Schlumberger Electricity

Electronic Time Switch

INSTALLATION

AND

USER

INSTRUCTIONS

10:02 PM

DATE 19/05/95

MODE COPY CANCEL ACCEPT

SANGAMO

E750 SERIES

STANDARD VARIANT

* STD

CONTENTS

INTRODUCTION

Welcome

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

Carefully read the following instructions which comprise the recommended procedures for installing and operating the E750 time switch.

Applications and Variants

The Schlumberger range of Sangamo Round Pattern Time Switches provides the design solution for a wide range of lighting and heating control tasks.

Two main variants of the E750 series are available:

7 Day Standard Variant. These timers are available with single or dual channel control allowing up to five ON and five OFF operations per channel within any 24 hour period. A maximum of 140 switching operations per week dual channel and 70 switching operations per week single channel are supported.

Solar Mode Variant. These timers provide single or dual channel ON/OFF switching operations which track sunrise and sunset without relying on light detection. E750 switches offer early OFF and early ON switching which allows the user greater flexibility of operation. Lighting, for example, can be switched OFF for a period during the hours of darkness when not required.

Guarantee

This 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.

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

Repair Service

On expiry of the guarantee period, a comprehensive repair service is offered by the manufacturer. Phone number on back-cover for further information.

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SPECIFICATIONS

E754, E755, E763 and E770 - 7 Day Standard Variants

No. of Output Channels	:	Dual or single programmable channels.
Programming Capability	:	7 Day programmable.
Max. No. of Status Changes	:	5 ON and 5 OFF operations per day per channel with 15 minute switching resolution .
Override Facility	:	2 hour boost - when program OFF, Advance to OFF - when program ON, Holiday/OFF function - suspends programs.
Digital Display	:	12-hour digital clock, program and set-up indication (See page 5).
Analogue Display	:	24-hour analogue program display with 30 minute program indication.
Battery Back-Up	:	Automatically rechargeable battery will retain memory for typically 100 hours.
Battery Recharge Time	:	automatic full recharge typically 50 hours.
Rating of Output Switches	:	Up to 20A (resistive) — SPST or CHANGEOVER SPDT up to 230V ~ 50/60Hz.
		Up to 10A (resistive) per channel — Dual SPST up to 230V ~ 50/60Hz.
Ambient Temperature Range	:	-10°C to +35°C

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Supply Voltage	:	230V, 50/60Hz AC.
Max. Cable Size	:	6.0mm^2.
Clock Accuracy	:	Better than 10 minutes per year.
Protection		
Live Parts	:	This timer is completely protected by the enclosure.
Dirt & Moisture Protection	:	IP20. Control suitable for use in a normal pollution situation.
Shock Protection	:	Class 2, both functional and supplementary insulation.
Guarantee	:	2 years.
Mounting	:	Wall mounted standard round pattern base.
Packaging	:	Cardboard outer case.
Instructions	:	Full instructions contained in handbook.

Type 1B Control

BEAB approval applied for against BS EN 60730, part 2.7.

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THE ELECTRONIC DISPLAY

The E750 series features a Liquid Crystal Display (LCD) incorporating an analogue program display which displays all programmed ON/OFF periods for the selected 24-hour cycle. A 12-hour digital clock displays the current local time. A timer icon is activated whenever set-up mode is selected.

The analogue program display indicates programmed switching ON periods by activating the appropriate 1/2-hour LCD segments. See Fig. 1, page 5.
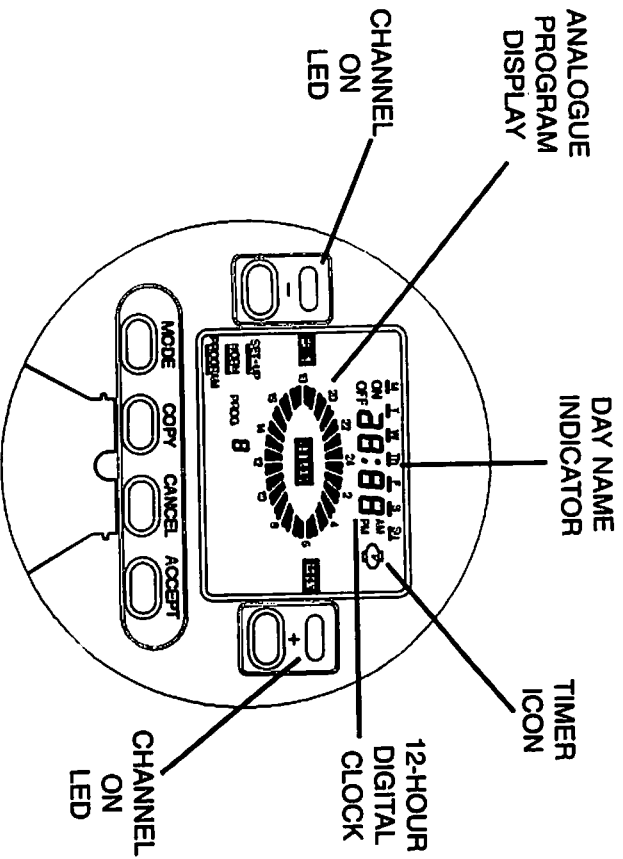
ANALOGUE
PROGRAM
DISPLAY

