

# Autonics

## TIMER LE7D-2

### MANUAL



Thank you very much for selecting Autonics products.  
For your safety, please read the following before using.

### Caution for your safety

- \*Please keep these instructions and review them before using this unit.
- \*Please observe the cautions that follow:
- Warning** Serious injury may result if instructions are not followed.
- Caution** Product may be damaged, or injury may result if instructions are not followed.
- \*The following is an explanation of the symbols used in the operation manual.
- Caution:** Injury or danger may occur under special conditions.

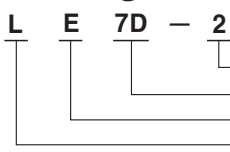
### Warning

- In case of using this unit with machineries(Nuclear power control, medical equipment, vehicle, train, airplane, combustion apparatus, entertainment or safety device etc), it requires installing fail-safe device, or contact us for information required.**  
It may result in serious damage, fire or human injury.
- This unit must be mounted on Panel.**  
It may give an electric shock.
- Do not repair or checkup when power on.**  
It may give an electric shock.
- Do not disassemble and modify this unit, when it requires. If needs, please contact us.**  
It may give an electric shock and cause a fire.
- Lithium battery is used for memory retention in this product, therefore do not disassemble or burn up.**  
It may cause a fire.

### Caution

- This unit shall not be used outdoors.**  
It might shorten the life cycle of the product or give an electric shock.
- When wire connection, No.20AWG(0.50mm<sup>2</sup>) should be used and screw bolt on terminal block with 0.74N·m to 0.90N·m strength.**  
It may result in malfunction or fire due to contact failure.
- Please observe specification rating.**  
It might shorten the life cycle of the product and cause a fire.
- Do not use the load beyond rated switching capacity of Relay contact.**  
It may cause insulation failure, contact melt, contact failure, relay broken, fire etc.
- In cleaning the unit, do not use water or an organic solvents.**  
It might cause an electric shock or fire that will result in damage to the product.
- Do not use this unit at place where there are flammable or explosive gas, humidity, direct ray of the sun, radiant heat, vibration, impact etc.**  
It may cause explosion.
- Do not inflow dust or wire dregs into inside of this unit.**  
It may cause a fire or mechanical trouble.

### Ordering information

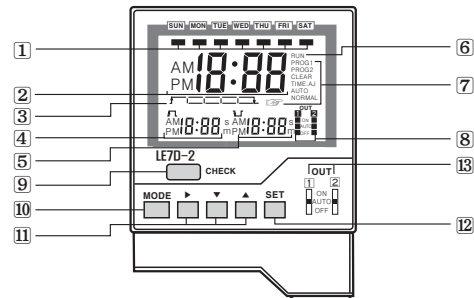


### Definition of a terms

- Record** : This is basic unit of program for controlling the output.
- Step** : This is basic unit of record.
  - ①ON/OFF operation : 2 steps(ON day/ON time, OFF day /OFF time) are composed of 1 record.
  - ②Cycle operation : 4 steps(ON day/ON time, OFF day /OFF time, ON/OFF time width) are composed of 1 record.
  - ③Pulse operation: 1 step(ON day/ON time/pulse width) is composed of 1 record.
- Enable total step: 24 steps

