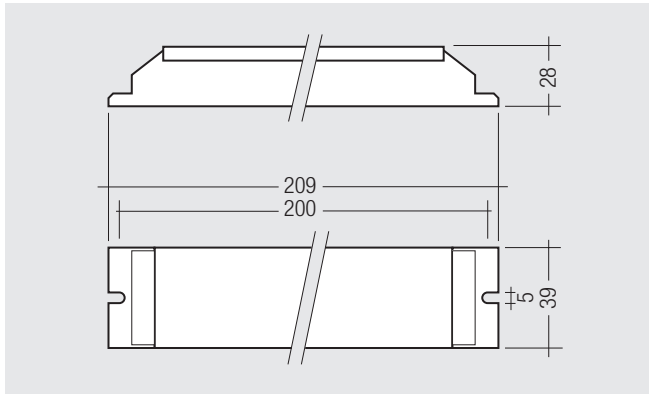


Emergency lighting modules with separate switched line output terminals for universal use with any high frequency electronic ballasts

EM BASIC Installation and wiring instructions



Description

An emergency lighting module, which together with the appropriate battery pack, can be used to convert standard high frequency luminaires to maintained emergency luminaires. These modules are approved to EN 61347-2-7 and provide a battery charge current that is within the range of charge currents quoted on the Battery Manufacturers Declaration Form for the recommended battery types. This compatibility allows converted luminaires to comply with the relevant parts of EN 60598.2.22.

Specification

Supply Voltage	230–240 V, 50/60 Hz
Supply Current	0.04 A @ 254 V
Duration/Type	1 or 3 hour/Maintained or Non-maintained
Ambient Temperature Range	0 °C to +50 °C
Lamp Starting	0 °C
Max Case Temperature (at geometric centre of side)	75 °C
Input Terminal Block Capacity	0.5–1.5 mm ² Pushwire, 0.5 mm ² IDC
Output Terminal Block Capacity	0.5–1.5 mm ² Pushwire, 0.5 mm ² IDC
Battery Fuse (internal)	3 A
Supply Fuse	Not fitted
Weight	310 grams
Mounting	M4 Screws

Type (55°C case temperature)	Article number	Number of cells	Type	Capacity
NiCd D cells – stick				
Accu-NiCd 3A	89895960	1 x 3	stick	4.2 Ah
Accu-NiCd 4A 55	89800089	1 x 4	stick	4.5 Ah
Accu-NiCd 5A	89895973	1 x 5	stick	4.2 Ah
NiCd D cells – stick + stick				
Accu-NiCd 4C	89895978	2 + 2	stick + stick	4.2 Ah
Accu-NiCd 6A	89895963	3 + 3	stick + stick	4.2 Ah
NiCd 4.5 Ah D cells – stick + stick				
Accu-NiCd 5C 55	89800090	2 + 3	stick + stick	4.5 Ah
NiCd D cells – side by side				
Accu-NiCd 3B	89895976	3 x 1	side by side	4.2 Ah
Accu-NiCd 4B	89895977	4 x 1	side by side	4.2 Ah

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

Charge Indicator (LED)

Standard green LED, Article Number 89899605 (not included)

Important

These instructions contain important safety information, read and follow them carefully. Tridonic will not accept any responsibility for injury, damage or loss, which may arise as a result of incorrect installation, operation, maintenance or disposal.

ISOLATE SWITCHED AND UNSWITCHED MAINS AND NEGATIVE BATTERY SUPPLY BEFORE INSTALLING OR MAINTAINING – High voltage will be present at lamp terminals if the battery is not isolated.

THIS MODULE MUST BE EARTHED. HIGH VOLTAGE INSULATION TESTING UP TO 500 V DC IS ONLY ALLOWED BETWEEN THE LINE AND NEUTRAL CONNECTED TOGETHER AND THE EARTH.

Note to the installer:

Please ensure this leaflet is made available to the user and/or maintenance engineer together with a test record card.

