Autonics

• Observe all 'Safety Considerations' for safe and proper operation to avoid hazards.

• Δ 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.

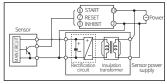
Caution Failure to follow instructions may result in injury or product damage.

- 01. 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. **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.
- 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

Safety Considerations

- 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

LCD Digital Timers



LE4S 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

- Mounting space saving with compact design
- : downsized by approx. 22% in depth compared to existing models (length of panel on the back side is 56 mm)
- Available to set each value and time range separately when choosing Flicker (FK, FK I) or ON-OFF Delay (ON OFF D, ON OFF D I) output mode
- Adds Flicker 1 mode (LE4SA)
- Settable One-shot output time (0.01 to 99.99 sec) (existing model: fixed 0.5 sec)
- Configurable time range (added 9.999 sec): settable by 0.001 sec unit
- Selectable min. input time: 1 ms or 20 ms (LE4S)
- Improved return time: 100 ms
- Backlight ON / OFF function
- Wide time range (0.01 sec to 9999 hour)
- · Lock setting function for saving setting data
- Soft touch setting
- High visibility display with backlight



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 **0**

Output No mark: Time limit 1c

A: Time limit 2c, Time limit 1c + Instantaneous 1c

Product Components

Product (+ bracket)

Instruction manual

14

Dimensions

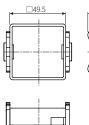
• Unit: mm, For the detailed drawings, follow the Autonics website.

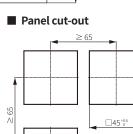
56





Bracket





□45 °⁶⁶

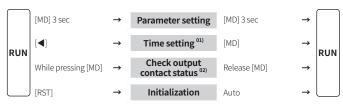
Unit Descriptions

60.3



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 progressing
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 digit when changing the setting value.
11	[▲] key	Change the parameter setting value

Mode Setting



01) If no key is pressed over 60 sec, returning to RUN mode and not storing the setting value. 02) 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 operati	on mode	LE4S	LE4SA	Time setting	
	OND	ON Delay		0		
	OND.1	ON Delay 1		-		
	OND.2	ON Delay 2	1			
Group 1	INT	Interval	0	0	Time	
·	INT.1	Interval 1				
	OFD	OFF Delay		-		
	INTG	Integration time				
	FLK	Flicker			Ł.oFF, Ł.on	
Group 2	FLK.1	Flicker 1		0	2.077,2.00	
Group 2	NFD	ON - OFF Delay				
	NFD.1	ON - OFF Delay 1		-	on.d, oFF.d	
	S-D	Star - Delta				
Group 3	TWN	Twin] -	0	E-1,E-2	
	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 work the settings.

• 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.

Para	meter	Display	Defaults	Setting range	Model	Display condition
1-1	Output operation mode	o U E. Ā	and	Refer to the output operation mode.		-
1-2	Time range	E.r n G	99.99	Refer to the table below.		1-1. Output operation mode: Group 1
1-3	One-shot output time	oUEE.	00.50	0.01 to 99.99 sec	Comm.	1-1. Output operation mode: OND.2
1-4	T.off time range	o F.r G	99.99	Refer to the table below.		1-1. Output operation
1-5	T.on time range	on.r G	99.99			mode: Group 2
1-6	T1 time range	E lr G	99.99		[LE4SA]	1-1. Output operation
1-7	T2 time range	£ 2.r G	99.99		[LE4SA]	mode: Group 3
1-8	Time UP / DOWN	U - d	UP	UP: $0 \rightarrow$ setting time DN: setting time $\rightarrow 0$	Comm.	-
1-9	Width of min. input signal	l n.E	20	1, 20 ms • Set the min. width of RESET, START, INHIBIT input signals	[LE4S]	-
1-10	Output contact ⁰¹⁾	Cont	1E. 1E	1C.1C: Time limit 1c + Instantaneous 1c 2C: Time limit 2c	[LE4SA]	-
1-11	Backlight	ЬΕՍ	on	ON, OFF	Comm.	-
1-12	Key lock	LoEY	L.o F F	L.OFF: release key lock LOC.1: lock [RST] key LOC.2: lock [◀], [▲] key	[LE4S]	-
			L o C. I	LOC.3: lock [RST], [◀], [▲] key	[LE4SA]	

01) 1-1. Output operation mode of group 3: 2C fixed

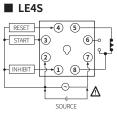
• [Table]							
Unit	SEC	SEC	SEC	SEC	ΜS	М	М
Display	9.999	99.99	999.9	9999	99m59s	999.9m	9999m
Range	0.001s to 9.999s	0.01s to 99.99s	0.1s to 999.9s	1s to 9999s	0m1s to 99m99s	0.1m to 999.9m	1m to 9999m
Unit	НМ	Н	Н	Н	•		
Display	99h59m	99.99h	999.9h	9999h	-		
Range	0h1m to 99h59m	0.01h to 99.99h	0.1h to 999.9h	1h to 9999h	-		

Connections

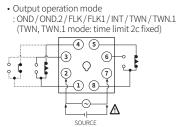
∆ Caution

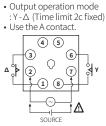
Refer to the 'specifications' for checking the power supply and control output.
The LE4S model: Be sure to use terminal No. 2 as the common terminal to connect

terminals No. 1, 3, and 4. Failure to follow this instruction may result in product malfunction.



