

Digital Time Switch
User Manual



Part Number: MP008392 & MP008393

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1. Overview

The Advance time switch is a programming clock which enables the automatic switching ON-OFF different loads on the basis of a timed programming that is sufficiently flexible to allow or exclude the activation depending on the day of the week.

Following product variants available in each single channel and Double channel configuration.

For detailed description along with CAT ID refer below table.

Digital Time Switch **Crono Pro**

Digital Time Switch **Astro Pro+**

Digital Time Switch **Astro Pro**

Functions	Crono Pro		Astro Pro+		Astro Pro	
	WT1SCDS	WT2DCDS	AT1SCDS	AT2DCDS	AS1SCDS	AS2DCDS
Supply Voltage	1	2	1	2	1	2
Relay Output (V AC)	240	110-240	240	110-240	240	110-240
Astro	-	-	√	√	√	√
Multifunction	√	√	√	√	-	-
Cycle	√	√	√	√	-	-
Pulse	√	√	√	√	-	-
Time Switch	√	√	√	√	-	-
Lat/Long	-	-	√	√	√	√
City	-	-	√	√	√	√
Program Memory (Per channel)	50	50	50	50	50	50
Holiday Program	10	10	10	10	10	10

2. Features

- Monitoring of load service hours to display alarm and plan maintenance/other activity
- LCD Display with green backlight
- Precise time programming for Daily / Weekly /Pulse /Astro switching
- Bar graph for intuitive representation of daily program
- Two separate relay outputs (16A each) with independent programming
- Settable DST feature
- Latitude / Longitude database for 45 countries and 280 cities
- Settable Latitude / Longitude precise to the minute with time zone
- Sunrise/Sunset or Twilight trigger modes
- ZCD assistance for inrush current management and for better relay & load life
- 12/24 hour display format
- Excellent battery backup with 6 years battery reserve
- Simple reset & Manual override
- Password protection for settings

Caution:

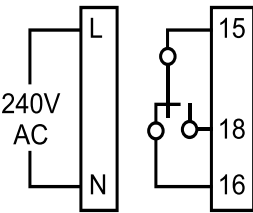
1. Always follow instructions stated in this product booklet.
2. Before installation, check to ensure that specifications agree with intended application.

3. Installation must be done by skilled technician.
4. Automation and controlled devices must be properly “installed” so that they are protected against any risk of involuntary actuations.

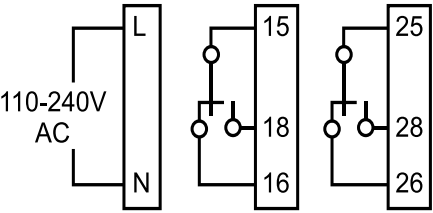


3. Connection Diagram

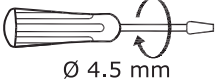
A) 1 Channel Device



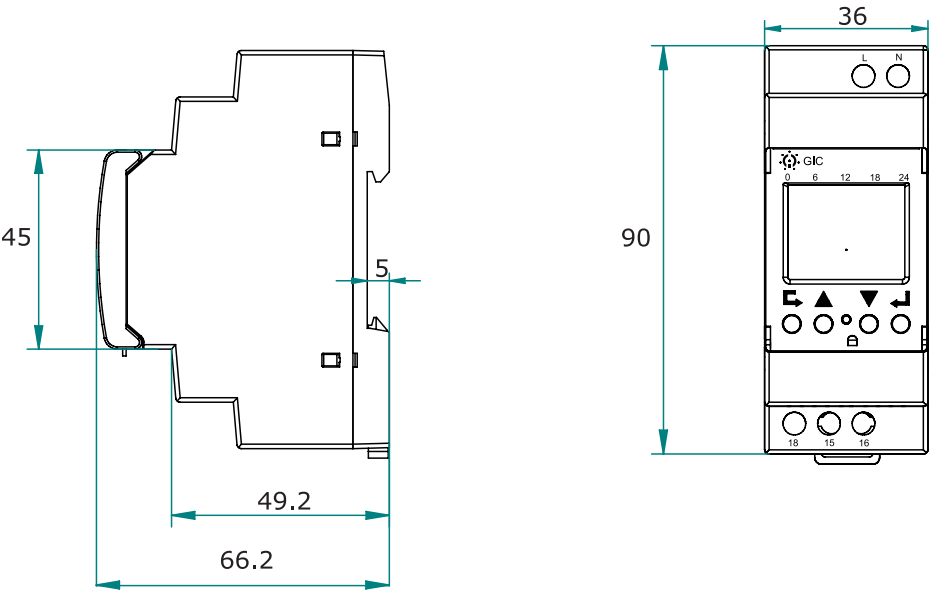
B) 2 Channel Device



Terminal Torque & Capacity

 Ø 4.5 mm	0.5 N.m (4.4 Lb.in)
	1 × 4mm² Solid/Stranded Wire
AWG	26 to 10

4. Mounting Dimension



Dimensions : Millimetres

5. Operating Modes

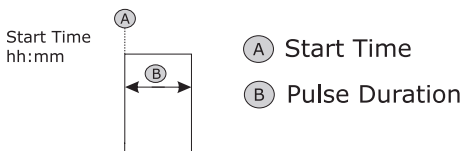
1) Switch Mode:

1. It allows user to program the output channel for set time period in a day or for multiple days in a week.
2. User has to define start and end time along with output action ON or OFF.



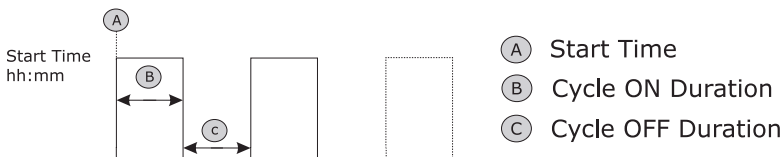
2) Pulse Mode :

1. It allows user to make output channel ON for short duration.
2. Duration ranges from minimum 1 sec to maximum 59 sec.
3. User has to define start time and duration of Pulse in the program.