Conversion

- IT IS RECOMMENDED THAT THE CONVERSION OF A LUMINAIRE SHOULD BE CARRIED OUT IN ACCORDANCE WITH ICEL 1004.
- ENSURE THAT THE MODULE AND ASSOCIATED BATTERY OPERATE WITHIN THEIR TEMPERATURE RATINGS.
- AFTER CONVERSION OF A LUMINAIRE EXISTING COMPONENTS MUST CONTINUE TO OPERATE BELOW THEIR TEMPERATURE RATING. Requirements for "F" marking MUST continue to be met.
- WIRE THE MODULE AND BATTERY INTO THE LUMINAIRE according to the wiring diagram.
Note: If the optional test switch is required, this is wired to the Sw terminals of the module and must be internal to the luminaire.
- ENSURE THE MODULE IS EARTHED.
- CLEARLY IDENTIFY THE NEW UNSWITCHED SUPPLY TO THE CONVERTED LUMINAIRE.
- CHECK OPERATION OF THE LED CHARGE INDICATOR by connecting the unswitched line.
- CHECK OPERATION OF THE LAMP in the emergency mode by disconnecting the unswitched supply after 15 minutes.
- RELABEL THE LUMINAIRE to identify the company responsible for the conversion.
- FILL IN TEST RECORD CARD if the luminaire is being converted on site.
- MARK THE DATE OF COMMISSIONING on the battery label.

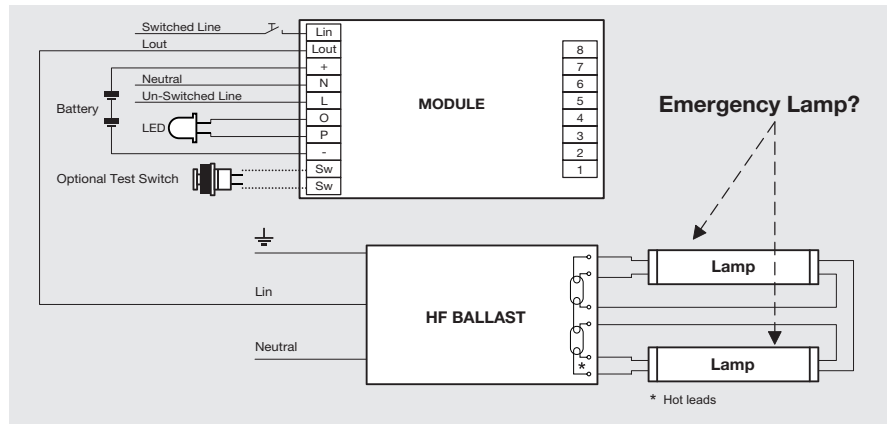
FAILURE TO DO AS MENTIONED ABOVE WILL INVALIDATE ANY WARRANTY CLAIMS.

Universal wiring diagram for HF ballasts

The following wiring instructions apply to any existing luminaire containing a HF Ballast to be converted to 1 hour or 3 hour maintained luminaires (depending on model).

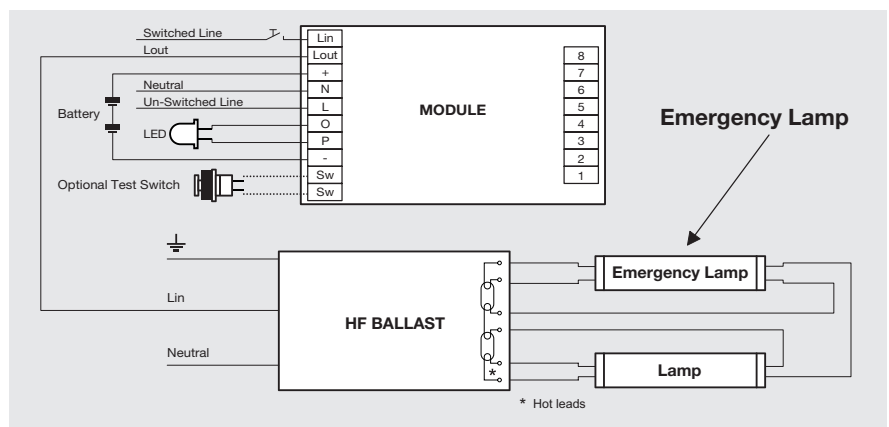
Step 1

Remove the switched line from the ballast and wire to the L_{in} terminal of the emergency module. Wire the L_{out} from the emergency module to the ballast as shown.