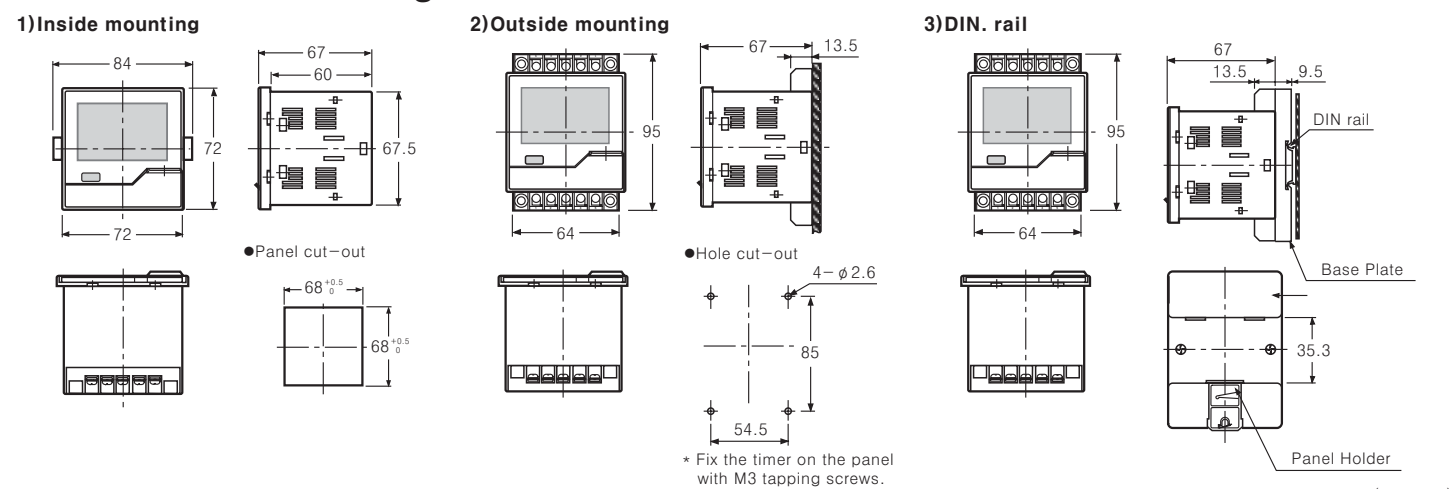
\*The above specification are changeable without notice anytime.

### Front panel identification

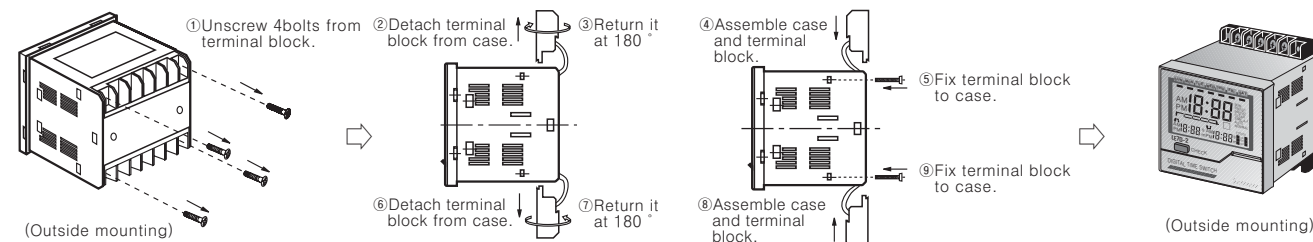


- Indication of days**
    - Light ON:Status of the day has been set.
    - Light OFF:Status of the day has not been set.
    - When the flicker is on the day has been set:Repeatedly flickers by turn(0.25sec)
    - When the flicker is on the day has not been set:Repeatedly flickers by turn(0.5sec)
  - Display(Current time, No of record, Residual step)**
    - RUN mode:Display the current time.
    - Program modify and check mode:Display the record No. of program has been set.
    - Program setting mode:Display programming residual step. Total step:24 steps.
  - Indication for operation type**
    - ON/OFF operation
    - Cycle operation
    - Pulse operation
  - Display of ON time**
  - Display of OFF time and pulse time width**
  - Output selection switch, AUTO position indication**
    - Output selection switch(OUT1,2)  
ON or OFF: RUN indicator: OFF
  - Main menu display**
    - PROG1: PROG 1 operating, PROG 1program setting, modify, light on/off.
    - PROG2: PROG 2 operating, PROG 2 program setting, modify, light on/off (When PROG1 and PROG 2 is operation at the same time, PROG1 turns on only.)
    - When Clear + PROG1 is flickering, SET key input: Program of PROG 1 will be eliminated.
    - When Clear + PGOG2 is flickering, SET key input: Program of PROG 2 will be eliminated.
    - Time AJ:When it is flickering, enable to set or change the current time.
    - Select memory retention
      - AUTO:It will output according to program setting after cut the power off.
      - NORMAL:After RETURN INPUT signal applied, then it will output according to the program setting when the power applied again.
  - Output and selection switch setting position display**
  - CHECK key** : This key can be used to check program and modify the day.
  - MODE key** : This key can be used to set, modify, remove program and set current time, select AUTO or NORMAL mode.
  - Shift key(▶, ▼, ▲)** : This key can be used to set, modify program or change day.
  - SET key** : After setting or modifying program or changing the day, these programs are fixed by pushing SET key.
  - Slide switch of OUT mode**
    - ON : Output always ON not related to program.
    - OFF : Output always OFF not related to program.
    - AUTO : Output operates according to program.
- <Output1(OUT1) & Output2(OUT2) are selected independently>

