Autonics TCD220045AA LE4S Series LCD Digital Timers Instruction Manual

Contents

Autonics

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Product Information

Transparent Guide LCD Digital Timers
The Transparent Guide LCD Digital Timers are electronic timers that can be used in various industrial applications. They have a transparent front panel that allows users to see the display clearly. The timers have a fail-safe device that can be installed when using the unit with machinery that may cause serious injury or substantial economic loss, such as nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.

The unit has a compact design and can be installed on a device panel. It is important to follow the instructions provided in the manual while installing and using the unit to prevent any damage or injury. Users are advised not to connect, repair or inspect the unit while connected to a power source. The unit should be installed in a place where there is no possibility of flammable/explosive/corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact or salinity.

Users should check the connections before wiring and use the unit within the rated specifications to prevent any damage or injury. The unit cannot be disassembled or modified. Users should use a dry cloth to clean the unit and avoid using water or organic solvent. Keeping the product away from metal chip, dust, and wire residue is also essential to prevent any damage or fire.

Product Usage Instructions

The Transparent Guide LCD Digital Timers have different functions that users can use as per their requirements. The following are the product usage instructions:

1. Install the unit on a device panel and make sure to use a fail-safe device while using it with machinery that may cause serious injury or substantial economic loss.
2. Check the connections before wiring and use AWG 20 (0.50 mm2) cable or over, and tighten the terminal screw with a tightening torque of 0.74 to 0.90 N m.
3. Use the unit within the rated specifications and do not disassemble or modify the unit.
4. Use a dry cloth to clean the unit, and keep the product away from metal chip, dust, and wire residue.
5. The unit has different keys that are used for different functions. The [RST] key is used to initialize the progressing time and output return. The [MD] key is used to enter RUN mode, and the [] key is used to shift to the next parameter in parameter setting.
6. Users can use the UP / DOWN keys to select the time unit or mode of time progressing, and use the [] key to

move the digit when changing the setting value.
7. The unit also has a key lock function that shows the key lock status.

Thank you for choosing our Autonics product.
Read and understand the instruction manual and manual thoroughly before using the product.

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

- Keep this instruction manual in a place where you can find easily.
- The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.
- Follow Autonics website for the latest information.

Safety Considerations

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

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

1. 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.
2. 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.
3. Install on a device panel to use.
   Failure to follow this instruction may result in fire or electric shock.
4. 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.
5. Check 'Connections' before wiring.
   Failure to follow this instruction may result in fire.
6. 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.

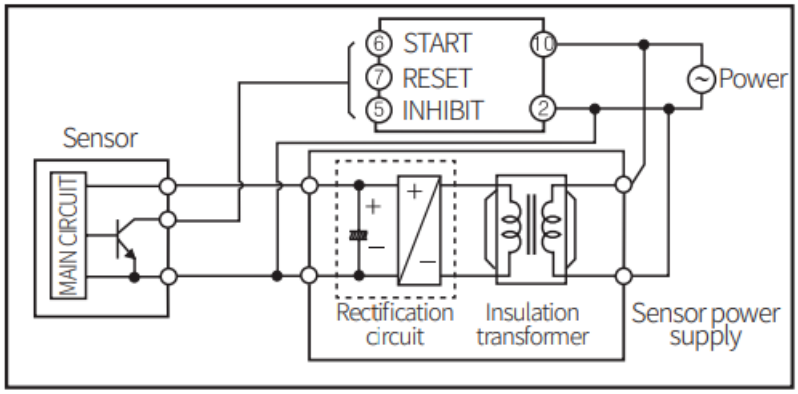
1. When connecting the power/sensor input and relay output, use AWG 20 (0.50 mm2) cable or over, and tighten the terminal screw with a tightening torque of 0.74 to 0.90 N m.
   Failure to follow this instruction may result in malfunction due to contact failure.
2. Use the unit within the rated specifications.
   Failure to follow this instruction may result in fire or product damage.
3. 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.

4. 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



- 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.