CHANNEL
ON
LED

DAY NAME
INDICATOR

TIMER
ICON

12-HOUR
DIGITAL
CLOCK

CHANNEL
ON
LED

Fig. 1

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Solar Variants

The LCD provides digital indication of local time (AM or PM), day of the week, date, mode (SETUP, NORMAL and PROGRAM), latitude, longitude, Greenwich Mean Time (GMT) offset, EARLY ON and EARLY OFF switching. Dual channel models display the channel being monitored as CH1 or CH2.

7 Day Standard Variants

The LCD provides digital indication of local time (AM or PM), day of the week, mode (SETUP, NORMAL and PROGRAM), current program (PROG 1-5), ON and OFF switching. Dual channel models display the channel being monitored as CH1 or CH2.

NOTE:
The digital clock must be set on completion of installation testing and after any disruption of the power supply which exceeds the battery life of 100 hours.

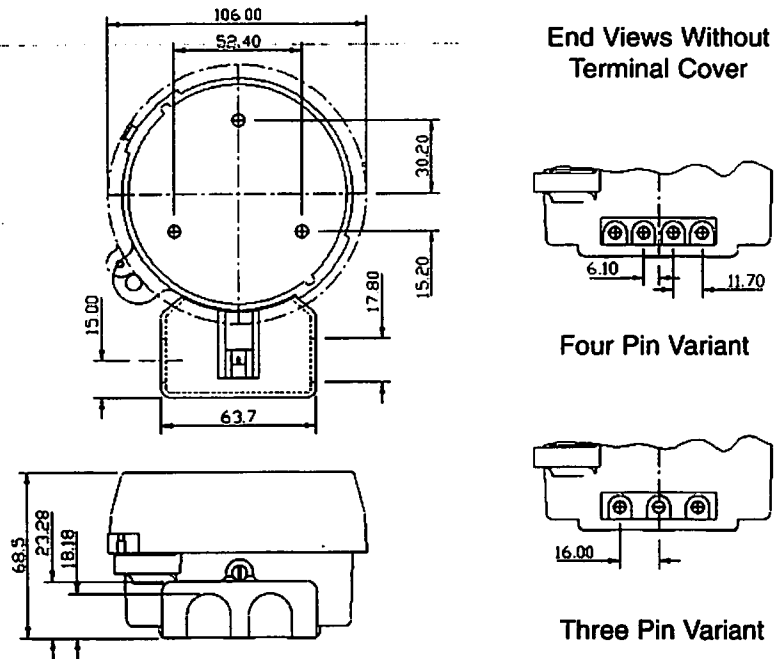## SANGAMO

Overall Dimensions and Mounting Positions

106.00
52.40
30.20
15.20
17.80
15.00
63.7

End Views Without
Terminal Cover

6.10   11.70

Four Pin Variant

16.00

Three Pin Variant

68.5
23.28
18.18

Fig. 2

NOTE: DIMENSIONS ARE IN MILLIMETRES

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To Install

WARNING:

Electricity can kill. Isolate mains supply before installation and servicing. Installation should be carried out by a qualified electrician, in accordance with the current edition of the IEE wiring regulations.

1.   Rotate front cover anti-clockwise and remove.

2.   Unscrew captive-screw C and remove extended terminal cover B. See Fig. 3, page 9.

3.   Lift and pull handle A to withdraw plug-in mechanism from switch base.

WARNING:

Electricity can kill. It is imperative that only those screws recommended below are used to mount the switch base. Screws must be secured firmly to ensure that heads fit flush within switch base.

