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General

You are now the owner of the latest design of electronic time switch incorporating years of Sangamo experience for reliability and first class workmanship.

Please read the following instructions carefully, they describe the recommended methods of installing and programming the time switch.

Guarantee

The switch is guaranteed by your supplier for two years from the date of purchase. If it should become defective, please contact your installer or supplier for a replacement unit.

The guarantee becomes invalid if the electronic circuitry has been tampered with, or if the switch has been abused or installed in an unsuitable environment.

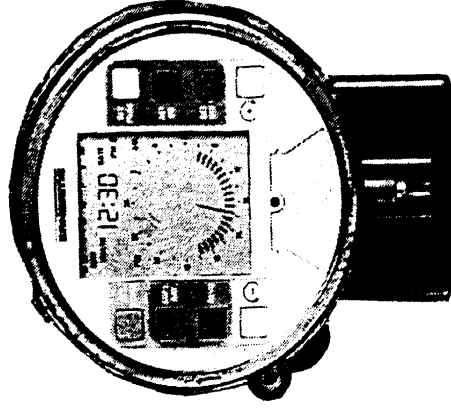
Daylight Savings Changeover

The changeover time is defined by the second group of 3 digits in the E850 model number:

E . . . 000 = BST/GMT changeover

E . . . 001 = EEC changeover

E . . . 002 = NO changeover



To Install

- 1) Rotate front cover anti-clockwise and lift clear.
- 2) Remove extended terminal cover A by unscrewing captive Screw B.
- 3) Lift Handle C and withdraw plug-in mechanism from switch base by pulling on Handle C.
- 4) Clear plastic from three fixing holes provided ensuring that no particles remain in base, use No. 8 woodscrews or 2BA countersunk screws for fixing.

NOTE: For safety reasons it is imperative that only these screw types are used and tightened so head is flush fitting within base.

When fitting this time control to insulating material using wood screws ensure all metalised coverings have been removed from the area of application and fix with suitable insulated wall plugs.

NOTE: This product is only suitable for "Ordinary" conditions i.e. this product is not protected against dripping or splashing moisture.

When mounting this time control on a metal surface ensure the metal is adequately earthed to cover 20A resistive rating in accordance with IEE regulations.

- 5) Connect switch to supply as in wiring diagram shown on page 6.
- 6) Plug mechanism into base.
- 7) Replace and secure extended terminal cover A.
- 8) On completion of installation replace cover and rotate clockwise to fully closed position with cover lug Y in position shown in fig. 2.
- 9) **IMPORTANT:** Secure instruction card to beaded tie mounted on lug Z.

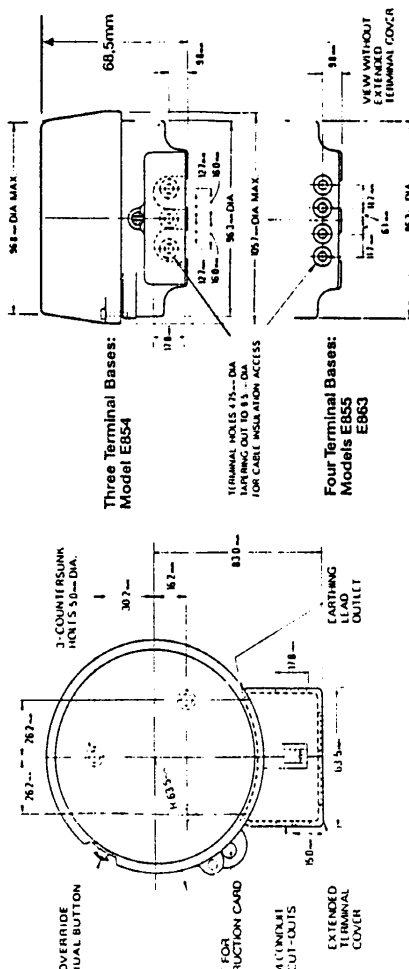
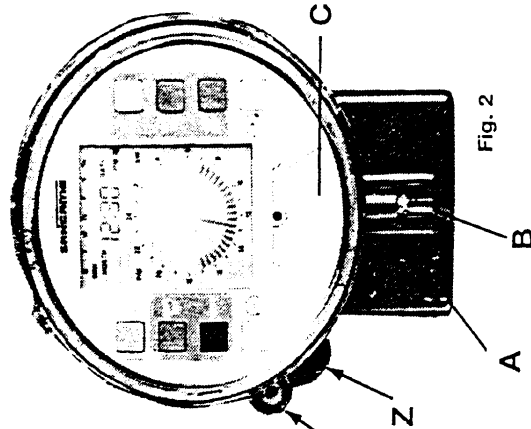
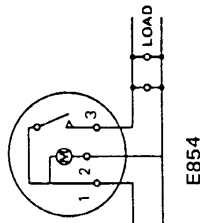