LE4S ❶

Output

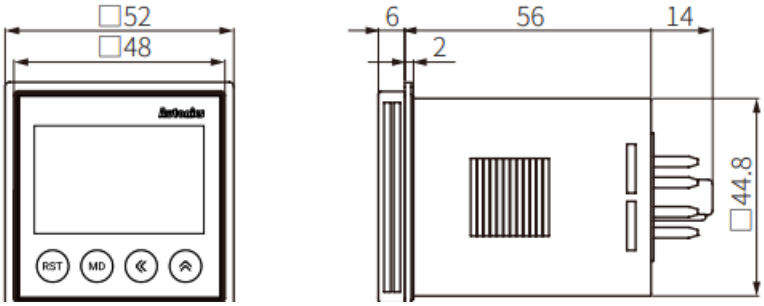
- **No mark:** Time limit 1c
- **A:** Time limit 2c, Time limit 1c + Instantaneous 1c

Product Components

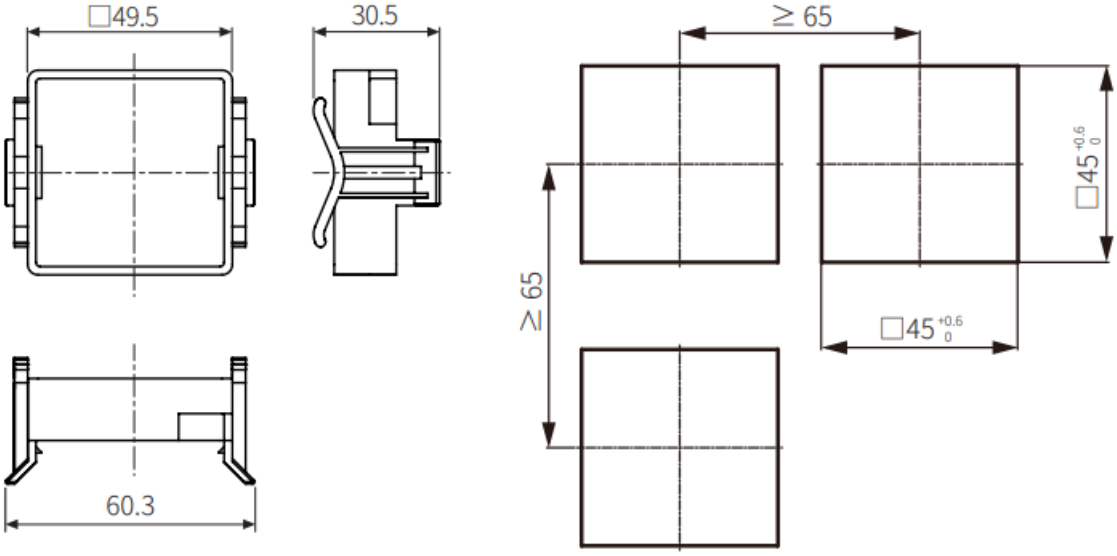
- Product (+ bracket)
- Instruction manual

Dimensions

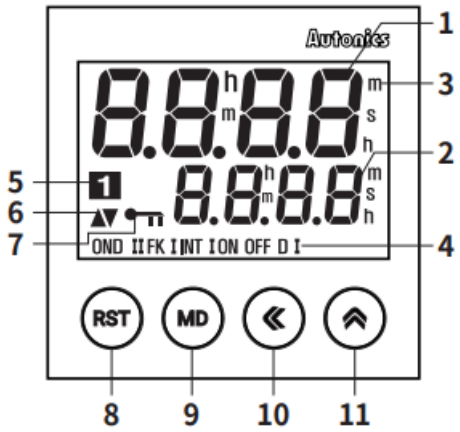
Unit: mm, For the detailed drawings, follow the Autonics website.