When securing switch base to metalised insulating material using No. 8 wood or 2BA countersunk screws, remove all metalised coverings from the area of application. Locate and secure using appropriate insulated wall plugs. When mounting the switch base on a metal surface, ensure the metal is adequately earthed to cover 20A resistive rating in accordance with IEE regulations.

CAUTION:

THIS PRODUCT IS NOT PROTECTED AGAINST DRIPPING OR SPLASHING MOISTURE AND MUST NOT BE LOCATED WHERE IT MAY COME INTO DIRECT CONTACT WITH LIQUIDS.

4.   Remove plastic from three countersunk holes on rear of switch base. Ensure no plastic cuttings remain within switch base.

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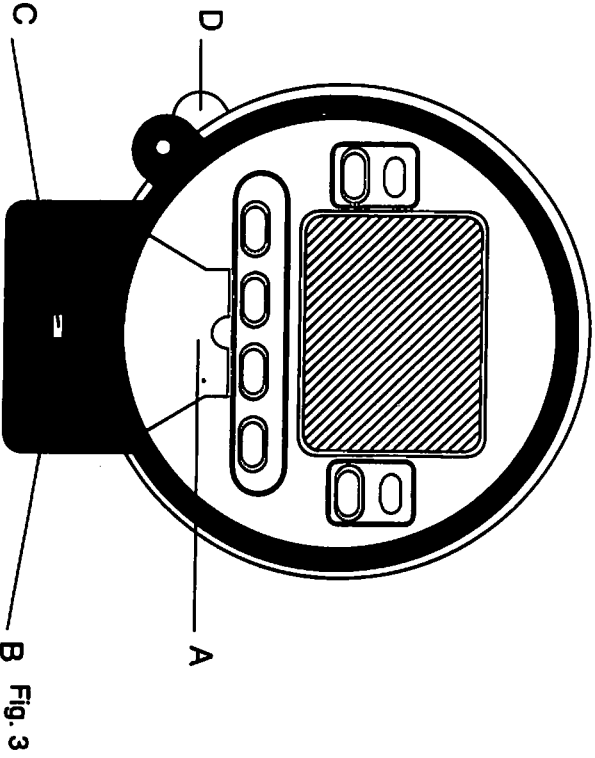5. Mount switch base using three No. 8 wood screws or three 2BA countersunk screws. See Fig. 2, page 7.

6. Strip insulation back 8mm from end of wire to ensure satisfactory connection with terminals. Connect fixed wiring to switch base. See Fig. 4, page 10, for the wiring diagram appropriate to your time switch model number.

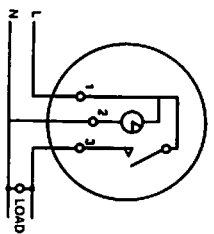7. Insert and engage plug-in mechanism in switch base.

WARNING:

Electricity can kill. Extended terminal cover must be fitted to ensure proper insulation protection.
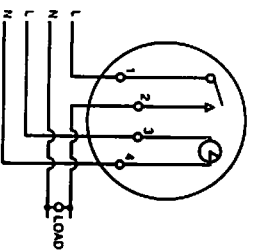
8. Secure extended terminal cover B to switch base using captive screw C.

9. Locate front cover on switch base and rotate clockwise until fully closed with lug D in position as shown. See Fig. 3, page 9.
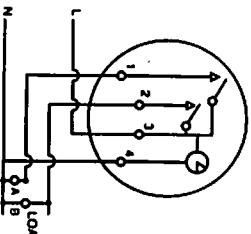

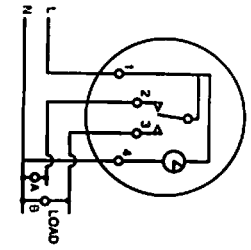B. Fig. 3

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E754

E755

E770

E763

Fig. 4

CAUTION:

ALTHOUGH EVERY CAUTION IS TAKEN TO ENSURE THE ACCURACY OF THE ELECTRICAL CIRCUIT DIAGRAMS SHOWN, SCHLUMBERGER ELECTRICITY OR ASSOCIATED COMPANIES CANNOT BE HELD RESPONSIBLE OR LIABLE FOR CIRCUIT CONNECTIONS OTHER THAN THOSE DIRECTLY ASSOCIATED WITH THE E750 RANGE OF TIME SWITCHES.