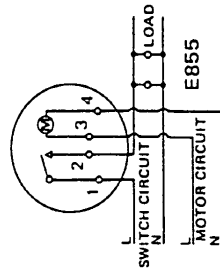
Fig. 1 Overall Dimensions and Mounting Positions



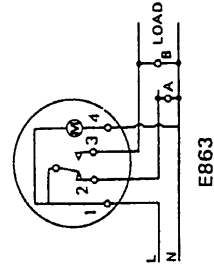
WIRING DIAGRAMS



E854



E855



E863

Electrical Connections –
Minimum cable size: 6.0 mm² Strip back insulation by 8mm from the end of wire to ensure satisfactory connection with the terminals.
Minimum switch current: 20A (resistive)

IMPORTANT NOTE:

Product is not suitable for use with existing Sangamo panel mounting attachments – for connection contact the address on back page.

In every case care is taken to ensure the accuracy of the electrical circuit diagrams shown. MORGAN ELECTRICITY or associated companies cannot be held responsible or liable for circuit variations other than those directly associated with the E850 range of time switches.

Wiring is for fixed wiring only. Provision must be made in the fixed wiring for a means of disconnection of the supply having a contact separation of at least 3mm on all poles.

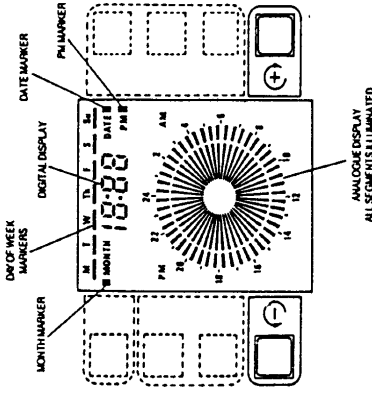
Installation should be carried out by a qualified electrician in accordance with IEE regulations.

The following tests should be carried out by the installer to check that the digital and analogue displays are functioning correctly. The test assumes that the switch is newly installed and that the digital clock has not been set.

When the E850 Electronic Switch is installed and the mains supply energised, the switch will immediately show the preset ON programme from 7am to 5 pm. Since the digital clock is not set, the digital display will show 0:00 and the analogue hand will appear vertically upwards.

All segments of the analogue and digital display should be tested for operation as follows:

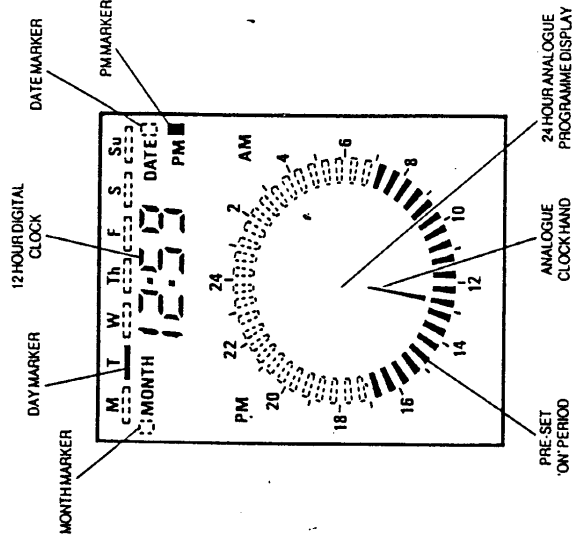
- Remove clear cover then simultaneously press the + and – buttons.
- All segments of the analogue and digital display should be illuminated as shown. If any segments are not illuminated the switch should be returned to your supplier for replacement.
- Set digital clock as described on Page 12.