3) Cycle Mode:

1. It allows user to make output ON and OFF in a cyclic manner.
2. User has to define Start and End period along with ON and OFF duration.



4) Astro Mode:

1. It allows user to program the output as per Sunrise and Sunset time along with OFFSET time if required.
2. User can also program output OFF time during execution of ASTRO program.

5) Permanent Switching:

1. This mode allows User to make output permanently ON or OFF.
2. The output will remain in this mode till User deactivate the mode.

6) Temporary Override

This mode allows User to override current state of output.

E.g. If current state of output is ON then using override mode User can change the output state to OFF (or vice a versa) till execution of next scheduled program.

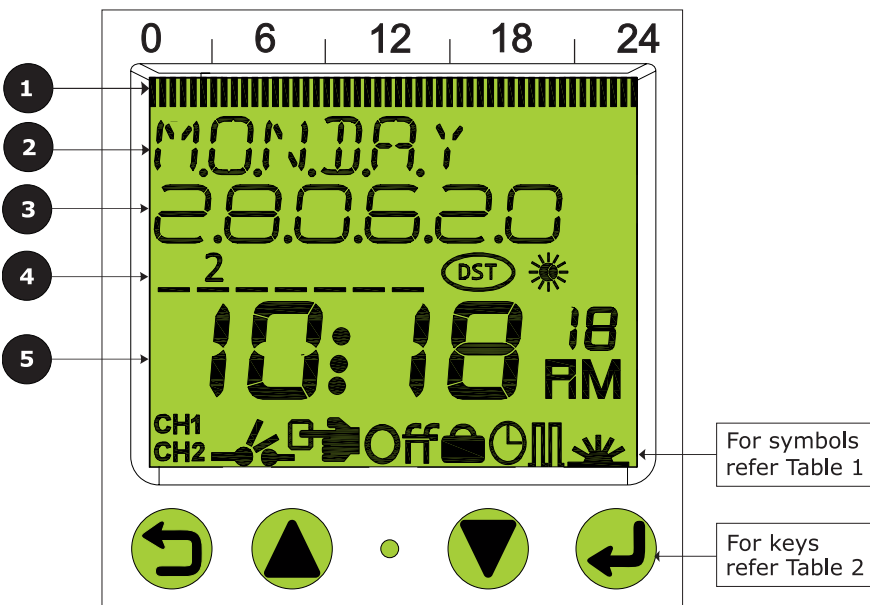
7) Priorities:

In case of multiple programs calls action on output at same time, it will be operated as per following priority,

1. PERMANENT OFF
2. PERMANENT ON
3. OVER RIDE
4. HOLIDAY OFF
5. HOLIDAY ON
6. PROGRAM OFF
7. PROGRAM ON

6. Display

6.1. Display Description



Symbol	Description
1	Bar Graph : It consist of 48 segments which indicates 24 hours of a day with a resolution of half hour. ON segment in Bar graph indicates that output will be ON at that time of the day. Also it indicates menu depth in menu/edit mode. It is updated whenever day changes or at program edit.
2	Display current weekday on main screen and menu name during program.
3	Display current date on main screen and menu setting mode during program.
4	Display current weekday in menu setting and also for main screen.
5	Display current time.
CH1 CH2	Display output channel number. For 2 Channel product, display toggles between CH1 and CH2 number after every 7 sec with 5 sec ON and 2 sec OFF time.
	Display relay status ON/OFF of respective channel CH1 or CH2
	Indicates that output is ON/OFF due to Temporary Override mode.
Off	Indicates that output is ON/OFF due to Permanent mode.

Symbol	Description
	Indicates that output is ON/OFF due to Holiday program.
	Indicates that output is ON/OFF due to Time Switch mode.
	Indicates that output is ON due to Pulse or Cyclic mode. Pulse mode is indicated by single pulse. Cyclic mode is indicated by dual pulse.
	Indicates that output is ON/OFF due to Astro mode.
	Blinking indicates DST is applied.
	Indicates day and night time. Sun indicates day time. Half moon indicates night time.

6.2 Key Operations

ESC 	To enter the menu. To return to main screen or previous menu. To abort changed value or parameter.
UP 	To view parameters upward. To change/increment parameter value in edit mode.
DOWN 	To view parameters downward. To change/decrement parameter value in edit mode.
ENTER 	To select and save parameter value in edit mode.
RESET 	To reset hardware when device doesn't respond or hangs. It doesn't change any of the user settings and clock. It is small key located in between Up and Down key.

6.3 Combined Key Operations for temporary override mode

 + 	Pressing both keys together will change the present output state of Channel 1. Repressing both keys together again will restore the output state of Channel 1.
 + 	Pressing both keys together will change the present output state of Channel 2. Repressing both keys together again will restore the output state of Channel 2.

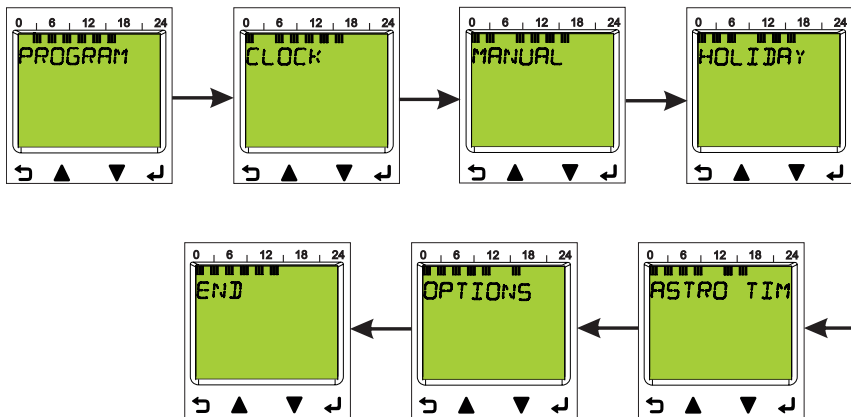
Temporary Override is deactivated by using same hot key or next program event.

