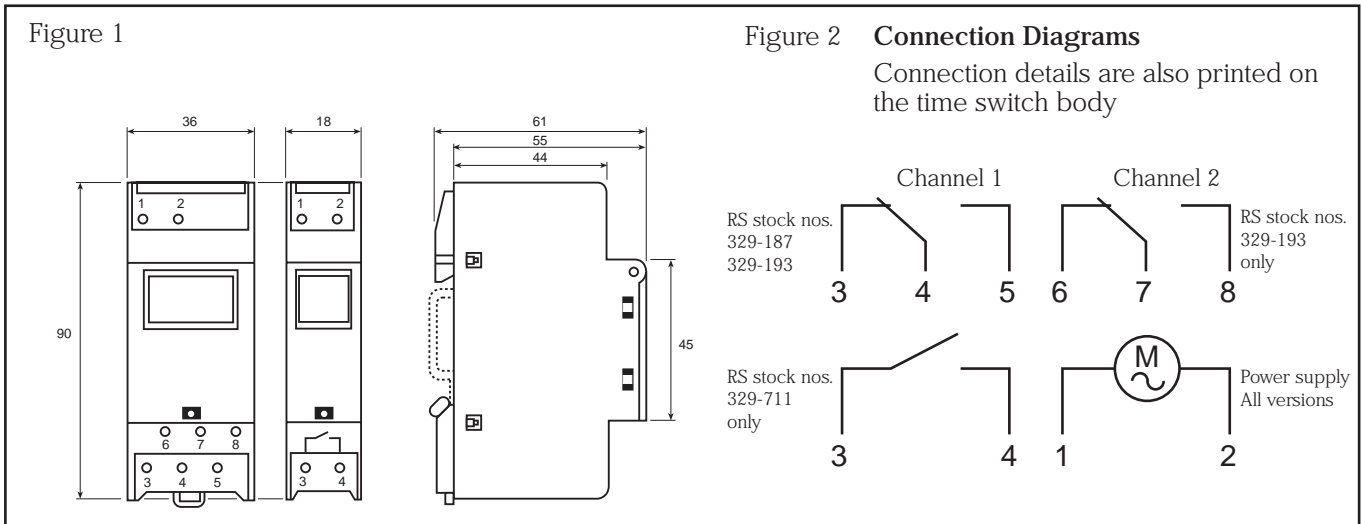




# Instruction Leaflet

# Modular Time Switches

- 1-channel, 7 day      RS stock no. 329-187
- RS stock no. 329-711
- 2-channel, 7 day      RS stock no. 329-193



These microprocessor controlled time switches, in one and two channel versions, will accept up to 8 programme 'pictures' for time control. Each 'picture' is a complete LCD display of a command for one or two channels to be switched 'on' at a set time, on one or more days and 'off' at a different set time, on one or more days. The 'on' days need not be the same as the 'off' days.

Figure 3 shows an example of one programme 'picture' for the two channel version. This example demonstrates the versatility of the programme, both channels have been set to switch 'on' at 7AM on days 1, 3 and 5 and 'off' at 5.30PM (1730) on days 2, 4 and 6. Instructions on programming are detailed later.

Besides switching in accordance with the 8 programme 'pictures', the time switches can be manually overridden; either temporarily until the next opposite command or continuously 'on' or 'off'. Additionally, a facility is incorporated for a continuous 'on' or 'off' over a chosen number of days (1 to 99).

A further two facilities exist:

1. Sunday and holiday programme; in this mode the time switch follows the 'Sunday' or 7th day programme, on channel 1 only, for a chosen number of days (1 to 99).
2. Summer/Winter changeover ( $\pm 1h$ ); a button on the front advances or retards the set time by one hour each time it is pressed.

## Installation

The time switches may be fitted on symmetrical DIN mounting rail to B.S.5584: 1978 (EN50 002, DIN 46 2773) in a suitable enclosure. Modular enclosures, permitting access to the front of the time switch, are available (see page 4 under DIN 43 880 Equipment, housing/enclosures). The unit must be connected as shown in the circuit diagram printed on the body. The load applied to the output relay contacts must not exceed the ratings shown in the technical specification.

**Note:** On power failure the output relay contacts go into the OFF condition, the programme and 'set time' is maintained by the battery reserve. When the power is restored the relay immediately assumes the correct switching position according to the programme.

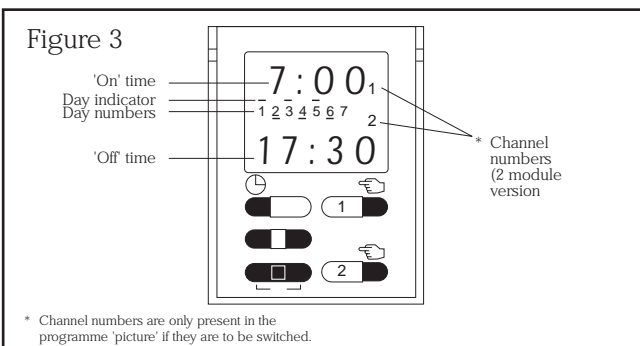
## Initial setting of time (clock).

