

Excaltibur

Light Control System
installation
instructions

Racal-Quarcell

ENGLISH

Introduction

Excalibur is an automatic light control system comprising of 3 component parts when fully configured i.e. Sensor Head (s), Drive Unit and Controller.

N.B. A basic system will consist of Sensor (s) and Drive Unit only whereas the fully configured system includes a separate controller with adjustable user features (See section 2C for features).

Note: Any passive infrared sensor mounted outdoors could be triggered by animals etc. Excalibur is not recommended for triggering sirens or bells, where unwanted operation could cause a nuisance.

SENSOR HEAD

RANGE :	17m Volumetric (100° field of view)
ZONES :	30m Long Range 17 - Volumetric 11 - Long Range
POWER	
Voltage :	+12V d.c. (+10 to 18V)
Current :	5mA nominal at 12V
Max Ripple :	2V Peak to Peak at 12V
Trigger Output :	Low voltage when active
Daylight Sensor Output :	Output level varies with ambient light
Steerable adjustment	
Horizontal :	+/- 90°
Vertical :	+10° -50°
Packed Weight :	230g
Dimensions :	100mmx80mmx60mm
Index of Protection :	IP54
Operating Temperature :	-20° to 50°C

DRIVE UNIT

POWER	
Voltage :	220-240V a.c. 50Hz
Consumption :	5W (without load)
Switch Output :	Rated 8A (~ tungsten load) 240V a.c.
Operating Temperature :	-20° to 50°C
Packed Weight :	580gms
Dimensions :	145mmx147mmx47mm
12V Regulated Supply Output 600mA max	
Index of Protection :	IP55
* (SA fluorescent lighting)	

CONTROL UNIT

POWER	
Voltage :	+12V d.c. (+11 to 13V)
Current :	10mA maximum at 12V
Max Ripple :	2V Peak to Peak at 12V
Day - Night Adjustment :	5 lux to 100 lux (nominal)
Time On Adjustment :	1 minute to 20 minutes (nominal)
Operating Temperature :	0 to 50°C
Packed Weight :	130g
Dimensions :	83mmx83mmx14mm

2. Operation

(A) The Drive Unit

- The Drive Unit contains a power supply and relay to drive the load. It also contains the electronic interface for the sensor and control unit.
- The Drive unit has 2 selectable links inside, which should be configured prior to commissioning.

a) **Walk Test** - Enables a visual indication of sensitive zones via any wired load.

b) **Controller Link LK2 (8)** - If no controller is required then the link should be left in position. If a controller is fitted then the link should be removed and 'parked' on one pin.

(B) The Sensor Head

- The passive infrared sensor head triggers when it detects changes in infrared energy caused by a person moving through the area it covers.
- The sensor head contains a daylight sensor, which if connected enables the system to determine whether it is 'day' or 'night', then triggering only in night mode. If no connection is made then the system can be triggered on at anytime during the day or night.
- A maximum of 10 sensor heads may be fitted in one system.
- N.B. The daylight sense line should only be connected from **one** sensor head when multiple sensors are used in a system.

(C)

The Controller

- N.B. Only one control unit may be fitted per system.
- The control unit enables the following features to be selected/adjusted from an internal position suitable to the user:-

Slide Switch (29)

a) **Walk Test** - By selecting this position on the slide switch the user can walk test the system at any time without any need to return to the drive unit.

b) **ON** - This position will turn the light on regardless of any other conditions.

c) **AUTO** - This will be the normal position for automatic light operation. The lights will be triggered dependant on sensor detection and the ambient light level.

d) **AUTO** - This position has the same features as AUTO but with the additional audible feature on trigger. **N.B.** The Sounder will operate in both day and night modes.

e) **OFF** - The light will be off regardless of any other condition.

Adjustments

a) **Daylight (30)** - This adjustment allows the user to select the light level to enable the system to determine whether it is day or night. Turning the adjustment clockwise increases the ambient light level at which the system operates on automatic.

b) **Time (31)** - This adjustment allows the user to vary the length of time the lightroad is switched on.