- Bracket
- Panel cut-out

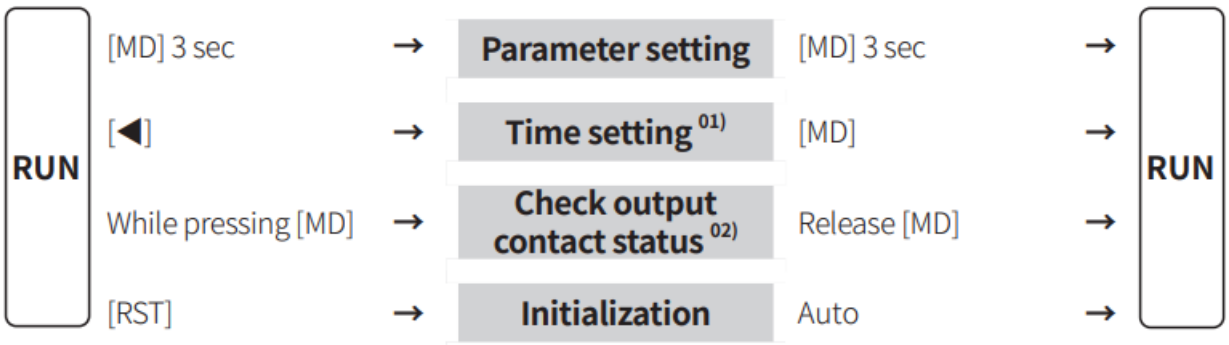


Unit Descriptions



No.	Name	Function
1	Time progressing display part	Shows progressing time
2	Time setting display part	Shows the setting time
3	Time unit	Shows time unit (h: hour / m: min / s: sec) Flashing: time pr ogressing
4	Operation mode	Shows current output operation mode • INTG: no mark
5	Output contact	Shows the status of current output contact
6	UP / DOWN	Shows UP / DOWN mode of time progressing
7	Key lock	Shows key lock status
8	[RST] key	Initializes progressing time and output return
9	[MD] key	Enter RUN mode ↔ Parameter setting Shift to next parameter in parameter setting
10	[◀] key	Enter RUN mode ↔ setting time change mode Move the di git when changing the setting value.
11	[▲] key	Change the parameter setting value

Mode Setting



1. If no key is pressed over 60 sec, returning to RUN mode and not storing the setting value.
2. Only for the LE4SA model

Output Operation Mode

For the detailed timing chart for operation output mode, refer to the manual. The output operation mode differs depending on each model.

Group	Output operation mode		LE4S	LE4SA	Time setting
Group 1	**OND**	ON Delay	○	○	Time
	OND.1	ON Delay 1		–	
	OND.2	ON Delay 2		○	
	INT	Interval			
	INT.1	Interval 1		–	
	OFD	OFF Delay			
	INTG	Integration time			
Group 2	FLK	Flicker	○	○	tOFF, tON
	FLK.1	Flicker 1			
	NFD	ON – OFF Delay		–	OnD, OFfD
	NFD.1	ON – OFF Delay 1			
Group 3	**S-D**	Star – Delta	–	○	T-1, T-2
	TWN	Twin			
	TWN.1	Twin 1			

Parameter Setting

- Some parameters are activated / deactivated depending on the model or setting of other parameters. Refer to the description of each parameter.
- In the parameter setting, the time and output control continue.
- If the settings are changed, all outputs to be OFF and reset the current values when returning to RUN mode.
- **[MD] key:** saves current setting value and moves to the next parameter.

Parameter	Display	Defaults	Setting range	Model	Display condition
Output 1-1 operation mode	OUtM	OND	• Refer to the output operation mode.		–
1-2 Time range	tRNG	9(99	• Refer to the table below.		1-1. Output operation mode: Group 1
One-shot 1-3 output time	OUTt	0)50	0.01 to 99.99 sec		1-1. Output operation mode: OND.2

1-4 T.off time range	OfRG	9(99	• Refer to the table below.	Comm.	1-1. Output operation mode: Gro up 2
1-5 T.on time range	OnRG	9(99			
1-6 T1 time range	T!RG	9(99		[LE4SA]	1-1. Output operation mode: Gro up 3
1-7 T2 time range	T@RG	9(99		[LE4SA]	
1-8 Time UP / DOWN	U-D	UP	UP: 0 → setting time DN: s etting time → 0	Comm.	–
Width of 1-9 min. input signal	InT	20	1, 20 ms • Set the min. width of RES ET, START, INHIBIT input s ignals	[LE4S]	–
1-10 Output contact 01)	CONT	1c1C	1C.1C: Time limit 1c + Instantaneous 1c 2C: Time limit 2c	[LE4SA]	–
1-11 Backlight	BLU	ON	ON, OFF	Comm.	–
1-12 Key lock	LOCK	lOFF	L.OFF: release key lock LO C.1: lock [RST] key LOC.2: lock [◀], [▲] key LOC.3: lock [RST], [◀], [▲] key	[LE4S]	–
		LOc1		[LE4SA]	

The output operation mode of group 3: 2C fixed

Table

Unit	SEC	SEC	SEC	SEC	M S	M	M
Display	9.999	99.99	999.9	9999	99m59s	999.9m	9999m
Range	0.001s to 9 .999s	0.01s to 99. 99s	0.1s to 999.9s	1s to 9999s	0m1s to 99 m99s	0.1m to 999.9m	1m to 9999 m