NOTE: Pressing the SET CLOCK will change the switch from the Test mode to the Set Clock mode. Pressing the + and – buttons simultaneously after the digital clock is set will change the switch from the Normal Operating mode, (see Page 11) to the Test mode, however, the switch will automatically return to the Normal Operating mode with 7.5 seconds.

- Output Channels** : 1 programmable channel.
- Operating Capability** : 7-day programmable.
- Status Changes** : Up to 48 ON/OFF operations per day.
- Efficiency** : Energy-saving, automatic, 2 Hour, 'Boost-On'. See page 24.
- Display** : Seven segment display to 1 minute resolution; set to the second.
- Display** : 24-hour display with 30-minute programme indication and 15-minute switching capability.
- Back-Up (seable)** : Automatically rechargeable battery will retain memory and display for typically 100 hours.
- Charge Time** : Battery will automatically fully recharge within typically 200 hours.
- Output Switches** : Up to 20 amp (resistive) — SPST or CHANGEOVER SPDT Up to 220/240V ~ 50/60 Hz. 10,000 min switching cycles at 20A.

- Ambient Temperature Range** : Designed to operate over a temperature range of -10°C to 35°C continuous.
- Supply Voltage** : As shown on identification label of switch.
- Max. Cable Size** : 6.0 mm
- BST/GMT Changeover** : Automatic (see page 3)
- Accuracy** : Better than 5 minutes per annum
- Protection Live Parts** : Enclosed i.e. this timer is totally protected by the enclosure
- Dirt Protection** : Normal domestic dust deposits only
- Moisture Protection** : Ordinary i.e. has no special protection against moisture
- Shock Protection** : Class II, both functional and supplementary insulation
- Guarantee** : 2 years
- Mounting** : Wall mounting (see page 5)
- Packaging** : In energy absorbent polystyrene box and cardboard outer case.
- Instructions** : Full instructions contained in handbook. Additional programming instructions reminder on product label attached to base.



features a liquid crystal display incorporating an analogue programme display showing the switching in relation to a 24-hour analogue clock, and a 12-hour digital clock.

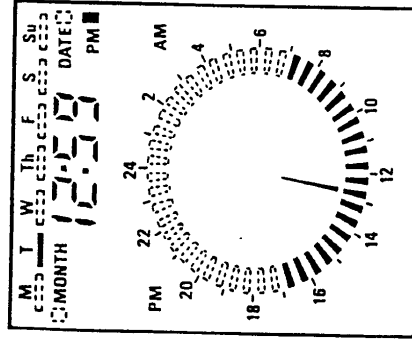
The programme display shows programmed switching 'On' periods, represented by means of markers as shown, and an analogue 'hand' showing the time on the 24-hour clock.

The display comprises a 12-hour digital clock and electronic markers to show PM, day of the week, month.

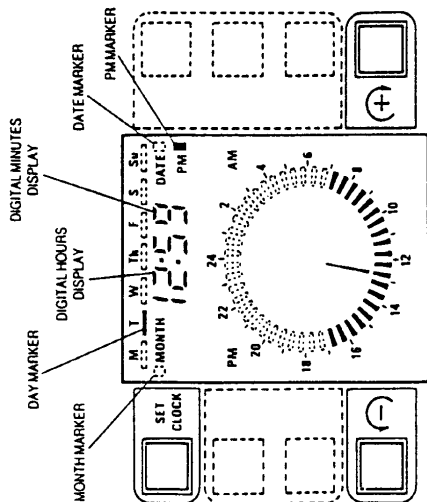
The switching 'On' period for each output channel from 7am to 5pm is automatically programmed into the switch memory and will appear on initially connecting power to switch. The time switch will also revert to switching programme in the event of the mains supply being disconnected for a period in excess of 100 hours.

The digital clock must be set when the mains supply is initially connected to the switch and after restoration following disconnection for a period of typically 100 hours. For alterations to the preset programme – timing the Time Switch (Page 15).

The switch can be set for time, programmed or reviewed whilst powered by the battery.



In the normal operating mode, the preset or programmed switching programme is displayed continuously on the analogue programme display. The analogue 'hand' will point to the actual time on the 24-hour analogue display and the digital clock will indicate the time and the day of the week.