### Dimensions & Mounting

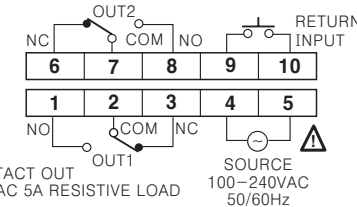


4)How to modify the mounting method from Inside mounting to Outside mounting  
: Take off terminals from the body after unscrew terminal screws, and then assemble terminals at the body after returning terminals as below figure.



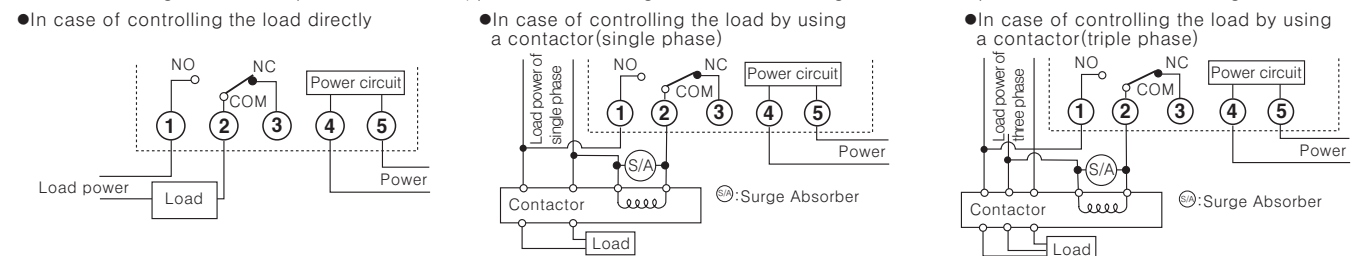
### Connection

#### 1. Connection Diagram



#### 2. Wiring

In case of controlling the load except the resistive load, please connect surge absorber after using a contactor to prevent malfunction or damage of the unit.



### Specifications

Model	LE7D-20	
Power supply	100-240VAC 50/60Hz	
Allowable voltage range	90 to 110% of rated voltage	
Power consumption	100VAC/60Hz:Approx. 3VA, 240VAC/60Hz:Approx. 5VA	
Output	<ul style="list-style-type: none"> <li>○ Contact composition SPDT(Single Pole Double Contact)</li> <li>○ Capacity 250VAC 5A resistive load</li> <li>○ Output number Independent 2 output(1c × 2)</li> </ul>	
External input	Short-circuit or open by switch or relay	
Timing program	Programmable 24 STEP	
Operation mode	Normal(ON/OFF)mode, Cycle mode, Pulse mode	
Operation cycle	1 week(7days)	
Mounting	Front panel, base panel, DIN rail	
Time deviation	±15sec/month(Ta:25°C) (±4sec/week)	
Memory retention	5years without power, 10years at 50% status of power failure	
Insulation resistance	Min. 100MΩ (at 500VDC)	
Dielectric strength	2000VAC 50/60Hz for 1minute	
Noise strength	±2kV the square wave noise(pulse width:1μs) by the noise simulator	
Relay life cycle	Mechanical	Min. 5,000,000 times (Switching capacity 30times/1minute)
	Electrical	Min. 100,000 times(Switching capacity 20times/1minute, 250VAC 5A resistive load)
Ambient temperature	-10 to +55°C (at non-freezing status)	
Ambient humidity	35 to 85%RH	
Storage temperature	-25 to +65°C (at non-freezing status)	
Weight	Approx. 250g	
Approval	File NO:E141946	