7. Main Menu

Press ESC  key to enter in to Main menu.

Press Up  Down  key to select menu.

Press Enter  key to select sub menu.



NOTE- In edit mode, If no push button is pressed for 40 seconds, device exit from edit mode.

7.1 Program

Program Menu is used to write new programs for selected channel.

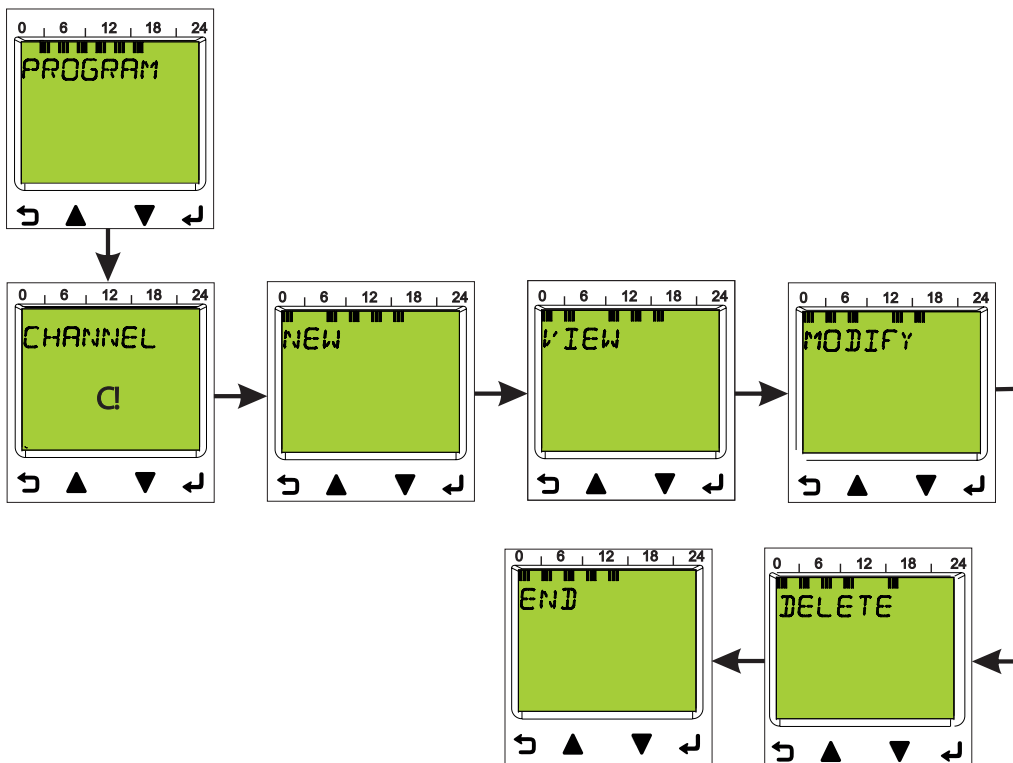
Channel selection is only available for two channel device.

Using Up ▲ Down ▼ key select Channel CH1/CH2.

User can also View, Modify, Delete existing program.

There are 6 sub menu under Program Main Menu.

Channel -> New -> View->Modify -> Delete -> End

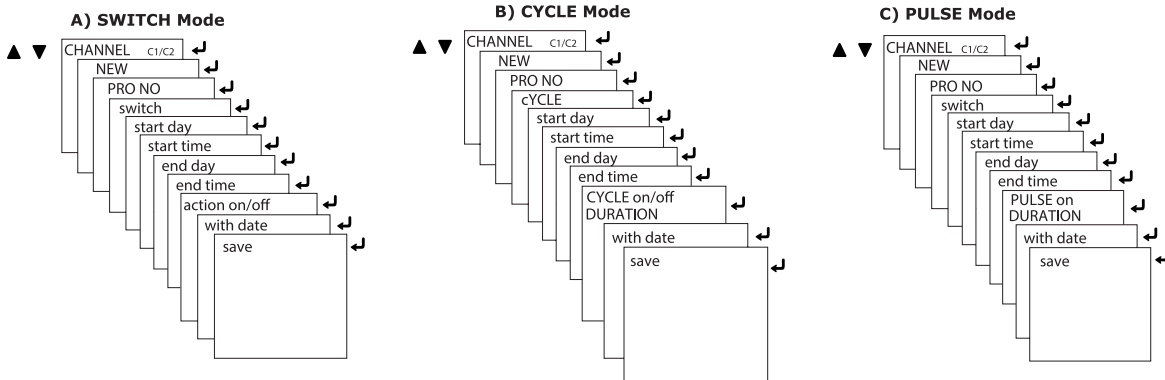


In Switch, Cycle and Pulse programming, user get following options for Start time and End time selection

1. USER TIME
2. SUNRISE TIME
3. SUNSET TIME

7.1.1 New

Flow to Write New Program



- NOTE** - 1. Channel selection option only for 2 channel device.
 2. By default whole week is selected for Start and End day selection.
 3. To deselect any weekday press down ▼ key and to select any weekday press up ▲ key

Press ESC ➡ to enter programming (Edit) mode

Change parameter value or status by pressing Up ▲ and Down ▼ key.

After changing parameter value press Enter ↵ key to accept value move to next digit or parameter.

