

EM BASIC, 230 – 240 V BASIC version

Product description

- Emergency lighting supply unit for manual testing
- For linear and compact fluorescent lamps
- Small dimensions (28 x 39 mm cross-section)

Properties

- 1 or 3 h rated duration
- Compatible with all electronic ballasts (dimmable and non-dimmable)
- Can also be used in combination with conventional magnetic ballasts
- 5-pole technology: 4-pole lamp changeover and delayed power switching for the ballast
- AC output voltage optimised for TC-DD and TC-L lamps
- DC output voltage optimised for T8 fluorescent lamps
- Cathode heating adapted for compact lamps
- Switchover relay with high-current contacts
- IDC (insulation displacement connection)
- Green charge status display LED
- Checking the emergency lighting function by interrupting the unswitched phase
- Optional test switch
- Deep discharge protection
- Battery connection, short-circuit protected (not reversible)
- Polarity reversal protection for battery

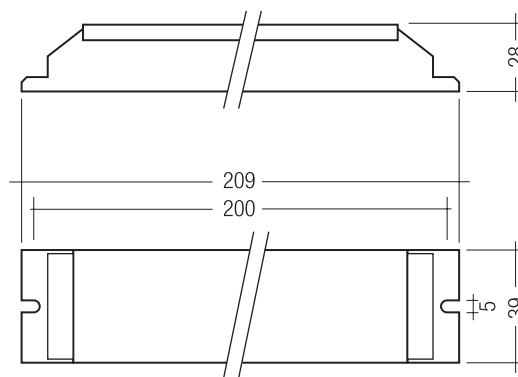
Batteries

- High-temperature cells
- NiCd batteries
- D cells
- Blade terminals for simple connection



Standards, page 6

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Technical data

Rated supply voltage	230 – 240 V
Voltage tolerance for performance (-10/+6%)	207 – 254 V
Voltage tolerance for safety (±10%)	207 – 264 V
Mains frequency	50 / 60 Hz
Mains current	0.04 A
Rated power	9 W
Battery charging time	24 h
Discharge current 1 h	2.25 A
Discharge current 3 h	1.1 A
Charge current	210 mA
Leakage current (PE)	0.5 mA
Ambient temperature t_a	0 ... +50 °C
Max. casing temperature t_c	75 °C
Mains voltage changeover threshold	according to EN 60598-2-22
Min. lamp starting temperature (emergency operation)	0 °C
Type of protection	IP20
Protection class	I

Ordering data

Number of cells	Type	Article number
Rated operating time 3 h		
3	EM 33A BASIC	89818556
3	EM 33B BASIC	89818655
3	EM 33C BASIC	89800000
4	EM 34A BASIC	89818557
4	EM 34B BASIC ^①	89818662
5	EM 35A BASIC	89818581
5	EM 35B BASIC	89818667
5	EM 35C BASIC	89800001

Packaging: 25 pieces/carton, 750 pieces/pallet

^① EM 34B BASIC also available in 110 V AC version

Ordering data

Number of cells	Type	Article number
5	EM 35D BASIC	89899621
6	EM 36A BASIC	89818654
Rated operating time 1 h		
3	EM 13B BASIC	89895971
3	EM 13E BASIC	89899864
4	EM 14B BASIC	89899611

Packaging: 25 pieces/carton, 750 pieces/pallet

ACCESSORIES

Test switch EM2

Product description

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



Ordering data

Type	Article number
Test switch EM 2	89805277

Packaging: 25 pieces/bag, 200 pieces/carton

ACCESSORIES

Status indication green LED

Product description

- A green LED indicates that charging current is flowing into the battery



Ordering data

Type	Article number
LED EM green	89899605
LED EM green, ultra high brightness	89899756

Packaging: 25 pieces/bag, 200 pieces/carton

EM BASIC for linear lamps, 1 h

	1 h	3 cells		4 cells
Type		EM 13B BASIC	EM 13E BASIC ①	EM 14B BASIC
Article no.		89895971	89899864	89899611
Lamp type	Wattage	BLF in emergency lighting mode in % for rated operating time		
T8	18 W	22		25
	36 W	16		19
	58 W		10	14

Technology and capacity	Design	Number of cells	Type	Article number	Assignable batteries		
NiCd 4Ah D-cells	Stick	3	Accu-NiCd 3A	89895960	•	•	
	Side by side	3	Accu-NiCd 3B	89895976	•	•	
	Stick	4	Accu-NiCd 4A 55	89800089			•
	Side by side	4	Accu-NiCd 4B	89895977			•
	Stick + Stick	2 + 2	Accu-NiCd 4C	89895978			•

Note: 50°C batteries also available (see separate datasheet at www.tridonic.com)

① For extended application of the lamp please see E 005en_EM BASIC_Extended Application_V1.pdf at www.tridonic.com.