Before setting the actual time and switching programmes the time switch needs to be powered up. The unit will be ready 30 seconds after the correct mains voltage has been connected. Before setting the time and programmes, clear the memory.

## Clearing memory.

Press 'S' and 'OK' buttons simultaneously. Setting the actual time.

1. Press '⌚' button once. Clock indicator will be displayed.
2. Press 'S' until the correct hour is shown in the time display (24 hour clock).
3. Press 'OK' once.
4. Press 'S' until the correct minute is shown in the time display.
5. Press 'OK' once.
6. Press 'S' until a 'day indicator' is shown over the correct day.
7. Press '⌚' when the actual time coincides with the time set (to the second). Time is now set and will advance automatically.



### Setting switching programmes.

To assist in programming, the time switch has two block programmes, (7-day and 5-day). The block programming method saves time in entering individual days when all the 'on' and 'off' times are the same for a group of days e.g. (Mon - Sun or Mon - Fri). Prior to setting switching times a decision has to be made as to whether the programme is for:

1. Seven day (1 to 7) block.
2. Five day (1 to 5) block.
3. Individual day.

### Choosing 'block' or 'individual day' programming.

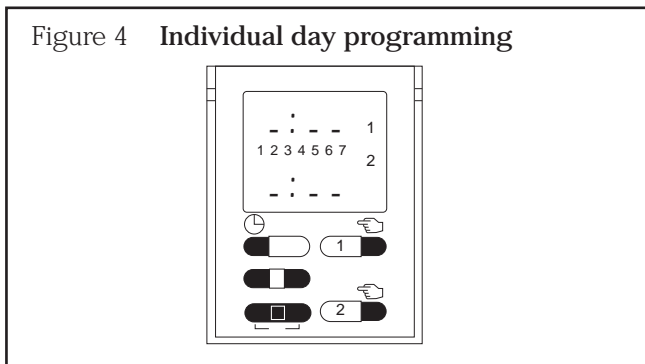
Repeated pressing of the '⌚' button displays the following:

1. Clockset.
2. Completed programme 'pictures' (does not apply if 'clearing memory' procedure has been followed).
3. Programme by '7-day block' (day indicators on both sides or day numbers 1 to 7 showing).
4. Programme by '5-day block' (day indicators on both sides or day numbers 1 to 5 showing).
5. Programme by 'individual day' (day indicators not showing).
6. Normal running.

Continuing to press the '⌚' button will repeat the above order of display. In order to describe the procedure for entering a switching programme the 'individual day' option has been chosen, the 'block' options will be compared.

Individual day switching programme.

Scroll through the options, described above, until the 'Individual day' programming picture is displayed (see -Fig. 4).



Press 'S': A flashing zero indicates the position of the 'on' time hour digits to be set. Continue to press 'S' until the required 'on' time hour is displayed. If the required hour passes, holding down 'S' will permit the required hour to be displayed again. Now press the 'OK' once. After 'OK' has been pressed, two flashing zeros indicate the position of the 'on' time minute digits to be set.

Press 'S' until the complete required 'on' time is displayed. If the minutes displayed go beyond the required figure, hold down 'S' and proceed as described earlier. Now press 'OK' once.

After 'OK' has been pressed a 'day' indicator will flash above day 1. Now a choice has to be made: Does the programmed 'on' time apply to day 1?

- (a) If yes, press 'OK'. The day Indicator will stop flashing but will remain above day 1.
- (b) If no, no action required.

Press 'S' once. A day indicator will flash above day 2. The choice described earlier now applies to this day, does the programmed 'on' time apply? Proceed as per (a) or (b) above and continue through to day 7. At this point the 'programmed in' days, where the 'on' time applies, are displayed. Are they set as required?

- (c) If no, press 'S'. The day indicator will flash over day 1 and other 'day indicators' previously programmed in will disappear. Proceed as detailed before.

- (d) If yes, proceed to next step.

Press '⌚'. A flashing zero indicates the position of the 'off' time hour digits to be set. Enter the complete 'off' time in the same way as the 'on' time was entered. After setting this time, the day indicators' under the 'day numbers' will flash (one indicator below the day number for every one above). Are they set as required?

- (e) If no, press 'S'. The 'day indicator' will flash under day 1 and other 'day indicators' previously displayed will disappear. Enter the applicable 'off' days in the same manner as described for applicable 'on' days.