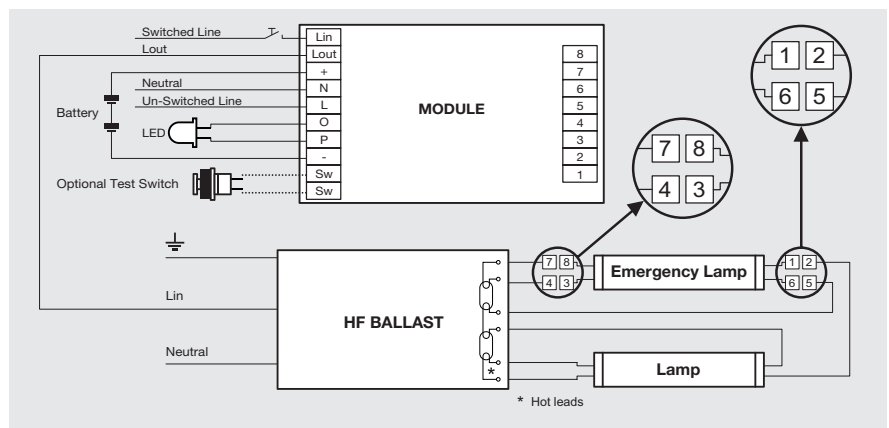
Step 2

Decide which lamp is to be converted to emergency**. In this example, a twin lamp HF ballast will be wired to the EM Basic emergency module.



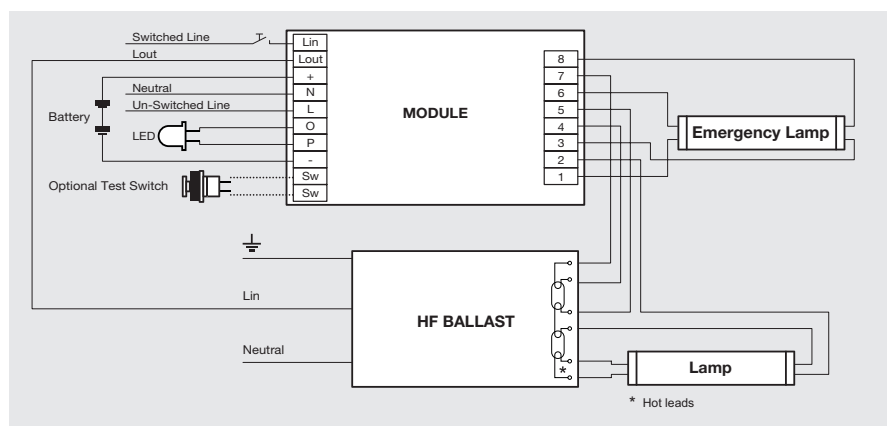
Step 3

Split the lamp leads to the emergency lamp and wire them to the corresponding input/output terminal numbers on the emergency module as shown.



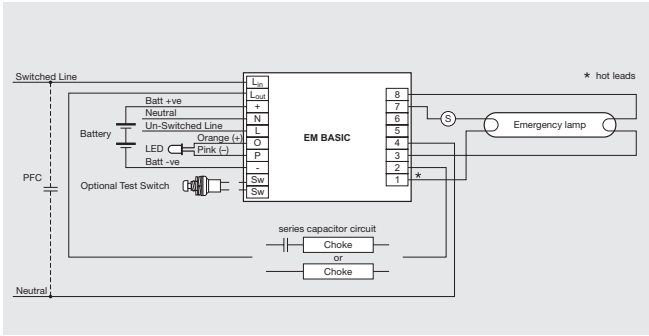
Step 4

The wiring will look as shown.

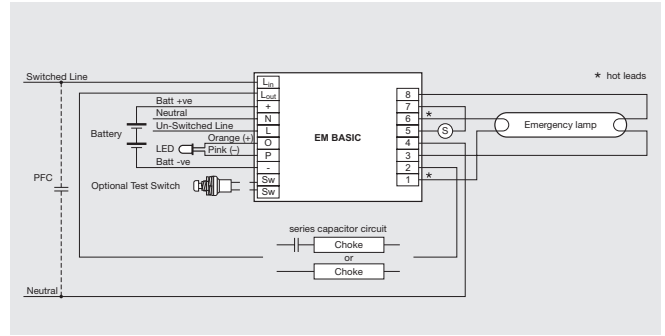


** Electronic ballast lamp terminal numbers and lamp to be used for emergency purposes should be checked with ballast supplier.

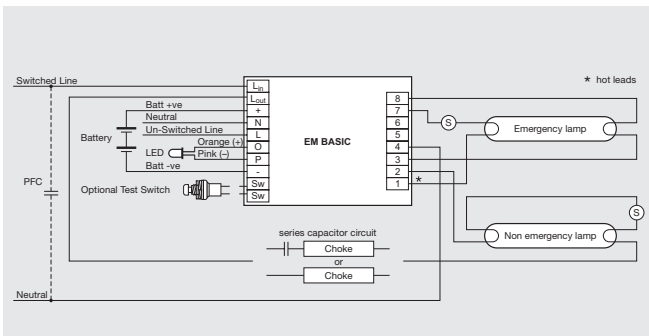
Wiring diagrams for switch start circuit with magnetic control gear



