

RR-MDU

Universal Digital Timer, Flasher, Star-Delta and Inverser

1. INTRODUCTION

“Ext-Start Timer” is a microcontroller based time relay. The device has five different programs. Starting mode must be selected before choosing one of these programs. There are two different starting modes. One of them is the operating with external start, the other one is the operation without external start. The device decreases adjusted time value. When the time reaches to zero, according to the selected program, relay output will change its position. The device has two different relays. In addition, all set values will be saved to EEPROM. So these values will not be erased even if the power is cut down.

2. USAGE OF RR-MDU

To be able to programming the device, SET button must be hold for 3 seconds. There are three steps to complete programming the device. I- Adjusting starting mode, II- Choosing programming mode, III- Setting suitable time value.

I- Adjusting starting mode: SET button must be hold for 3 second. At this condition SET LED will start to light and “Str.H” will be shown on the screen. It means that “NO” option is selected for external start. There are two options for external output. Adjustment can be made by using UP and DOWN button. If “Str.E” is selected, it means that external start option is activated. If “Str.H” is selected, it means that external start option is deactivate.

When the choosing ext-start option is completed by pushing SET button, the devices will pass second steps adjustment menu.

If external start is deactivated, the device will start to count adjusted time as soon as the device is energized. When the device complete adjusted program, the devices will stay the last position until the energy of the devices is turned off and turned on again.

If external start is activated, the device will start to count adjusted time as soon as the external start terminal is made short circuit. When the device complete adjusted program, the devices will stay the last position until the external start terminal is made short circuit again.

II- Choosing Programming Mode: There are five programs. The program selection can be made by using UP and DOWN. Selecting program mode can be completed by pushing SET button.

All programming modes are explained below.

1- “t_on”: Timer On Program : At the beginning, both two relays are not energized. In this mode, the device will energized relay1 and change the contact position of the relay1 at the end of the adjusted time. If external start terminals are made short circuit, the relays will turn back initial position and operate the same operation again. In this program relay2 is not used.

2- “t_off”: Timer Off Program : At the beginning, relay1 is not energized and relay2 is energized. In this mode, the device will cut the energy of the relay2 and change the contact position of the relay2 at the end of the adjusted time. If external start terminals are made short circuit, the relays will turn back initial position and operate the same operation again. In this program relay1 is not used.

3- “y_U1”: Star – Delta Program : At the beginning, relay1 is energized and relay2 is not energized. In this mode, there are two separate time adjustment.

First time: “y_U1” symbolizes operation time at star mode. During this time, relay1 will stay at energized position and relay2 will stay at not energized position. In this mod motor will operate at star operation mode.

Second time: “y_U2” symbolizes delay time for passing from star operation mode to delta operation mode. Relay1 and relay2 will be not energized until end of the adjusted second time. At the end of the time, relay2 will be energized and motor will start to operate delta mode.

In this mode, when the device is started to operate, relay1 will stay at energized position until end of first time and second time will start to count. At the end of the second time, relay2 will energized and the device will stay the same position until external start is activated again:

4- “FLS1”: Flasher Program: At the beginning, relay1 and relay2 is energized. In this mode, there are two separate time adjustment.

First time: “FLS1” symbolizes the operation time which both relays stay at energized position.

Second time: “FLS2” symbolizes the operation time which both relays stay at not energized position.

In this mode, when the device is started to operate with or without external start option, both two relays will be energized and first adjusted time will start to count and at the end of the first time, energy of both two relays will be cut and second time will start to count. At the end of the second time, both two relays will be energized and the first time start to count again. Operation will go on to operate at the same procedure.

5- “Inr1”: Inverser Program: At the beginning, relay1 is energized and relay2 is not energized. In this mode, there are four separate time adjustment.

First time: “Inr1” symbolizes operation time which motor is turning right side. During this time, relay1 will stay at energized position and relay2 will stay at not energized position.

Second time: “Inr2” symbolizes delay time before motor is turning left side. During this time, relay1 and relay2 will stay at not energized position.

Third time: “Inr3” symbolizes operation time which motor is turning left side. During this time, relay1 will stay at not energized position and relay2 will stay at energized position.

Fourth time: “Inr2” symbolizes delay time before motor is turning right side. During this time, relay1 and relay2 will stay at not energized position.