3. Installing the Drive Unit

Drive Unit (Fig. 1)

- 1 Base Moulding
- 2 Cable Knockouts
- 2a Cable Knockouts - indoors only
- 3 Earth Termination screw
- 4 Electronics Module
- 5 Mains Terminal Block
- 6 Low Voltage Terminals
- 7 Walk Test Link - LK1
- 8 Controller Link - LK2
- 9 Module Retaining Screws
- 10 Module Cover
- 11 Module Cover Screws
- 12 Sealing Gasket
- 13 Lid Moulding
- 14 Lid Retaining Screws
- 15 Sensor Cable Knockout

(A) Mounting

Note: Switch off power during installation.

Note: The drive unit is not intended for connection with flexible cord wiring.

- The sensor can be mounted indoors or outdoors in a convenient location.
- The drive unit is designed for mounting a sensor on the lid if desired, to reduce installation wiring.
- For installation with sensor head attached see paragraph (4D).
- Remove Lid Moulding (13).
- Select Drive Unit orientation to suit cabling.
- If indoors, knockouts (2 or 2a) may be used (using a pin drift and hammer).

Warning : If knockouts (2a) are used then the unit must be mounted so as to avoid dripping or splashing.

- If outdoors, knockouts 2 only may be used with appropriate M20 cable glands or conduit adaptors to maintain sealing protection.
- Affix the base moulding to the wall using 4 off No.6 screws.

(B) Wiring

Note : The Drive Unit should be installed in accordance with the latest National Wiring regulations.

Note : Fit a fuse appropriate to the wiring used (Max 10A).

- The drive unit should be wired to the domestic power supply using terminal (5). The relay output (L out N out) provides a Neutral and Switched Live capable of operating a load of 2kW, which should be wired to the ramp/load.
- The Excalibur does not require an earth connection, however a terminal (3) has been provided to ensure the continuity of any earth wires from supply and load.
- The drive unit should then be wired to the sensor head (s) (and control unit if applicable) using low voltage cable (Fig. 5) to terminal (6). Note carefully the terminal identifier when connecting the Drive Unit to the Sensor head (and controller). (See Figure 5).
- Apply power to the system.

4. Installing the Sensor Head

Sensor Head (Fig. 2 & 3)

- 16. Mounting Bracket
- 17. Adjustable Head
- 18. Mounting Hole (secured)
- 19. Mounting Holes
- 20. Wing Nut
- 21. Terminal Block
- 22. Connector Cover
- 23. Connector Cover Screw
- 24. Special Mounting Screw
- 24a Special Mounting Screw (short)
- 32. Sealing Gasket
- 33. Cable Knockouts

For installation of Drive Unit and Sensor combined see section (4D).

(A) Positioning

- Choose a sheltered location for the sensor head with a clear view of the area to be covered.
- The coverage patterns of Escalibur with the sensor head mounted at 2.3 m is shown in Fig 6.
- **N.B.** Loosen wing nut (20) prior to adjustment
- To reduce range, point the sensor head lower/downwards.
- For optimum performance mount the sensor head such that an approaching person walks across the coverage pattern and not directly towards the sensor head.

(B) Mounting

- For installation with Drive Unit attached see paragraph (4D).
- Remove connector cover (22) via screw (23).
- Attach sensor to surface via 3 No.6 screws through fixing holes (18 & 19).
- Knockouts (33) are provided for cable connection to the Sensor.

(C) Wiring

- Switch off power during installation.
- The sensor head (s) should be prepared for wiring to the system as shown in Fig. 5 using standard low voltage 4 core cable. Multiple sensors may be wired either directly back to the drive unit or by connection in a loop.
- This part of Escalibur's wiring operates at low voltage.

Note: If 24 hour operation is required, leave terminal 4 (Daylight Disable Line) unconnected.

For night time only operation, connect terminal 4 to any one sensor head. In multiple head installations, terminal 4 must only be connected to one sensor head. Choose a sensor head which is not subject to bright floodlighting and which is not located in a "dark" location.