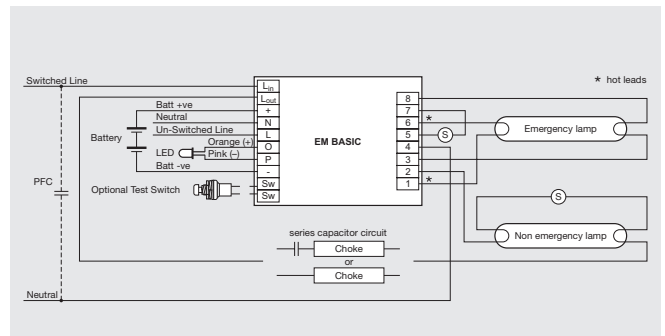
Single lamp switch start circuit with combined lamp holder and starter holder assembly



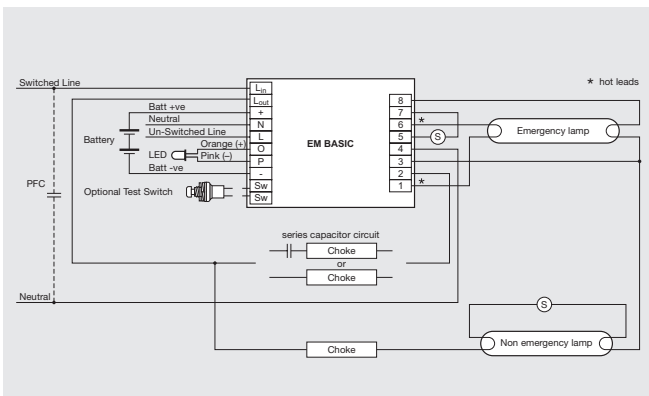
Single lamp switch start circuit with separate lamp holder and starter holder



Twin series switch start circuit with combined lamp holder and starter holder assembly



Twin series switch start circuit with separate lamp holder and starter holder



Twin parallel wiring with separate lamp holder and starter holder

Wiring guidelines for EM BASIC emergency modules

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.

Wiring guidelines for EM BASIC used with 50 Hz magnetic ballasts and glow-switch or electronic starters

1. 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.
2. The switched mains leads must be wired through the fifth pole to isolate the mains supply from the rest of the wiring. The compensation capacitor parallel to the mains must not be wired through the fifth pole, it must be wired directly to the mains terminal (Overload of the relay contact because of the high inrush current of the capacitor). With serial compensation the capacitor is connected directly to L_{out} .
3. The mains supply wiring should be looped between circuit elements (PFC, capacitors, chokes etc.) by using multi way terminals to avoid multiple lengths of line and neutral cables running the length of the luminaire.
4. In inductive or serial compensated luminaires the noise suppression can be improved with a noise suppression capacitor, e.g. 47 nF.
5. On 2 lamp luminaires both ballasts are connected through the emergency unit (L_{out}). The neutral lead for both circuits will be returned through PIN 3 of the emergency unit, so that neutral wiring is also disconnected from the mains in the emergency mode of operation.

6. 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 minimise coupling. They also have a restriction on capacitance to other wiring and earth of 100 pF, (EM 35D 55 pF), which must be observed to ensure good lamp starting.
7. 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.
8. Through wiring may affect the emc performance of the luminaire.

Wiring guidelines for EM BASIC used with electronic ballasts

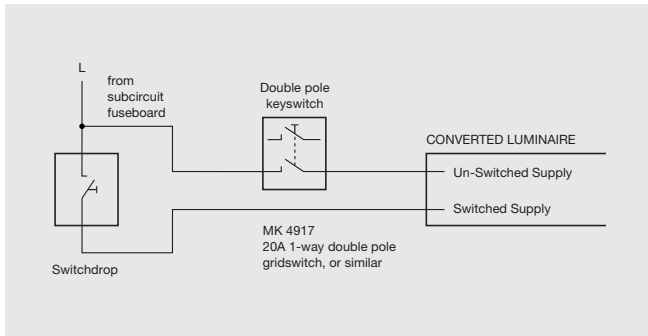
The same general principles of good wiring practice, as outlined above, also apply to luminaires containing electronic ballasts with EM BASIC modules. Some further notes are given below.

1. 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.
2. All high frequency wiring should be separated from 50 Hz wiring, and kept as short as possible, particularly the emergency hot leads.
3. 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.