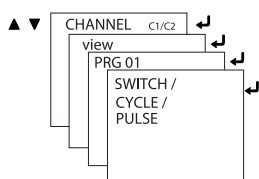
After completion of parameter editing, press Enter ↵ key to save all parameters.

If select NO for 'With Date' option then program get saved without date and operate as weekly time switch.

As per above procedure other programs can be enter and saved.

7.1.2 View

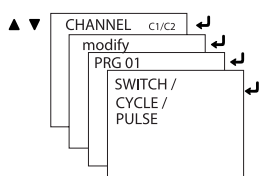
To verify, the switching times have been correctly programmed use this sub menu.



Use Up ▲ Down ▼ key to select the channel.
 Use Up ▲ Down ▼ key to select the program number.
 Then press Enter ↵ key to check all settings one by one.

7.1.3 Modify

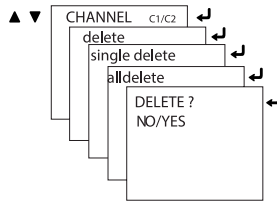
The program can be modified in this sub-menu.



Use Up ▲ Down ▼ key to select the channel.
 Use Up ▲ Down ▼ key to select the program number.
 Then press Enter ↵ key to confirm program to be modified.
 As per program type, Set new values as per subsection 7.1.1. NEW.
 By pressing Enter ↵ key modified program get saved.

7.1.4 Delete

To delete single or multiple programs use this sub menu.



Use Up ▲ Down ▼ key to select the channel.

Use Up ▲ Down ▼ key to select single delete or multiple delete program.

Use Up ▲ Down ▼ key to confirm delete with No/Yes option.

Then press Enter ↵ key selected program will be deleted for single delete and if selected multiple delete then all programs will be deleted.

To abort Delete option, press ESC ⏮ key.

7.1.5 End

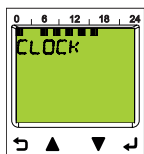
By using this menu, direct go to Main screen.

To go to previous menu, use ESC ⏮ key.

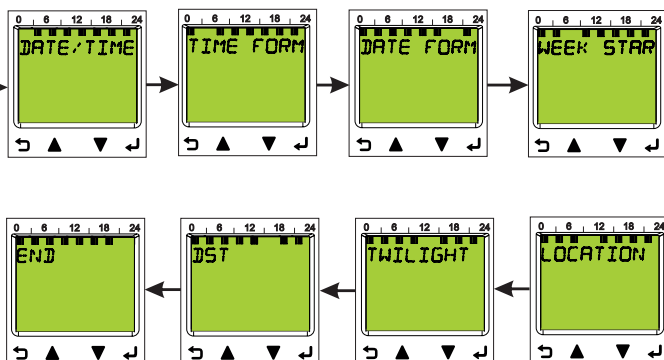
7.2 Clock

Second option is Clock Menu which is used for various clock settings.

Ensure that before clock setting respective country's time zone/Location is set.

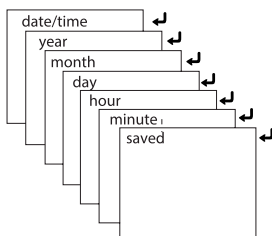


There are 8 sub menu under Clock Main Menu.
Date/Time -> Time Format -> Date Format -> Week Start Day ->
Location -> Twilight -> DST -> End



7.2.1 Date/Time

Date/Time menu is used to set Date and Time manually.



Use Up ▲ Down ▼ key to select the parameter value.

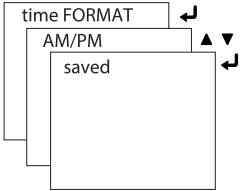
Then press Enter ↵ key to save parameter and go to next parameter setting.

After setting, press enter ↵ key to save date and time.

NOTE - This setting reflects on main screen display and in Program setting.

7.2.2 Time Format

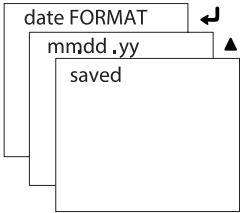
Time Format is used to set time format either 24 hours or 12 hours (AM/PM).



Use Up ▲ Down ▼ key to select the time format.
Then press Enter ↵ key to save format.

7.2.3 Date Format

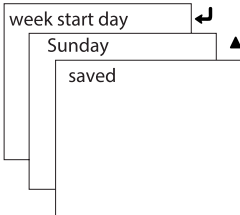
For date format setting, Worldwide 3 different formats are usual, as listed below.



Use Up ▲ Down ▼ key to select the date format as listed below.
DD:MM:YY, Ex- 08-07-20
MM:DD:YY, Ex- 07-08-20
YY:MM:DD, Ex- 20-07-08
Then press Enter ↵ key to save format.

7.2.4 Week Start Day

This menu is used to set start day of week.

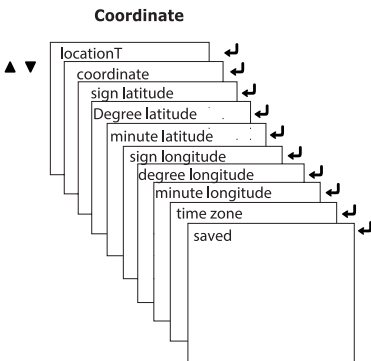
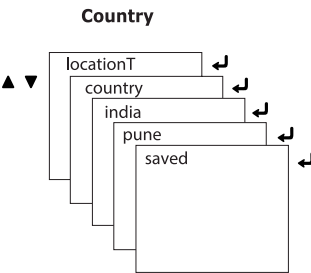


Use Up▲ Down ▼ key to scroll week days and Enter key to save week start day.
Select week start day from Saturday to Sunday.

