LCD Digital
Thumb wheel Switch Timers

LE3S 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

- Power supply: 24 - 240 VAC~ 50 / 60 Hz, 24 - 240 VDC⎓
- Easy to switch Up / Down mode
- 10 output operation modes (LE3S)
- 10 time range modes
- Selectable function by front digital switches
- Graphic output contact status display (N.O. / N.C.)
- BAR graph display (%) of time progressing about the setting time
- Compact size (length: 74 mm)

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.

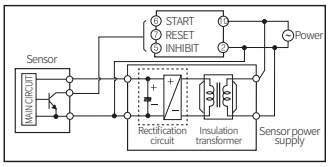
01. Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)
Failure 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 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.

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

01. Use the unit within the rated specifications.
Failure to follow this instruction may result in fire or product damage.
02. 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.
03. 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..
- In order to block peripheral current, use isolation transformer which of secondary part is not grounded to supply power to the external input device.



- After turning off the power, change the time range, etc.
- Do not connect two or more timers with only one input contact or transistor simultaneously.
- 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.
- 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

Ordering Information

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

LE3S ❶

❶ Output
No mark: Time limit SPDT (1c)
A: Time limit DPDT (2c)
B: Time limit SPDT (1c), Instantaneous SPDT (1c)

Product Components

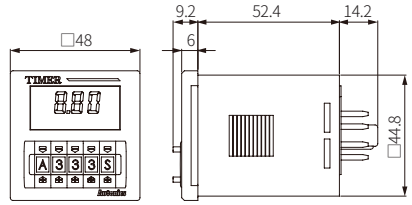
- Product (+ bracket)
- Instruction manual

Sold Separately

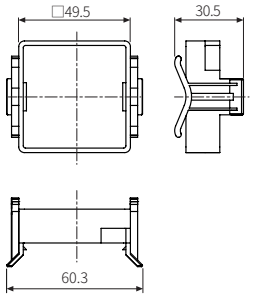
- 8-pin socket: PG-08, PS-08(N)

Dimensions

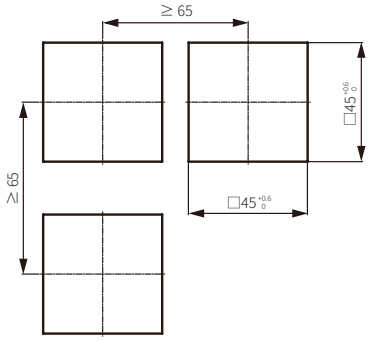
- Unit: mm, For the detailed drawings, follow the Autonics website.



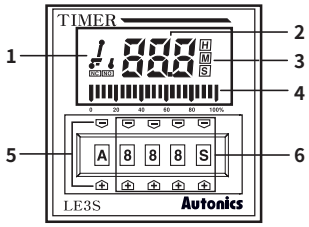
■ Bracket



■ Panel cut-out



Unit Descriptions



No.	Name
1	Output status ON: NO OFF: NC
2	Time progressing display part
3	Time unit
4	Time progress bar (%)
5	Output operation mode setting switch
6	Time range setting switch

Output Operation Mode

For the detailed timing chart for operation output mode, refer to the manual.

A	ON Delay Ⓐ • LE3SA, LE3SB: A mode fixed
B	Interval Delay Ⓐ
C	ON Delay Ⓑ
D	Flicker Ⓐ
E	Flicker Ⓑ
F	One-shot Out Flicker
H	OFF Delay
K	ON / OFF Delay
L	Interval Delay Ⓑ
N	Integration Time

Time Range

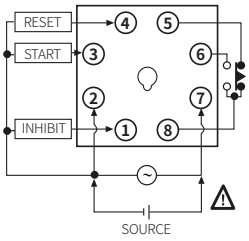
Setting	Unit	Range
0.01s	SEC	0.01 s to 9.99 s
0.1s		0.1 s to 99.9 s
s		1 s to 999 s
0.1m	MIN	0.1 m to 99.9 m
m		1 m to 999 m
0.1h	HOUR	0.1 h to 99.9 h
h		1 h to 999 h
10h		10 h to 9990 h
S	MIN / SEC	0 m 01 s to 9 m 59 s
M	HOUR / MIN	0 h 01 m to 9 h 59 m

Connections

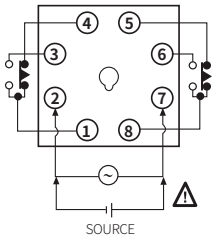
⚠ Caution

- Refer to the 'specifications' for checking the power supply and control output.
- The LE3S model: Be sure to use terminal No. 2 as the common terminal to connect terminals No. 1, 3, and 4.
  Failure to follow this instruction may result in product malfunction.