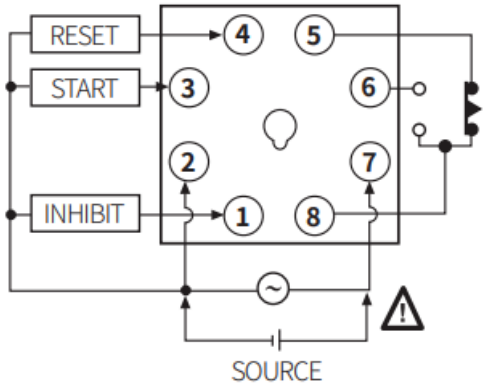
Unit	H M	H	H	H
Display	99h59m	99.99h	999.9h	9999h
Range	0h1m to 99h59m	0.01h to 99.99h	0.1h to 999.9h	1h to 9999h

Connections

Caution

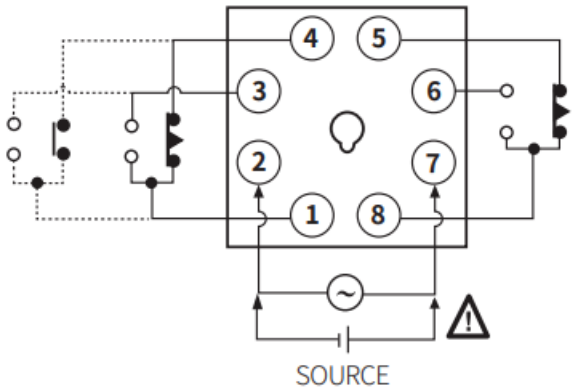
- Refer to the ‘specifications’ for checking the power supply and control output.
- The LE4S model: Be sure to use terminal No. 2 as the common terminal to connect terminals No. 1, 3, and 4. Failure to follow this instruction may result in product malfunction.

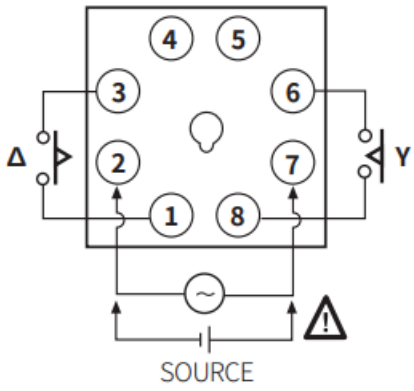
LE4S



LE4SA

- Output operation mode
  OND / OND.2 / FLK / FLK1 / INT / TWN / TWN.1 (TWN, TWN.1 mode: time limit 2c fixed)
- **Output operation mode:** Y -Δ (Time limit 2c fixed)
- Use the A contact.





Specifications

Model		**LE4S**	**LE4SA**
Function		MULTI-time, MULTI operation	
Display method		LCD (Backlight)	
Return time		≤ 100 ms	
Time operation		Signal ON Start	Power ON Start
Input signal		START, INHIBIT, RESET	
Min. signal width		≈ 1, 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) (depends on operation mode)
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	≤ ± 0.01% ± 0.05 sec
	SET		
	Voltage	Signal ON Start : ≤ ± 0.005% ±0.03 sec	
	Temp.		
Approval			
Unit weight		≈ 98 g	

Model	LE4S	LE4SA
Power supply	24 – 240 VAC ± 10% 50 / 60 Hz, 24 – 240 VDC ± 10%	
Power consumption	AC: ≤ 4.5 VA, DC: ≤ 2 W	AC: ≤ 4 VA, DC: ≤ 1.6 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)	
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/s2 (≈ 30 G) in each X, Y, Z direction for 3 times	
Shock (malfunction)	100 m/s2 (≈ 10 G) In each X, Y, Z direction for 3 times	
Relay life cycle	Mechanical: ≥ 10,000,000 operations Electrical: ≥ 100,000 operations	
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)	

18, Bansong-ro 513Beon-gil, Haeundae-gu, Busan, Republic of Korea, 48002 www.autonics.com | +82-2-2048-1577 | sales@autonics.com

Documents / Resources

	Autonics TCD220045AA LE4S Series LCD Digital Timers [pdf] Instruction Manual TCD220045AA LE4S Series LCD Digital Timers, TCD220045AA, LE4S Series LCD Digital Timers, LCD Digital Timers, Digital Timers, Timers

References

- autonics.com