NOTE - This setting reflects on main screen display and in Program setting.

7.2.5 Location

Coordinate menu is used to set location details and time zone.



Country

By Up ▲ Down ▼ key select the country and respective cities.
Then press Enter ↵ key to save format.

Coordinate

For Latitude setting, enter sign of Latitude i.e. South or North. Then degree followed by minute of latitude. Same parameters enter for Longitude for Sign East or West.

Then select time zone from list, to save setting use Enter ↵ key.

To scroll digit use Up ▲ and down ▼ key.

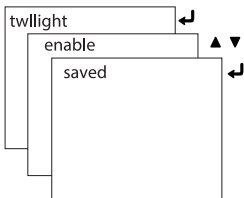
For save and update next parameter use Enter ↵ key.

7.2.6 Twilight

This is energy saving mode. Twilight is the soft glowing light from the sky when the sun is below the horizon, caused by the reflection of the sun's rays from the atmosphere.

Even after Sunset, there is sufficient light in the sky & generally there is no need to switch on Lights/Load exactly at Sunset. So if Twilight feature is used, then light will get On after some time from Sunset. This time is calculated automatically.

Thus it saves energy & reduce Electricity bill as well.



Using Up ▲ Down ▼ key scroll enable/disable and Enter ↵ key to save.

ENABLE- Device will operate at [Sunset+Twilight time]
[Sunrise-Twilight time] which saves energy.

DISABLE- Device will operate as per Sunset/Sunrise time

NOTE - This setting reflects on main screen display and in Program setting.

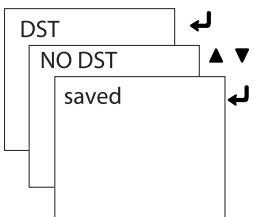
7.2.7 DST

On DST event, date and time automatically get updated.

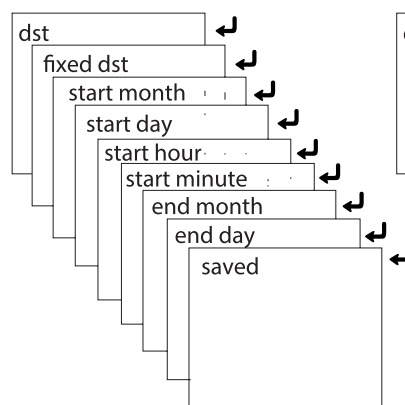
User can select DST from options available in menu. User can either select country or set manually by FIX DST or CUSTOM DST option.

By using Up ▲ and Down ▼ keys, select required settings and to save press Enter ↵ key.

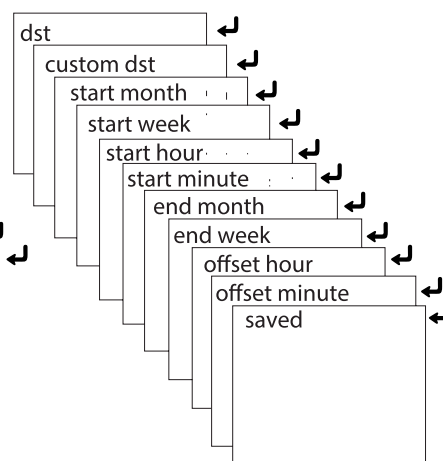
NO DST



FIXED DST



CUSTOM DST



NO DST - No changeover

FIX DST - Changeover as per user set date & time. By default 1 hour offset time.

CUSTOM DST - Changeover as per user set date & time. Here user get access to set offset hour range from. 1 Minute to 2 Hours.

SELECT COUNTRY - Changeover as per below table.

NOTE - To avoid settings at day changeover, the time 9.01 PM- 11.59 PM is blocked in setting range.

DST Setting Country Chart

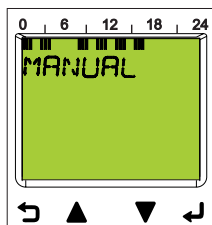
Country	Start Month	Start Week	Start Weekday	Start Time	End Month	End Week	End Weekday	End Time	Offset Time
Europe	March	Last week	Sunday	2:00	October	Last week	Sunday	3:00	1:00
USA	March	2nd week	Sunday	2:00	November	1st week	Sunday	3:00	1:00
GB/IRL/P	March	Last week	Sunday	1:00	October	Last week	Sunday	2:00	1:00
FIN/GR/TR	March	Last week	Sunday	3:00	October	Last week	Sunday	4:00	1:00
CDN	April	1st week	Sunday	2:00	October	Last week	Sunday	3:00	1:00

7.2.8 End

By using this menu, direct go to Main screen.

To go previous menu use ESC key.

7.3 Manual

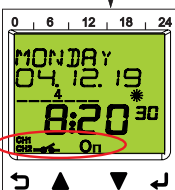
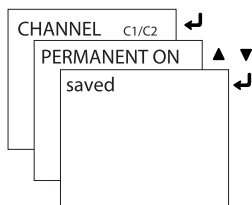


There are 3 modes under Manual Menu.

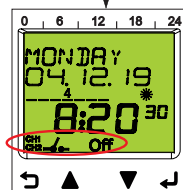
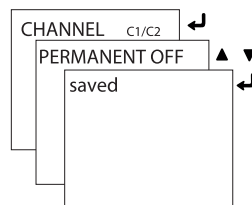
- Permanent ON
- Permanent OFF
- Override ON/OFF

This setting affect on main screen display and in program setting.

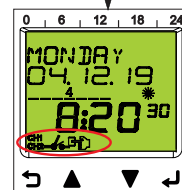
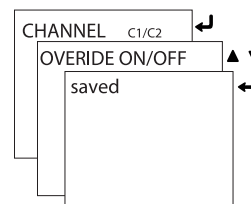
Permanent ON



Permanent Off



Override ON/OFF



By using Up ▲ and Down ▼ keys, select required settings and to save press Enter ↵ key.