(D) Drive Unit and Sensor Combined

- Choose a location for the unit as described in 4A.
- Mount the Drive Unit as per 3A.
- Wire the Drive Unit to the mains supply and required load as per 3B.
- Remove knockout (15) in the Drive Unit Lid.
- Place the waterproof gasket (32) in position.
- Attach the Sensor Head to the lid using screws (24) provided. **N.B.** Note short screw positions (24a).
- Using 4 core low voltage cable connect the low voltage terminals (6) on the Drive Unit to the Sensor Head.
- Fix the lid moulding (13) onto the Drive Unit ensuring that the gasket (12) is held in position and fix with the four screws (14).
- **N.B.** Up to 9 other Sensors and 1 Control Unit can be connected.

5. Installing the Controller

Controller (Fig. 4)

- 25. Rear Moulding
- 26. Front Module
- 27. Terminal Block
- 28. Mounting Screws
- 28a. Mounting Screws (Special)
- 29. Slide Switch
- 30. Daylight Adjustment
- 31. Timer Adjustment

A) Positioning

- Choose an indoor location convenient for the operation of the unit.

(B) Mounting

- Switch off power during installation.
- The Control Unit has been designed for surface mounting with the rear moulding (25) provided or recess mounting in a standard light switch patress.
- Screws (28) are supplied for use with the rear moulding provided.
- Screws (28a) are supplied for use with a standard UK light switch patress.

(C) Wiring

- The Control Unit should be wired from terminal block (27) to the system as shown in Fig (5) using standard low voltage 4 core cable.
- This part of Excalibur's wiring operates at low voltage.
- Fix Front Module (28) onto the selected back box with the appropriate screws.

6. Testing Excalbur

- When the system is installed it should be tested as follows:
 - More : Follow procedure A for systems with no control unit
 - Follow procedure B for systems with control unit.
- (A) - Wait approximately 40 seconds after power up for the sensor head electronics stabilise.
 - Walk about to establish the detection pattern and adjust the sensor head to give the required coverage.
 - Tighten the sensor wing nut (20) - which will secure the sensor head in place.
 - Replace the sensor connector cover (22) using the screw (23).
 - Remove walk test link 7 from the drive unit (places on one pin for storage).
 - Replace the drive unit lid moulding (13) making sure that the gasket (12) is held in position and fix with the four screws (14).
- (B) - Remove walk test link 7 and controller link 8 from the drive unit. (Place on one pin for storage).
 - Replace the drive unit lid moulding (13) making sure that the gasket (12) is held in position and fix with the four screws.
 - Wait approximately 40 seconds after power up for the sensor head electronics to stabilise.
 - Select "walk test" on the control unit slide switch (29).
 - Walk about to establish the detection pattern and adjust the sensor head to give the required coverage.
 - Tighten the sensor wing nut (20) - which will secure the sensor head in place.
 - Replace the sensor connector cover (22) using the screw (23).
 - Select desired mode for customer operation as described under section 2(c).

7. Warranty

- 1 year warranty period
- The Drive Unit electronics are enclosed in a module. If the Drive Unit does not operate as specified during the warranty period, the electronics module (4) should be taken out and returned to your supplier, who will replace it.
- If the Sensor Head does not operate as specified, during the warranty period, it should be returned to the supplier who will replace it.
- The Control Unit is mounted on the front module (26). If the Control Unit does not operate as specified during the warranty period the front module (26) should be removed and returned to your supplier, who will replace it.

8. Appendix - Wiring Options

- A. Loads greater than 2kW**
A suitable relay or contactor must be used to isolate loads greater than 2kW from the Excalbur.
- B. Normally open (NO) switches**
One or more NO switches can be used to trigger the controller. The switch should be connected between TRIG and 0 Volts on Terminal 6 (Ref Figure 5).

