Multifunctional Programmable Timer Relay Module

FEATURES：

- **Designed for low cost**
- **Power input protect**
- **Wide supply range: 5-25V**
- **5V、12V、24V Relay supported**
- **Maximum load : AC 250V/10A, DC 30V/10A.**
- **Multifunction integrated**
- **flexible work time range:**

   0-999milliseconds

   0-999seconds

   0-999minutes

   0-999hours

- **Precise time delay：up to 0.1%**
- **High and low trigger level supported**
- **IR Remote Controller equipped**
- **3-bit digital tube display**
- **1 power indicator LED**
- **1 relay indicator LED**
- **Can be controlled by Arduino、8051、 AVR、 PIC、 DSP、 ARM**
- **Size：55.8mm× 50mm× 18.5mm**

APPLICATIONS：

- **Home Appliances**
- **Automotive industry**
- **Industrial control**
- **Auto control**

GENERAL DESCRIPTION

This module can be controlled by many kinds of MCU, such as Arduino、8051、AVR、PIC、DSP and ARM, it is well designed for high quality and low cost. It is a MCU based relay module with many functions, such as make your system work after some time, make your system work when you give a trigger signal, make your system work periodically and etc. If you want some new functions or products, you can go to the web to contact us, we are very glad to receive your feedback.

Two LEDs are used to indicate the power state and the relay state. A 3-bit digital tube is used to display the working state and the parameters what you set. You also can shut it dow when you want to save power.

There is a infrared remote(IR) receiver on the board. And we use our IR controller instead of traditional keys to make you select the function and set the parameters very convenient. If you want to have many modules with the same function and parameters, you can use just use one IR controller to set them at the same time. And you can also use one IR to control your modules work simultaneously.

BLOCK DIAGRAM
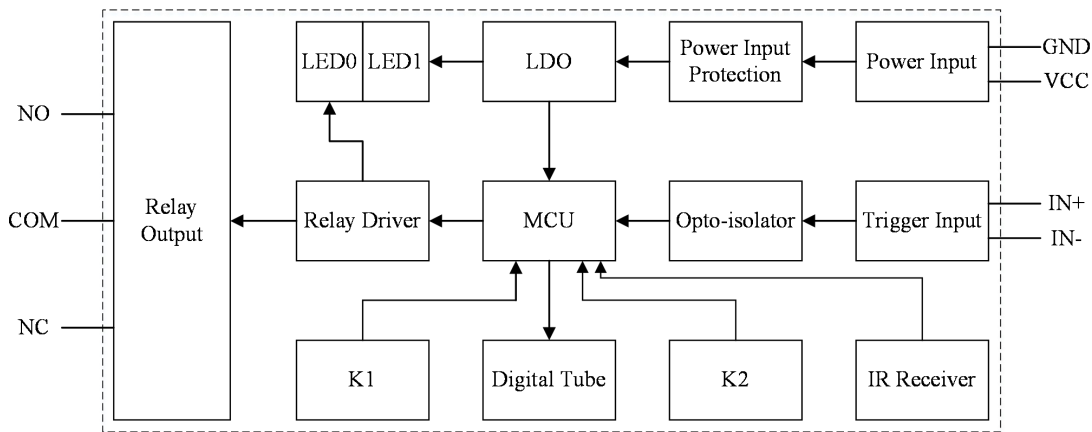
PIN DESCRIPTION

NAME	INPUT/OUTPUT	DESCRIPTION
VCC	Input	power supply: 5V-25V DC
GND	Input	power ground
IN+	Input	trigger input +
IN-	Input	trigger input - , connected to power ground
NO	Output	Relay output, normal open. Before relay closes, this pin is not connected. When relay closes, this pin is connected with COM.
COM	Output	Relay output, Common pin
NC	Output	Relay output, normal close. Before relay closes, this pin is connected with COM. When relay closes, this pin is not connected.
K1	Input	User key1, used to lock or unlock the module. When the module is locked, it cannot receive the IR signal.
K2	Input	User key2, used to power on or off the digital tube. When don't need to display the time,you can power off the digital tube to save power.

