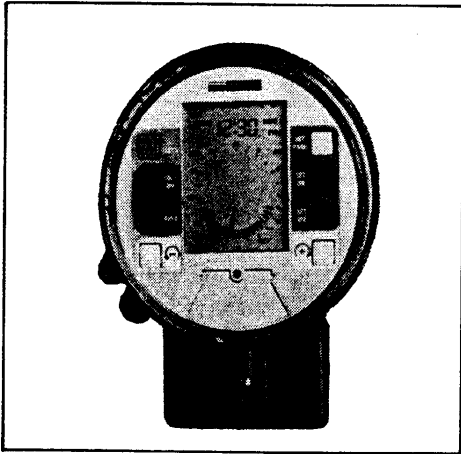


# ELECTRONIC MODELS

## E850 series



The QuartzMaster E850 combines the simplicity of plug-in installation with the flexibility of full 7 day programming. The unique 24 hour liquid crystal display shows each day's pattern of ON/OFF operations in full instead of just one event at a time; this feature makes setting quick and accurate and the weekly programme can be reviewed in a few seconds.

Available with ON/OFF (E854 and E855) or changeover contacts (E863). 2 year guarantee.

## SPECIFICATIONS

Programming .....	7 day programme with up to 48 ON and 48 OFF operations per day; copy day facility.
Display .....	Analogue display shows programme for current 24 hours and indicates current time. Digital display shows current time, day, date and month.
Mounting .....	Surface mounting; contact Sangamo for panel mounting information.
Override .....	2 hour boost for the OFF to ON condition.
Reserve .....	Continuously charged Ni Cad battery maintains programme, display and programming capability.
Current Rating .....	20 amps resistive.
Supply voltage/frequency .....	220/240V, 50/60Hz.
Minimum accuracy .....	$\pm 5$ mins per annum.
Daylight savings .....	Automatic changeover, see ordering information.
Temperature range .....	From $-10^{\circ}\text{C}$ to $+50^{\circ}\text{C}$ ( $-35^{\circ}\text{C}$ to $+50^{\circ}\text{C}$ for short periods only).
Protection .....	Live parts ..... enclosed Dirt protection ..... normal situations Moisture protection ..... ordinary Shock protection ..... class II
Packaging .....	Polystyrene box, attractive cardboard outer.
Instructions .....	Comprehensive handbook and tag-on abbreviated instruction card.
Overall dimensions .....	Height (wall mounted) ..... 136mm Width ..... 105.7mm Projection ..... 68.5mm

## ORDERING INFORMATION

Model

E854.000 Single pole, single throw, automatic BST/GMT changeover, 3 pin base\*

E854.001 Single pole, single throw, automatic EEC changeover, 3 pin base.

E854.002 Single pole, single throw, no automatic changeover, 3 pin base.

E855.000 Single pole, single throw automatic BST/GMT changeover, 4 pin base\*\*

E855.001 Single pole, single throw, automatic EEC changeover, 4 pin base.

E855.002 Single pole, single throw, no automatic changeover, 4 pin base.

E863.000 Single pole, double throw, automatic BST/GMT changeover, 4 pin base\*\*\*

E863.001 Single pole, double throw automatic EEC changeover, 4 pin base.

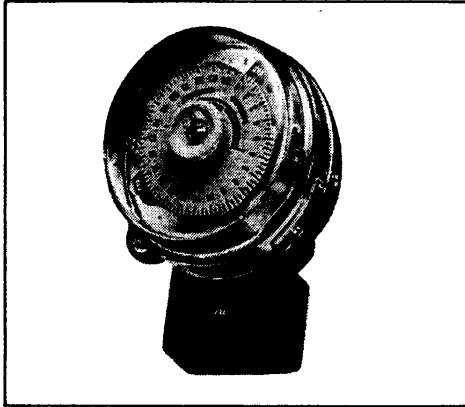
E863.002 Single pole, double throw, no automatic changeover, 4 pin base.

\* Drive and switching circuits are commoned.