Channel selection option only for two channel device.

Once any mode activated, then to deactivate setting user has to go to same menu and select setting.

Symbol for particular mode is displayed at bottom row as shown by red circle.

Override ON/ OFF :

This mode allows User to override current state of output.

When relay is in ON state, Override OFF will appear in manual menu and when relay is in OFF state, Override ON option will

appear in manual menu.

Temporary override can also be achieved by hot keys operation.

E.g. If current state of output is ON then using override mode User can change the output state to OFF (or vice a versa) till execution of next scheduled program.

After selection display returns to the manual menu window.

NOTE - Only one Channel (CH1/CH2) symbol will be displayed at a time.

7.4 Holiday

Holiday mode can be set on any channel of the device. Channel output can be set as ON/OFF during holiday period.

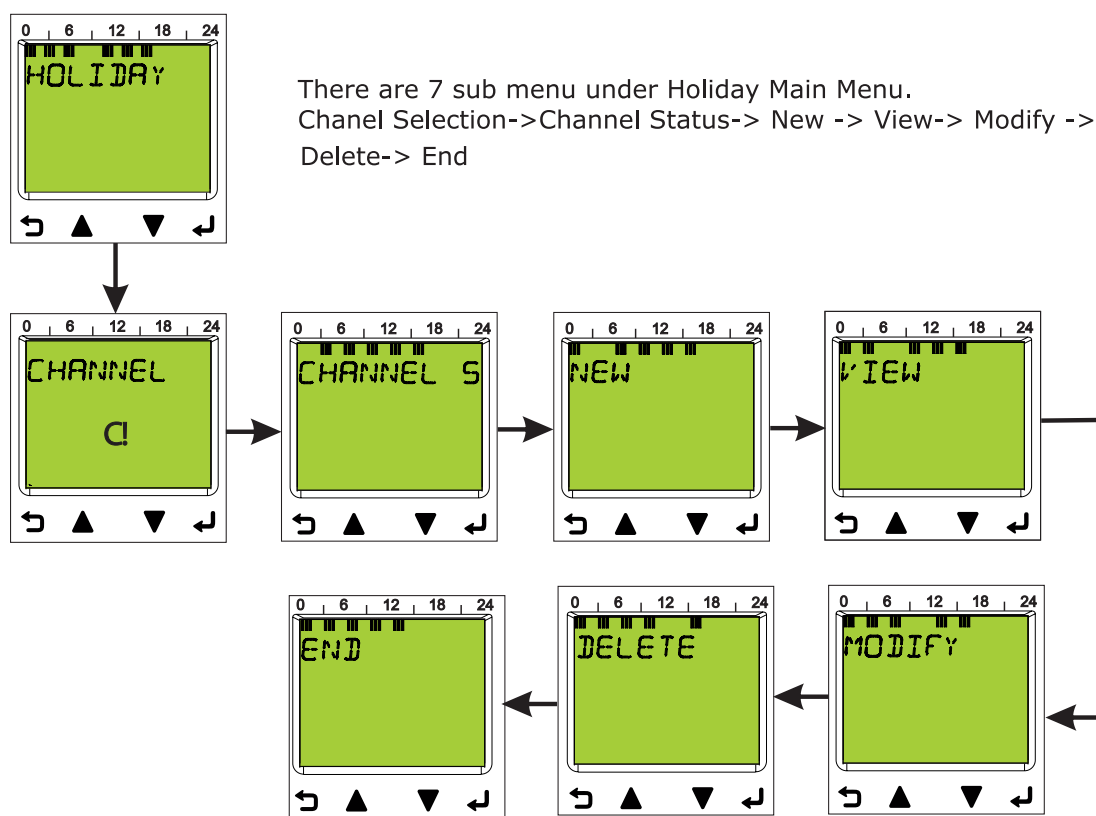
For example- If user select holiday start event at 10:15 of 17th March 2018 and Holiday end event at 07:00 of 30th May 2018 & select channel action as ON.

Then, Channel output will be ON from 10:15 of 17th March 2018 till 07:00 of 30th May 2018.

CHANNEL selection option only for two channel device.

By using Up ▲ Down ▼ Keys select channel CH1/CH2.

User can also View, Modify, Delete existing program.



7.4.1 Channel Status

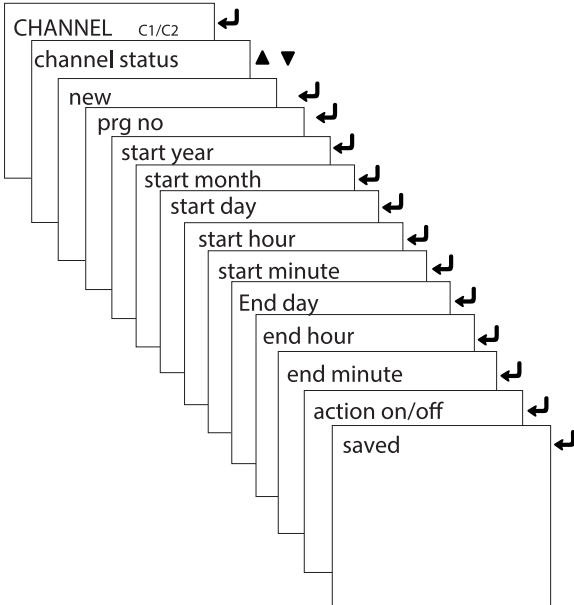
By using Up ▲ Down ▼ key status can be changed.

After selecting press Enter ↵ key to save selected status.

ENABLE -Holiday Program for selected channel will execute as per set.

DISABLE -Holiday feature for selected channel will not available.

