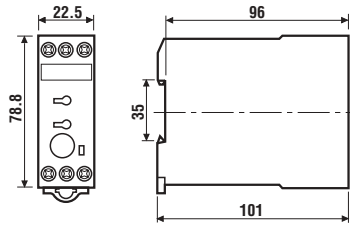
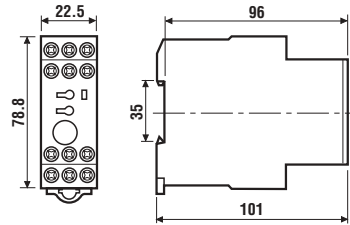


- 22.5 mm wide
- Mono-function and multi-function versions available
- Time scales from 0.05s to 60h
- "1 delayed contact + 1 instantaneous contact" and remote potentiometer version available (type 87.02)
- True OFF delay version (type 87.61/62)
- LED indicator
- 35 mm rail (EN 50022) mount



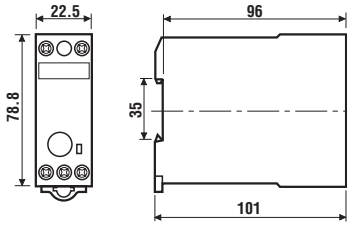
87.01



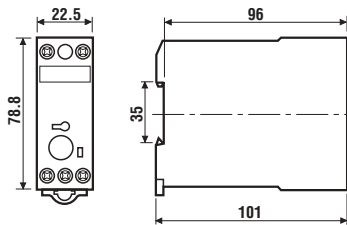
87.02

	87.01	87.02
	<ul style="list-style-type: none"> <li>- Multi-function</li> <li>- 1 pole</li> <li>- 35 mm rail mounting</li> </ul>	<ul style="list-style-type: none"> <li>- Multi-function</li> <li>- Timing can be regulated using ext. Potentiometer</li> <li>- 2 timed contacts or 1 timed + 1 instantaneous contact</li> <li>- 35 mm rail mounting</li> </ul>
	<b>AI:</b> ON delay <b>DI:</b> ON pulse <b>G:</b> Fixed pulse delayed <b>SW:</b> Symmetrical recycler: ON start	<b>AI:</b> ON delay <b>DI:</b> ON pulse <b>G:</b> Fixed pulse delayed <b>SW:</b> Symmetrical recycler: ON start
	<b>BE:</b> Signal OFF delay <b>CE:</b> Signal ON and OFF Delay <b>DE:</b> Signal ON pulse <b>EE a:</b> Signal OFF pulse	<b>BE:</b> Signal OFF delay <b>CE:</b> Signal ON and OFF Delay <b>DE:</b> Signal ON pulse <b>EE a:</b> Signal OFF pulse
	<p>wiring diagram (without signal START)      wiring diagram (with signal START)</p>	<p>wiring diagram (without signal START)      wiring diagram (with signal START)</p>
<b>Contact specifications</b>		
Contact configuration	1 CO (SPDT)	2 CO (DPDT)
Rated current/Maximum peak current	A 8/30	8/30
Rated voltage/Maximum switching voltage V AC	250/400	250/400
Rated load in AC1	VA 2,000	2,000
Rated load in AC15 (230 V AC)	VA 400	400
Single phase motor rating (230 V AC)	kW 0.185	0.185
Breaking capacity in DC1: 30/110/220 V A	8/0.5/0.2	8/0.5/0.2
Minimum switching load	mW(V/mA) 300 (10/5)	300 (10/5)
Standard contact material	AgCdO	AgCdO
<b>Supply specifications</b>		
Nominal voltage	V AC (50/60 Hz) 24...240	24...240
	V DC 24...48	24...48
Rated power AC/DC	VA (50 Hz)/W 5/0.5	5/0.5
Operating range	AC (0.85...1.1)U <sub>N</sub>	(0.85...1.1)U <sub>N</sub>
	DC (0.85...1.2)U <sub>N</sub>	(0.85...1.2)U <sub>N</sub>
<b>Technical data</b>		
Specified time range	See page 163	See page 163
Repeatability	% ± 2	± 2
Recovery time	ms 50	50
Minimum control impulse	ms 50	50
Setting accuracy-full range	% ± 5	± 5
Electrical life at rated load in AC1	cycles 100·10 <sup>3</sup>	100·10 <sup>3</sup>
Ambient temperature range	°C -20...+60	-20...+60
Protection category	IP 20	IP 20
<b>Approvals</b> (according to type):		