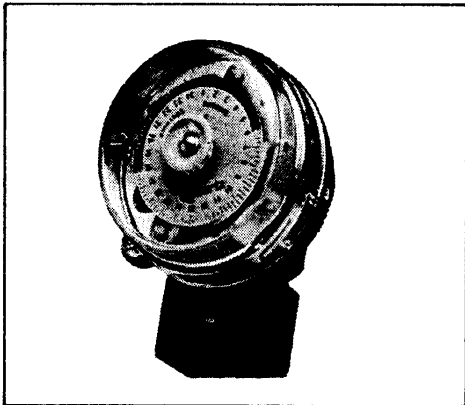
\*\* Drive and switching circuits are independent

# SYNCHRONOUS AND QUARTZ CONTROLLED MODELS

## S250, 24 hour series



## Q550, 24 hour series



Sangamo synchronous time switches are designed to perform a daily cycle of operations effected by operating levers fitted to the dial.

Once set by the user, the switch will operate at the selected times on every day of the week; if operations are not required on certain days, the Day Omission Device can be used (see special features.)

A manual operation push button is provided.

Quartz controlled switches offer the same range of operating features as the synchronous series but also incorporate a continuously recharged battery; the battery will maintain the switch's timekeeping for 100 hours in the event of a power interruption.

A manual operation push button is provided.

### **SPECIFICATIONS** (24 HOUR AND SOLAR DIAL MODELS)<sup>1</sup>

Supply (S250 series) .....	200/250V 50Hz
Supply (Q550 series) .....	200/250V, 50/60Hz
Current Rating .....	See individual models
Ambient Temperature Range .....	0°C to 50°C continuous
Power Consumption (S250 series) .....	1.4W at 230V
Power Consumption (Q550 series) .....	0.6W at 230V
Battery Reserve (Q550 series only) .....	100 hours at 15°C
Accuracy on Power (Q550 series only) .....	± 2 minutes per year
Accuracy on Reserve (Q550 series only) .....	± 15 seconds per 100 hours
Live Parts .....	Enclosed
Dirt Protection .....	Normal Situations
Moisture Protection .....	Ordinary
Shock Protection .....	Class 1 (must be earthed)
Dial Calibrations .....	15 minute divisions
Setting Accuracy .....	± 3 minutes

## SPECIAL FEATURES

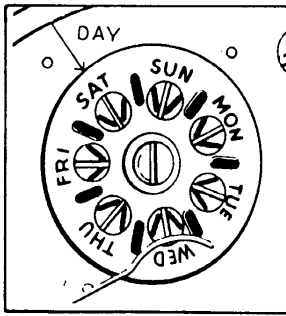


Fig. 1

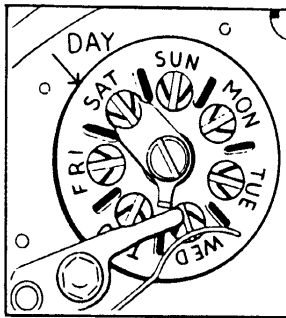


Fig. 2

The day omission device permits operations to be skipped on as many or as few days of the week as the user selects. Most models omit the ON operation to provide continuous OFF for the selected days e.g. weekends; some models omit the OFF to provide continuous ON for the selected days (see Ordering Information.)

The device consists of a disc containing a small inset for each day of the week and, as shown in Fig.1, all insets are pointing inwards rendering the device inoperative. Operation can be cut out on any pre-determined day by turning clockwise the inset for that day so that its arrowhead points to the periphery of the disc.

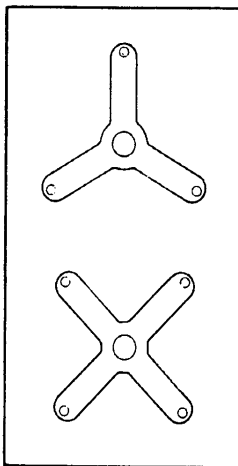
### Early Operation

Certain of the 24 hour dial switches are provided with a device which enables a particular switching operation to be carried out at an earlier pre-set time on any one day of the week. The day on which the 'early' operation is required to occur is pre-selected by means of a small day lever situated on the day omitting device. In Fig.2 this lever is shown set to Saturday and is engaging an adjacent lever which brings into operation the spring-tensioned 'early' operating lever on the dial of the switch.

---

## SPECIAL LEVERS

for operation at fixed intervals



1 group of  
3 fixed levers

1 group of  
4 fixed levers

### Form 4:

1 set of levers consisting of two groups of three levers, each one of the three being fixed at 120° to the next. (Performs three 'on' and three 'off' operations every 24 hours or six change-over operations in the case of Model Q563).