ORDERING INFORMATION

JDQSX11SH-5V	5V Relay Module
JDQSX11SH-12V	12V Relay Module
JDQSX11SH-24V	24V Relay Module

ELECTRICAL CHARACTERISTICS

JDQSX11SH-5V	
VCC	5V±10%
Trigger level high	3-5V
Trigger level low	<1V
JDQSX11SH-12V	
VCC	12V±10%
Trigger level high	3-12V
Trigger level low	<1V
JDQSX11SH-24V	
VCC	24V±10%
Trigger level high	3-24V
Trigger level low	<1V

APPLICATIONS INFORMATION
TERMINOLOGY

Relay open: the COM pin is connected to the NC pin

Relay close: the COM pin is connected to the NO pin

FUNCTION LIST

MODE0:   After power on, the relay closes and a timer begins to work,when delay time T1 reaches, the relay opens.

MODE1:   After power on, the relay opens and a timer begins to work,when delay time T1 reaches, the relay closes.

MODE2:   After power on, the relay closes when the module detects the trigger signal, a timer begins to work, when delay time T1 reaches, the relay opens.

MODE3:   After power on, the relay opens, when the module detects the trigger signal, a timer begins to work, when delay time T1 reaches, the relay closes.

MODE4:   After power on, at first, the relay closes and a timer begins to work, when delay time T1 reaches, the relay opens; then when delay time T2 reaches, the relay closes again; this process will repeat till power is off. This is a cycle mode.

MODE5:   After power on, at first, the relay opens and a timer begins to work, when delay time T1 reaches, the relay closes, then when delay time T2 reaches, the relay opens again; this process will repeat till power is off. This is a cycle mode.

MODE6:   After power on, at first ,the relay closes, when the module detects the trigger signal, a timer begins to work, when delay time T1 reaches, the relay opens; then when delay time T2 reaches,the relay closes again; this process will repeat till power is off. This is a cycle mode.

MODE7:   After power on, at first ,the relay opens, when the module detects the trigger signal, a timer begins to work, when delay time T1 reaches, the relay closes; then when delay time T2 reaches, the relay opens again; this process will repeat till power is off. This is a cycle mode.

MODULE DESCRPITON

Figure 1 is the image of the module and the comments show you should pay attention when you use it.

Trigger lever select is used to select the trigger level, it is defined as below:

Low   --   connect the middle pin to the right

High   --   connect the middle pin to the left

Digital tube is used to display the time when it works or display the parameters when you are setting them..

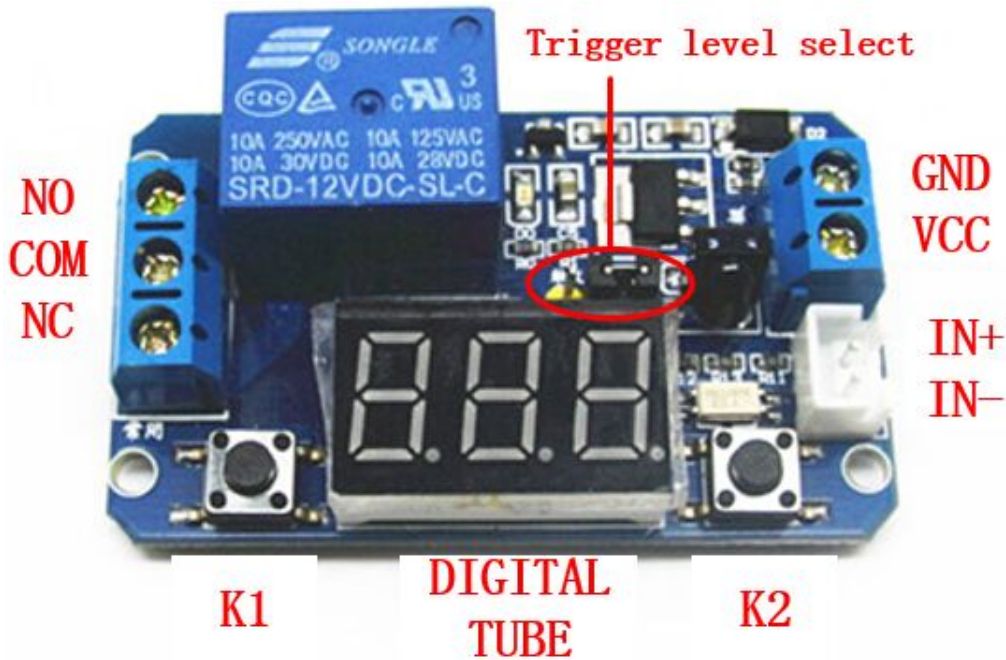GND、VCC、IN+、IN- 、NO、COM、NC、K1 and K2 are defined in **PIN DESCRIPTION.**