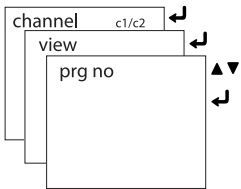
7.4.2 New



Change parameter value or status by pressing UP ▲ and Down ▼ key.
After changing parameter value press Enter ↵ key to accept value move to next digit or parameter.
After completion of parameter editing, press Enter ↵ key to save all parameters.
As per above procedure other programs can be enter and saved.

7.4.3 View

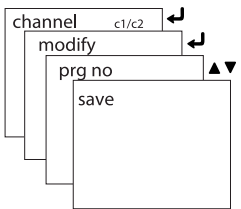
To verify, the switching times have been correctly programmed use this sub menu.



Using Up ▲ Down ▼ key select the parameter value.
Then press Enter ↵ key to save parameter and go to next parameter setting.
After setting, press enter ↵ key to save date and time.

7.4.4 Modify

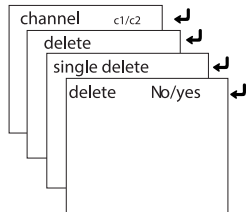
The program can be modified in this sub-menu.



Using Up ▲ Down ▼ key select the channel to be modify.
Using Up ▲ Down ▼ key select the program number to be modify
Then press Enter ↵ key to confirm program to be modified.
As per program type, Set new values as per subsection 8.4.2. NEW.
By pressing Enter ↵ key modified program get saved.

7.4.5 Delete

To delete single or multiple programs use this sub menu.



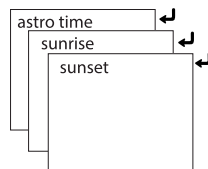
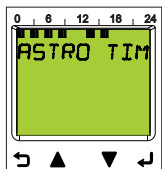
Using Up ▲ Down ▼ key select the channel which program to be delete.
 Using Up ▲ Down ▼ key select single delete or multiple delete program.
 Using Up ▲ Down ▼ key confirm delete with No/Yes option.
 Then press Enter ↵ key selected program will be deleted for single delete
 and if selected multiple delete then all programs will be deleted.
 To abort Delete option, press ESC key.

7.4.6 End

By using this menu, direct go to Main screen.

To go to previous menu use ESC key.

7.5 ASTRO Time

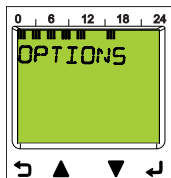


This is fifth sub menu in Main Menu. By using this menu user can get information for Sunrise and Sunset Times.

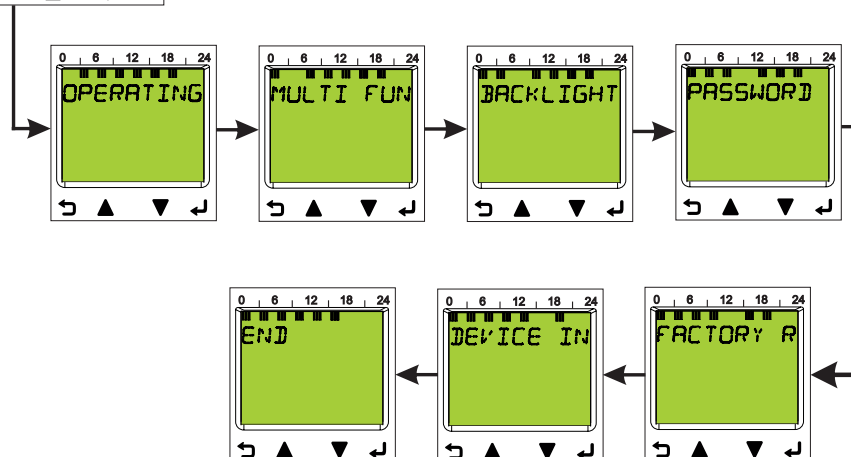
Press Enter ↵ key to view between Sunrise and Sunset.

For step wise back stage use ESC ↵ key.

7.6 Options

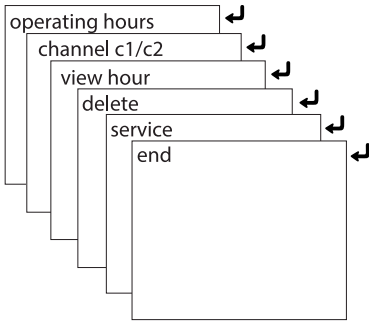


There are 7 sub menu under Options Main Menu.
 Operating Hours -> Multifunction -> Back light-> Password ->
 Factory Restore->Device Info-> End



7.6.1 Operating Hours

This option enable user to set and monitor load service hours. After completion of service hours, Device display alarm which can be used for maintenance or other activity.



Service

Here user can set operating hours, After which he intend to generate alarm message. User can set operating hours for individual channel.

View Hour

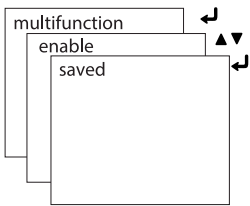
In this menu, user can check how much time of service hours completed. After completion of service hour, display shows message "Service CH1" or "Service CH2" which flash after every 5 seconds.

Delete

To clear service message on display user need to clear service hours by using this menu. Also during service hours in progress user can clear it.

For deleting operating hours, Confirm the deletion by selecting "YES" and press the Enter ↵ key, then counter is reset to zero.

7.6.2 Multifunction

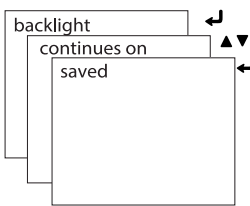


Use Up ▲ Down ▼ key select Enable/Disable selection. Then press Enter ↵ key to save setting.

Enable - User get access to set multifunction like Switch, Pulse, Cycle in new program setting.

