

Microcomputer Time Switch

Instruction Manual

1 Uses and application

microcomputer time switch (called time switch for short below) is applicable to automatic control circuit of AC 50Hz (or 60Hz) with rated control supply voltage of 220V, for the use of timing connection and cut - out of equipment, including street lamps, neon lamps and advertising lamp housing etc..

2. Normal working condition and installation condition

- 2.1 Ambient temperature: -25°C ~ 60°C ;
- 2.2 Altitude: Not more than 2000m;
- 2.3 Humidity: Relative humidity of air at the installation site is not more than 50% when the highest temperature is $+50^{\circ}\text{C}$; relative high humidity is allowed when the temperature is low. Special measures should be taken for condensation on products caused by temperature change;
- 2.4 Pollution class: 3;
- 2.5 In medium without explosion hazards, and without air which could corrode metal and destroy insulation, as well as places without conducting dust seriously existing;
- 2.6 Places with rain and snow protection equipment, and are not full of steam;
- 2.7 In places without distinct shake, shock and vibration.
- 2.8 Installation type: II;
- 2.9 Variation range of supply voltage: 85%~110% of rated voltage;
- 2.10 Protective class: IP20.4. Main technical data

3 Main technical data

- 3.1 Rated controlling supply voltage: AC 220V 50Hz;
- 3.2 Agreed heating current: 10A
- 3.3 Rated working current: AC-15 220V 3A;
- 3.4 Range of time control: 1 min~168 hours;
- 3.5 Timing error: ≤ 2 seconds/ day;
- 3.6 Electric life: 1×10^5 times;
- 3.7 Mechanical life: 1×10^6 times;
- 3.8 Anti-interference endurance: See form 1

form 1 Anti-interference endurance

Item	Harshness degree
Static discharge endurance	$\pm 8 \times (1 \pm 10\%) \text{ kV}$ (air discharge)
Endurance to radiation electromagnetic field	Intensity of test electric field $10 \times (1 \pm 10\%) \text{ V/m}$
Endurance to rapid transient	Last for 1min to 2kV power cord
Surge (shock) endurance	Test voltage of open circuit $2 \times (1 \pm 10\%) \text{ kV}$

4 Structural principle

The product is made up of four parts, including power module, main controlling module, display module and output relay, with timing control function. The product could set sixteen groups of connecting and cut-out time. And it could connect and cut off equipment including fluorescent lamps, electric bells, etc. at setting time according to setting requirements.

5 Appearance, installation dimension and wiring method

5.1 Appearance and installation dimension: See diagram 1~diagram 3.

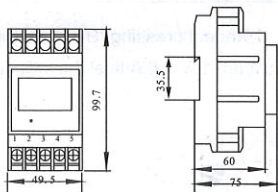


Diagram 1 Outer dimension

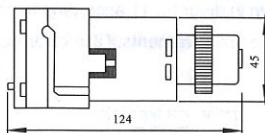


Diagram 2 Outer dimension

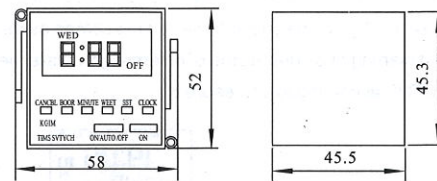


Diagram 3 Installation dimension

5.2 Wiring method of single-phase direct control

The electrical equipment under control is supplied with power with a single phase, and the power consumption is not more than rated capacity of the switch (the resistive load is 15A, and the inductive load is not more than 10A). Direct controlling method could be applied. And the wiring method is as that shown in diagram 6.

5.3 Wiring of three-phase working method

The electrical equipment under control is supplied with power with three phases. Three-phase AC contactors are required to be connected externally. Voltage of coils of controlling contactors is AC 380V. The wiring method of 50Hz is as that shown in diagram 7.

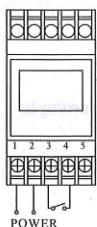


Diagram 4

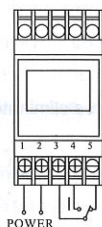


Diagram 5

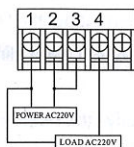


Diagram 6 Single-phase load

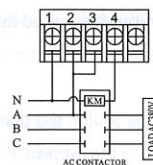


Diagram 7 Three-phase load

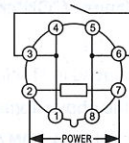


Diagram 8 Wiring diagram

6 Setting and use

There are "HOUR", "MINUTE" and "WEEK" buttons on the panel of the product, which could be used to adjust hour (h), minute (m) and week (week) correspondingly; there are also working instructions. Time switch could be controlled manually or automatically.

6.1 Timing setting.

6.1.1 All settings of the product could be made only after canceling the keyboard locking function. Cancel the keyboard locking function by pressing "CANCEL" button for four times, to make " " disappear.