### Form 7:

1 set of levers consisting of two groups of four levers, each one of the four being fixed at 90° to the next. (Performs four 'on' and four 'off' operations every 24 hours or eight change-over operations in the case of Model Q563).

---

## MINIMUM PERIOD BETWEEN OPERATIONS

### On and Off Switches and Change-over Switches

1 pair of levers: These can be set for a minimum period of 15 minutes between operations.

1 set of levers: Each group of levers can be adjusted to give a minimum period of 15 minutes between 'on' and 'off' operations of 'A' and 'B' lever operations of change-over models.

'Early' lever plus 1 pair of normal levers: The minimum period between the setting of the 'early' lever and that of the normal lever preceding it is 3 hours; between the 'early' lever and the normal lever following it the minimum period is 1¾ hours. The period between the settings of the normal levers must be at least 15 minutes.

'Early' lever plus 2 pairs of normal levers: The limitations set out in the previous paragraph are equally applicable here but, it must be remembered that a minimum period of 1¾ hours must elapse between

# **ORDERING INFORMATION**

## **PLEASE SPECIFY MODEL AND FORM NUMBERS**

### **Models S254 (synchronous) Q554 (quartz control, 100 hour reserve)**

#### **1 Pole, 1 Throw, Current rating 20 A**

This switch is provided with a day omitting device which will omit the 'on' operation. It is available with any one of the following groups of levers:

- Form 1 One 'on' and one 'off' lever.
  - Form 2 Two 'on' and two 'off' levers.
  - Form 3 Three 'on' and three 'off' levers.
  - Form 4 Operation at fixed intervals (see special levers page 6)
  - Form 7 Operation at fixed intervals (see special levers page 6)
- 

### **Models S255 (synchronous) Q555 (Quartz control, 100 hour reserve)**

#### **1 Pole, 1 Throw Current rating 20 A**

This switch is supplied with independent motor connections but is otherwise similar to Model Q554.

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### **Models S257 (synchronous) Q557 (Quartz control, 100 hour reserve)**

#### **1 Pole, 1 Throw Current rating 20 A**

This switch is provided with a day omitting device which will omit the 'off' operation. It is available with any one of the following groups of levers:

- Form 1 One 'on' and one 'off' lever.
- Form 2 Two 'on' and two 'off' levers.
- Form 3 Three 'on' and three 'off' levers.

The model is fitted with independent motor connections.

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### **Models S259 (synchronous) Q559 (Quartz control, 100 hour reserve)**

#### **1 Pole, 1 Throw Current rating 20 A**

In addition to allowing 'on' and 'off' operations at regular times daily, this switch has a facility for giving an early 'off' operation on one day only of the week. A day omitting device is fitted and this will omit the 'on' operation. The switch is available with any one of the following groups of levers:

- Form 1 'Early' lever plus one normal 'on' and one normal 'off'.
- Form 2 'Early' lever plus two normal 'on' and two normal 'off'.

N.B. When two normal 'off' levers are fitted, the early operation is effective for one lever only.

The model is fitted with independent motor connections.

---

### **Models S286 (synchronous) Q586 (Quartz control, 100 hour reserve)**

#### **1 Pole, 1 Throw current rating 20 A**

In addition to allowing 'on' and 'off' operations at regular times daily, this switch has a facility for giving an early 'on' operation on one day only of the week. A day omitting device is fitted and this will omit the 'on' operation. The switch is available with any one of the following groups of levers:

- Form 1 'Early' lever plus one normal 'on' and one normal 'off'.
- Form 2 'Early' lever plus two normal 'on' and two normal 'off'.

N.B. When two normal 'on' levers are fitted, the early operation is effective for one lever only.

The model is fitted with independent motor connections.