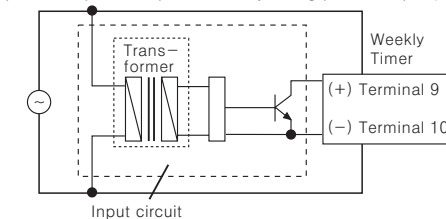
### Operations

#### 1. 1 Cycle : 24 hour × 7 days

#### 2. Operation

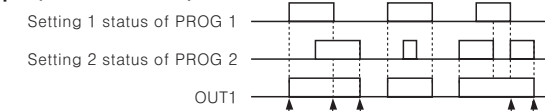
- ON/OFF operation**  
The output(OUT1 or OUT2) turns on during ON setting time(Move relay contact NC to NO) and return during OFF setting time(Move relay contact NO to NC).  
①Max. time unit : 1minute  
②Each ON days & OFF days can be selectable differently.
- CYCLE operation**  
The output(OUT1 or OUT2) turns on(NC to NO) & off(NO to NC) repeatedly during ON or OFF time from the start time the close time of CYCLE operation.
- PULSE operation**  
The output(OUT1 or OUT2) turns on(NC to NO) during ON setting time.  
\*Pulse width(ON time):1 to 59sec., 1 to 60min.
- Enforced ON/OFF operation**  
: When slide switch is selected at ON position, the output is always turns ON not related to program. When slide switch is selected at OFF position, the output is always turns OFF not related to program.
- Memory retention**
  - In case of setting AUTO  
: When power on again after power off, the output(OUT1, OUT2) operates according to program status.
  - In case of setting NORMAL  
: When power on again after power off, "E" Mark in display window appears and flicker, the output operates according to program status by applying Return input.

- How to apply RETURN INPUT
  - In case of using relay or switch, please use it which has the gold plated contact guaranteed high contact reliability.
  - In case of using a transistor or photocoupler, please be careful as follow:
    - Power voltage of signal input must be supplied by insulated transformer which is separated between primary and secondary line, and 2nd line must not be grounded.
    - If insulated transformer is not separated between primary and secondary line, please separate input circuit by using photocoupler, etc.



-Please check polarity of a transistor or photocoupler. In case of using transistor, please use which has characteristic as follow: Vce0 ≥ 30V, Ic ≥ 30mA, Iceo ≤ 5μA

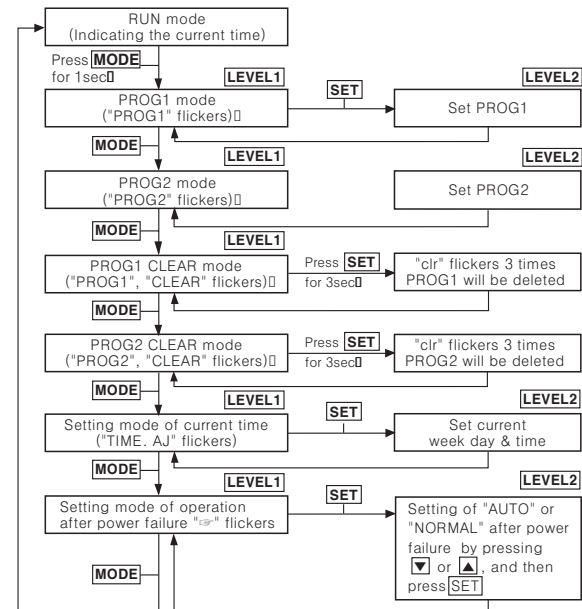
#### 3. Output(OUT1 or OUT2)



- Operation of OUT1:Interval between ① and ② will be operated according to setting 1 status of PROG1. Interval between ② and ③ will be operated according to setting 2 status of PROG1.
  - ④Operates according to setting 2 status of PROG1.
- OUT1 is operated as setting contents of program1.  
OUT2 is operated as setting contents of program2.

# Programming

## 1. Setting group

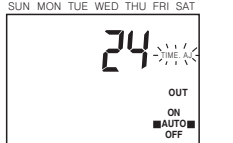


- If no key touched for 30sec. at LEVEL1, it will be returned to RUN mode automatically.
- If no key touched for 30sec. at LEVEL2, it will be returned to LEVEL1 automatically.
- If MODE key is pushed at LEVEL2, modified program is cancelled and returned to LEVEL1 automatically.