EM BASIC for linear and compact lamps, 3 h

	3 h	3 cells			4 cells		5 cells				6 cells
Type		EM 33A BASIC	EM 33B BASIC	EM 33C BASIC	EM 34A BASIC	EM 34B BASIC ④	EM 35A BASIC	EM 35B BASIC	EM 35C BASIC	EM 35D BASIC	EM 36A BASIC
Article no.		89818556	89818655	89800000	89818557	89818662	89818581	89818667	89800001	89899621	89818654
Lamp type	Wattage	BLF in emergency lighting mode in % for rated operating time									
T5	4 W	25			30		37				44
	6 W	26			32		40				48
	8 W	27			32		40				48
	13 W	25			30		37				44
	14 W	16			21		32				
	21 W				21 ①		28.5 ①				
	24 W						19				
	28 W							14 ②③			
T8	18 W		10			12	18	13			
	30 W		9			13	18	14			
	36 W		8			10	16	10			
	58 W					7		7			
	70 W							7			
TC-DD	10 W	27			30		39				46
	16 W	24			24		31				37
	21 W				20		25				30
	28 W				19		21				25
	38 W						15				18
	55 W										14
TC-SEL	5 W			20							
	7 W			14							
	9 W			11							
	11 W			16							
TC-DEL	10 W			13							
	13 W			16							
	18 W								12		
	26 W								15		
TC-TEL	13 W			10					16		
	18 W								12		
	26 W								15		
	32 W									7	
	42 W									5	
TC-L	18 W	18			18		19				22
	24 W				17		20				24
	34 W					9 ②	19				22
	36 W					9 ②	20				24
	40 W					8 ②		10 ②			8 ①
	55 W					5 ②		6 ②			6 ①

Technology and capacity	Design	Number of cells	Type	Article number	Assignable batteries						
NiCd 4 Ah D-cells	Stick	3	Accu-NiCd 3A	89895960	•	•	•				
	Side by side	3	Accu-NiCd 3B	89895976	•	•	•				
	Stick	4	Accu-NiCd 4A 55	89800089				•	•		
	Side by side	4	Accu-NiCd 4B	89895977				•	•		
	Stick + Stick	2+2	Accu-NiCd 4C	89895978				•	•		
	Stick	5	Accu-NiCd 5A	89895973					•	•	•
	Stick + Stick	3+2	Accu-NiCd 5C 55	89800090					•	•	•
	Stick + Stick	3+3	Accu-NiCd 6C	89895963							•

Note: For more lamp combinations for 1 and 3 h see separate data sheet.

Not for use with compact amalgam lamps.

50°C batteries also available (see separate datasheet at www.tridonic.com)

① For 2-hour operation only.

② Used only in maintained mode because mercury migration may occur during emergency operation.

③ Lamp restrictions apply, for further information contact Tridonic.

④ For extended application of the EM 34B Basic please see E 005en_EM BASIC_Extended Application_V1.pdf at www.tridonic.com.

EM BASIC Extended Application

The EM BASIC range consists of 4 different product types (A, B, C, D). These are needed due to the different starting and operating requirements of the various types of fluorescent lamps. Each EM BASIC type is optimised to give best possible lamp performance and life performance with the minimum number of battery cells.

Additional to this there is also the possibility to use only one type out of the EM BASIC range to operate most lamp types of a rated duration – the EM 34B BASIC for 3 hours and the EM 13E BASIC for 1 hour.

According to the statement above please note that by using only one EM BASIC type for the complete lamp range, some lamps will be run outside of the specification. This will lead to a decrease in the lamp performance.

In the following table an information about the effect on the duration and the BLF for all lamps which can be operated is listed.

