

# W 72 × H 72 mm LCD Week / Year Digital Timers



## LE7M-2 Series PRODUCT MANUAL

**For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.**

The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

### Features

- Various external input functions
- Clear display with built-in backlight
- Easy to check and change the program setting
- Customizable weekly or yearly unit time setting and control by user
- Includes daylight saving time function
- Built-in 2 independent control output (relay)
- Flush mount or Surface / DIN rail mount available (depending on the model)

### Safety Considerations

- Observe all 'Safety Considerations' for safe and proper operation to avoid hazards.
- ⚠ symbol indicates caution due to special circumstances in which hazards may occur.

**⚠ Warning** Failure to follow instructions may result in serious injury or death.

- 01. Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss.** (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)  
Failure to follow this instruction may result in personal injury, economic loss or fire.
- 02. Do not use the unit in the place where flammable/explosive/corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact or salinity may be present.**  
Failure to follow this instruction may result in explosion or fire.
- 03. Install on a device panel or DIN rail to use.**  
Failure to follow this instruction may result in fire or electric shock.
- 04. Do not connect, repair, or inspect the unit while connected to a power source.**  
Failure to follow this instruction may result in fire or electric shock.
- 05. Check 'Connections' before wiring.**  
Failure to follow this instruction may result in fire.
- 06. Do not disassemble or modify the unit.**  
Failure to follow this instruction may result in fire or electric shock.
- 07. Since Lithium battery is embedded in the product, do not disassemble or burn the unit.**  
Failure to follow this instruction may result in fire.
- 08. Please contact to us for battery replacement.**

**⚠ Caution** Failure to follow instructions may result in injury or product damage.

- 01. When connecting power/external input and relay output, use AWG 20 (0.50 mm<sup>2</sup>) cable or over, and tighten the terminal screw with a tightening torque of 0.74 to 0.90 N m.**  
Failure to follow this instruction may result in fire or malfunction due to contact failure.
- 02. Use the unit within the rated specifications.**  
Failure to follow this instruction may result in fire or product damage.
- 03. Use a dry cloth to clean the unit, and do not use water or organic solvent.**  
Failure to follow this instruction may result in fire or electric shock.
- 04. Keep the product away from metal chip, dust, and wire residue which flow into the unit.**  
Failure to follow this instruction may result in fire or product damage.

### Cautions during Use

- Follow instructions in 'Cautions during Use'.  
Otherwise, it may cause unexpected accidents.
- When supplying or turning off the power, use a switch or etc. to avoid chattering.
- Install a power switch or circuit breaker in the easily accessible place for supplying or disconnecting the power.
- Keep away from high voltage lines or power lines to prevent inductive noise. In case installing power line and input signal line closely, use line filter or varistor at power line and shielded wire at input signal line.  
Do not use near the equipment which generates strong magnetic force or high frequency noise.
- In case of controlling a heater, be sure to use a thermostatic switch at the load circuit.
- This unit may be used in the following environments.
  - Indoors (in the environment condition rated in 'Specifications')
  - Altitude max. 2,000 m
  - Pollution degree 2
  - Installation category II

## Cautions for Lithium Battery

Follow these instructions for using the product safely.

- Do not charge, short, disassemble, subject it to shock, heat.
- Check the polarity.
- Do not solder on a battery directly.
- Insulate a battery with tape to dispose.
- Do not store this unit in the place with the direct sunlight, high temperature and humidity.

## Ordering Information

This is only for reference, the actual product does not support all combinations. For selecting the specified model, follow the Autonics website.

LE7 ① - ② ③

### ① Size

M: DIN W 72 × H 72 mm

### ③ Mounting type

B: Flush mount

D: Surface mount

### ② Output

2: Relay 2-stage

## Product Components

| Model              | LE7M-2B                     | LE7M-2D                  |
|--------------------|-----------------------------|--------------------------|
| Product components | Product, instruction manual |                          |
| Bracket            | × 2                         | -                        |
| Base plate         | -                           | × 1                      |
| Bolt               | -                           | × 2 (for the base plate) |

## Sold Separately

- Bracket (model name: 2BD00099AB)
- Base plate (model name: DRW180858AA)

