

**Instruction Manual**

# DIN Rail Mounted Programmable Digital Timer Switch

(TS-DR-110 / TS-DR-12)

Version 1.1 (Jul, 2021)

### 1. Overview

This is a programmable digital timer switch with relay output. It can be used to switch on or off lights, appliance, or other small loads at specified date and time. The timer can be programmed to turn on/off the relay in 17 different daily/weekly schedules. Manual mode is available to overrule the programmed relay events. A 1.2 V / 40 mA lithium battery inside the timer switch provides power to the timer and it will be charged whenever the switch is connected to an AC power. The DIN rail mount of this timer switch makes it suitable for power management in a control panel.

### 2. Specifications

Table 1. Specifications

Power supply voltage rating	110 VAC or 12 V AC / DC
Power consumption (MAX)	2 W
Display type	LCD
Relay lifetime	Mechanically 10,000,000; Electrically: 100,000
Load capacity	Resistive load: 16 A / 250 V AC; Lagging load: 8 A / 250 V AC; Lamp Load: 2000 W
Output relay	1 x form C relay (1 N.O., 1 N.C.)
Timer range	1 minute ~ 168 hours (7 days)
Timer deviation	+/- 1 second / 24 hours, 25°C
Power-off memory	60 days
Working temperature	-14°F ~ 104°F ( -10°C ~ + 40°C)
Ambient humidity	35 - 85% RH
Power reserve	3 years (lithium battery)
Size	86.5 mm x 36 mm x 65.5 mm
Weight	120 g

### 3. Dimensions

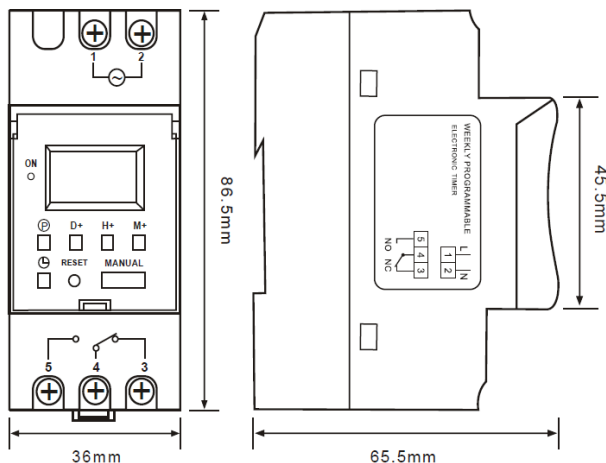


Figure 1. Dimensions of TS-DR-110 / TS-DR-12.

### 4. Wiring Diagrams

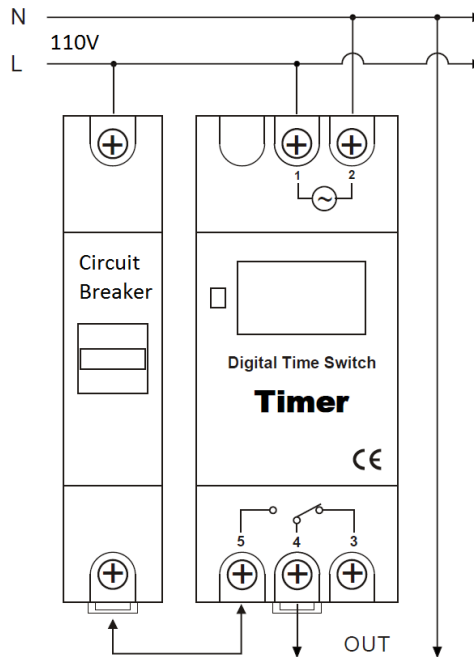


Figure 2(a). Wiring for 110V AC version TS-DR-110.

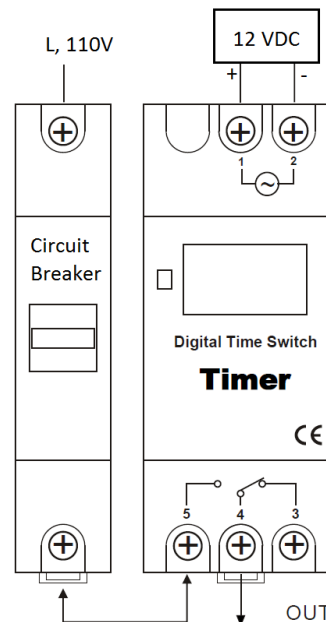


Figure 2(b). Wiring for 12V DC version TS-DR-12.