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### **Models S263 (synchronous) Q563 (Quartz control, 100 hour reserve)**

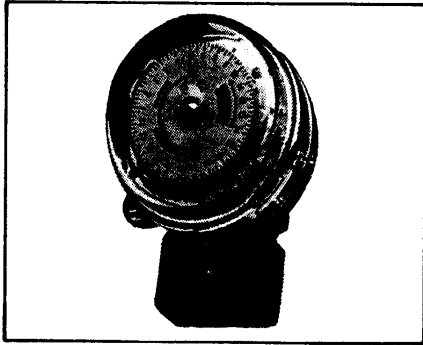
#### **1 Pole, 2 Throw \*Current rating 10/20 A**

This switch is fitted with a day omitting device which will omit the 'B' circuit operations. This circuit is shown in the wiring diagram for this model on page 5. The switch is available with any one of the undermentioned groups of levers. Each lever effects a change-over operation:

- Form 1 One pair of levers.
- Form 2 Two pairs of levers.
- Form 3 Three pairs of levers.
- Form 4 Operation at fixed intervals (see special levers page ).
- Form 7 Operation at fixed intervals (see special levers page ).

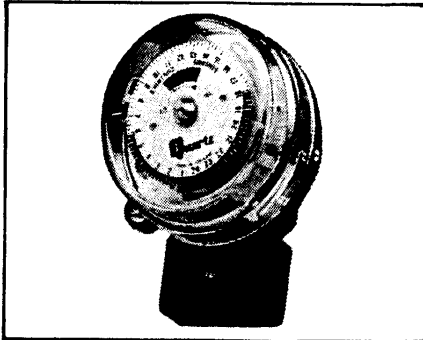
# SOLAR DIAL MODELS

## SYNCHRONOUS AND QUARTZ CONTROLLED



### S250 Solar Series Q550 Solar Series

Sangamo solar dial time switches are designed primarily for the automatic control of street lighting. The switches can also be used in any electrical circuit in which a daily cycle of switching operations beginning at or near sunrise and ending at or near sunset is required. Once set the switches will perform such a cycle throughout the year without further adjustment.



Quartz controlled solar dial switches offer the same range of operating features as the synchronous series but also incorporate a continuously recharged battery; the battery will maintain the switch's timekeeping for 100 hours in the event of a power interruption. This feature is particularly recommended for street lighting applications where re-setting switches following power interruption often proves time consuming and costly.

### SOLAR DIAL FORMS

All solar dial models are available with dials incorporating either 1 set of ON/OFF pins (Form 13) or with 2 sets (Form 14).

**1 ON/OFF.** Form 13 dials are supplied ready to switch the contacts ON at Sunset and OFF at Sunrise; by simply moving the OFF pin to a special position on the dial, however, the OFF operation can be fixed at any time between 8.30pm and 1.00am.

**2 ON/OFF.** Form 14 dials are designed to switch ON at sunset and OFF at any chosen time between 8.30pm and 1.00am, ON again at any chosen time between 3.15am and 8.30am and OFF again at sunrise. The early morning 'on' operation is automatically omitted when the sunrise time precedes the setting of the early morning fixed 'on' lever.



### SOLAR DIAL ZONES

**Zone 1:** South of line drawn through Bideford in the West, Taunton, Southampton to New Romney in the East (50°N)

**Zone 2:** North of Zone 1 and as far as a line drawn through Gwydir in the West, Whitchurch, Nottingham to Hunstanton in the East (52°N)

**Zone 3:** North of Zone 2 and as far as a line drawn through Corsewall Point in the West, Gretna, Newcastle to South Shields in the East (54°N)

**Zone 4:** North of Zone 3 in United Kingdom (56°N)

Dials can be supplied for certain other latitudes any details will be supplied on request.

As the times of sunset and sunrise vary with latitude, different standard dials have been designed for the four zones of latitude illustrated in Fig.1. The dials, as supplied, are set to the times of sunset and sunrise on the Greenwich meridian (longitude 0°) but can be simply adjusted to allow for variation of these times. Adjustments can be made up to approximately 45 minutes either side of longitude 0° in steps of 15 minutes, each step being equivalent to a variation of 4 degrees. If, for example, the switch is to be used on longitude 4°E of 4°W, an adjustment of about 15 minutes is required.

### ORDERING INFORMATION

**PLEASE SPECIFY MODEL, FORM NUMBER AND ZONE NUMBER**

MODEL S251 FORM 13 (synchronous) Q551 FORM 13 (quartz control, 100 hour reserve) 1 ON, 1 OFF. Single pole, single throw. 3 pin base. 20Amp.