E850 incorporates an internal, continuously charged battery which supplies power to the display the preset programmes within the unit memory during a power failure (typically 100 hours). The automatically recharge to full power within typically 200 hours.

Remove the clear cover and set the digital clock as follows:-

1. Set Minutes

- Press the SET CLOCK button. The minutes display will flash on and off.
- Press + or - button until the correct minutes setting is displayed.
- Press SET CLOCK to enter the set minutes in the unit memory. The digital hours will now be flashing on and off.

2. Set Hours and PM Marker

- Press the + or - button until the correct hours setting is displayed and the PM marker is illuminated as appropriate.
- Press SET CLOCK to enter the set hours in the unit memory. The day of the week marker will now be flashing on and off.

3. Set the Day of Week.

- Press + or - button until the day of the week marker is located below the correct day on the display.
- Press SET CLOCK button to enter the set day in the unit memory. The 'Month ' marker will now be flashing on and off and the last two digits on the digital clock will display 01 and flash on and off.

Month of Year.

or – button until the digital clock shows the correct month number of the year.

ET CLOCK button to enter the set month in the unit memory. The 'Date' marker will now be flashing off and the last two digits of the digital clock will display 01 and flash on and off.

Date of Month

or – button until the digital clock shows the correct date of the month.

ET CLOCK button to enter the set date number in the unit memory. The digital clock is now set switch will automatically revert to the Normal Operating mode.

or – buttons can be pressed and released to increment or decrement the digital display by one digit, pressed to continuously advance (or retard) the display. A delay of 1 second will occur before the digital move continuously.

can be supplied to automatically change from GMT to BST (or equivalent) and back again on the date. See page 3 Daylight Saving Changeover.

our years the date must be reset on the second of March of each leap year to reset the date to

the E850 returns to the Normal Operating mode after setting the digital clock, if it were previously in 'Override' mode it will be set to the normal operating condition and the 'Override' cancelled.

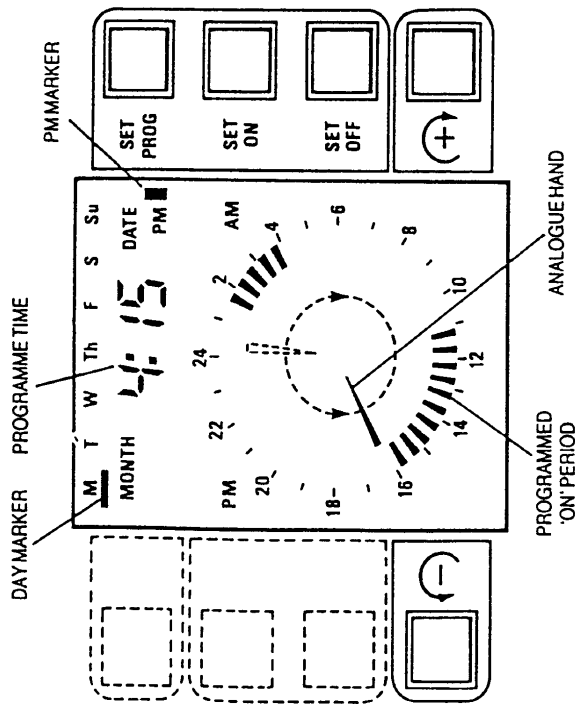
All E850 Electronic Time Switches are despatched from the factory programmed with a standard preset 'On' period from 7.00am to 5.00pm on initially energising the switch and when the switch is re-energised from the mains following a power disruption for a period of typically 100 hours.

The programme is displayed on the analogue display for each day in accordance with the actual or selected day of the week. Discrete electronic markers on the analogue programme display represent a switch 'On' period and the absence of markers represents a switch 'Off' period.

Programming the time switch to a programme other than that set at the factory is achieved by 'painting in' or 'wiping out' 'On' markers as the analogue hand is moved around the 24-hour clock display in either direction using the + or – buttons.

NOTES:

1. It is advisable that the intended ON/OFF programme is plotted on the programme chart at the rear of this manual before programming the time switch.
2. The E850 will automatically revert from the SET PROG mode to the Normal Operating mode 5 minutes after the last button is pressed. This feature protects the external circuit against the time switch being accidentally left in the SET PROG mode.