Figure 1

IR CONTROLLER DESCRIPTION

Figure 2 is the image of the IR controller, it is battery powered, button cells are installed before it leaves the factory. Because of the transportation, please check the battery again when you are about to use the controller.

The controller is used to set the parameters of the module, such as the function and the delay time. And it can also be used to give the module a trigger signal when you choose the proper function, such as mode2 and mode 3 in the FUNCTION LIST. The effective distance is about 5m, so make sure the module is in the range before you use it.

Figure 2 IR controller

SYMBOL	DESCRIPTION
ON	Give the module a trigger signal
OFF	???
MS	Set the time to millisecond
Sec	Set the time to second
Min	Set the time to minute
Hour	Set the time to hour
Mod	Select the function
CH	Not used
Sav	Save the set time
Clr	Clear the incorrect time you have input just now
0	Numeric 0, used to input the time
1	Numeric 1, used to input the time
2	Numeric 2, used to input the time
3	Numeric 3, used to input the time
4	Numeric 4, used to input the time
5	Numeric 5, used to input the time
6	Numeric 6 used to input the time
7	Numeric 7, used to input the time
8	Numeric 8, used to input the time
9	Numeric 9, used to input the time

How to select the function:

First, power on the module, then press 'Mod' key on the controller board, the digital tube of the module will display the current mode. '0' stands for mode0 in the FUNCTION LIST, '1' stand for mode1, '2' stand for mode 2, and etc. Press 'Mod' once, the mode will plus 1, when current mode is 7, the next press will make the mode to 0 again. When you find the mode what you want, wait about 3seconds, then the module will save the mode automatically. You won't have to set it again in the future use.

If you want to set many modules to same function, just power on all the modules, and do above once.

How to set the time:

This is a 3-bit digital tube, so you can set the time from 0 to 999.

If you want the delay time from 0-999 milliseconds: first, press three numerical keys(0-9) on the controller board. When you press the numerical keys, the digital tube will display them at the same time. If the input is incorrect, press the 'Clr' key to clear them and press what you want. If the input is right, press the 'MS' key and then press the 'Sav' key to save the time.

If you want the delay time from 0-999 seconds : first, press three numerical keys(0-9) on the controller board. When you press the numerical keys, the digital tube will display them at the same time. If the input is incorrect, press the 'Clr' key to clear them and press what you want. If the input is right, press the 'Sec' key and then press the 'Sav' key to save the time.

If you want the delay time from 0-999 minutes: first, press three numerical keys(0-9) on the controller board. When you press the numerical keys, the digital tube will display them at the same time. If the input is incorrect, press the 'Clr' key to clear them and press what you want. If the input is right, press the 'Min' key and then press the 'Sav' key to save the time.

If you want the delay time from 0-999 hours: first, press three numerical keys(0-9) on the controller board. When you press the numerical keys, the digital tube will display them at the same time. If the input is incorrect, press the 'Clr' key to clear them and press what you want. If the input is right, press the 'Hour' key and then press the 'Sav' key to save the time.

For the cycle mode, like the mode4-mode7 in the **FUNCTION LIST**, you have to set the time twice, once for the relay closes, and once for the relay opens.

If you want to set many modules to the same time, just power on all the modules, and do above once.

About the input sequence:

If you press the sequence '1'、'2'、'3', the effective input is 123.

If you press the sequence '1'、'2'、'3'、'4'、'5', the effective input is 345.

If you press the sequence '1'、'2'、'3'、'4'、'5'、'6', the effective input is 456.

Examples:

1、set the time to 9ms

Press '9' first, then press 'MS', then press 'Sav'.