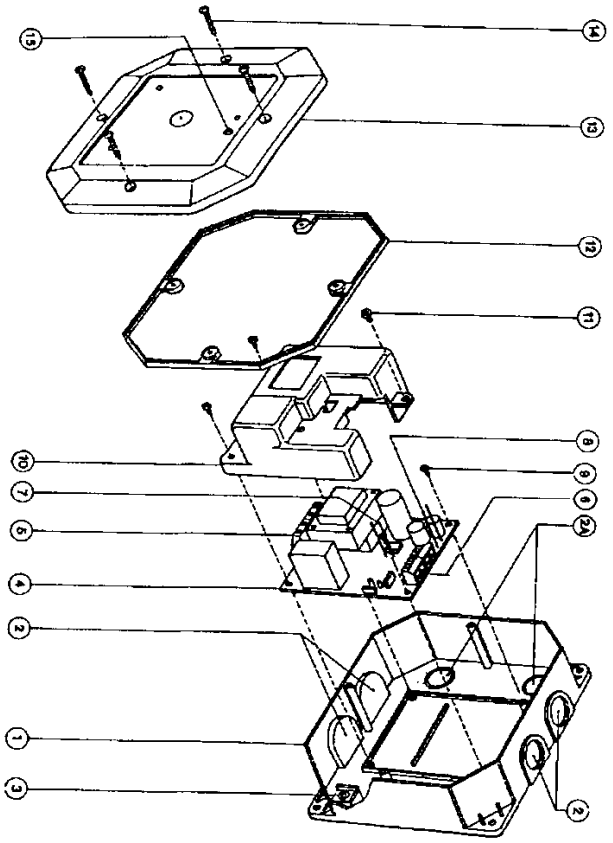


Fig. 1 - The Drive Unit

Fig.2 - The Sensor Head

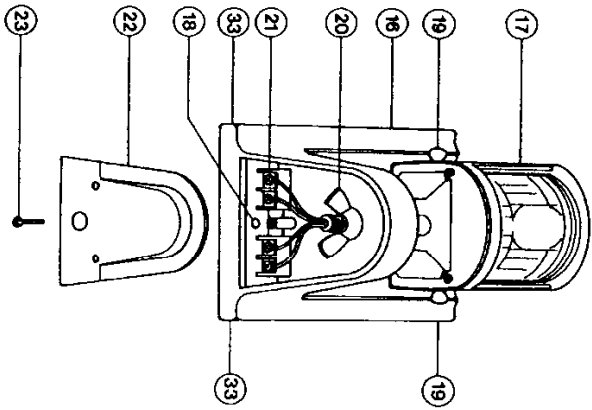
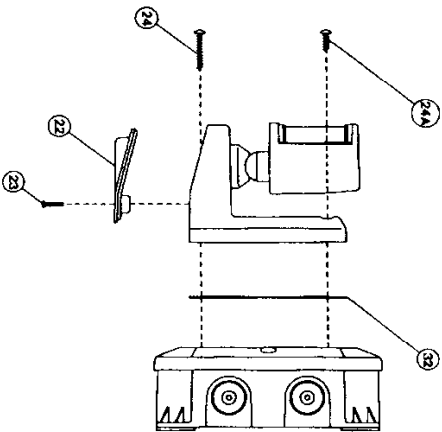