REMOVE THE CLEAR COVER AND PROGRAMME THE SWITCH AS FOLLOWS:-

- Press the SET PROG button. The analogue 'hand' will move to the vertical position at the top of the display and will be flashing on and off. The day of the week marker will take up a position below M (Monday).

NOTE: Should it be necessary to programme or amend programmes for specific days the particular day's programme can be selected by pressing the SET PROG button until the day marker is located below the required day of the week, then proceed as follows:-

- Press the + or - button. The analogue hand will move around the analogue clock in the appropriate direction. The + or - button can be pressed and released to increment (or decrement) the analogue hand (and digital clock) by 15 minutes, or held pressed to continuously advance (or retard) the hand and digital time. A delay of 1 second will occur before the hand (and digital clock) will move continuously. The digital clock will follow in direction and time in 15 minute steps. When the analogue hand approaches the point where it is required to 'paint in' or 'wipe out' an 'On' period, release the + or - button. The desired switching time (as displayed on the digital clock) can be approached in the 15 minute steps by momentarily pressing the + or - button.

To 'Paint in' an 'On' Period.

- When the digital display shows the required time to 'Paint in' an 'On' period momentarily press the SET ON button. The time switch will change to the 'Paint in' mode, and further rotation of the analogue hand around the clock in either direction will set the programme for an 'On' Period. An 'On' marker will be 'Painted in' on the display for every two depressions of the + or - button.

To 'Wipe Out' an 'On' Period.

- When the digital display shows the required time to 'Wipe out' an 'On' period, momentarily press the SET OFF button. The time switch will change to the 'Wipe out' mode, and further rotation of the analogue 'hand' in either direction will delete the programmed 'On' period. One 'On' marker will be deleted for every two depressions of the + or - button.

SET ON and SET OFF buttons incorporate a toggle feature. Pressing either button once will set the machine in the appropriate mode ('Paint in' or 'Wipe out'). Pressing either button again will set the time switch to the appropriate mode, neither 'painting in' or 'wiping out'. This feature is useful when amending existing 'neutral' mode, rather than changing the setting.

the SET ON button is pressed, an 'On' marker will immediately appear on the analogue programme. The 'On' marker initially represents an 'On' period of 15 minutes. Momentarily pressing the + or - button (or the + or - button) the digital clock by fifteen minutes but will not move the analogue hand. After the second press of the + or - button, the analogue hand will move in the appropriate direction by 30 minutes, and the 'On' marker to the analogue display. It is therefore possible to set an 'On' or 'Off' period beginning and ending at any time. The digital clock minutes display shows 00, 15, 30 or 45 although the analogue display will show the 'On' period as 00, 15, 30 or 45 minutes segment.

SET ON SET OFF + or - buttons the desired programme for Monday can be constructed.

the **SET BBPG** button to set the programme for Monday into the unit memory.

any of the week marker will then be positioned below T (Tuesday). The programming procedure is as previously described and the Tuesday programme entered into the unit memory by pressing the PROG button.

procedure is repeated for each day of the week until programming is completed for Sunday. The week's routine will now be contained in the unit's memory, and the E850 will return to the Normal Operating mode when the **SET PROG** button is pressed once more.



A review feature, incorporated within the E850 enables the user to check the programme in the unit memory for each day without affecting the normal operation of the time switch or without the risk of altering the programmes.

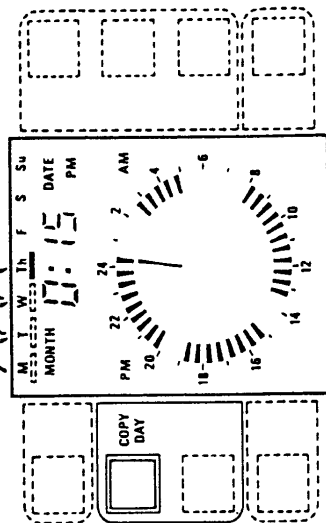
To Review the Week's Programmes.