2、set the time to 25s

Press '2' first, then press '5', then press 'Sec', then press 'Sav'.

3、set the time to 666 minutes

Press '6' for three times, then press 'Min', then press 'Sav'.

How to use the module:

MODE0:　　After power on, the relay closes and a timer begins to work,when delay time T1

reaches, the relay opens.

1、 Make sure the IR controller has power.

2、 Power on the module.

3、 Press 'Mod' key on the controller and set the mode to 0.

4、 Set the time T1.

5、 power is off the module.

6、 Power on the module.

You'll find the relay closes first, and the digital tube will display the reminder time before relay opens, when it display '000', T1 reaches and the relay opens.

The unit of the display is the same as what you have set.

MODE1:   After power on, the relay opens and a timer begins to work,when delay time T1 reaches, the relay closes.

1、Make sure the IR controller has power.

2、Power on the module.

3、Press 'Mod' key on the controller and set the mode to 1.

4、Set the time T1.

5、power is off the module.

6、Power on the module.

You'll find the relay opens first, and the digital tube will display the reminder time before relay closes, when it display '000', T1 reaches and the relay closes.

The unit of the display is the same as what you have set.

MODE2:   After power on, the relay closes when the module detects the trigger signal, a timer begins to work, when delay time T1 reaches, the relay opens.

1、Make sure the IR controller has power.

2、Power on the module.

3、Press 'Mod' key on the controller and set the mode to 2.

4、Set the time T1.

5、power is off the module.

6、Power on the module.

You'll find the relay closes and the digital tube display the set time T1. When you give the module a trigger signal, the digital tube will display the reminder timer before relay opens, when it display '000', T1 reaches and the relay opens.

The unit of the display is the same as what you have set.

MODE3:   After power on, the relay opens, when the module detects the trigger signal, a timer begins to work, when delay time T1 reaches, the relay closes.

1、Make sure the IR controller has power.

2、Power on the module.

3、Press 'Mod' key on the controller and set the mode to 3.

4、Set the time T1.

5、power is off the module.

6、Power on the module.

You'll find the relay opens and the digital tube display the set time T1. When you give the module a trigger signal, the digital will display the reminder timer before relay closes, when it display '000', T1 reaches and the relay closes.

The unit of the display is the same as what you have set.

MODE4: After power on, at first, the relay closes and a timer begins to work, when delay time T1 reaches, the relay opens; then when delay time T2 reaches, the relay closes again; this process will repeat till power is off. This is a cycle mode.

1、Make sure the IR controller has power.
2、Power on the module.
3、Press 'Mod' key on the controller and set the mode to 4.
4、Set the time T1 first, then set the time T2.
5、power is off the module.
6、Power on the module.

You'll find the relay closes and the digital tube display the reminder time of T1. When T1 reaches, the relay opens, and the digital tube display the reminder time of T2. When T2 reaches, the relay closes and the digital tube start to display the reminder time of T1 again. This process will repeat till power is off.

The unit of the display is the same as what you have set.

MODE5: After power on, at first, the relay opens and a timer begins to work, when delay time T1 reaches, the relay closes, then when delay time T2 reaches, the relay opens again; this process will repeat till power is off. This is a cycle mode.

1、Make sure the IR controller has power.
2、Power on the module.
3、Press 'Mod' key on the controller and set the mode to 5.
4、Set the time T1 first, then set the time T2.
5、power is off the module.
6、Power on the module.

You'll find the relay opens and the digital tube display the reminder time of T1. When T1 reaches, the relay closes, and the digital tube display the reminder time of T2. When T2 reaches, the relay opens and the digital tube start to display the reminder time of T1 again. This process will repeat till power is off.

The unit of the display is the same as what you have set.

MODE6: After power on, at first ,the relay closes, when the module detects the trigger signal, a timer begins to work, when delay time T1 reaches, the relay opens; then when delay time T2 reaches,the relay closes again; this process will repeat till power is off. This is a cycle mode.

1、Make sure the IR controller has power.
2、Power on the module.
3、Press 'Mod' key on the controller and set the mode to 6.
4、Set the time T1 first, then set the time T2.
5、power is off the module.
6、Power on the module.