## 2. The current time setting

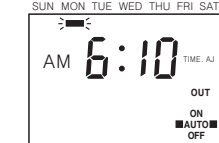
Be sure to set the current time after purchasing this unit.  
(Example) Change setting from AM6:10 Sunday to AM9:00 Monday.

### ① Move to current time setting mode



Press MODE over 1 sec. then PROG1 will flicker, and press MODE 4 times, AJ will flicker at this moment then press SET key.

### ② Current day setting



AM 6:10 and flickering will appear in the screen, move flicker Sunday to Monday by pressing <right> key. And select Monday pressing <left> key or <down> key.

### ③ Current time setting(AM, PM)



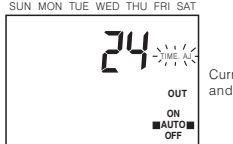
Now AM is flickering so you can move flicker to Hour position by pressing <right> key, if setting time is AM, by pressing <left> or <down> key. Set 00 minute with <down> key and able to change to PM.

### ④ Hour, Minute



After setting 9:00 with <right> key, move to Minute position with <right> key. Set 00 minute with <down> key and press SET key.

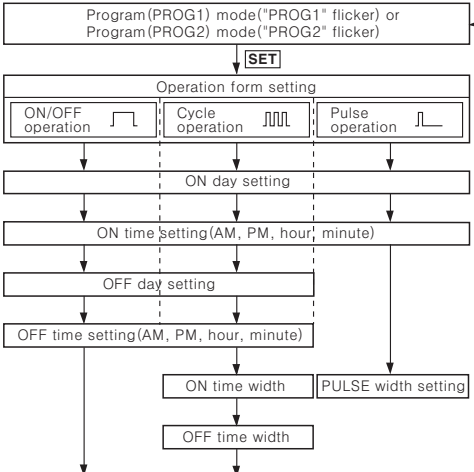
### ⑤ Complete the current time setting



Current time setting completed, and Time AJ will flicker.

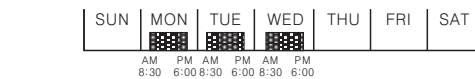
## 3. Program(PROG1, PROG2) setting

### ● Program setting flow chart

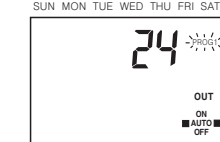


## 4. Example for program setting

(Example1) ON/OFF operation: The output1(OUT1) at (Mon. Tue. Wen. AM 8:30) is ON, The output1 (Mon. Tue. Wen. PM6:00) is OFF.

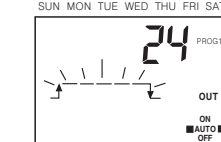


### ① PROG1 setting mode



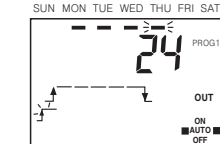
Press MODE over 1sec., PROG1 will flicker then press SET key.

### ② Operation form setting



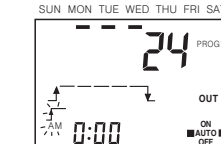
This is ON/OFF operation, just Press SET key.

### ③ ON day setting



Move flicker to Mon. with <right> key, press 3 times <left> or <down> keys (Mon. Tue. Wen. are ON, Thu flickers) then press SET key.

### ④ ON time setting(AM, PM)



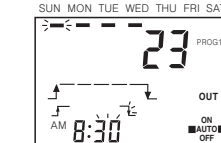
Just press <right> key and move flicker to Hour position because AM is set already. If ON time is PM, able to select PM by pressing <left> or <down> keys.

### ⑤ ON time setting(Hour, Minute)



After set 8 by pressing <right> key then move flicker to Minute position by pressing <right> key, finally set 30minute with <down> key then SET key.

### ⑥ OFF day setting



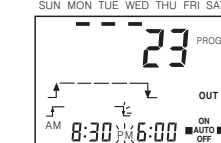
Press SET due to ON day and OFF day is the same. Able to set ON/OFF day differently between them.