In this mode, when the device is started to operate with or without external start option, relay1 will be energized and relay2 will not be energized and first adjusted time will start to count and at the end of the first time, both two relays will not be energized and second time will start to count. At the end of the second time, relay1 will not be energized and relay2 will be energized and third adjusted time will start to count and at the end of the third time, both two relays will not be energized and fourth time will start to count. At the end of the fourth time, the device will turn back to the beginning of the program and operation will go on to operate at the same procedure.

III- Setting Suitable Time: After desired program is chosen and SET button are pushed, third step which is used for setting time will be shown in the screen.

According to the program mode, time option displayed on the screen like shown below:

1- “h.” Hour : Adjustable from 00 to 99. During hour adjustment hour LED blinks.

2- “dA.” Minute : Adjustable from 00 to 59. During minute adjustment hour LED blinks.

3- “Sc” Second : Adjustable from 00 to 59. During second adjustment hour LED blinks.

4- “SI” Millisecond : Adjustable from 00 to 99. During millisecond adjustment millisecond LED blinks.

Note: Total time setting can not be adjusted less than 10 millisecond.

There is only one time adjustment for timer ON and timer OFF program and time setting starts from hour.

There two separate time adjustment for FLASHER program and both two time setting starts from hour.

There two separate time adjustment for STAR-DELTA program and first time setting starts from hour and the second time adjustments start from second.

There four separate time adjustment for INVERSER program and all time setting starts from hour.

UP : Used for increment.

DOWN : Used for decrement.

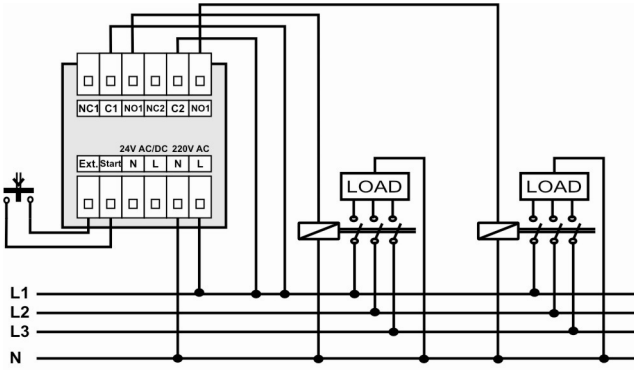
SET : Used for accepting adjustment and passing next adjustment.

When the setting operation is completed by finalizing setting procedure, SET LED will go off.

Type of displayed time value will be described by the LED where is on the top of the front panel of device.

When the user gives start to the device by using external start terminal, device will start to decrease adjusted time by starting from hour. At this time hour and minute will be displayed on the screen. When the hour reach to zero, minute and second will be displayed on the screen. When the minute reach to zero, second and millisecond will be displayed on the screen.

3. CONNECTION DIAGRAM



Terminals

N, L : Supply Voltage
 NC1 : Normally Closed Contact 1
 C1 : Common Contact 1
 NO1 : Normally Opened Contact 1
 NC2 : Normally Closed Contact 2
 C2 : Common Contact 2
 NO2 : Normally Opened Contact 2

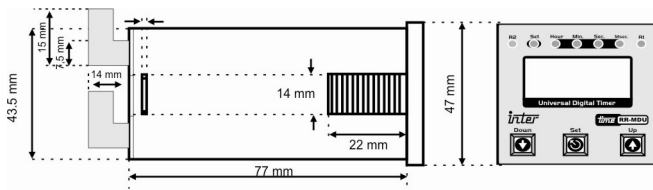
4. TECHNICAL SPECIFICATIONS

Operating Voltage (Un)	220VAC 1 Phase + 1 Neutral
Operating Range	(0.8-1.2)xUn
Operating Frequency	50/60 Hz
Contact Output	250VAC-5A
Power Consumption	2W
Output Type	2 Separate relay
Max. Contact Current	5A
Max. Contact Voltage	250VAC
Starting Mode	Internal-External
Mounting Type	Panel Mounted
Protection Class	IP 20
Plastic Material	V0 Nonflammable
Operating Temperature	-25°C ... +65°C
Weight	225 gr.

5. SAFETY & WARNING INSTRUCTIONS

- Turn off power during connection/wiring.
- Check correct mains voltage/wiring terminal.
- Installation shall only be performed by qualified personnel.
- Do not use any solvent or alike for cleaning.

6. MECHANICAL DIMENSIONS



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