LE4SA





Specifications

Model		LE4S	LE4SA
Function		MULTI time, MULTI operation	·
Display me	thod	LCD (Backlight)	
Return tim	e	≤ 100 ms	
Time opera	tion	Signal ON Start	Power ON Start
Input signa	il	START, INHIBIT, RESET	
Min. signal v	vidth	≈ 1, 20 ms	-
No-voltage i	nput	$\begin{array}{l} Short-circuit impedance: \leq 1 k\Omega\\ Short-circuit residual voltage\\ :\leq 0.5 VDC \Longrightarrow\\ Open-circuit impedance\\ :\geq 100 k\Omega \end{array}$	-
Control out	tput	Relay	
Contact type	e	Time limit SPDT (1c)	Time limit DPDT (2c), Time limit SPDT (1c) + Instantaneous SPDT (1c) (depends on operation mode)
Contact cap	acity	250 VAC~ 5 A, 30 VDC== 5 A resistive load	250 VAC~ 3 A, 30 VDC== 3 A resistive load
Error	Repeat SET Voltage Temp.	Power ON Start $1 \le \pm 0.01\% \pm 0.05$ sec Signal ON Start $1 \le \pm 0.005\% \pm 0.03$ sec	$\leq \pm \ 0.01\% \pm 0.05 \ \text{sec}$
Certificatio			1
Unit weigh	t	≈ 98 g	
		-	
Model		LE4S	LE4SA
Power sup	ply	24 - 240 VAC~ 50 / 60 Hz, 24 - 240	VDC==
Permissible range	e voltage	90 to 110 % of rated voltage	
Power cons	sumption	AC: \leq 4.5 VA, DC: \leq 2 W	AC: \leq 4 VA, DC: \leq 1.6 W
Insulation	resistive	100 MΩ (500 VDC== megger)	
Dielectric s	trength	Between the charging part and the for 1 min	e case: 3000 VAC~ at 50 / 60 Hz
Noise imm	unity	\pm 2 kV square-wave noise by noise	e simulator (pulse width 1 μs)
Vibration		0.75 mm double amplitude at freq direction for 1 hour	uency of 10 to 55 Hz in each X, Y, Z
Vibration (malfunction	on)	0.5 mm double amplitude at freque direction for 10 min	ency of 10 to 55 Hz in each X, Y, Z
Shock		$300 \text{ m/s}^2 (\approx 30 \text{ G})$ in each X, Y, Z dir	rection for 3 times
Shock (ma	lfunction)	100 m/s ² (\approx 10 G) In each X, Y, Z di	rection for 3 times
Relay life c	ycle	Mechanical: \geq 10,000,000 operation Electrical: \geq 100,000 operations	DNS
Ambient te	mperature	-10 to 55 °C, storage: -25 to 65 °C (r	no freezing or condensation)
Ambient h	umidity	35 to 85 %RH, storage: 35 to 85 %F	RH (no freezing or condensation)

Contact capacity

• IEC (EN60947-5-1)

Mode	l	LE4S		LE4SA	
Rated	current	5 A		3 A	
Rated	voltage	30 V	250 V	30 V	250 V
AC	Resistive load (AC-12)	-	5 A	-	3 A
DC	Resistive load (DC-12)	5 A	-	3 A	-

Time Setting

Setting method

- Be aware that the time is progressing when you set the time.
- If no key is pressed over 60 sec, returning to RUN mode and not storing the setting value.
- 1. In the parameter setting, set the output operation mode.
- 2. In RUN mode, press [4] key to enter the time setting mode.
- 3. The last digit flashes at the time setting display part.

- 4. Set the time.
 [◄] key: shift the setting digit, [▲] key: shift the flashing position, increasing time
 5. Press [MD] key to complete the setting and return to RUN mode.

Setting example

Output operation mode FK, FK1

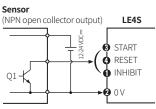
Mode	Time progressing display part	Time setting display part	Description
RUN mode	-	-	Press [4] key to enter the time setting
	Ł.oFF	00m01s	Flashing: the last number
Setting mode	Ł.oFF	0 Im 20s	Set the time via [◀], [▲] key Press [MD] key to complete the setting and progress the next time setting
	E.on	00m01s	Flashing: the last number
	t.on	03m57s	Press [MD] key to complete the setting and return to RUN mode

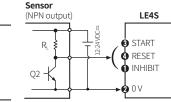
Input Connections (LE4S)

When wiring, make sure that the power and the signal input terminals are non-insulated.