## Specifications

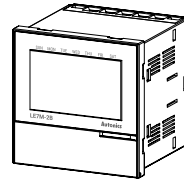
| Model                           | LE7M-2B   | LE7M-2D                   |
|---------------------------------|---|---------------------------|
| Number of steps for the program | 64 steps for weekly, 32 steps for yearly                                  |                           |
| Operation mode                  | Weekly: ON/OFF, pulse, cycle operation<br>Yearly: ON/OFF, pulse operation |                           |
| Temperature error               | ≤ (±0.01%±0.05 sec), at a ratio by the setting time                       |                           |
| Cyclic error                    | ±15 sec/month (25 °C, ±4 sec/1 week)                                      |                           |
| Memory retention                | ≥ 5 years (25 °C)   |                           |
| External input                  | Open or short circuit by a contact device (switch or relay)               |                           |
| Mounting type                   | Flush mount   | Surface or DIN rail mount |
| Certification                   | CE ENEC EAC   | CE ENEC EAC               |
| Unit weight (packaged)          | ≈ 207 g (≈ 337 g)   | ≈ 208 g (≈ 361 g)         |

|                            |  |
|----------------------------|--|
| Power supply               | 100 - 240 VAC ~ 50 / 60 Hz   |
| Permissible voltage range  | 90 to 110 % of rated voltage   |
| Power consumption          | ≤ 4.2 VA   |
| Control output             | Relay  |
| Contact type               | SPDT (1c)  |
| Contact capacity           | Resistive load: 250 VAC ~ 15 A   |
| Number of circuits         | Independent 2 circuits (1c × 2)  |
| Mechanical life expectancy | ≥ 10,000,000 operations<br>(switching capacity: 30 times/min)                              |
| Electrical life expectancy | ≥ 50,000 operations<br>(switching capacity: 20 times/min, resistive load: 250 VAC ~ 15 A)  |
| Insulation resistive       | ≥ 100 MΩ (500 VDC = megger)  |
| Noise immunity             | ± 2 kV square-wave noise by noise simulator (pulse width 1 μs)                             |
| Dielectric strength        | Between the charging part and the case<br>: 3,000 VAC ~ at 50 / 60 Hz for 1 min            |
| Vibration                  | 0.75 mm double amplitude at frequency of 10 to 55 Hz in each X, Y, Z direction for 2 hours |
| Vibration (malfunction)    | 0.5 mm double amplitude at frequency of 10 to 55 Hz in each X, Y, Z direction for 10 min   |
| Shock                      | 300 m/s <sup>2</sup> (≈ 30 G) in each X, Y, Z direction for 3 times                        |
| Shock (malfunction)        | 100 m/s <sup>2</sup> (≈ 10 G) in each X, Y, Z direction for 3 times                        |
| Ambient temperature        | -10 to 55 °C, storage: -25 to 65 °C (no freezing or condensation)                          |
| Ambient humidity           | 35 to 85%RH, storage: 35 to 85%RH (no freezing or condensation)                            |

## Unit Descriptions

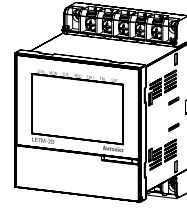
### ■ LE7M-2B

: flush mounting installation

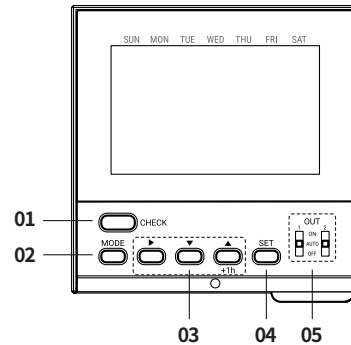


### ■ LE7M-2D

: surface mounting installation

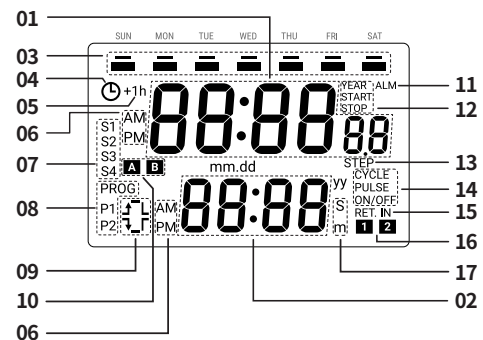


## ■ Button layout



01. [CHECK] key
02. [MODE] key
03. [▶][▼][▲] key  
+1h: summer time (DST)
04. [SET] key
05. Switch for output settings  
ON: keeps the output in ON state  
AUTO: controls the state of output depending on the settings  
OFF: keeps the output in OFF state