TERMINALS FOR FIXED WIRING ONLY. PROVISION MUST BE MADE IN THE FIXED WIRING FOR A MEANS OF DISCONNECTION FROM THE SUPPLY HAVING A CONTACT SEPARATION OF AT LEAST 3MM ON ALL POLES.

NOTES:

1) Maximum cable size: $6.0mm^2$.

2) Maximum switch current - 20A (resistive). Dual channel - 10A (resistive) per channel.

3) This product is not suitable for use with existing Sangamo panel mounting attachments - for clarification contact the address on the back page.

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SETTING-UP

On completion of installation or after any disruption of the power supply which exceeds the battery life of 100 hours, it is necessary to set the initial values detailed below to ensure the correct operation of this product.

1. Rotate front cover anti-clockwise and remove. Note: On power up, SETUP mode is entered automatically.

2. Press MODE button and repeat until SETUP is indicated on LCD. See Fig. 5, page 12.

NOTES:
1) On entering SETUP mode, timer icon is displayed and the digital clock is flashing.
2) On pressing MODE at any point during the set-up procedure, the system returns operation to NORMAL mode.

3. Set 12-hour digital clock:

   a. Press "+" or "-" button until correct time of day is displayed.

NOTES:
1) Pressing the "+" button increments the digital clock by one minute. Pressing and holding the "+" button increments the digital clock at an increased rate.
2) Advancing the minute display from 59 to 00 increments the hour display by one hour. Advancing the hour display from 11 to 12 toggles the AM/PM indicators on the LCD.
3) Pressing the "-" button decrements the digital clock by one minute. The "-" button exactly mirrors the behaviour of the "+" button.

   b. Press ACCEPT button to store time of day in memory. Day name indicator is now flashing. Timer icon disappears.
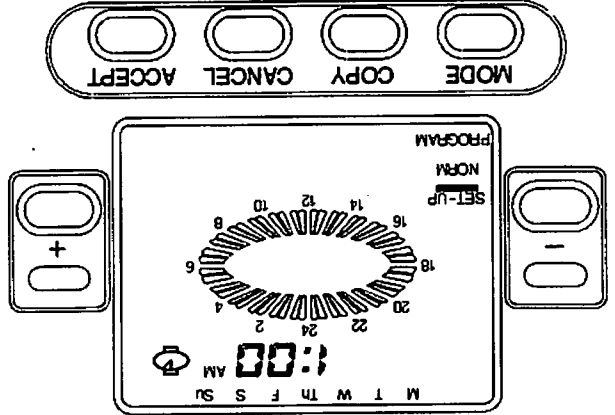
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Fig. 5

NORM
SET-UP
PROGRAM

1:00 AM

M T W T F S Su

MODE   COPY   CANCEL   ACCEPT
+   −

4. Set day name:

   a. Press "+" or "-" button until day of week marker is positioned below correct day name on LCD. See Fig. 6, page 12.

   b. Press ACCEPT to store day name in memory and enter NORMAL mode.

NOTE:
Pressing CANCEL returns system operation to the set 12-hour digital clock procedure.
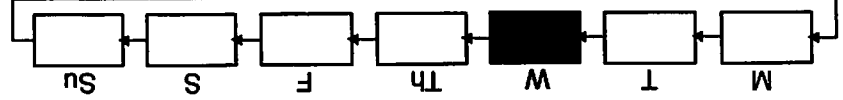
Fig. 6

M   T   W   Th   F   S   Su

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PROGRAMMING

The following procedures apply to both single and dual channel variants.

Dual channel variants require the relevant channel to be selected prior to carrying out the programming procedures. Single channel variants do not require channel selection.

