mackwell electronics

# INSTALLATION INSTRUCTIONS

**AUTOTEST MODULE** **NON-MAINTAINED**

| | | |
|---|---|---|
| MODULES: | AS453 | for 4 - 8 watt lamps with 2 x 4 Ah cells for 3 hours |
| | AS454 | for 6 - 8 watt lamps with 3 x 4 Ah cells for 3 hours |
| | AS453/M1 | for 4 - 8 watt lamps with 2 x 1.5 Ah cells for 1 hour |
| | AS454/M1 | for 6 - 8 watt lamps with 3 x 1.5 Ah cells for 1 hour |

## GENERAL DESCRIPTION

The module comprises battery charger, solid state circuit operating changeover relay, deep discharge protection circuit and LED charge indicator. A pre-programmed microprocessor system routinely tests all functions of the emergency circuits reporting status through the LED. The method of connection is by terminal block and a quick release mechanism is fitted so that leads may easily be removed. Wires of cross sectional area 0.5 – 2.5mm² may be connected by pushing a solid conductor into the connection or operating the release mechanism to insert a stranded conductor. The connection marked "starting aid" is fitted with a green/yellow lead with a ring which is intended to be bolted down by the nearest fixing screw to the chassis. The wire is not a safety earth, but is required to obtain EMC compliance or act as a starting aid for the lamp. PLEASE NOTE, THIS CONNECTION MUST BE REMOVED DURING FLASH TESTING. Earthing would normally be achieved via the fixing screws and the upper surface of the flange is unpainted to facilitate this.

When the module is connected to the unswitched mains supply with the battery connected, the indicator will light and this shows that a charge current is flowing to the battery. A charge time of 24 hours should be allowed before testing the unit for its duration. If it does not achieve well in excess of its rated duration, the charge cycle should be repeated.

N.B. It should be noted that simply connecting the battery to the module would not light the lamp. The lamp will only go into emergency mode upon mains failure. The unit may therefore be tested, and if the mains is not being permanently connected the battery may be disconnected and reconnected leaving the unit inert until mains is again applied.

## REMOTE MOUNTING OF MODULES

These units are not suitable for remote mounting and must be contained within the luminaire.

## TEMPERATURE

The ambient temperature range for the module is 0 – 55°C but in any event the centre side of can should not exceed 60°C.

## BATTERIES

Mackwell supply a wide range of high quality battery packs for use with our products. They have all been designed to provide the 4 year life required by BS EN 60598-2-22 and ICEL 1001, when operated within the temperature range specified. The maximum operating temperature of Mackwell battery packs is detailed in our web site. This should not be exceeded, or the operational life of the cells will be reduced.

## DEEP DISCHARGE PROTECTION

The module is fitted with a deep discharge circuit, which disconnects the battery after the cell voltage has dropped below the end of discharge level (1 volt per cell) and the circuit will remain inert until the supply is restored. This will protect the battery against the dangers of full and deep discharge.

## FUSES

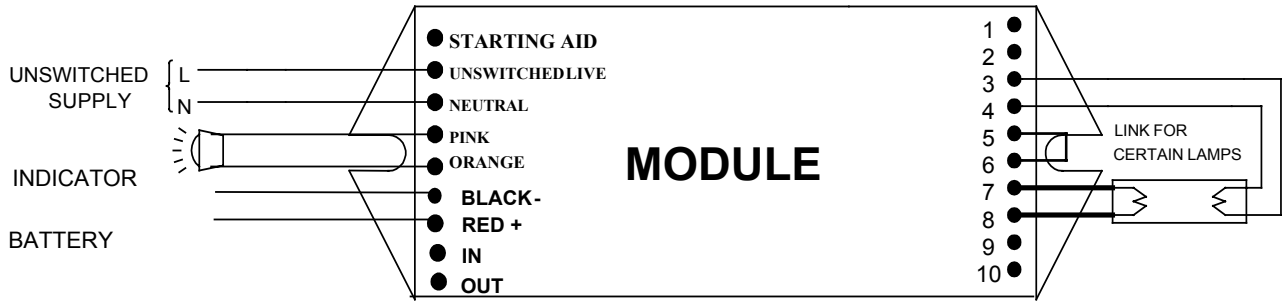
Battery A battery fuse is incorporated in the module to protect the battery from heavy discharge

Charger Although the charger is already short circuit protected it may be desirable for isolation to include a fuse in the circuit. A suitable value is 750mA or 1A.

## MECHANICAL INSTALLATION

This should be looked at with a view to both temperatures and convenience before commencing. Firstly, the battery is the most sensitive of the components and has a temperature rating of 55°C for NiCd batteries. It should be pointed out that this is a maximum value in order to achieve an expected life in excess of 4 years as required by BS EN 60598-2-22. If run continuously at 60°C for example, the expected life would reduce to approximately 3 years and in addition, capacity and charge acceptance would be reduced. The optimum battery performance will be achieved at 30°C and obviously the nearer to this value the better. To prevent premature lamp damage, after test the assembled luminaire should be energised for a minimum of 24 hours to fully charge the batteries. The un-switched supply should be left undisturbed during the commissioning and installation period, as otherwise lamp damage may occur.

## CONNECTIONS




## OPERATION

The module routinely tests all functions of the emergency system and reports on status through the LED.

| | | |
|---|---|---|
| **A continuous green LED indicates** | - | mains present and connected |
| | - | battery present and in circuit |
| | - | charge current satisfactory |
| **A flashing green LED indicates** | - | lamp fault |
| **LED off indicates** | - | battery fault or lack of mains |

**All fault indications persist until fault rectified and system reset.**

The autotest system goes into self test mode within a period of 37 days from commissioning. The test schedule is programmed into the microprocessor during manufacture to ensure that no more than 15% of luminaires are on test in any one day. Tests are repeated on a 30 day time frame.
**Three test durations are provided - 5 minutes / monthly - 60 minutes / 6 monthly - 3 hours / 12 monthly.**

| | | |
|---|---|---|
| **User reset facility** | - | To reset the LED after the fault condition has been rectified, the user simply switches the unswitched supply OFF/ON/OFF/ON within 10 seconds either external to or within the luminaire |
| **Test report status** | - | After each monthly test the memory status is incremented by one. The current status is displayed by the LED each time the mains is turned on. After a delay of 30 seconds the LED extinguishes (in groups of three to facilitate counting) to indicate the number of the next test to be carried out on an annual basis. The count is reset back to one after each annual test. In this way, users can be assured that essential monthly, 6 monthly and annual tests have been carried out and compile any supporting records they may require. |
| **Audible alarm** | - | An audible alarm will sound if a fault is found during a test. The alarm will sound 3 times every 35 minutes until the fault condition is rectified and the unit reset. |

## WARRANTY

All our electronic products are guaranteed for three years to cover both faulty workmanship and materials. This “Return to Base” warranty requires that the product is used within the terms and conditions stated above and in our literature, and in particular, modules must be used with the correct or approved battery pack. Items should be carefully checked thermally so that the specified temperatures are not exceeded under any conditions. Do not insulation test this product. Products returned to us under warranty must be carriage paid. Mackwell Electronics accept no liability for costs incurred. This does not affect your statutory rights.

Battery packs are guaranteed for one year, but when operating within the temperature specified in our web site have a design life in excess of four years as required by BS EN 60598-2-22.