## ■ Screen layout



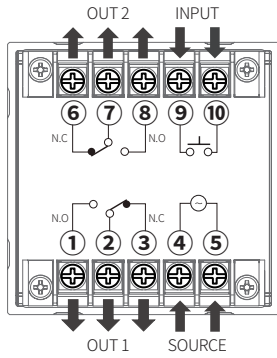
01. Main display part
02. Sub-display part
03. Day indicator and day display
04. Current time setting indicator
05. Summer time (DST) indicator
06. AM/PM indicator  
It turns ON depending on the selected 12/24h display mode
07. Season indicator
08. Program indicator
09. Setting state display  
ON time/day:  $\uparrow$  OFF time/day:  $\downarrow$   
ON time width:  $\uparrow$  OFF time width:  $\downarrow$   
Pulse width:  $\uparrow$
10. Bank group indicator
11. Total time/count alarm indicator
12. Year indicator
13. Display for the number of remaining steps
14. Operation mode indicator
15. Retention (return) input indicator
16. Output operation (OUT 1, OUT 2) indicator
17. Indicator for the unit of pulse width

## Connections

⚠ **Caution:** Refer to the 'specifications' for checking the power supply and control output.

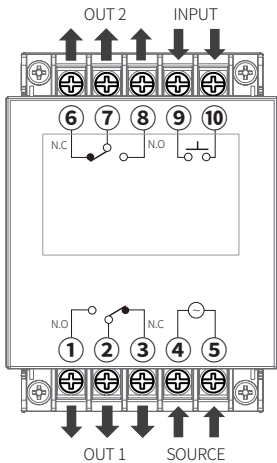
### ■ LE7M-2B

• Rear part



### ■ LE7M-2D

• Front part



### ■ External input

- Set the external input mode on the Function settings (group 2). For more information, refer to the Manual.
- The external input function is operated depending on the state of the no. 9 and 10 input terminals.
- When using a switch or relay: Be sure to use a highly reliable contact device that is enough to flow and break 0.1 mA at 5 VDC=.

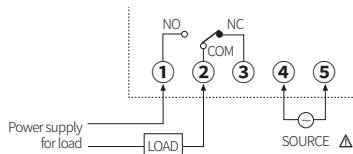
|   | Open-circuit | Short-circuit |
|---|--------------|---------------|
| Total time                              | -            | Input         |
| Total count                             | -            | Input         |
| Bank group                              | Bank A       | Bank B        |
| Retention (return) input <sup>01)</sup> | -            | Input         |
| Time synchronization                    | -            | Input         |

01) In RUN mode, press [SET] key over 3 sec to return the mode.

## Connections of Load

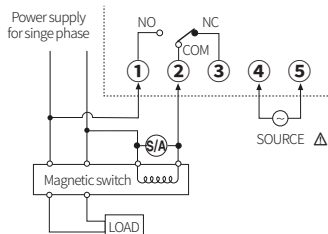
⚠ **Caution:** Be sure to connect a surge absorber (S/A) to both ends of the load to prevent damage or malfunction of this unit when controlling non-resistive load (e.g., magnetic switch, etc). Failure to follow this instruction may result in the product damage or malfunction.

### ■ Controlling the load directly

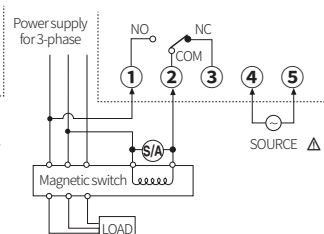


### ■ Controlling the load by using a magnetic switch

• Single phase



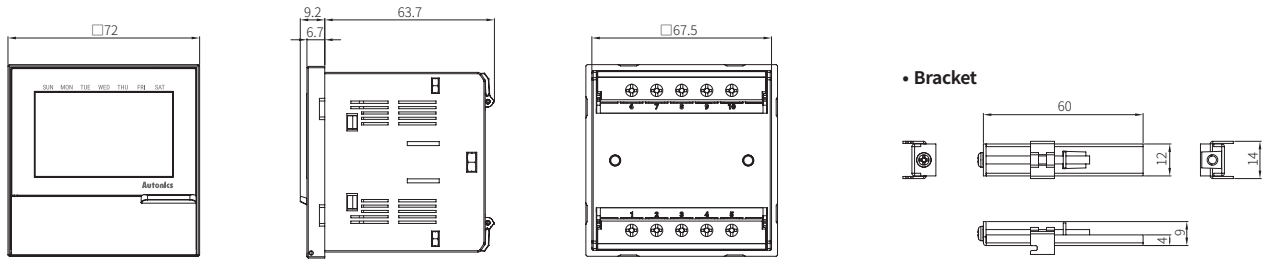
• 3-phase



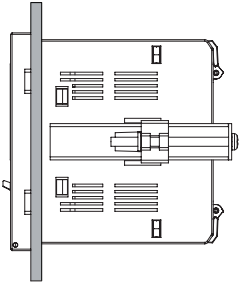
## Dimensions

- Unit: mm, For the detailed drawings, follow the Autonics website.
- The bolt size of terminal blocks: M3.5