No-voltage (NPN) input

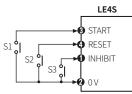
Solid-state input





Q1-2: operates when it is ON.

Contact input



Use reliable contact enough to flow 5 VDC== 1 mA Q1-2, S1-3: operates when it is ON.

Output Operation Mode

LE4S

The timing charts are under the supplying power.

- Initial status: UP mode display value 0, output OFF DOWN mode displays the setting time, output OFF T, T.on, T.off : setting time / T.out : One-shot output time (range: 0.01 to 99.99 sec)
- T.on, T.off : individual setting available
- T, T.on, T.off > Ta
 T = T1 + T2 / T = Ta + Tb + Tc

OND

POWER START RESET RELAY OUT Setting time Settingtim DOWN 0

START signal: time starts during ON state Position ① - progressing time = setting time → Output: ON, display value: Hold S. Position ② - RESET signal: ON → Display value and output: return to the initial status Position ③ - START signal: ON → RESET signal: OFF, starting the operation of no. 1 S. Position ④ - START signal: OFF → Display value and output: return to the initial status	POWER START RELAYOUT

OND.1

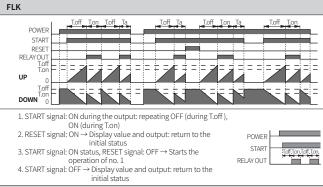
0.01150			H Ta		
POWER START		2			
RESET			3		
RELAYOUT	1				
Setting time – –	•		-		
Setting time – DOWN 0					
	I: ON → Time starts progressing time = s	etting time →		POWER	
	Output: ON, display			RESET	_
3. Position 2 -	Recognizes the first	START signal		START	
4. Position ③ -	RESET signal: ON →			RELAY OUT	
		return to the initia	l status		
OND.2					
			<mark>⊨</mark> Ta		
POWER				2	
	──────────────────────────	╺╸└┼──┦└─┼			
RESET		· · · •			
RELAYOUT	1				
RELAY OUT Setting time	1				
RELAY OUT Setting time UP 0					
RELAYOUT Setting time UP 0 Setting time					
RELAY OUT Setting time UP 0					

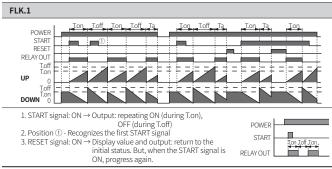
POWER START i i i i т

RELAY OUT

2. Position ① - progressing time = setting time → Output: ON (during Tout) and OFF, display value: Hold 3. RESET signal: ON → Display value and output: return to the initial status

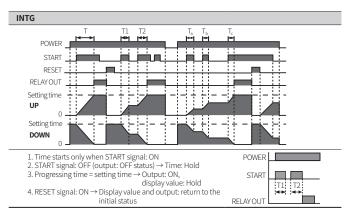
Position (2) - START Signal: ON during progressing the time, Progressing time: return to the initial status and progress again.





NT							
	1	т		Т	Та	T	
POWER	┝╴┍╾┦	< <u>'</u> ►		<u> </u> → →	1 1		<u>ا</u>
START RESET		1				2	
RELAY OUT Setting time					1		
UP 0			- + -				
Setting time		<					
0		instanthu		N and time st	arte		
2. Progress			ime → O				
3. Position	1) - RESE	ET signal: ($DN \rightarrow Dis$	splay value: He play value and	l output:	POWER	
4. START si			SET signa		di Sidius	START RELAY OUT	4 ^T 14
5. Position		rts the ope RT signal: C	DFF \rightarrow Dis	splay value an turn to the init			
NT.1			Ter				
1		T	Ta	T	-		T
POWER START		-	in i	in i		: : :	
RESET	(1	D				2	
RELAY OUT Setting time	- + + -						
UP 0							
Setting time							
1. START sig				N and time sta	rts		· · · ·
2. Progressir	ng time =	setting tin		tput: OFF, play value: Ho	ld	POWER	
3. Position (first STAR			START	.
-		output: O	N, initiali	zing time and	progress	RELAY OUT	
5. Position (2) - RESET	i signal: Ol		lay value and rn to the initia			
FD							
PO	WER	T.on	T.off	Ta Ta T.o H	ff Ta	T.on Ta	T.on T.off
	ART						
	SET			1		2	
RELAY ON D ON D ing time OFF D	olay i						
P							·:/
	0						
ing time ON D	0 elay elay						
ON D OFF D OWN	0 elay 0						
ON D OFF D OWN START signa START signa	0 elay 0 $1: ON \rightarrow ($ $1: OFF \rightarrow $	Output: O	FF (durin	T.on) - ON Del	Delay		
ON D OFF D OWN START signa START signa	0 elay 0 0 $0 \rightarrow 0$ $0 \rightarrow 0$	Output: O ignal: repe	FF (durin atedly in		elay setting	POWER	
ON D OFFD OWN START signa START signa Position ① -	0 elay 0 l: ON → 0 l: OFF → START si time) →	Output: O ignal: repe Output: O	FF (durin atedly in N, displa	ng T.off) - OFF E put (within the y value: return status	Delay e setting to initial	POWER	Ion, Ioff
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display value: Hold 3. RESET signal: ON → Display value and output: return to the RELAYOUT initial status



