



INSTALLATION INSTRUCTIONS

D SERIES MINI INTEGRATED MODULES

Modules:	Reference	Cells	Rating	Lamps	
	D222	3	4 Ah	13 w DEL, 16 w 2D, 21 w 2D	
	D222/M1	3	1.5 Ah	13 w DEL, 16 w 2D, 21 w 2D	
	D223	3	4 Ah	28 w 2D	
	D223/70	3	4 Ah	28 w 2D	70% output
	D224	4	4 Ah	16 w 2D, 21 w 2D	
	D224/M1	4	1.5 Ah	16 w 2D, 21 w 2D	
	D225	4	4 Ah	18 w DEL, 26 w DEL, 18 w T8, 18 w TEL (N/A), 28 w 2D, 24 w TC-L	
	D225/M1	4	1.5 Ah	18 w DEL, 26 w DEL, 18 w T8, 18 w TEL (N/A), 28 w 2D, 24 w TC-L	
	D226	3	4 Ah	9 w SEL, 10 w 2D	
	D226/M1	3	1.5 Ah	9 w SEL, 10 w 2D	
	D228	4	4 Ah	28 w 2D	70% output
	D228/M1	4	1.5 Ah	28 w 2D	70% output

Battery 3 or 4 cells as required: 4 Ah for 3 hour duration, 1.5 Ah for 1 hour duration.

GENERAL DESCRIPTION

The unit comprises high frequency ballast, solid state automatic device operating a changeover relay, battery charger, deep discharge protection circuit and charge indicator for use with 4Ah rechargeable Ni-Cd cells. The method of connection is by terminal block fitted with a quick release mechanism so that leads may be easily removed. Wires of 0.5 – 2.5mm² cross section may be connected by pushing a solid conductor into the connection or operating the release mechanism to insert a stranded conductor. Earthing is achieved via the fixing screws.

REMOTE MOUNTING

In general these units are not suitable for remote mounting due to their inherent low power consumption. The exception to this is the D224 4 cell module when operating the 16 & 21W 2D lamps, providing that the distance between module and luminaire is kept within 0.5M. **MINERAL INSULATED CABLES MUST NOT BE USED IN ANY CIRCUMSTANCE.** Multicore cables, which also have an inherently high capacitance between wires, may be used with caution providing the insulation is thick and opposite sides of the core leads are used for opposite ends of the lamp to minimise losses.

TEMPERATURE

The ambient temperature range for the module is 0 – 55°C but in any event the centre side of can should not exceed 70°C.

ELECTRICAL INSTALLATION

Modules comply with the EMC directive in both modes of operation, mains and emergency. Compliance will be protected by keeping lamp leads away from mains leads to avoid transfer of RFI to the live and neutral connections. The fused terminal block should be situated so that the incoming mains connections are short. To prevent premature lamp damage, after test the assembled luminaire should only be energised for a minimum of 24 hours to fully charge the batteries. The unswitched supply should be left undisturbed during the commissioning and installation period, as otherwise lamp damage may occur.

OPERATION

When the un-switched live and neutral are connected, the indicator will light to show that the battery is receiving charge and after a period of 24 hours the unit will be capable of achieving a 3 hour emergency duration. It should be noted that inserting the plug alone (connecting the battery) will not light the lamp this will only operate when the mains has been applied and failed. Connecting the switched live will cause the ballast to operate the lamp in mains mode and this can be switched in the usual way.

DIMENSIONS

Length:	150mm		
Width:	73mm		
Height:	33mm		
Fixing centres	140mm	Weight:	375g



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.

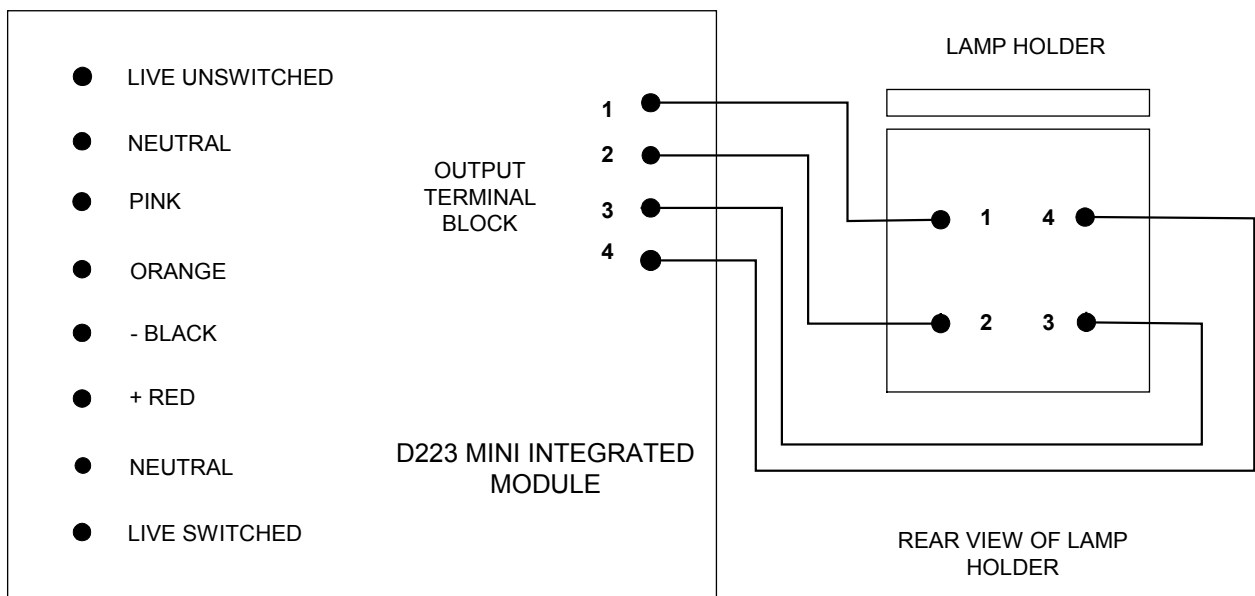
DEEP DISCHARGE PROTECTION

The module is fitted with a deep discharge protection circuit, which disconnects the battery after the cell voltage has dropped below the end of discharge level (1 volt/cell) and the circuit will remain inert until the supply is restored. This protects the battery against excessive discharge when the mains supply is removed for long periods.

FUSES

Battery A fuse is incorporated in the module to protect the battery from heavy discharge
Charger Although the charger is already short circuit protected a fuse should always be fitted in the luminaire to protect the system integrity against total failure of any unit. A suitable value is 2A.
Ballast Overload and short circuit protection is incorporated so that the ballast will safely shut down to standby mode when an abnormal load is detected in the lamp circuit. The unit will automatically reset to normal operating when the fault condition is cleared. However, a 2A fuse is recommended in the switched live feed to protect the system integrity.

CONNECTIONS



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 insulate 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.