### LE7M-2B

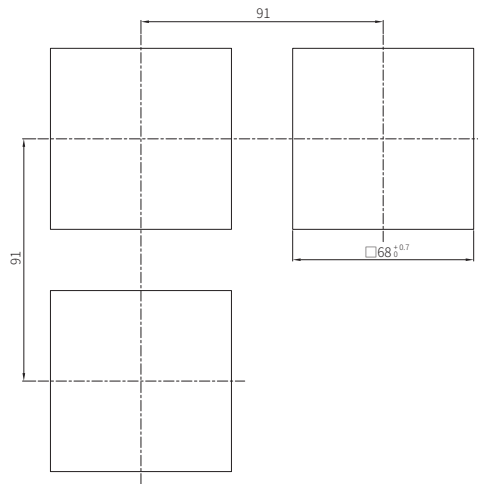


#### • Flush mounting installation

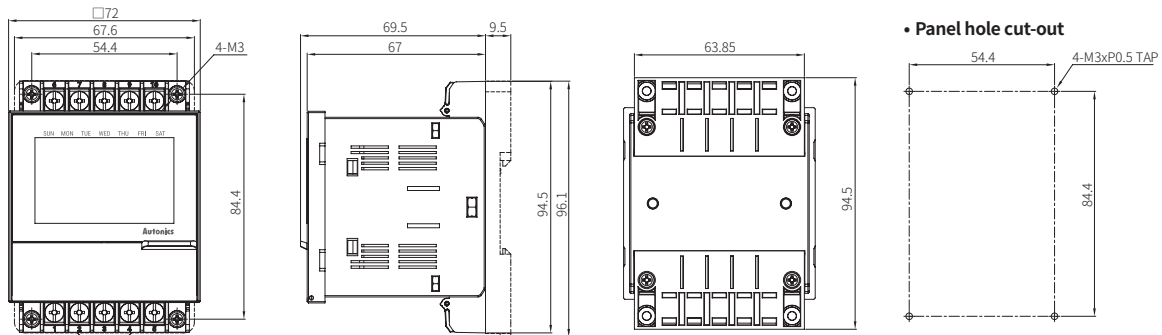


#### • Panel cut-out

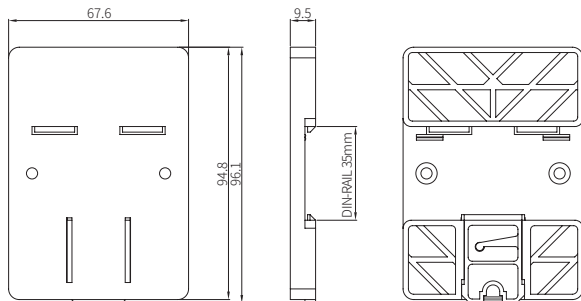
Panel thickness:  $\leq 3.7$  mm



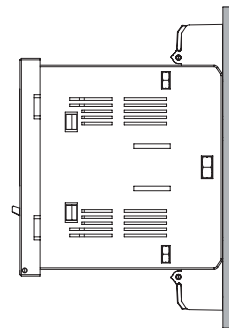
### LE7M-2D



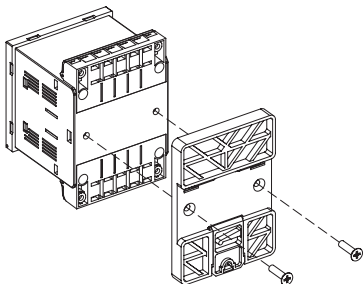
#### • DIN rail mounting installation: Base plate



#### • Surface mounting installation



- Use the provided bolts to mount the base plate for the DIN rail installation.



