 mm ²	1.5 mm ²	1.5 mm ²	1.5 mm ²	2.5 mm ²	I _{max}	time
EM converterLED BASIC 203 NiCd 90V	90	130	130	130	180	260	260	260	10 A	120 µs
EM converterLED BASIC 204 NiCd 90V	90	130	130	130	180	260	260	260	10 A	120 µs

5.2 Typ. LED current/voltage characteristics

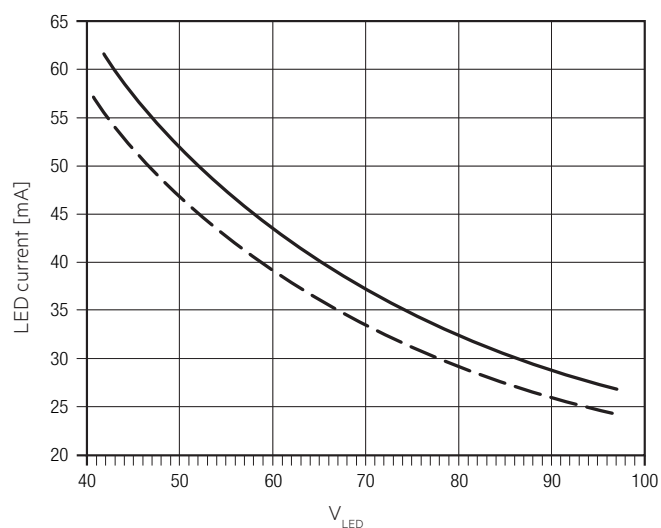
The LED current in emergency mode is automatically adjusted by the EM converterLED module based on the total forward voltage of the LED modules connected and the associated battery. The start of the LED in emergency mode does not result in a current peak.

EM converterLED BASIC 203 NiCd 90V

Article number: 89800561

3.6 V battery voltage

850 – 960 mA battery discharge current (tolerance)

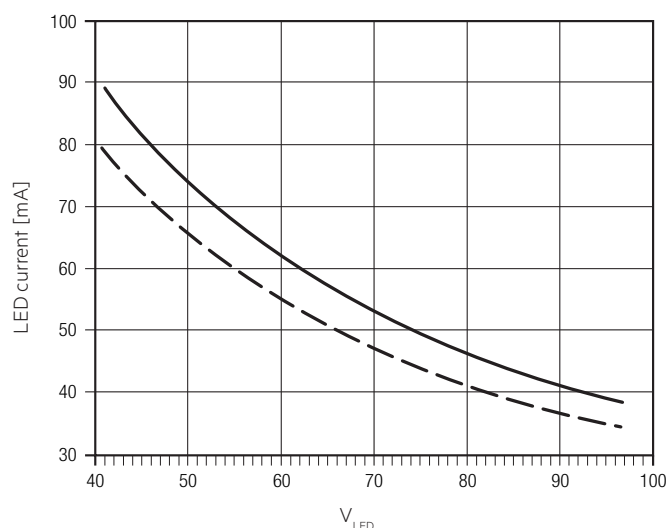


EM converterLED BASIC 204 NiCd 90V

Article number: 89800562

4.8 V battery voltage

850 – 960 mA battery discharge current (tolerance)



— — — LED current at nominal battery voltage and min. battery discharge current

— LED current at nominal battery voltage and max. battery discharge current

5.3 LED Driver compatibility

The EM converterLED emergency unit use 3 pole technology and is compatible with most LED Drivers on the market, however it is important to check that the rating of the LED Driver does not exceed the values specified below:

- The max. allowed output current rating of the associated LED Driver is 2.4 A peak (current rating of switching relays of EM converterLED)
- The max. allowed inrush current rating of the associated LED Driver is 60 A peak for 1 ms or 84 A for 255 μ s (inrush current rating of switching relay of EM converterLED)
- The max. allowed output voltage of the associated LED Driver applied to the EM converterLED output is 450V (voltage withstand between adjacent contact of the single switching relay of the EM converterLED)
- The max. allowed LED load of the associated LED Driver is 150 W in operation. The load must be an LED module.