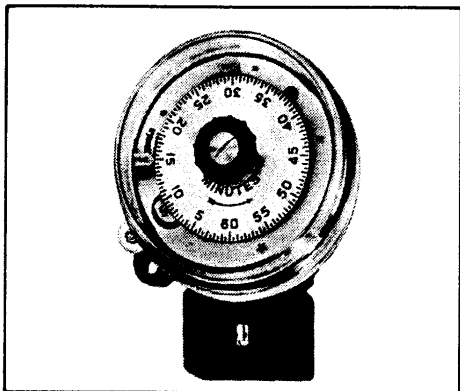
MODEL S251 FORM 14 (synchronous) Q551 FORM 14 (quartz control, 100 hour reserve) 2 ON, 2 OFF. Single pole, single throw. 3 pin base. 20Amp.

MODEL S253 FORM 13 (synchronous) Q553 FORM 13 (quartz control, 100 hour reserve) 1 ON, 1 OFF. Single pole, single throw. 4 pin base. 20Amp.

MODEL S253 FORM 14 (synchronous) Q553 FORM 14 (quartz control, 100 hour reserve) 2 ON, 2 OFF. Single pole, single throw. 4 pin base. 20Amp.

# SYNCHRONOUS 1 HOUR DIAL MODEL

## MODEL S271



The Sangamo 1 hour dial switch is suitable for a variety of automatic time control applications in a.c. circuits and is designed to perform an hourly cycle of operations effected by levers fitted to the dial. The switch is often described as a 'kindling clock' due to its extensive use with solid fuel heating systems.

### SPECIFICATIONS

Standard voltage and frequency .....	200/250V at 50Hz
Current rating (for a gas-filled lamp load) .....	20A
Motor consumption at 230V .....	1.4W
Dial calibration .....	30-second divisions
Setting accuracy .....	$\pm 15$ seconds
Ambient temperature range .....	0°C to 50°C
Live parts .....	Enclosed
Dirt protection .....	Normal Situations
Moisture protection .....	Ordinary
Shock protection .....	Class I
Approximate weight .....	510 g
The switch has a guaranteed life of 20,000 switching cycles.	

### ORDERING INFORMATION

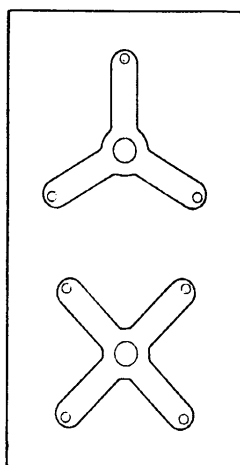
PLEASE SPECIFY MODEL NUMBER AND FORM NUMBER

#### Model S271 1 Pole, 1 throw

Five forms are available:

- Form 1 One 'on' and one 'off' lever
- Form 2 Two 'on' and two 'off' levers
- Form 3 Three 'on' and three 'off' levers
- Form 4 Operation at fixed intervals (see special levers below)
- Form 7 Operation at fixed intervals (see special levers below)

The model is fitted with independent motor connections (4 pin base) and a manual operation push button.



### SPECIAL LEVERS

for operation at fixed intervals

#### Form 4

1 set of levers consisting of two group of three levers, each one of the three being fixed at 120° to the next. (Performs three 'on' and three 'off' operations per dial revolution).

#### Form 7

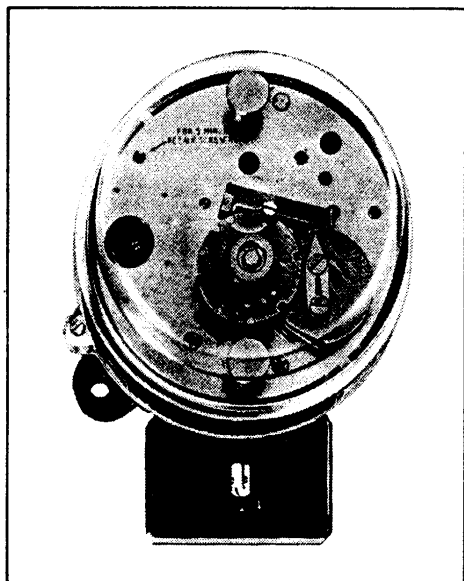
1 set of levers consisting of two groups of four levers, each one of the four being fixed at 90° to the next. (Performs four 'on' and four 'off' operations per dial revolution).