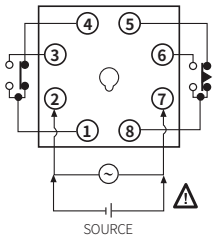
■ LE3S



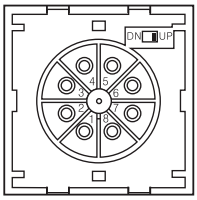
■ LE3SA



■ LE3SB



UP / DOWN Mode



⚠ Caution: Be sure to turn OFF the power.

- Set the UP mode or DOWN mode via the switch.
- UP mode: DN ■ UP
- DOWN mode: DN ■ UP

Model	Defaults
LE3S	UP mode
LE3SA	UP mode (DOWN mode: optional)
LE3SB	

Specifications

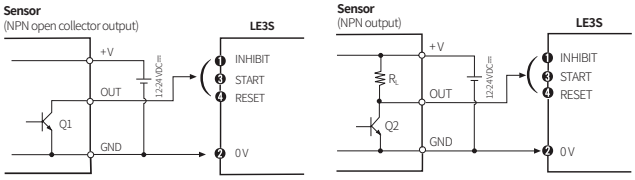
Model		LE3S	LE3SA	LE3SB
Function		MULTI time, MULTI operation	MULTI time, Power ON Delay	
Display method		LCD (Character size: W 4 × H 8 mm)		
Return time		≤ 200 ms	≤ 100 ms	
Time operation		Signal ON Start	Power ON Start	
Input signal		START, INHIBIT, RESET	-	
Min. signal width		≈ 20 ms	-	
No-voltage input		Short-circuit impedance : ≤ 1 kΩ Short-circuit residual voltage : ≤ 0.5 VDC⎓ Open-circuit impedance : ≥ 100 kΩ	-	
Control output		Relay		
Contact type		Time limit SPDT (1c)	Time limit DPDT (2c)	Time limit SPDT (1c) + Instantaneous SPDT (1c)
Contact capacity		250 VAC~ 5 A, 30 VDC⎓ 5 A resistive load	250 VAC~ 3 A, 30 VDC⎓ 3 A resistive load	
Error	Repeat	- Power ON Start : ≤ ± 0.01% ± 0.05 sec - Signal ON Start : ≤ ± 0.005% ±0.03 sec	≤ ± 0.01% ± 0.05 sec	
	SET			
	Voltage			
	Temp.			
Approval		CE cULus EAC		
Weight		≈ 100 g	≈ 105 g	

Model	LE3S	LE3SA	LE3SB
Power supply	24 - 240 VAC~ ± 10% 50 / 60 Hz, 24 - 240 VDC⎓ ± 10%		
Power consumption	AC: ≤ 2.5 VA, DC: ≤ 1 W	AC: 3.3 VA, DC: ≤ 1.5 W	
Insulation resistive	100 MΩ (500 VDC⎓ megger)		
Dielectric strength	2000 VAC~ 50 / 60 Hz for 1 min		
Noise immunity	± 2 kV square-wave noise by noise simulator (pulse width 1 μs)		
Vibration	0.75 mm double amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 1 hour		
Vibration (malfunction)	0.5 mm double amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 10 min		
Shock	300 m/s^2 (≈ 30 G) in each X, Y, Z direction for 3 times		
Shock (malfunction)	100 m/s^2 (≈ 10 G) In each X, Y, Z direction for 3 times		
Relay life cycle	Mechanical: ≥ 10,000,000 operations		
	Electrical: ≥ 100,000 operations (250 VAC~ 5 A resistive load)	Electrical: ≥ 100,000 operations (250 VAC~ 3 A resistive load)	
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)		

Input Connections (LE3S)

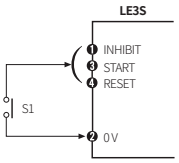
■ No-voltage (NPN) input

• Solid-state input



Q1-2: operates when it is ON.