Remove the clear cover and review the programmes as follows:-

- Press the REVU button. The digital display and the analogue pointer will zero and the day of the week marker will be located below M (Monday).
- The analogue programme display will show the programme for Monday.
- Press the REVU button again and the analogue programme display will change to show Tuesday's programme and the day of the week marker will move to T (Tuesday).
- By pressing the REVU button after viewing each day's programme, the weeks programmes can be examined.
- Pressing the REVU button after viewing Sunday's programme will return the time switch to the Normal Operating mode.

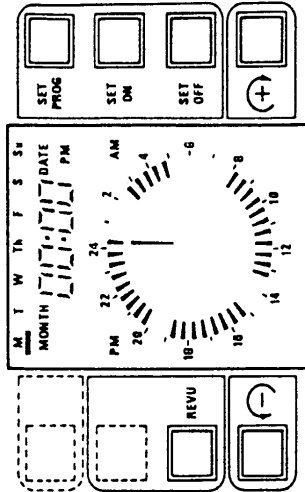
NOTE:

Should the time switch be accidentally left in the REVU mode, the switch will automatically return to the Normal Operating mode 5 minutes after pressing the last button.



programming is complete for one day, and the same programme is required for the next and subsequent programme can be copied by pressing the COPY DAY button.

COPY DAY button enters the first day's programme into the unit memory and changes the day marker to the next day. The COPY DAY button should be pressed instead of the SET PROG button as in steps (f) and (g) of the programming procedure. Pressing the COPY DAY button again will enter the day's programme into the unit memory and advance the day marker to the next day.

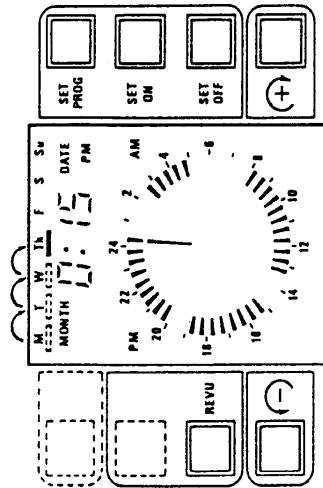


REVU feature can also be used to check the exact On/Off times of the programme as follows:-

Review Programme Settings.

Press the REVU button until the day marker is located below the day to be reviewed. Press the + or - button to rotate the analogue 'hand' round the programme day. The digital display will continue to show the time until the 'hand' crosses an 'On' or an 'Off' period. The digital display will immediately change to display the time of change of state. This time will remain displayed until the next change of state. The digital display will change to show the time of that change of state. By rotating the 'hand' around the analogue display, the time of each change of state can be noted on the digital display.

When the time switch is returned to the Normal Operating mode by pressing the REVU button repeatedly until the day of the week marker is located below Su (Sunday). Pressing the REVU button again will return the time switch to the Normal Operating mode.

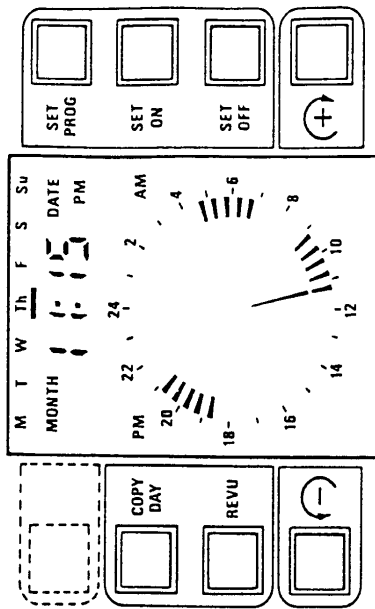


Amending a Programme While Reviewing.

Any programme under review may be amended by pressing the SET PROG button. This will change the switch to the programming mode, and the programme may be amended using the SET ON and SET OFF buttons to 'Paint in' or 'Wipe out' 'On' periods within the programme. The switch may be returned to the Review mode by pressing the REVU button or to the Normal Operating mode by repeatedly pressing the SET PROG button to Su (Sunday). One further press returns the switch to the Normal Operating mode.

Reviewing a Programme While Programming.

During programming, it may be necessary to check the time setting of a change of state. This is achieved by pressing the REVU button and using the + or - buttons to move the analogue 'hand' to the period to be checked. The digital clock will change to show the time of each change of state as previously described. The time switch is returned to the Normal Operating mode by repeatedly pressing the REVU button to Su (Sunday). One further press returns the switch to the Normal Operating mode.