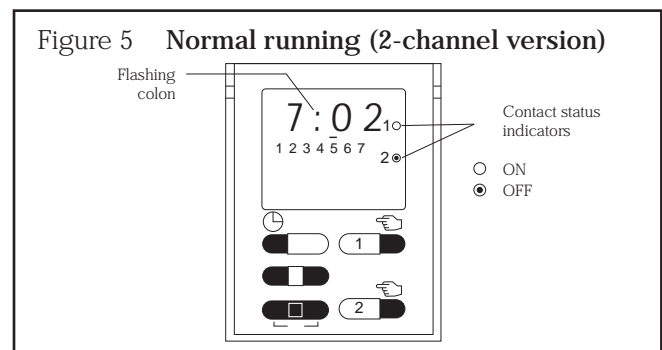
- (f) If yes, proceed to next step.

Press '⌚'. On single channel units the programme is complete and the display automatically changes to the normal running display (see figure 5). On two channel units a further choice is offered. The two channel numbers will be flashing. Are they both required to be switched by the programme?

- (g) If no, press 'S' Channel 1 will flash. If this channel is the one required press 'OK'. If channel 2 is required press 'S' again. Channel 2 will flash. Press 'OK'. The final choice will appear as a steady number in the display.

- (h) If both channels are required to be switched press 'OK'. Channels 1 and 2 will show steady.

Press '⌚' to enter the programme. The display will automatically change to the 'normal running' mode. If more programmes are required to be entered, press '⌚' to scroll through the 'clock set' and previously entered programme 'pictures'. Unused programme 'pictures' will be presented in the three programming choices; 7-day or 5 day blocks and 'individual day'. When all 8 programme 'pictures' have been used, the display will read 'Full' after scrolling through all the entered programmes.



### Block Programming.

The procedure for programming by 5 or 7 day blocks is similar to 'individual day' programming. The only difference is that the programme only requires entry of the 'on'/'off' times and the appropriate channel or channels. Programming is thus easier.

### Programme review/cancel.

Press '⌚' button to review programme 'pictures'. When the programme to be changed or deleted is on display press 'C'. The programme 'picture' will clear ready to be programmed in the mode that the original programme was set in, e.g. if the cancelled programme had been in the 5-day block mode the cleared 'picture' will be ready for a new programme in this mode. To change to a '7-day block' or 'individual day' mode simply press '⌚' until the required mode appears.

## Override facilities

### Manual on/off override.

This facility permits the changing of a relay state, contrary to the programmed position, until the next opposite command. For example, channel 1 is programmed to switch 'on' at 8:00, 'off' at 12:00, 'on' at 13:00 and 'off' at 17:00. At 10:00 the manual 'off' override is used. Channel 1 will thus stay 'off' until 13:00 when it will again continue to follow the programme.

To effect manual override, on any channel, press the appropriate '☞' button. A further press of this button cancels the override.

**Note:** 'contact status indicator' condition (see figure 5)

### Continuous on/off manual reset.

Press '☞' button to display the appropriate channel 'contact status indicator' condition (see figure 5).

**Note:** This is required even if the 'contact status indicator' shows the desired 'on' or 'off' condition in the first place.

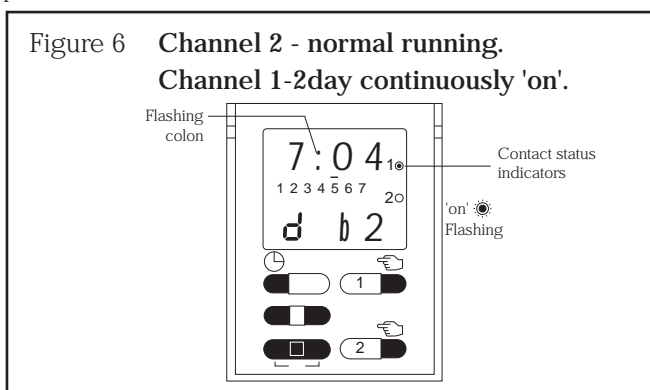
Press 'OK', 'contact status indicator' will start and continue to flash as long as this continuous 'on' or 'off' condition is set.

To cancel the continuous on/off press '☞'. Further presses of this button will switch the output relay 'on' and 'off' regardless of the normal programme setting. The normal programme resumes on the next switching command for the channel, i.e. same as manual on/off override.

### Continuous on/off for up to 99 days.

Press '☞' button to display the appropriate channel 'contact status indicator' (see above comments). Press 'S' repeatedly to select the required number of days to be continuously switched. The unit displays the appropriate channel, 'contact status indicator' and 'd' is followed by the number of days being selected. When the desired number of days are displayed press 'OK' 'contact status indicator' will start and continue to flash during the days when the continuous 'on' or 'off' condition applies (see figure 6). The day numbers will count down from the set number, the programme resuming thereafter automatically.