Ballast Lumen Factor (BLF) and duration

Lamp Type	EM 34B BASIC		EM 13E BASIC	
	Duration hours	BLF %	Duration hours	BLF %
T5 4 W	6	15	4.5	23
6 W	6	14	3	23
8 W	6	16	3	23
13 W	4.5	14	2	22
14 W	5.5	11	2	19
21 W	3	12	1.5	18
24 W	4.5	7	2	12
28 W	3	11	1	15
35 W	2.5	10	–	–
39 W	3	6	1.5	9
49 W	2.5	7	–	–
54 W	3	6	1	8
T8 18 W	6	12	2.5	12
36 W	3	10	1.5	9
58 W	3	7	1	10
TC-DEL 10 W	6	11	3	17
TC-D/TEL 13 W	6	11	2.5	16
18 W	4.5	10	2.5	13
26 W	4.5	7	2	11
TC-TEL 32 W	3	8	1.5	10
42 W	3	8	1	9
TC-SEL 5 W	6	12	4.5	19
7 W	6	11	3	19
9 W	6	12	3	18
11 W	5.5	13	2	22
TC-L 18 W	6	7	2.5	11.5
24 W	4.5	7	2	11
36 W	3	9	1.5	9
40 W	3	8	1	9
55 W	3	5	1	7
TC-DD 10 W	6	13	2.5	20
16 W	4.5	11	2.5	15
28 W	4.5	7	1.5	11
38 W	4.5	5	1.5	8
T5 circline 40 W	3	6	1	9

Standards

- according to EN 50172
- according to EN 60598-2-22
- EN 601347-2-7
- EN 60929
- EN 55015
- EN 61000-3-2
- EN 61000-3-3
- EN 61547
- EN 60068-2-64
- EN 60068-2-29
- EN 60068-2-30

Isolation and electric strength testing of luminaires

Electronic devices 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 V_{DC} 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 V_{AC} (or 1,414 x 1,500 V_{DC}). To avoid damage to the electronic devices this test must not be conducted.

Batteries

case temperature range	0 °C to +55 °C
to ensure 4 years design life	
battery voltage/cell	1.2 V
capacity	4.2 / 4.5 Ah
max. short term temperature (reduced lifetime)	70 °C

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

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

To inhibit inverter operation, only disconnect the batteries by removing the connector from the battery spade tags.

Electrical connections

An earthed starting aid is recommended.
The module should be earthed by the fixings used to attach it to the luminaire.

Terminal block type:
Push wire and insulation displacement

Terminal block capacity

- Push wire: 0.5 to 1.5 mm² solid conductor
- Insulation displacement: 0.5 mm² solid conductor

Wire strip length: 7.5 to 8.5 mm

Lamp lead length: 2,500 mm max.
The longer pair of leads should always be connected to terminals 3 and 8.

CE marking

The modules are CE marked for compliance with the low voltage directive. Certificates of compliance are available to allow luminaires to be CE marked for compliance with the EMC directive.

Service life

Average service life 50,000 hours under rated conditions with a failure rate less than 10 %. Average failure rate of 0.2 % per 1,000 operating hours

Mechanical details

Channel manufactured from 0.4 mm Galvalite galvanised steel.
Cover manufactured from 0.4 mm white precoated steel.

LED charge indicator

- Green
- Mounting hole 6.5 mm diameter
- Length of LED lead 750 mm (Bezel supplied fitted to LED)
- Insulation temperature rating: 90 °C

Test switch

- Mounting hole 7 mm diameter
- Length of test switch lead 550 mm

Battery leads

- Quantity: 1 red and 1 black
- Length: 1000 mm (Accu NiCd 3B, 4B, 4C), 1300 mm (all others)
- Wire type: 0.5 mm solid conductor
- Insulation temperature rating: 90 °C

Termination 1

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

Termination 2

9 mm stripped insulation

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

Wiring guidelines

To ensure that a luminaire containing high frequency 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 lamp leads.

This means, for example, in a linear T8 or T5 luminaire the mains wiring should be routed along one side of the luminaire body, while the wires to the emergency lamp from the emergency module are routed along the other side.

The high frequency emergency lamp wiring contains "hot" leads at pins 1 and 6, which have high voltage to earth. These should be kept as short as possible and separated from other wiring to minimize coupling. They also have a restriction on capacitance to other wiring and earth of 100 pF, which must be observed to ensure good lamp starting.

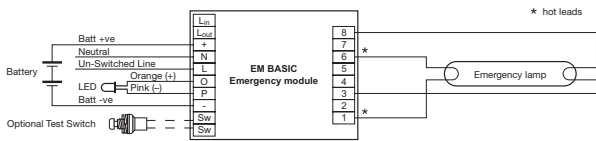
With an earth connection of the metal case of the emergency module the noise suppression can be further improved. The wiring of the earth should be kept as short as possible.

Through wiring may affect the emc performance of the luminaire.