Channel Selection

1. Select channel to be programmed:

a. Rotate front cover anti-clockwise and remove.

b. Press MODE button and repeat until PROGRAM is indicated on LCD. CH1 and CH2 indicators are now flashing. See Fig. 7, page 13.

c. To select channel 1, press "–" button. CH1 and current settings for selected channels are displayed on LCD. Day indicator flashing.
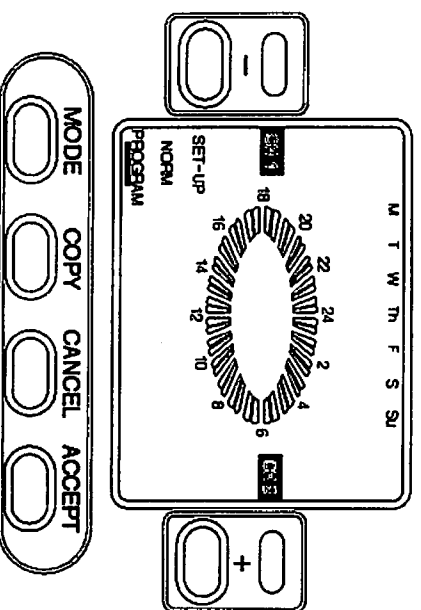

SET-UP NORM

M T W Th F S Su

MODE COPY CANCEL ACCEPT

PROGRAM

Fig. 7

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d. To select channel 2, press "+" button. CH2 and current settings for selected channel are displayed on LCD.

Channel Programming

All time periods are programmed in 15 minute steps. The operation of the program day ON/OFF time settings can be compared with sliding contact switches on a round face analogue timer. Moving one OFF or ON setting, around the dial, pushes ahead of it each subsequent ON/OFF setting encountered. Although pressing the CANCEL button rejects any value selected and returns operation to the previous set ON or OFF time, the settings for subsequent program steps may have been moved during the selection process. See Fig. 8, page 15.

NOTES:

1) All program steps must follow in consecutive order i.e. PROG 1 then PROG 2 then PROG 3 etc.

2) ON/OFF times may not be set beyond midnight of the selected day.

3) If a program step is not required it may be disabled by making the ON time equal to the OFF time.

4) As a result of the above it is best to sketch or write down all Program ON/OFF times prior to programming.

1. Press MODE button and repeat until PROGRAM is indicated on LCD.

NOTES:

1) PROG 1 is displayed and CH1 or CH2 is displayed to indicate the selected channel. Day indicator flashing.

2) Analogue program display and 12-hour digital clock indicate any existing program setting for the current day.
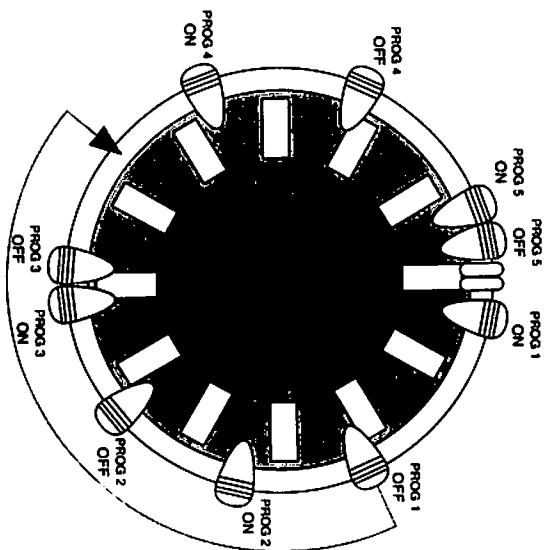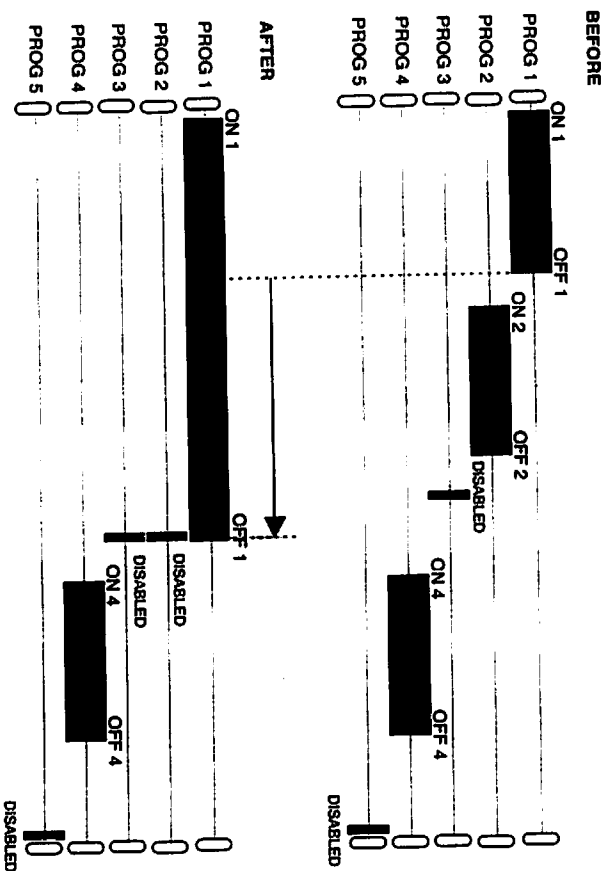
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Fig. 8