6.1.2 Firstly check if time display of the clock is identical to the current time. If recalibration is required, pressing "HOUR", "MINUTE" and "WEEK" buttons separately, to adjust the clock to accurate current time.

6.1.3 Press "SET" button once, the character of "01 ON" will appear at the bottom right of the display screen (indicating the starting time of the first group). The starting time will be displayed as "=: =" in the primary state. Press "CANCEL" button once, the starting time will be displayed as "0:00". Then press "WEEK" button to choose working model (see form 2). Press "HOUR" and "MINUTE" buttons to input the starting time required by the first group.

6.1.4 Press "SET" button again, character "01 OFF" will appear at the bottom right of the display screen (indicating the closing time of the first group). The closing time will be displayed as "=: =" in the primary state. Press "CANCEL" button once, the closing time will be displayed as "0:00". Then press "WEEK" button to choose working model (see form 2). Press "HOUR" and "MINUTE" buttons to input the closing time required by the first group.

6.1.5 Press "SET" button successively, "2 ON, 20FF, 16 ON, 16 OFF" will appear at the bottom left of the display screen. Set starting and cut-out time for different times later referring to procedure 3, 4.

6.1.6 If the 16 groups of switches are unnecessary to be set every day, you must press "CANCEL" button to eliminate surplus time of different group, and make "=: =" appear on the screen.

6.1.7 After finishing timing setting, press "SET" button to check timing conditions of different times, and see if it is identical to actual conditions. Otherwise, please press "WEEK", "HOUR" and "MINUTE" buttons to make adjustment or reset.

6.1.8 Press "CLOCK" button again after finishing the examination, to make the current time displayed on the screen.

6.1.9 Press "ON / AUTO / OFF" button to adjust time switch to the current state of controlling equipment, and adjust to "AUTO". The time switch could turn on and turn off circuits automatically according to setting time. If circuit needs to be connected or cut off temporarily during the operation, just press "ON/AUTO/OFF" button to adjust the switch to "ON" or "OFF".

6.1.10 Illustrate with an example. An electrical equipment needs to be turned on at 19:00 every day, and turned off at 08:00 on the next day. Operate according to the following procedures: 1. Make the screen display shown as that in diagram 9, according to procedure 3. 2. Make the screen display shown as that in diagram 10, according to procedure 4. 3. Make time of different group later of "02 ON, 02 OFF, ... 16 ON, 16 OFF" displayed as "=: =" on the screen as that shown in diagram 11, according to procedure 6. 4. Repeat pressing "SET" button to check if starting and cut-out time of different group are the same as requirements. If it is incorrect, repeat procedure 1-3. 5. Adjust the switch mark to "AUTO" according to procedure 8.

Table 2 working mode		
No.	Working mode	Functions
1	MO TU WE TH FR SA SU	The same daily working hours in a whole week
2	MO/TU/WE/TH/FR/SA/SU	Different daily working hours in a week
3	MO TU WE TH FR	The same daily working hours from Monday to Friday
4	MO TU WE TH FR SA	The same daily working hours from Monday to Saturday
5	SA SU	The same daily working hours on Saturday and Sunday
6	MO WE FR	The same daily working hours on Monday, Wednesday, and Friday
7	TU TH SA	The same daily working hours on Tuesday, Thursday, and Saturday
8	MO TU WE	The same daily working hours on Monday, Tuesday, and Wednesday
9	TH FR SA	The same daily working hours on Thursday, Friday, and Saturday

Note 1: As long as a working mode is set up once, the system can work in accordance with the presetting routine.



Diagram 9 Connection setting



Diagram 10 Cut-out setting



Diagram 11 Canceling setting

6.2 Automatic calibration function of clocks

At first, hold on to "CANCEL" button, and press "SET" button at the same time, to enter the automatic calibration function of clocks. "7d = - 00" will be displayed on the screen, indicating time unit needs to be adjusted in a week is second. "-" stands for automatic deceleration, and "+" stands for automatic acceleration. Press "WEEK" button to adjust time needs to be calibrated, and press "CLOCK" button to return. After finishing setting, it will calibrate time automatically at a certain period every Saturday.

7. Malfunction analysis

7.1 If the time switch has not been turned on at certain time one day, or not turned off at setting time, the reason of which may be that "WEEK" button as timing setting hasn't been adjusted in right place. Please check or readjust it according to methods introduced in "Timing setting".

7.2 If time settings of "ON" and "OFF" buttons have been ensured as completely correct, but the time switch is started at wrong time, or turned off at wrong time, perhaps the reason is that time of a few groups of surplus switches haven't been eliminated. Please eliminate them referring to methods introduced in "Timing setting".

7.3 If both of the above items are correct, while time switch still operates incorrectly, the reason might be manual adjustment of "ON/AUTO/OFF" button. Check the mark "ON AUTO OFF" to adjust it to the current state of controlling equipment, and then adjust it to "AUTO".

7.4 If time switch still couldn't work normally, please check if power wiring and output wiring are connected correctly, and if power cord and terminals connect well.