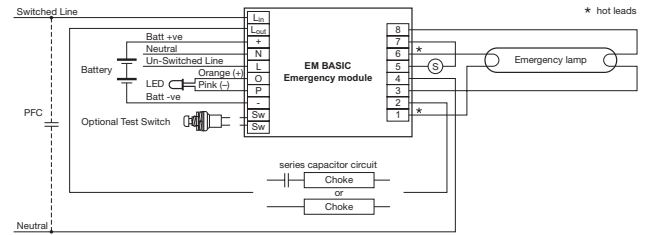
With the use of the fifth pole possible compatibility problems between the products can be prevented. Depending on the luminaire wiring the radio suppression in the emergency mode of operation can be further improved.

Capacitive loading limits of lamp leads must not be exceeded. Note the capacitance of the emergency lamp leads adds to the capacitance of the leads from the ballast to the EM BASIC module when considering ballast loading.

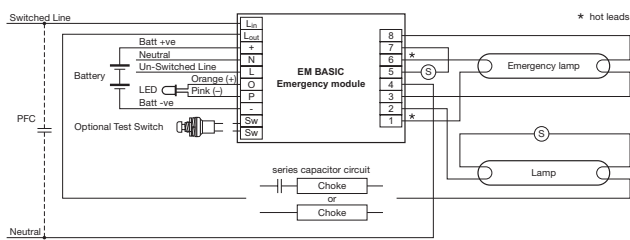
Circuit diagrams



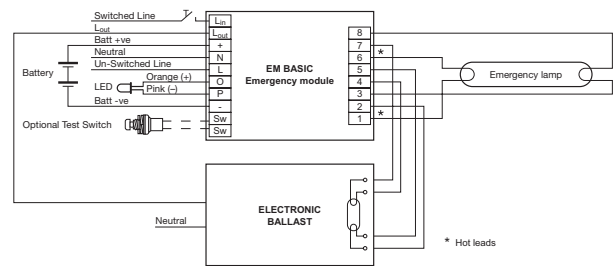
Non maintained



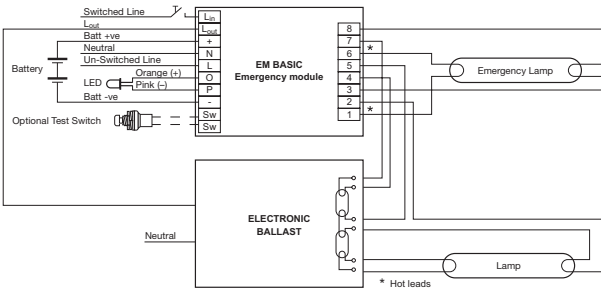
Single lamp switch start circuit with conventional control gear



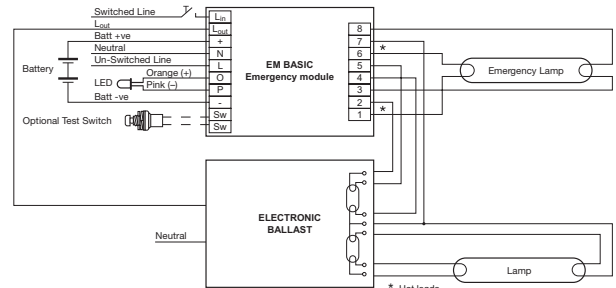
Twin series switch start circuit with conventional control gear



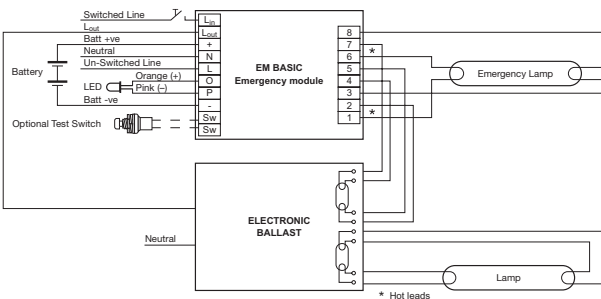
Single lamp high frequency electronic ballast



Twin lamp high frequency electronic ballast (6 lamp lead connections)



Twin lamp high frequency electronic ballast (7 lamp lead connections)



Twin lamp high frequency electronic ballast (8 lamp lead connections)

Packing quantities:

EM BASIC:	Test Switch:
25 pieces/carton	25 pieces/bag
30 cartons/pallet	200 pieces/carton
750 pieces/pallet	
LED green:	Accu NiCd:
25 pieces/bag	25 pieces/carton
200 pieces/carton	