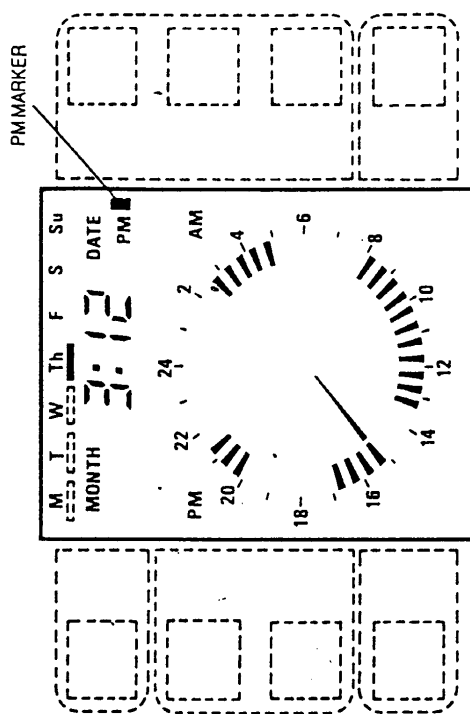
button provides an emergency facility to set the switch from an 'On' state to an 'Off' state or vice-versa accessible with the clear cover fitted.

If circuit is currently 'On', pressing the **OVERRIDE** button will immediately switch the circuit 'Off'. The number of the programmed 'On' period will be temporarily deleted from the analogue programme display and the circuit will remain 'Off' until the analogue 'hand' reaches the next 'On' period. At that point, the Override will be cancelled, the circuit will automatically return to the Normal Operating mode, and the deleted part of the period will return to the analogue programme display.

If circuit is currently 'Off', pressing the **OVERRIDE** button will immediately switch the circuit 'On' for a period of two hours. The analogue programme display will show the override 'On' period by means of a 'programme 'On' markers. The circuit will remain 'On' until the end of the two hour period and then return to the Normal Operating mode. The override programme markers will then be deleted from the display.

If the programmed 'On' period for the circuit is less than two hours from the current time, pressing the **SET** button will immediately switch the circuit from 'Off' to 'On'. The number of programmed 'On' periods required to ensure that the switch is 'On' until the next programmed 'On' period is reached are inserted into the analogue display. Whenever the programmed 'On' period is reached the **OVERRIDE** condition is cancelled, the circuit will automatically return to the Normal Operating mode and the **OVERRIDE** markers are deleted from the display.

If the circuit may be manually returned to the Normal Operating mode at any time during the Override by pressing the **OVERRIDE** button again.



NOTE:

If the **SET CLOCK** or **SET PROG** buttons are operated whilst circuit is in the **OVERRIDE** condition, the override for that circuit will be cancelled when the time switch returns to the Normal Operating mode.

Prog. No.	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1.	On - 7.00 am Off - 12.15 pm On - 1.00 pm Off - 4.15 pm	Copy Monday	Copy Monday	Copy Monday	On - 7.00 am Off - 12.15 pm On - 1.00 pm Off - 3.30 pm	On - 7.30 am Off - 12 noon	Off - all day
2.	On - 5.00 am Off - 7.00 am On - 9.00 pm Off - 11.00 pm	Copy Monday	Copy Monday	Copy Monday	On - 5.00 am Off - 7.00 pm On - 9.00 pm	Off - 1.00 am On - 6.00 am Off - 7.00 am On - 11.00 am	Off - 3.00 am
3.	On - 9.00 am Off - 12 noon On - 1.30 pm Off - 7.00 pm	Copy Monday	Copy Monday	Copy Monday	On - 8.00 am Off - 12 noon On - 1.30 pm Off - 4.30 pm	On - 6.30 am Off - 12 noon	Off - all day
4.	On - 5.00 am Off - 7.00 am On - 9.00 am Off - 11.00 pm	Copy Monday	Copy Monday	Copy Monday	On - 7.00 am Off - 12.30 pm On - 11.00 pm	Off - 3.30 am On - 8.00 am Off - 12.30 pm On - 9.00 pm	Off - 1.00 am

Prog. No.	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1.							
2.							
3.							
4.							