You'll find the relay closes and the digital tube display the time of T1. When you give the module a trigger signal, the digital tube start to display the reminder time of T1. When T1 reaches, the relay opens, and the digital tube start to display the reminder time of T2. When T2 reaches, the relay closes and the digital tube start to display the reminder time of T1 again. This process will repeat till power is off.

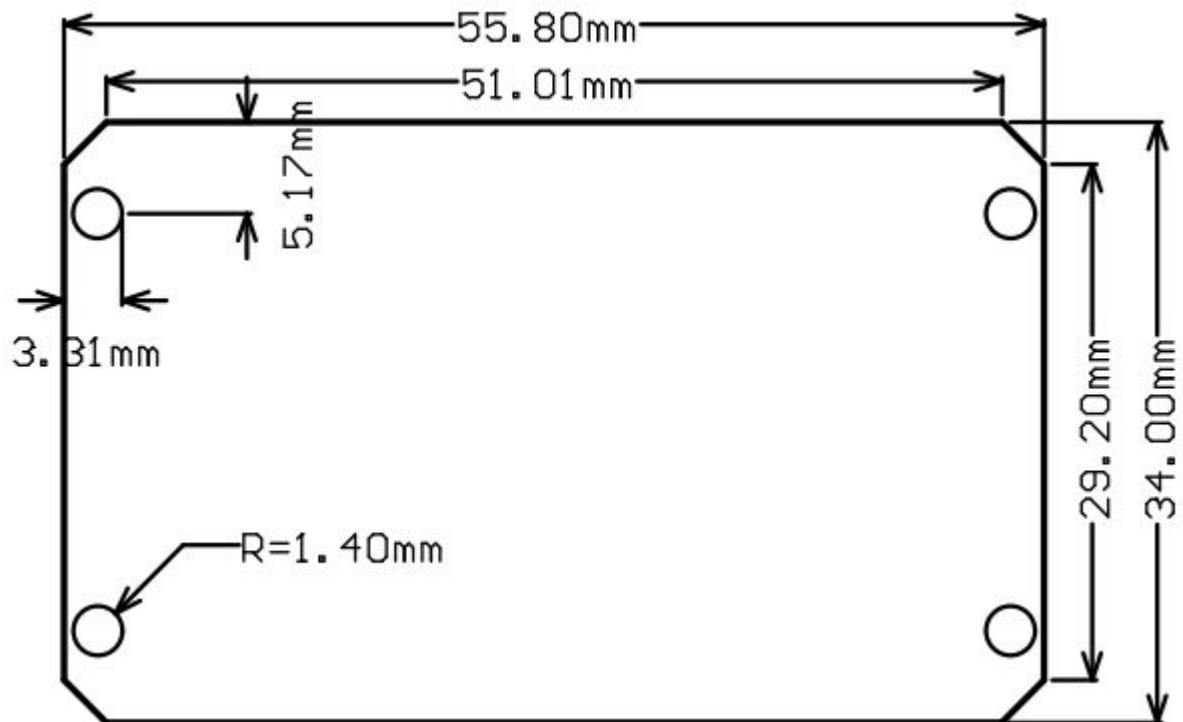The unit of the display is the same as what you have set.

MODE7: After power on, at first ,the relay opens, when the module detects the trigger signal, a timer begins to work, when delay time T1 reaches, the relay closes; then when delay time T2 reaches, the relay opens again; this process will repeat till power is off. This is a cycle mode.

1、 Make sure the IR controller has power.

2、 Power on the module.

3、 Press 'Mod' key on the controller and set the mode to7.

4、 Set the time T1 first, then set the time T2.

5、 power is off the module.

6、 Power on the module.

You'll find the relay opens and the digital tube display the time of T1. When you give the module a trigger signal, the digital tube start to display the reminder time of T1. When T1 reaches, the relay closes, and the digital tube start to display the reminder time of T2. When T2 reaches, the relay opens and the digital tube start to display the reminder time of T1 again. This process will repeat till power is off.

The unit of the display is the same as what you have set.

MODULE SIZE INFORMATION

1 inch = 25.4 mm