Fig.3 - Sensor Head and Drive Unit Combined



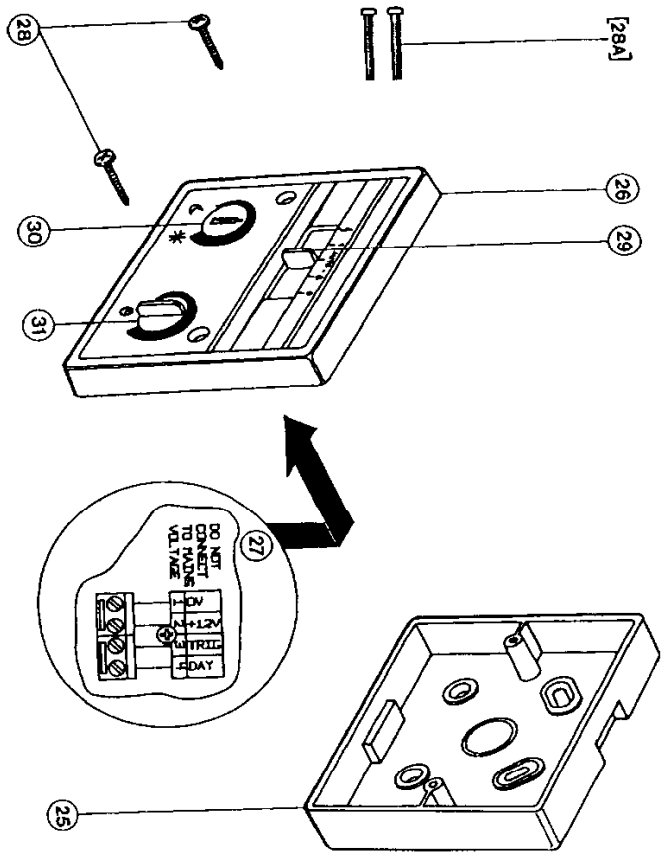


Fig. 4 - The Controller

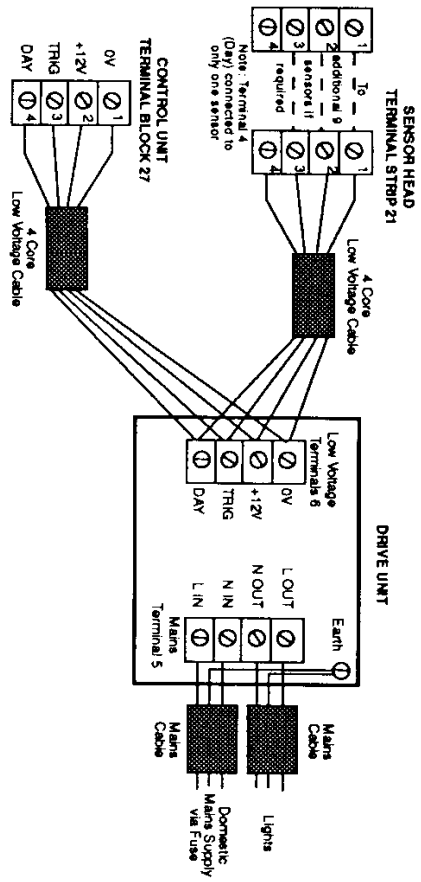
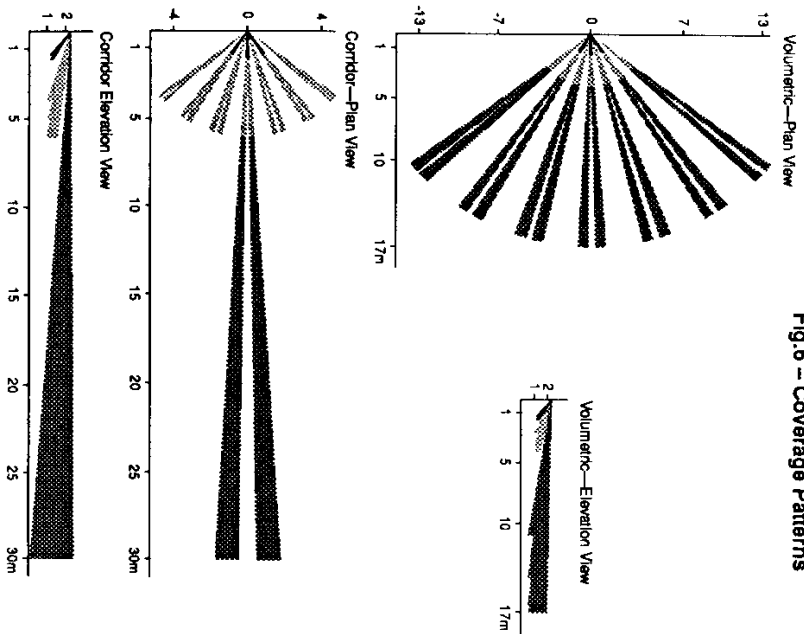


Fig.5 - Wiring Diagram

Fig 6 – Coverage Patterns



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