**Note:** This facility is only available on one channel at a time. To cancel the continuous on/off, during the count-down period, press '☞'.



### Sunday and holiday programme.

In this mode, the time switch follows the 'Sunday' (7th day) programme, on channel 1 only, for up to 99 days.

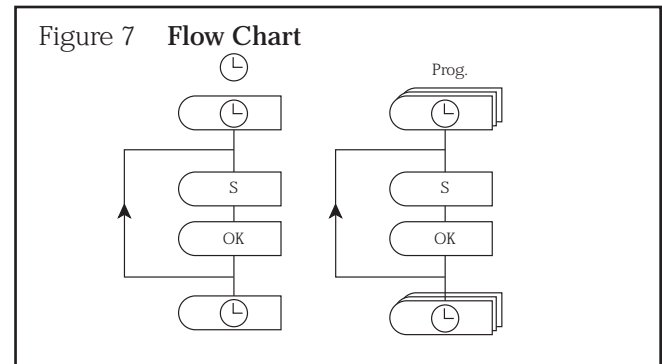
With the time switch in the normal running mode, press 'S' once. An 'F' symbol, followed by a flashing number '1' will be displayed. Press and hold in 'S' to select the number of days. When the right number is displayed press 'OK': This programme begins at 0:00 next day and will end at Midnight on the last selected day, e.g. programme set on day1, F4, will start at 0:00 day 2 and end 0:00 commencing day 6.

To cancel this programme press '1 ☞'.

### Summer/Winter changeover.

Each press of the '+/-1h' button causes the set time to move;

- (1) 1 hour in advance of set time.
- (2) 1 hour behind set time.
- (3) Back to set time.



### DIN 43 880 Equipment housings/enclosures

The time switches are designed for fitting into purpose-built enclosures to the above specification. This method of housing is very common in mainland Europe and is gaining in popularity in the UK. The main advantages are:

#### Simplicity of Design.

Selecting components to make up a system is made easy by assigning a standard modular size to each component according to its width. Other dimensions must conform to the specification so the designer is only concerned with the total number of modules required. For example, a 3 phase load of 40A per phase (resistive) is required to be controlled by means of a time switch. Two basic components are required:

1. A 3-phase modular contactor, RS stock no. 354-773.
  2. A modular 7 day time switch, RS stock no. 329-711.
- The total width of the above components is  $3 + 1 = 4$  modules (ie.  $4 \times 17.5\text{mm} = 70\text{mm}$ ).

To house these components a 4 module width enclosure, chosen from the range in the RS catalogue, is needed (see DIN 43 880 Equipment -Enclosures in the index). A choice of 4 module width enclosures are available, in both metal and all insulated materials, and may be selected according to the degree of environmental protection required.

#### Ease of installation

The components are simply snap-fitted to the integral DIN rail. Access to the time switch is via the front. This may be protected by a hinged transparent cover. The more simple enclosures are open fronted but, in all cases, the wiring and terminals are fully shrouded.

The example, of using a time switch in conjunction with a contactor, is recommended for two main reasons:

1. The time switch is isolated from the load.
2. The contacts on the time switch are only required to switch the coil of the contactor, thus the electrical life is greatly increased.

Single module wide, 20A contactors are also available to extend the current rating of the time switch on single phase loads.

**Technical Specification**

Supply Voltage (nominal) \_\_\_\_\_ 220-240Vac 50/60Hz

Min/Max. Limits \_\_\_\_\_ 187-264Vac 50/60Hz

Energy Consumption \_\_\_\_\_ 1 channel types 2.5VA

\_\_\_\_\_ 2 channel type 5.2VA

Output Relay Contacts:

2 Module, 1 Channel Type \_\_\_\_\_ 16A, 250Vac (cos  $\phi$  =1)\_\_\_\_\_ 6A, 250Vac (cos  $\phi$  =0.6)\_\_\_\_\_ 10A, 250Vac (cos  $\phi$  =1)\_\_\_\_\_ 6A, 250Vac (cos  $\phi$  =0.6)

Min. Switching Interval \_\_\_\_\_ 1 minute

Time Switch Accuracy \_\_\_\_\_ +/-0.5 secs./day typical

Ambient Temperature Range \_\_\_\_\_ 0°C...+50°C working

\_\_\_\_\_ -10°C...+60°C storage

Environmental Protection \_\_\_\_\_ IP20 to DIN 40 050

Humidity \_\_\_\_\_ Max. 75% (constant)

Max. Transient Withstand

Capacity \_\_\_\_\_ 3kV pulse (IEC TC65/WG4)

Max. Conductor Terminal \_\_\_\_\_ 1x4mm<sup>2</sup> or 2x2.5mm<sup>2</sup>


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