Testing

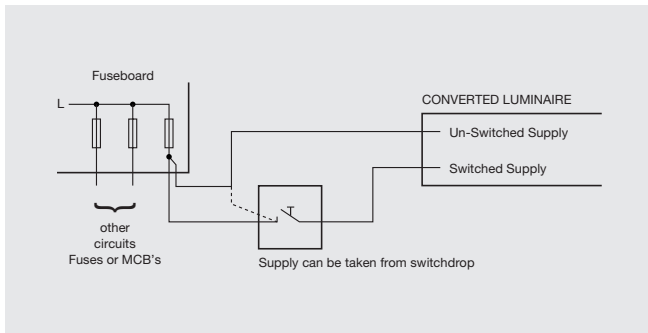
Test Circuit

To test luminaires converted with this module it is only necessary to provide a method for disconnecting THE UNSWITCHED SUPPLY.



Keyswitch Testing

The unswitched mains supply to this module should be derived from a circuit which is continuously energised. Steps must be taken to ensure that this supply is not inadvertently interrupted at any time. Switches associated with this supply should either be sited in a position inaccessible to unauthorised persons, or be of a tamper proof type.



Fuseboard Testing

Testing

Emergency Lighting must be regularly tested to ensure that it is working and that the batteries achieve the specified duration. Results of testing should be recorded on a test record card. FAILURE TO DO SO WILL INVALIDATE ANY WARRANTY CLAIMS. BS 5266 specifies the following tests.

- **Daily:**
The charge indicator (LED) should be checked to see if it is alight.
- **Monthly:**
To check correct function, the converted luminaire should be energised from its battery for a short period.
To ensure the full functionality is recommended to expand the function test duration to approximately 30 seconds.
- **Six monthly:**
The converted luminaire should be energised from its battery for a period of 1 hour (3 h duration) resp. 15 minutes (1 h duration).
- **At three years and each subsequent year:**
The converted luminaire should be energised from its battery for the full emergency duration depending on variant.

Batteries should be replaced after 4 years or if the luminaire does not meet its rated duration.

Because the failure of the supply could occur immediately after testing, the operational tests above should be carried out at times of least risk. It is important that prior to the tests the unswitched supply must have been connected for at least 24 hours. Test by disconnecting the supply as described in "Test Circuit" which will simulate mains failure.

Test Switch (optional)

A test switch, connected between the Sw terminals of the module, when pushed, will cause the module to operate in the emergency mode. This may be carried out whilst the main supply is present (recommended test duration appr. 30 seconds).

General notes

Safety

This module must be connected to an adequate earth.

This module and associated luminaire has both an unswitched mains electricity supply and a switched supply as well as an internal battery. To ensure safety disconnect all three before installation or maintenance work begins. (Isolate battery by disconnecting the negative lead.)

The nickel cadmium batteries used together with this module contain an electrolyte which can be harmful to eyes and poisonous on open wounds. Care must be taken when handling the batteries, to avoid puncturing the case. If electrolyte comes into contact with skin wash immediately in water.

Batteries must not be subjected to excessive charge or discharge currents. When working with batteries take care not to short circuit them with tools or jewellery etc.

Installation

Installation must be carried out by a competent person, in accordance with the national or local wiring regulations (in the UK, the 16th edition of The Regulations for Electrical Installations, published by the IEE, apply.), and BS 5266 Part 1; Code of Practice for Emergency Lighting. If in any doubt consult a qualified electrician.

Ensure that voltage and frequency requirements are compatible with the available supply.

Observe the correct polarity when making electrical connections.

Maintenance

The module does not contain serviceable parts and should not be opened. DOING SO WILL INVALIDATE THE WARRANTY.

Replace failed lamps promptly to avoid damage to the components.

Disposal of Batteries

Do not incinerate batteries. Whilst disposing of small quantities is possible with little or no risk, large numbers require expert handling. Consult the relevant Local Authority Health and Safety Officers.

User Obligation

Every care is taken by Tridonic, in the design and construction of its products, to ensure that as far as is reasonably practical, the products, when properly used are safe, and without risk to health.

The health and safety at work act, however, imposes upon the users of a Company's products, an obligation to ensure that all personnel involved with the installation, handling, use or disposal of the products are acquainted with the information provided by the Company, and are made fully aware of any precautions that need to be taken.

Modification

Do not attempt to modify this product. Any modification will invalidate the safety/approval marks, and may render the product unsafe. Tridonic will not accept responsibility for any modified product, or any injury damage, or loss, which may arise as a result of unauthorised modification.

Change of Specification

Tridonic reserve the right to change specifications without prior notification or public announcement.