BEFORE

PROG 1	ON 1		OFF 1	
PROG 2		ON 2		OFF 2
PROG 3			DISABLED	
PROG 4		ON 4		OFF 4
PROG 5			DISABLED	

AFTER

PROG 1	ON 1		OFF 1	
PROG 2		DISABLED	
PROG 3		DISABLED	
PROG 4		ON 4	OFF 4	
PROG 5		DISABLED	

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2. Select program day:

a. Press "+" or "-" button until day of week marker is positioned below desired day name on LCD.

b. Press ACCEPT to set program day. ON is indicated and 12-hour digital display is now flashing.

NOTE:
On pressing MODE or CANCEL button, the system returns operation to NORMAL mode.

3. Select ON time:

a. Press "+" or "-" button until desired ON time is displayed on 12-hour digital clock.

NOTES:

1) Pressing the "+" button increments the ON time by 15 minutes. Pressing and holding the "+" button increments the ON time at an increased rate.

2) Advancing the minute display from 45 to 00 increments the hour display by one hour. Advancing the hour display from 11 to 12 toggles the AM/PM indicators on the LCD.

3) Pressing the "-" button decrements the ON time by 15 minutes. The "-" button exactly mirrors the behaviour of the "+" button.

4) The maximum ON time is 11:45 PM. The minimum ON time is 12:00 AM, midnight, or the OFF time for the previous program step.

5) On pressing MODE button at any time during the following procedures the system carries out the following actions before returning operation to NORMAL mode:

i) If the program step ON time is set later than the OFF time, the OFF time is made equal to the ON time thus disabling the program step.

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ii) ON/OFF times for all subsequent program steps are adjusted to ensure that ON/OFF times do not overlap. No program step may switch ON or OFF earlier than the previous program steps OFF time. See Fig. 8, page 15.

b. To reject ON time, press CANCEL button.

c. Press ACCEPT button to set ON time.

4. Select OFF time:

a. Press "+" or "-" button until desired OFF time is displayed on 12-hour digital clock.

NOTES:

1) Pressing the "+" button increments the OFF time by 15 minutes. Pressing and holding the "+" button increments the OFF time at an increased rate.

2) Advancing the minute display from 45 to 00 increments the hour display by one hour. Advancing the hour display from 11 to 12 toggles the AM/PM indicators on the LCD.

3) Pressing the "-" button decrements the OFF time by 15 minutes. The "-" button exactly mirrors the behaviour of the "+" button.
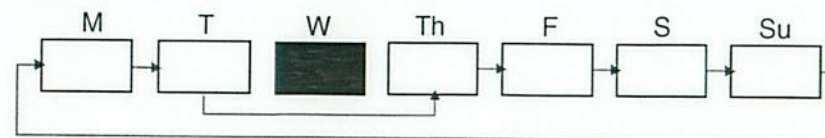
4) The maximum OFF time is 12:00 AM, midnight. The minimum OFF time is 12:15 AM or the ON time for the current program step.

b. To reject OFF time, press CANCEL button.

c. Press ACCEPT to set OFF time.

5. Repeat procedure 3 to 4 for subsequent ON/OFF program steps, PROG 2 to PROG 5. On completion of program step PROG 5, PROG 1 is displayed and day of week marker has stepped on to next day name indicator.

6. Repeat procedures 3 to 5 for subsequent program days. When all program days have been programmed, press MODE button.

Copy day

To reduce the amount of programming required when several days are expected to have identical programs, a copy facility is supplied. This procedure should be repeated for each individual channel. See Fig. 9, page 18.