### ⑦ OFF time setting(AM, PM)



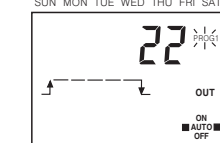
Press <left> or <down> to set PM because OFF time is PM, then move flicker to Hour position by pressing <right> or <down> keys.

### ⑧ OFF time setting(Hour, Minute)



After set 6 o'clock with <left> key and move flicker to Minute position with <right> key then set 00 minute by pressing <down> key and SET key.

### ⑨ Complete setting



When PROG1 is flickering, if you press SET key then able to set additional program.

(Example2) ON/OFF operation: The output2(OUT2) is ON, The output2(Fri. PM 5:00) is OFF.

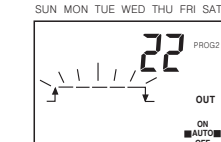


### ① PROG2 Setting mode



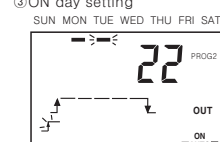
Press MODE for 1sec then PROG1 will flicker, if press MODE one time more, PROG2 will flicker then press SET key.

### ② Operation form setting



Just press SET because ON/OFF will be displayed. If memorized operation state is CYCLE, select ON/OFF operation by pressing <right> key.

### ③ ON day setting



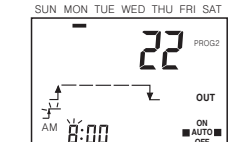
Move flicker to Monday position with <right> key then press <left> key one time (Monday is ON and Tuesday will flicker) and SET key.

### ④ ON time setting(AM, PM)



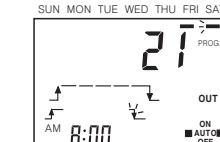
Move flicker to hour position with just <right> key because AM has set already. If ON time is AM, select PM with <left> key.

### ⑤ ON time setting(Hour, Minute)



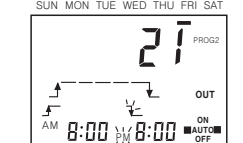
Set 8:00 with <right> key then just press SET because minute position has set. If need to set minute, move to minute position with <right> key and set needed time with <down> key then SET key.

### ⑥ OFF day setting



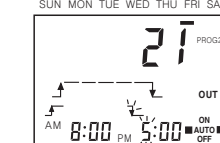
Monday(ON day) is ON on LCD display. Move flicker to Monday position then cancel selected Monday with <left> key (Monday is OFF). After move flickers to Friday position with <right> key, then select Friday as OFF day with <left> key and SET key.

### ⑦ OFF time setting(AM, PM)



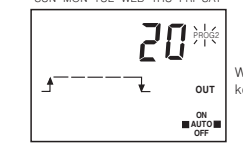
Select PM with <left> key because OFF time is PM then move flicker to hour position with <right> key.

### ⑧ OFF time setting(Hour, Minute)



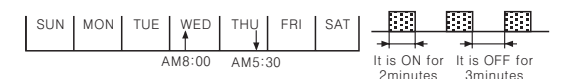
Change OFF time to 5 o'clock with <left> key. Because minute position is memorized as 00 minute, just press SET key.

### ⑨ Complete setting



When PROG2 is flickering, if you press SET key then able to set additional program.

Example3) CYCLE operation setting: Repeatedly the output1(OUT1) is ON for 2minute and OFF for 3 minute from Wednesday AM 8:00 to Tuesday PM 5:00.

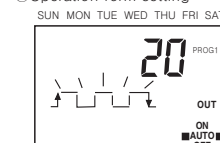


### ① PROG1 setting mode



PROG1 will flicker by pressing MODE over 1sec. then press SET one time.

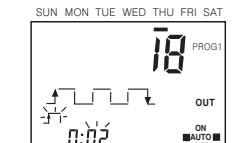
### ② Operation form setting



Now ON/OFF operation display is flickering. Move flicker to CYCLE operation by pressing <right> key, then press SET key.

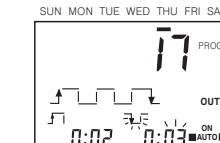
③-⑥ ON day, ON time and OFF day/time are the same as ③-⑥ of setting.

### ⑨ ON time width setting



After move flicker to minute position with <right> key then set ON time width for 2minute and SET key.