LE4SA

Initial status: UP mode - display value 0, output OFF

DOWN mode - displays the setting time, output OFF Instantaneous contact (OUT2) return: it is available when the power is OFF.

Release the key lock to use [RESET] key.

 T, T.on, T.off, T1: setting time / T.out: One-shot output time (range: 0.01 to 99.99 sec) / Rt: return time

• T2: S-D mode - switching time, TWN, TWN.1 mode - setting time

T.on, T.off / T1, T2 (TWN, TWN.1 mode): individual setting available
 T, T.on, T.off > Ta

OND

POWFF RESET Time limit contact Instantaneous contact Setting time UP 0 Setting time DOWN 0 1. Power: ON, simultaneously time starts 2. Progressing time = setting time \rightarrow Time limit output: ON, POWER display value: Hold display value: Hold 3. Time limit 1c + Instantaneous 1c mode : power ON → Instantaneous output ON power OFF → Instantaneous output OFF 4. RESET signal: ON → Display value and output: return to the initial status Time limi contact output OND.2 POWER RESET Time limit contac Ì. Instantaneous contact Setting time UP Setting til DOWN 1. Power: ON, simultaneously time starts Progressing time = setting time → Time limit output: ON (during Tout) and OFF, POWER display value: Hold display value: Hold 3. Time limit 1c + Instantaneous 1c mode : power ON → Instantaneous output ON power OFF → Instantaneous output OFF 4. RESET signal: ON → Display value and time limit output: return to the initial status T.out Time limi contact output FLK T.off T.on T.off Rt T.off T.on T.off T.on T.off T.on Та POWER RESET Time limit contact Instantaneous contact T.off Ton UP T.off T.on DOWN 1. Power: ON, simultaneously output: repeating OFF (during T.off), ON (during T.on) 2. Time limit 1c + Instantaneous 1c mode POWER T.off T.on T.off T.on power ON \rightarrow Instantaneous output ON power OFF → Instantaneous output OFF 3. RESET signal: ON → Display value and time limit output: return contact output to the initial status

FLK.1 T.on T.off T.on T.off T.on Ta T.on T.off Rt T.on T.off POWER RESE Time limit contac Instantaneous contac T.of T.or IIP DOWN 1. Power: ON, simultaneously output : repeating ON (during T.on), OFF (during T.off) POWFR 2. Time limit 1c + Instantaneous output ON power ON → Instantaneous output ON power OFF → Instantaneous output OFF Ton Toff Ton Toff Timelimi RESET signal: ON → Display value and time limit output: return contact output to the initial status T) Ì INT POWER RESET Time limit contac Instantaneous contac Settingtime UF Setting tin DOWN 1. Power: ON, simultaneously time limit output ON and time starts 2. Progressing time = setting time → Time limit output: OFF, display value: Hold POWER 3. Time limit 1c + Instantaneous 1c mode power ON \rightarrow Instantaneous output ON power OFF \rightarrow Instantaneous output OFF Timelim contact outpu 4. RESET signal: ON → Display value and time limit output: return to the initial status S-D (Y-∆) Τ1 Τ1 T2 T2 POWER RESET Y contact Δcc Setting time UP Setting time DOWN 1. Power: ON, simultaneously Y contact: ON and time starts 2. Progressing time = Setting time $T1 \rightarrow$ Y contact: OFF, POWER T1 initializing progressing time and progress again 3. Progressing time = Switching time T2 $\rightarrow \Delta$ contact: ON, display Y contac value: Hold T2 4. RESET signal: ON → Display value and Y - Δ contact: return to the initial status A contact TWN T2 T2 Τ1 POWER RESET T1 contac T2 contac Setting time UP _ F Ξ Setting time DOWN 1. Power: ON, simultaneously T1 contact: ON and time starts 2. Progressing time = Setting time T1 \rightarrow T1 contact: OFF, POWER T2 contact: ON, initializing progressing time and progressing Τ1 again 3. Progressing time = Setting time T2 → T1 contact: ON T1 contact T2 contact: OFF T2 display value: Hold 4. RESET signal: ON \rightarrow Display value and T1, T2 contact T2 contact : return to the initial status