With Wednesday selected , Copy To sub-mode allows the above selection of target days. Having copied to Monday, Thursday and Friday (see below), only three days for copying remain selectable.
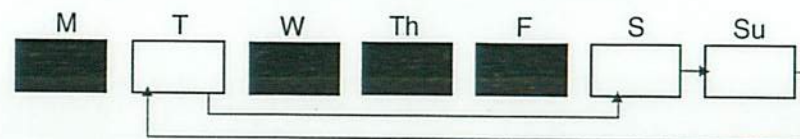
Fig. 9

1. Press MODE button and repeat until NORMAL is indicated on LCD.

2. Press COPY button. Day name indicator is now flashing.

NOTE:

On pressing MODE at any point during the following procedure, the system returns operation to NORMAL mode.

3. Copy from:

a. Press "+" or "-" button until day of week marker is positioned below source day name on LCD.

b. Press ACCEPT button to select program day for copying. Selected day of week marker is displayed continuously and the "next" day of week marker is flashing.

4. Copy to:

a. Press "+" or "-" button until day of week marker is positioned below target day name on LCD.

NOTES:

1) When stepping through the days of week the day of week marker will skip over the source program day.

2) On pressing CANCEL during the Copy To sub-mode, the system returns operation to the copy from sub-mode.

b. Press ACCEPT button to copy program to selected program day. The target day of week marker is flashing until next day is selected.

5. Repeat steps 3. and 4. until all days have been copied as required.

The following procedures apply to both single and dual channel variants.

Dual channel variants require the relevant channel to be selected prior to viewing the program settings. Single channel variants do not require channel selection.

Viewing Current Day

1. To view analogue display for current days' settings, select channel to be viewed.

a. Rotate front cover anti-clockwise and remove.

b. Press MODE button and repeat until NORMAL is indicated on LCD.

c. To select channel 1, press "-" button. CH1 and current settings for selected channel are displayed on LCD.

d. To select channel 2, press "+" button. CH2 and current settings for selected channel are displayed on LCD.

Viewing Program Settings

CAUTION:
TO PREVENT ACCIDENTAL LOSS OF PROGRAM SETTINGS, DO NOT USE THE "+", "-" OR CANCEL BUTTONS WHILE REVIEWING PROGRAMS.

1. Press MODE button and repeat until PROGRAM is indicated on LCD.

2. Select channel to be viewed. See Fig. 7, page 13.

NOTES:

1) PROG 1 is displayed and CH1 or CH2 is flashing to indicate the selected channel.

2) Analogue program display and 12-hour digital clock indicate existing program settings for the current day.

3)   Select program day:

   a.   Press "+" or "-" button until day of week marker is positioned below desired day name on LCD. See Fig. 6, page 12.

   b.   Press ACCEPT to view program day. ON is indicated and 12-hour digital display is now flashing.

NOTE:

On pressing MODE button at any time during the following procedures, the system returns operation to NORMAL mode.

4)   Press ACCEPT button to view current program step ON time.

5)   Press ACCEPT button to view current program step OFF time.

6)   Repeat procedure 3 to 4 for subsequent ON/OFF program steps, PROG 2 to PROG 5. On completion of program step PROG 5, PROG 1 is displayed and day of week marker has stepped on to next day name indicator.

7)   Repeat procedures 3 to 5 for subsequent program days. When desired program days have been viewed, press MODE button.

HOLIDAY MODE

The system may be placed in holiday mode disabling all outputs for the duration of the holiday period.

1.   Press and hold CANCEL button for a period of five second or more. Analogue program display is disabled and OFF is indicated on the LCD. 12-hour digital clock indicates time of day.

2.   To exit holiday mode, press CANCEL button. Analogue display is enabled and NORMAL is indicated on the LCD.

NOTE:

Entering holiday mode disables both channels for dual channel variants.

POWER FAILURE MODE

During NORMAL operation, the system monitors the mains supply status. On detecting a mains supply failure, the system carries out the following actions:

1.   LCD is disabled.

2.   Output controls are disabled.

3.   System enters WATCH mode.

The system exits WATCH mode at regular intervals to monitor the mains supply status. On detecting the restoration of mains supply, the system checks programme settings in memory for signs of corruption (due to back-up battery failure). Should corruption be detected, system variables are set to default values, and product will power up in SETUP mode. If no corruption is detected the system sets system variables to the values held in memory.

The following default values are used if corrupted program settings are detected:

Time	01:00 AM
Day	Sunday
All ON times	12:00 AM
All OFF times	12:00 AM

Part No. 143126

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