## Mode Setting

|   |  |   |  |  |   |     |
|---|--|---|--|--|---|-----|
| RUN                                       | [MODE] 3 sec                               | →   | <b>Program settings</b> <sup>01)</sup>                 | [MODE] 3 sec   | → | RUN |
|   | [MODE] + [SET] 3 sec                       | →   | <b>Function settings</b> <sup>01)</sup>                | [MODE] 3 sec   | → |     |
|   | [CHECK] 1 sec                              | →   | <b>Checking weekly program settings</b>                | [MODE] 3 sec   | → |     |
|   | [CHECK] 3 sec                              | →   | <b>Checking yearly program settings</b>                | [MODE] 3 sec   | → |     |
|   | [MODE] + [CHECK] 3 sec                     | →   | <b>Program test</b>                                    | Auto   | → |     |
|   | [▼] 3 sec                                  | →   | <b>Switching 12/24h display</b>                        | Auto   | → |     |
|   | [▼] + [▲] 5 sec                            | →   | <b>Initialization</b>                                  | Current time setting                                   | → |     |
|   | Switch for output settings: [AUTO] → [OFF] | →   | <b>Forced output OFF</b>                               | Switch for output settings: [OFF] → [AUTO]             | → |     |
|   | Switch for output settings: [AUTO] → [ON]  | →   | <b>Forced output ON</b>                                | Switch for output settings: [ON] → [AUTO]              | → |     |
|   | Switch for output settings: [AUTO] → [OFF] | →   | <b>Semi-automatic forced output OFF</b> <sup>02)</sup> | Switch for output settings: [OFF] → [AUTO] + [SET] key | → |     |
| Switch for output settings: [AUTO] → [ON] | →  | <b>Semi-automatic forced output ON</b> <sup>03)</sup> | Switch for output settings: [ON] → [AUTO] + [SET] key  | →  |   |     |

01) All outputs (OUT 1, OUT 2) are to be OFF when entering the setting mode on RUN mode. If the timer is turned OFF and ON again during the settings, applying previous settings.

02) The timer operates depending on the program settings at next ON time.

03) The timer operates depending on the program settings at next OFF time.

## Operation and Function Settings

- Some parameters are activated or deactivated depending on the other parameters.
- For more information, refer to the Manual.

### ■ Program settings (group 1)

| Parameters                            | Display part  | Main display | Sub-display |
|---------------------------------------|---------------|--------------|-------------|
| Weekly program of program 1           | PROG P1       | 64 STEP      |             |
| Weekly program of program 2           | PROG P2       | 64 STEP      |             |
| Yearly program of program 1           | PROG P1, YEAR | 32 STEP      |             |
| Yearly program of program 2           | PROG P2, YEAR | 32 STEP      |             |
| Clear all weekly program of program 1 | PROG P1       | 64 STEP      | [CLR]       |
| Clear all weekly program of program 2 | PROG P2       | 64 STEP      | [CLR]       |
| Clear all yearly program of program 1 | PROG P1, YEAR | 32 STEP      | [CLR]       |
| Clear all yearly program of program 2 | PROG P2, YEAR | 32 STEP      | [CLR]       |
| Change weekly day                     |               |              | [DAY]       |
| Yearly holiday operation              | YEAR          |              | [HAY]       |

### ■ Function settings (group 2)

| Parameters                         | Display part | Main display | Sub-display |
|------------------------------------|--------------|--------------|-------------|
| Current time                       | ⌚            |              | ERR         |
| Season switching                   |              |              | SEN         |
| Period of season                   |              |              | SEN         |
| Summer time (DST) operation        |              |              | d5t         |
| Automatic summer time (DST) period |              |              | d5t         |
| External input modes               |              |              | EIn         |
| Total time/count display and alarm |              | totL         | EIn         |
| Bank function                      |              | BRN          | EIn         |
| Retention (return) input operation |              | RET          | EIn         |
| Time synchronization operation     |              | SYN          | EIn         |

### ■ Check/edit/clear the weekly program

| Parameters  | Display part | Main display | Sub-display |
|---|--------------|--------------|-------------|
| Check the record of weekly program in the program 1 |              | r.D I        |             |
| Edit the record of settings                         |              | r.D I        | Edt         |
| Clear the record of settings                        |              | r.D I        | [CLR]       |
| Check the record of weekly program in the program 2 |              | r.D I        |             |
| Edit the record of settings                         |              | r.D I        | Edt         |
| Clear the record of settings                        |              | r.D I        | [CLR]       |

### ■ Check/edit/clear the yearly program

| Parameters  | Display part | Main display | Sub-display |
|---|--------------|--------------|-------------|
| Check the record of yearly program in the program 1 | YEAR         | r.D I        | [HY]        |
| Edit the record of settings                         | YEAR         | r.D I        | Edt         |
| Clear the record of settings                        | YEAR         | r.D I        | [CLR]       |
| Check the record of yearly program in the program 2 | YEAR         | r.D I        | [HY]        |
| Edit the record of settings                         | YEAR         | r.D I        | Edt         |
| Clear the record of settings                        | YEAR         | r.D I        | [CLR]       |