Disable - Cycle and Pulse function are hide and not accessible in new program setting.

7.6.3 Back light



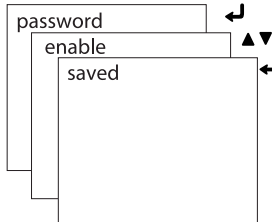
Use Up ▲ Down ▼ key select required option 1Min ON/ Continuous ON. Then press Enter ↵ key to save format.

1 Min ON - Whenever there is key pressed, back light will ON for 1 minute.

Continuous ON - When Mains is ON, back light will be continuously ON.

NOTE -Backlight remains OFF in case of power absent.

7.6.4 Password



For security reason there is provision of password in time switch.
By enabling password access to unauthorized user is restricted.
By default, password is disabled.

After confirming with Enter key time switch is locked with the password entered.

Whenever any key pressed device will prompt to enter the password.

User get access to menu, only when he enter correct password.

40 seconds after the last time the key was pressed the timer is automatically locked again.

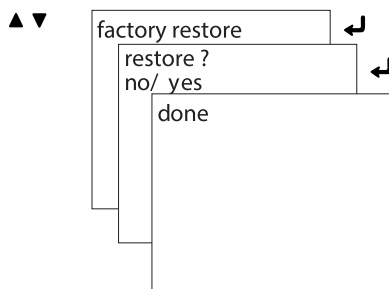
To disable password user has to enter the menu by entering correct password and using disable option password setting can be disabled.

DISABLE-

No any password is required to edit settings.

7.6.5 Factory Restore

In this Menu, user can reset all setting and programs to factory reset while RTC (clock and Date) remains unchanged.



Using up ▲ Down ▼ key, Confirm restore with No/Yes then press Enter ↵ key.

Any settings made previously are overwritten.

The factory settings are loaded as per below table.

SETTING	DEFAULT VALUE
TIME FORMAT	24 Hours
DATE FORMAT	DD.MM.YY
WEEK START DAY	SUNDAY
TWILIGHT	NO DST
DST	DISABLE
HOLIDAY CHANNEL STATUS	DISABLE
MULTIFUNCTION	DISABLE
BACK LIGHT	ONE MINUTE
PASSWORD	DISABLE

7.6.6 End

By using this menu, direct go to Main screen.

To go to previous menu use ESC ⏮ key.

8. Technical Specifications

	Part Number	
	MP008392	MP008393
Supply Characteristics		
Supply Voltage	240V AC	110V AC - 240V AC
Supply Variations	50/60 Hz	
Operating Frequency	-20% to +10%	
Power Consumption (Max.)	6VA	
Battery Back up	Approx. 6 Years	
Functional Characteristics		
Display	6 Lines Text LCD, Viewing Angle-6 O' Clock, Backlight- Green	
Number of Programs	50 (Each channel) + 10 Holiday (Each channel)	
Clock Mode	Either 12 Hour (AM/PM) or 24 Hour Clock	
Clock Resolution (Min.)	1 Minute	
Pulse Duration	1-59 seconds	
Hour Setting	00-23 for 24 Hour clock and 01-12 for 12 Hour clock	
Reset	Hardware reset and to be used only when device doesn't respond or hangs.	
Day Setting	Monday to Sunday	
RTC Accuracy	±0.5 sec/day @ 25°C	
Number of Keys	4 keys [ESC, UP, DOWN, OK] & 1 RESET key	
Relay Output Characteristics		
Contact Arrangement	1 C/O	2 C/O
Contact Rating	16A (NO & NC)@ 240V AC/24V DC (Resistive)	
Utilization Category (AC-1)	Max switching : 16A (NO & NC) at 250V AC, Cos Φ = 1	
	Max switching: 10A (NO & NC) at 250V AC, Cos Φ = 0.6	
Incandescent Lamps	2600 W	
Contact Material	AgSnO ₂	
Electrical Life	50000 cycles @ rated load	
Environmental Characteristics		
Operating Temperature	-15°C to +55°C	
Storage Temperature	-20°C to +70°C	
Humidity	95% Rh (Non Condensation)	
Maximum Operating Altitude	2000m	
Pollution Degree	2	
Degree of Protection	IP-20 for Terminals; IP-40 for Enclosure	
Enclosure	Flame Retardant UL-94 V0	
Other Characteristics		
Mounting	Din Rail	
Weight (Unpacked)	Approx. 1 Channel - 110gm, 2 Channel - 140gm	
Operating Position	Any	

Product Standard

IEC 60730-1 and IEC 60730-2-7

9. EMC, Safety & Environmental Specifications

EMI/EMC Compliance	
Harmonic Current Emissions	IEC 61000-3-2 Class A
Voltage Flicker & Fluctuation	IEC 61000-3-2 Class A
ESD	IEC 61000-4-3 Level III
Radiated Susceptibility	IEC 61000-4-2 Level III
Electrical Fast Transients	IEC 61000-4-4 Level IV
Surge	IEC 61000-4-5 Level IV
Conducted Susceptibility	IEC 61000-4-6 Level III
Power Frequency Magnetic Field	IEC 61000-4-8 Class 4
Voltage Dips & Interruption (AC)	IEC 61000-4-11
Conducted Emission	CISPR 11 Class B
Radiated Emission	CISPR 11 Class B
Safety Compliance	
Test Voltage (Input & Output)	IEC 60947-5-1 2.5 KV
Test Voltage(All Terminal to Body)	IEC 60730-1 3 KV
Impulse Voltage (Input & Output)	IEC 60947-5-1 Level IV
Single fault	IEC 61010-1
Insulation Resistance	IEC 60730-1 >7MΩ
Leakage Current	UL 508 <3.5 mA
Environmental Compliance	
Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6 10 to 55Hz, 5 g

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