### MINIMUM PERIOD BETWEEN OPERATIONS

1 pair or 1 set of levers – 1 minute between unlike operations

# SYNCHRONOUS SHORT INTERVAL MODELS

## MODELS S277, S278, S279, S280



Sangamo short interval time switches are designed primarily for the automatic time control of Maximum Demand indicators but can be used in any electrical circuit in which short period switching is required to take place. There are two basic types of switch in the Short interval range: one is arranged to close a circuit for a pre-set period; the other is designed to open a circuit for a pre-set period. In each case, this period is controlled by a timing cam which is set against a time pointer for the required period. The interval between operations is pre-selected from a range of six timing intervals. The switch can be operated manually by rotating clockwise the timing cam assembly with the aid of a screwdriver.

### **SPECIFICATIONS**

Standard voltages and frequency .....	200/250V or 100/125V at 50Hz
Current rating (for a gas-filled lamp load) .....	5A
Motor consumption .....	1.4W at 230V
Cam setting accuracy .....	$\pm 2$ seconds
Ambient temperature range .....	0°C to 50°C
Live parts .....	Enclosed
Dirt protection .....	Normal situations
Moisture protection .....	Ordinary
Shock protection .....	Class I
Approximate weight .....	510 g

### **ORDERING INFORMATION**

**PLEASE SPECIFY MODEL NUMBER AND TIMING RANGE**

#### **Model S277 Form 1 1 Pole, 1 Throw, 3 pin base**

This switch is designed to 'make' a circuit for a pre-set period which is controlled by a timing cam. The timing cam is available with a timing range of either 5 to 75 seconds or 75 to 130 seconds and has an engraved scale which, for both timing ranges, is calibrated in 5-second divisions. Additionally, the switch is fitted with a selector disc which enables an interval of 10, 15, 20, 30 or 60 minutes to be obtained between operations; a five minute interval between operations can be obtained by removing a selector screw fitted to one of the operating levers. A tapped hole is provided on the top plate of the switch for retaining this screw.

#### **Model S278 Form 1 1 Pole, 1 Throw, 4 pin base**

This switch is fitted with independent motor connections but is otherwise similar to Model S277 Form 1.

#### **Model S279 Form 1 1 Pole, 1 Throw, 3 pin base**

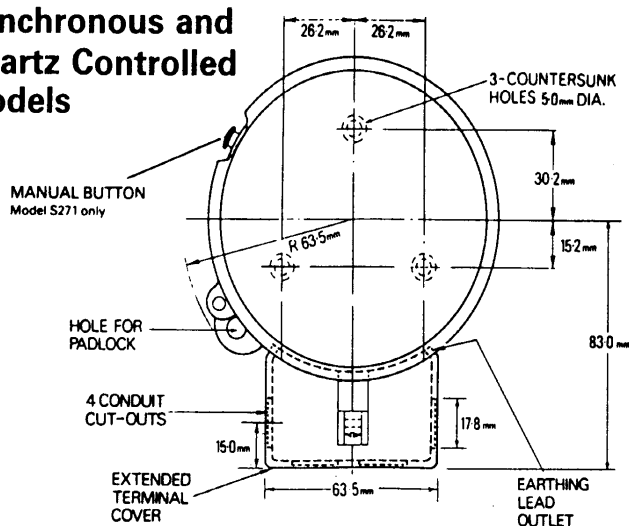
The switch is similar to Model S277 Form 1 with the exception that it is designed to 'break' a circuit for a pre-set period.

#### **Model S280 Form 1 1 Pole, 1 Throw, 4 pin base**

This switch is similar to Model S277 Form 1 with the following exceptions: it is designed to 'break' a

## DIMENSIONS

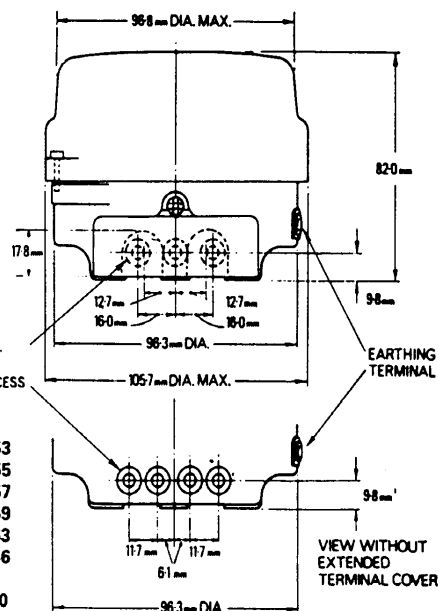
### Synchronous and Quartz Controlled models