5. Timer Display and Key Pad

5.1 Timer Display Window

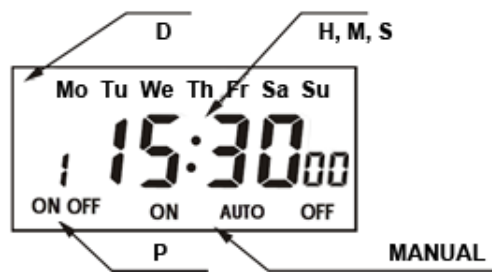


Figure 3. Display window of the timer.

Descriptions

**D:** This section of the LCD shows the days of the week.

**H, M, S:** Shows the time in the format of Hour: Minute: Second (HH:MM:SS).

**P:** Program/event number. "ON" or "OFF" will appear when editing the event-on time and the event-off time.

**MANUAL:** Indicating whether the time switch is ON, in AUTO mode, or OFF.

5.2 Key Pad on the Timer Switch

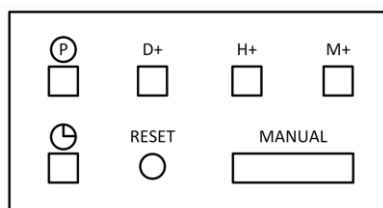


Figure 4. Key pad of the timer switch.

Table 2. Key Functions.

Symbol	Function
Ⓟ	Program the timer switch events
D+	Day adjustment
H+	Hour adjustment
M+	Minute adjustment
🕒	Clock setting
RESET	Reset
MANUAL	Switch mode between ON / AUTO / OFF; Clear / reset the timer event.

6. Setup the Timer Switch

1. When you first use this timer switch, press RESET key to reset this timer switch. This will clear all programmed events and reset the clock.
2. Set the Clock: Press and hold the CLOCK key (🕒), then press "D+", "H+" or "M+" key to adjust the day, hour or minute respectively to match with the current time.
3. Set up ON/OFF timer of each event. Please follow the steps in the Table 3 to program the event.
4. To have the timer switch run by the programmed events, set the mode to "AUTO" using MANUAL key. At any time, you can manually turn on the timer

switch (mode "ON") or turn off the timer switch (mode "OFF") by pressing the MANUAL key.

Table 3. Steps to program the event timer.

Step	Action	Description
1	Press Ⓟ	Enter the Event Setting Mode. You can set up to 17 different relay events. Each event is numbered, and has an ON time when the relay will pull in and an OFF time when the relay will drop off. By pressing Ⓟ key, you can go through all these settings.
2	Press H+ / M+	Set hours and minutes for the current event.
3	Press D+	Select recurring days for this event. There are 15 different combinations. Keep pressing D+ briefly to cycle through these available options.
4	Press Ⓟ	Confirm the current timer setting and go to the next setting. For example, if you just edited the "1 ON" timer, by pressing this key, you will go to "1 OFF".
5	Press H+ / M+	Set hours and minutes for the current event.
6	Press D+	Select recurring days for this event. Keep pressing D+ briefly to cycle through these available options.
7	Repeat step 2 - 6	Confirm your previous setting and go to next. Set the ON/OFF timer for event 2 - 17. Leave the event timer as blank if you don't want to use this event. If you have previously set the timer for an event but no longer need it, use the MANUAL key to clear the timer setting. If you don't need the rest of the events, press 🕒 to exit the timer programming mode.
8	Press 🕒	Exit the timer programming mode.

NOTE:

- 1) As the execution of relay events relies on the clock setting, please adjust your clock first before programming the event timer.
- 2) You can set up to 17 relay events on this timer switch. Each event has two timer settings: the time to activate the relay (displayed as "1 ON", "2 ON", and so on), and the time to deactivate the relay (displayed as "1 OFF", "2 OFF", and so on).
- 3) To cancel or disable an event, please make sure both the ON and OFF timer are cleared " - - : - - ".
- 4) When program the event timer, if no key is pressed for 10 seconds, the timer display will automatically go back to normal display mode and no settings will be saved.
- 5) To use the relay function, this timer must connect to external power supply. The embedded battery only provide power to the clock/timer, it cannot energize the coil of the relay.

5. Troubleshooting

If the relay had not been activated or deactivated at your pre-set time. Please do the following steps:

- 1) Double check if the recurring weekday setting is correct for your event; otherwise, just reset your event.
- 2) If the date and time were set correctly for both the ON and OFF timer, but the relay is pulling in or dropping out at unexpected time, please check other

unused events one by one, and press MANUAL key to clear both the ON and OFF timer to show "--:--".

3) If your switch is still not working properly after performing 1) and 2), please check if timer is running under "Auto" mode (In normal operation mode, press Manual key to change).

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