• Contact input



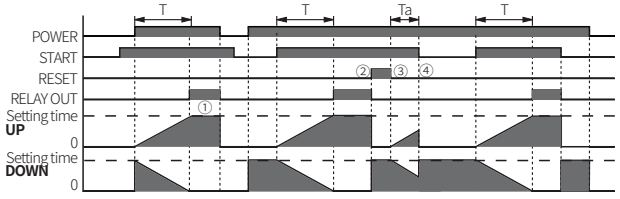
Use reliable contact enough to flow 5 VDC⎓ 1 mA
S1 (micro switch, push button switch, relay contact): operates when it is ON.

Output Operation Mode

■ LE3S

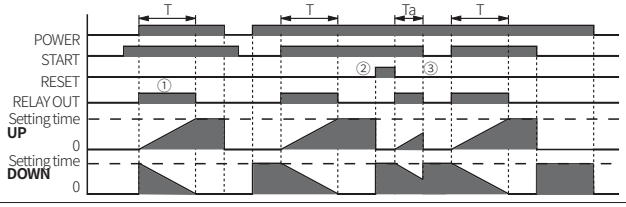
Ⓐ mark - START signal: continuously ON → time starts and output operates.
Ⓑ mark - START signal: though the one-shot input is occurred time starts and output operates. (one-shot input signal: ≥ 20 ms)
Initial status: UP mode - Display value 0, output OFF
DOWN mode - Displays the setting time, output OFF
If the setting time is '000', the control output does not switch to ON.
The input time of output operation mode D, E: ≥ 100 ms
• T : setting time
• T = T1 + T2 + T3, T > Ta + Tb

A



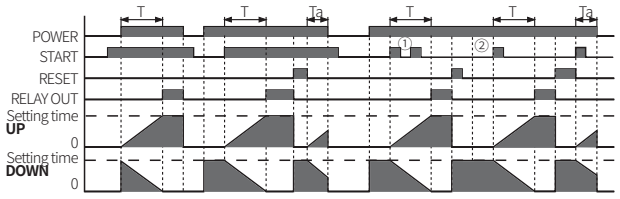
1. START signal: continuously ON → Time starts
2. Position ① - progressing time = setting time → Output: ON, display value: Hold
3. Position ② - RESET signal: ON → Initial status
4. Position ③ - RESET signal: OFF → Time progress
5. Position ④ - START signal: OFF (output OFF status) → Display value: return to the initial status

B



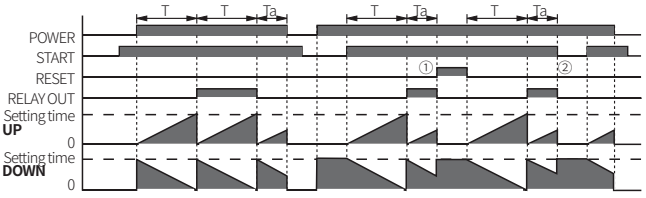
1. START signal: continuously ON → Time starts
2. Position ① - progressing time = setting time → Return the output, display value: Hold
3. Position ② - RESET signal: ON → Display value: return to the initial status
4. Position ③ - START signal: OFF (output OFF status) → Display value: return to the initial status

C



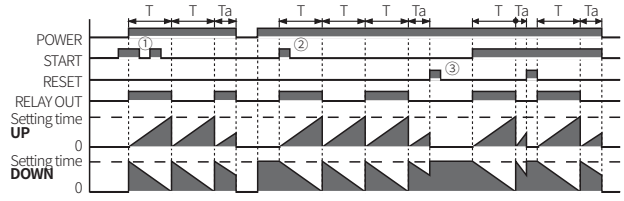
1. START signal: ON → Time starts
2. Progressing time = setting time → Output: ON, display value: Hold
3. RESET signal: ON → Return to the initial status
4. Position ① - Recognizes the first START signal
5. Position ② - START signal: ON (unnecessary for continuous input) → Time progress