**Three Pin Bases:**  
Models S251 S254  
Q551 Q554  
S277 S279

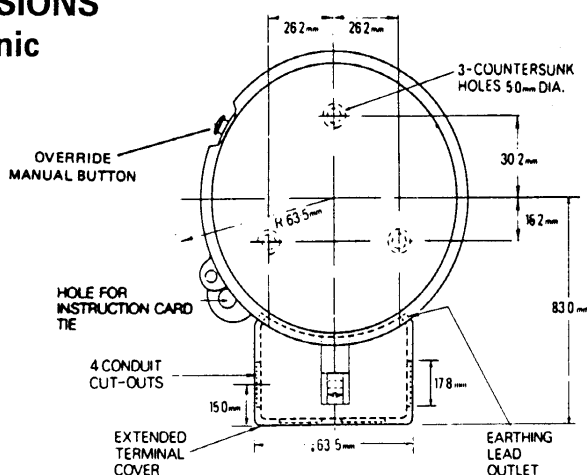
TERMINAL HOLES 4.75 mm DIA.  
TAPERING OUT TO 9.5 mm DIA.  
FOR CABLE INSULATION ACCESS

**Four Pin Bases:**  
Models S253 Q553  
S255 Q555  
S257 Q557  
S259 Q559  
S263 Q563  
S286 Q586  
S271 S278  
S280



## DIMENSIONS

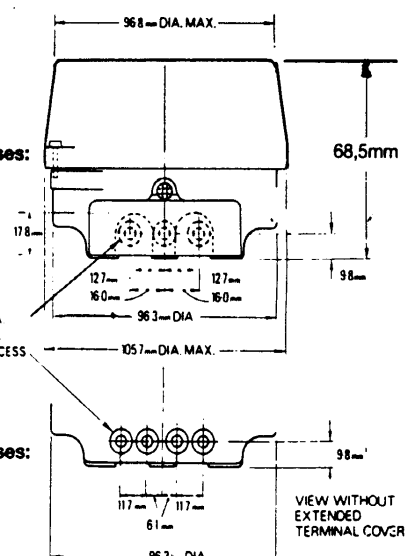
### Electronic models



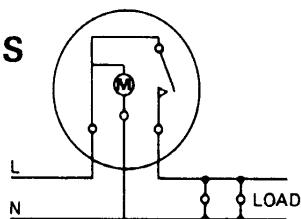
**Three Terminal Bases:**  
Model E854

**Four Terminal Bases:**  
Models E855  
E863

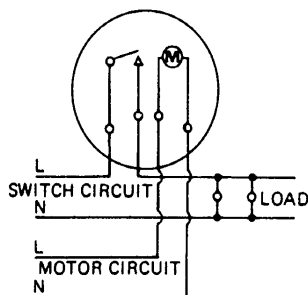
TERMINAL HOLES 4.75 mm DIA.  
TAPERING OUT TO 9.5 mm DIA.  
FOR CABLE INSULATION ACCESS



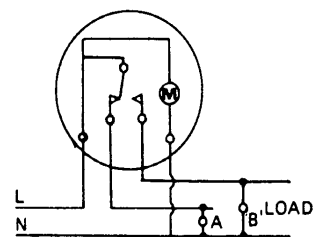
## WIRING DIAGRAMS



3 Pin models



4 Pin models



Changeover models

## EXTRAS

Synchronous and quartz controlled models can be supplied with a panel mounting housing. Please specify whether a manual operation push button is required.

Conduit entry box type FD930 is suitable for all Round Pattern models.

Some models can be supplied in voltages and/or frequencies other than those quoted in this leaflet, details are available from our Sales Office.

## GUARANTEES

### S250 Range

This product is guaranteed for 1 year. Should it become defective please contact your supplier.

### Q550 Range/E850 Range

This product is guaranteed for 2 years. Should it become defective please contact your supplier.

The maximum recommended shelf life is 1 year. In order to assist stockists, distributors and installers to rotate their stock correctly, all products carry a date code showing date of manufacture.