6. Functions

6.1 Duration link selection

Duration	Usage duration link
3 h	 With link
1 h	 Without link

Emergency lighting LED Driver supplied with duration link in 3 hours position.

The position of the link will only be read on first power up. If it is changed afterwards both the battery and mains supply must be disconnected for 10 seconds to enable the EM converterLED to read the new link position on reconnection of the battery and mains. It will lead to a false battery failure indication if the link is changed after installation without this reset.

7. Battery data

7.1 Battery selection

EM converterLED BASIC, 1 / 3 h

			Type	EM converterLED BASIC 203 NiCd 90V		EM converterLED BASIC 204 NiCd 90V	
			Article no.	89800561		89800562	
			Cells	3 cells		4 cells	
			Duration	1 h	3 h	1 h	3 h
Technology and capacity	Design	Number of cells	Type	Article no.	Assignable batteries		
NiCd 1.6 Ah Cs cells	stick	1 x 3	Accu-NiCd C 3A	89899743	•		
	stick	1 x 4	Accu-NiCd C 4A	89899692		•	
	stick + stick	2 + 2	Accu-NiCd C 4C	89899694		•	
	side by side	4 x 1	Accu-NiCd C 4B	89899693		•	
NiCd 4 Ah D cells	stick	1 x 3	Accu-NiCd 3A	89895960	•		
	side by side	3 x 1	Accu-NiCd 3B 55	89800384	•		
	stick	1 x 4	Accu-NiCd 4A 55	89800089			•
	stick + stick	2 + 2	Accu-NiCd 4C	89895978			•
	side by side	4 x 1	Accu-NiCd 4B 55	89800385			•

7.2 Battery charge / discharge data

EM converterLED BASIC, 1 / 3 h

	Type	EM converterLED BASIC 203 NiCd 90V		EM converterLED BASIC 204 NiCd 90V	
		89800561		89800562	
		3 cells		4 cells	
		1 h	3 h	1 h	3 h
Battery charge time	Initial charge	24 h			
	Fast recharge	24 h			
	Trickle charge	continuously			
Charging current	Initial charge	105 mA	210 mA	105 mA	210 mA
	Fast recharge	105 mA	210 mA	105 mA	210 mA
	Trickle charge	50 mA	105 mA	50 mA	105 mA
Discharge current		850 – 960 mA	850 – 960 mA	850 – 960 mA	850 – 960 mA

7.3 Accu-NiCd

1.6 Ah

Battery voltage/cell	1.2 V
Cell type	Cs
Case temperature range to ensure 4 years design life	+5 °C to +50 °C
Max. short term temperature (reduced life-time)	70 °C
Max. number discharge cycles	4 cycles per year plus 4 cycles during comissioning
Max. storage time	6 months

4.2 / 4.5 Ah

Battery voltage/cell	1.2 V
Cell type	D
Case temperature range to ensure 4 years design life	+5 °C to +55 °C
Max. short term temperature (reduced life-time)	70 °C
Max. number discharge cycles	4 cycles per year plus 4 cycles during comissioning
Max. storage time	6 months

7.4 Wiring batteries

Connection method: 4.8 x 0.5 mm spade tag welded to end of cell.

For stick packs this connection is accessible after the battery caps have been fitted.

To inhibit inverter operation disconnect the batteries by removing the connector from the battery spade tag.

For further informations refer to corresponding battery datasheet.

7.5 Storage, installation and commissioning

Relevant information about storage conditions, installation and commissioning are provided in the battery datasheets.

8. Miscellaneous

8.1 Additional information

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

Guarantee conditions at www.tridonic.com → Services

Life-time declarations are informative and represent no warranty claim.
No warranty if device was opened.