D



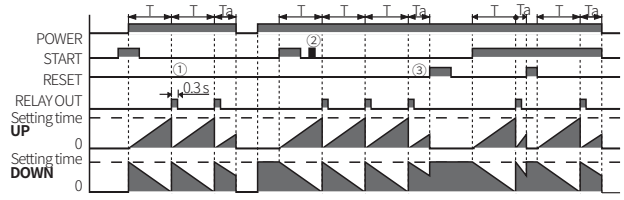
1. START signal: continuously ON → Time starts and repeatedly operates
2. Output: repeated operation N.C. → N.O. → N.C. (cycle of the setting time)
3. Position ① - RESET signal: ON → Return to the initial status
4. Position ② - START signal: OFF → Display value and output: return to the initial status

E



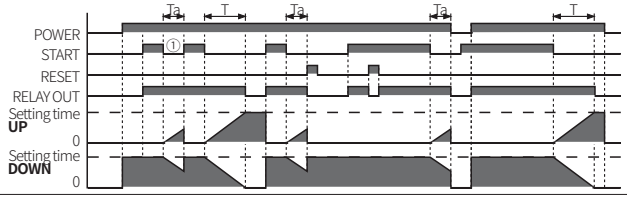
1. START signal: ON → Time starts and repeatedly operates
2. Output: repeated operation N.O. → N.C. → N.O.
3. Position ① - Recognize the first START signal
4. Position ② - START signal: ON (unnecessary for continuous input) → Time progress
5. Position ③ - RESET signal: ON → Return to the initial status

F



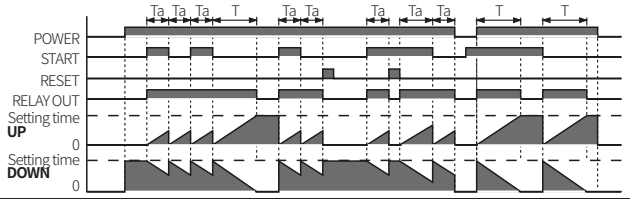
1. Position ① - START signal: ON → Output: one-shot output (0.3 s), time operates repeatedly
2. Position ② - Recognize the first START signal
3. Position ③ - RESET signal: ON → Return to the initial status

H



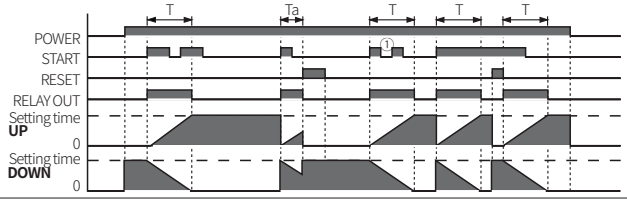
1. START signal: ON, simultaneously output: ON → Return after the setting time, display value: Hold
2. RESET signal: ON → Display value: return to the initial status
3. Position ① - START signal: continuously ON → Output: ON, deactivated time progress

K



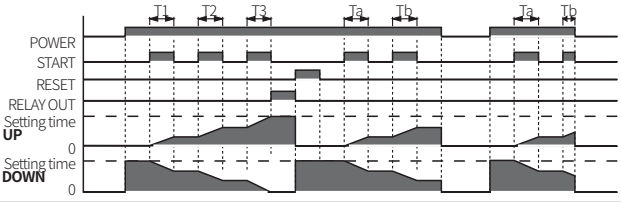
1. START signal: ON → Output: ON,
   Time progress / progressing time = setting time → Return the output, display value: Hold
2. START signal: OFF → Output: ON,
   Time progress/ progressing time = setting time → Return the output, display value: Hold
3. RESET signal: ON → Return to the initial status
4. START signal: continuously ON → Output: maintains ON state, time: return to the initial status

L



1. START signal: ON, simultaneously time starts and output: ON
2. After completing the time progress, return the output, display value: Hold
3. RESET signal: ON → Display value: return to the initial status
4. Position ① - Recognizes the first START signal

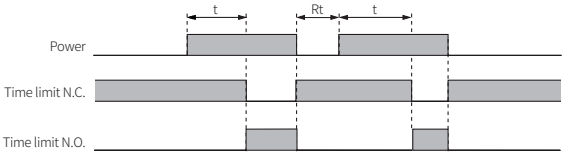
N



1. START signal: ON, time starts
2. START signal: OFF (output OFF status) → Time: Hold
3. RESET signal: ON → Return to the initial status

■ LE3SA

• t : setting time, Rt: return time (≥ 100 ms)



■ LE3SB

• t : setting time, Rt: return time (≥ 100 ms)