### ⑩ OFF time width setting



After move flicker to minute position with <right> key then set OFF time width for 3 minute and SET key.

### ⑪ Complete setting

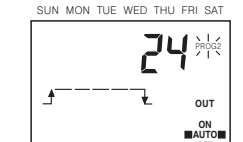


When PROG1 is flickering, if you press SET key then able to set additional program.

(Example4) PULSE operation setting: The output2(OUT2) will be ON for 10sec. on Monday, Tuesday and Wednesday AM 8:50.

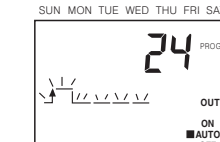


### ① PROG2 setting mode



When PROG1 is flickering by pressing MODE over 1sec., if press MODE one time more then PROG2 will flicker and SET key.

### ② Operating form setting



Now ON/OFF is displayed. When PULSE operation display flickers by pressing <right> key two times and SET key.

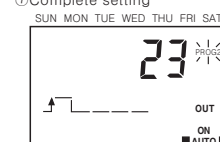
③-⑥ ON day and ON time are the same as setting example ③-⑥.

### ⑥ PULSE width setting



Set 10 sec. by pressing <down> key then SET key.

### ⑦ Complete setting



When PROG2 is flickering, if you press SET key then able to set additional program.

● In case of operation form of being set program in PROG1(PROG2) is PULSE( ), if you add program in to PROG1(PROG2), the operation form will be fixed.

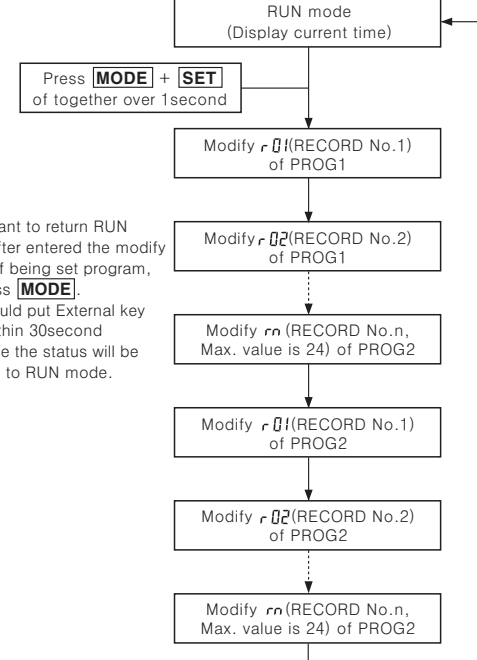
● In case of operation form of being set program in PROG1(PROG2) is ON/OFF( ) or CYCLE( ), if you add program in to PROG1(PROG2), the PULSE( ) operation will be not used.

- \*Status of selected day: Light ON ( ) or flicker in CYCLE(0.5sec( )
- \*Status of non-selected day: Light OFF of flicker in CYCLE(1sec( )
- \*Cancel the selected day: After move flicker to the position where you want cancel the selected day by pressing <right> key, then cancel the selected day by pressing <left> key.

## Program modify [MODE key + SET key]

● The status of several programs are set, this function is used to modify particular part without erasing program.

### 1. Program modify



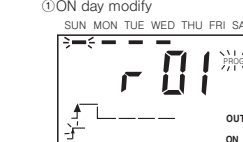
If you want to return RUN mode after entered the modify status of being set program, just press MODE key.

You should put External key input within 30second otherwise the status will be returned to RUN mode.

### 2. Example of program modify

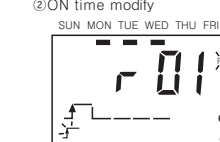
If you want to modify the operation of OUT2 is ON for 10 second every AM 8:00 on Monday, Tuesday, Wednesday to the operation of OUT2 is ON for 3minute every PM 8:50 on Monday, Tuesday, Wednesday, just press MODE + SET at the same time.

#### ① ON day modify



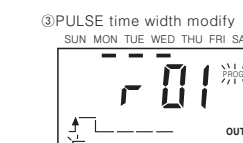
Press SET key because there is no change of day. If there is modification of ON day, change to ON day setting.

#### ② ON time modify



Change AM to PM by pressing <left> key then SET key.

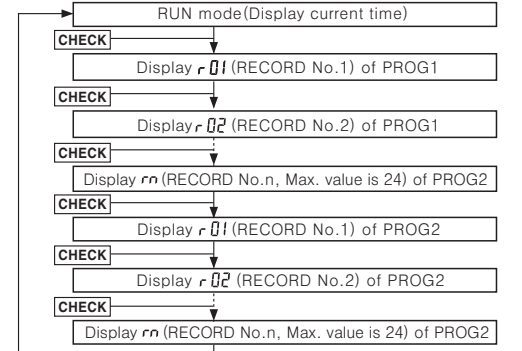
#### ③ PULSE time width modify



Set 3 minute with <down> key then SET key.

## Program check [CHECK key]

### ● Program check



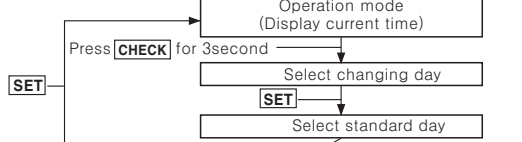
\*When you check set program (PROG1, PROG2) by RECORD. You should put External key input within 30second or press MODE, otherwise the status will be returned to RUN mode.

## Day modify operation [CHECK key 3second]

### 1. What is the day modify operation?

You can use this operation to change any day (Changing day) among set program to operation of standard day.  
- Changing day multi selection function.  
- When completed setting of changing day, return to the first program.  
- Cancel of the day modification  
① Current day change from status of current time setting.  
② Modify program that standard day is set.

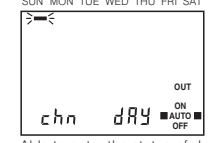
### 2. Day change operation setting



### 3. Program setting example

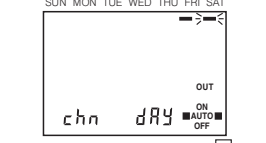
The operation is programmed as OUT1 is ON at AM 8:30, OUT2 is OFF at PM 6:00 in every day. When Friday is holiday, if you need to make operation on Friday as operation of Sunday, this function can be used.

#### ① Day change operation



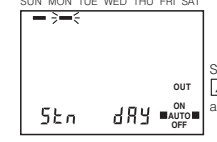
Able to enter the status of day change operation with pressing CHECK key for 3second continuously in RUN mode.

#### ② Changing day selection



Move flicker to Friday with <right> key and select Friday with <left> or <down> key then SET key.

#### ③ Standard day selection



Select Sunday as standard day with <left> or <down> key then SET key (Setting will be completed and return to RUN mode)

## Caution for using

1. Please use the power within rating power and apply or cut the power at once to prevent from chattering.
2. When test dielectric voltage and insulation resistance of the control panel with this unit installed.
  - ① Please isolate this unit from the circuit of control panel.
  - ② Please make all terminals of this unit short-circuited.
3. When control a heater, please install the thermal switch at load circuit.
4. Installation environment
  - ① It shall be used indoor
  - ② Altitude Max. 2000m
  - ③ Pollution Degree 2
  - ④ Installation Category II.

\*It may cause malfunction if above instructions are not followed.

## Main products

- COUNTER
- TIMER
- TEMPERATURE CONTROLLER
- PANEL METER
- TACHOMETER/ LINE SPEED METER/ PULSE METER
- DISPLAY UNIT
- PROXIMITY SENSOR
- PHOTOELECTRIC SENSOR
- FIBER OPTIC SENSOR
- PRESSURE SENSOR
- ROTARY ENCODER
- SENSOR CONTROLLER
- POWER CONTROLLER
- STEPPING MOTOR & DRIVER & CONTROLLER

**Autonics Corporation**  
<http://www.autonics.net>

■ HEAD QUARTER : 41-5, Yongdang-ri, Ungsang-eup, Yangsan-si, Gyeongnam, Korea 626-847  
■ INTERNATIONAL SALES : 512 Ansung B/D, #10-13, Shindorim-dong, Guro-gu, Seoul, Korea 152-070  
TEL: 82-2-2679-6585 / FAX: 82-2-2679-6556  
E-mail : sales@autonics.net

NO20030215-EP-E-02-019D