- 22.5 mm wide
- Mono-function and multi-function versions available
- Time scales from 0.05s to 60h
- "1 delayed contact + 1 instantaneous contact" and remote potentiometer version available (type 87.02)
- True OFF delay version (type 87.61/62)
- LED indicator
- 35 mm rail (EN 50022) mount



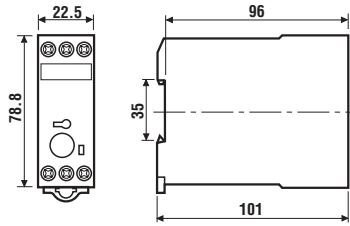
87.31



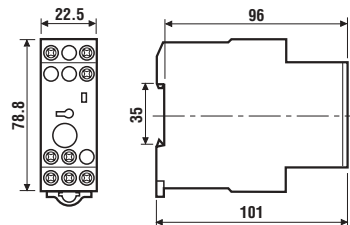
87.11  
87.21

	87.11	87.21	87.31
	- Mono-function - 35 mm rail mounting	- Mono-function - 35 mm rail mounting	- Mono-function - 35 mm rail mounting
	<b>A1:</b> ON delay	<b>D1:</b> ON pulse	<b>SW:</b> Symmetrical recycler: ON start
	wiring diagram (without signal START)	wiring diagram (without signal START)	wiring diagram (without signal START)
<b>Contact specifications</b>			
Contact configuration	1 CO (SPDT)	1 CO (SPDT)	1 CO (SPDT)
Rated current/Maximum peak current	A 8/30	8/30	8/30
Rated voltage/Maximum switching voltage V AC	250/400	250/400	250/400
Rated load in AC1	VA 2,000	2,000	2,000
Rated load in AC15 (230 V AC)	VA 400	400	400
Single phase motor rating (230 V AC)	kW 0.185	0.185	0.185
Breaking capacity in DC1: 30/110/220 V A	8/0.5/0.2	8/0.5/0.2	8/0.5/0.2
Minimum switching load	mW(V/mA) 300 (10/5)	300 (10/5)	300 (10/5)
Standard contact material	AgCdO	AgCdO	AgCdO
<b>Supply specifications</b>			
Nominal voltage	V AC (50/60 Hz) 24...240	24...240	24...240
	V DC 24...48	24...48	24...48
Rated power AC/DC	VA (50 Hz)/W 5/0.5	5/0.5	5/0.5
Operating range	AC (0.85...1.1)U <sub>N</sub>	(0.85...1.1)U <sub>N</sub>	(0.85...1.1)U <sub>N</sub>
	DC (0.85...1.2)U <sub>N</sub>	(0.85...1.2)U <sub>N</sub>	(0.85...1.2)U <sub>N</sub>
<b>Technical data</b>			
Specified time range	See page 163	See page 163	See page 163
Repeatability	% ± 0.2	± 0.2	± 0.2
Recovery time	ms 50	50	50
Minimum control impulse	ms —	—	—
Setting accuracy-full range	% ± 5	± 5	± 5
Electrical life at rated load in AC1	cycles 100 · 10 <sup>3</sup>	100 · 10 <sup>3</sup>	100 · 10 <sup>3</sup>
Ambient temperature range	°C -20...+60	-20...+60	-20...+60
Protection category	IP 20	IP 20	IP 20
<b>Approvals</b> (according to type):			GOST

- 22.5 mm wide
- Mono-function and multi-function versions available
- Time scales from 0.05s to 60h
- "1 delayed contact + 1 instantaneous contact" and remote potentiometer version available (type 87.02)
- True OFF delay version (type 87.61/62)
- LED indicator
- 35 mm rail (EN 50022) mount



87.41



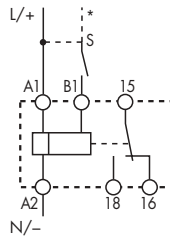
87.61  
87.62

## 87.41



- Mono-function
- 35 mm rail mounting

**BE:** Signal OFF delay



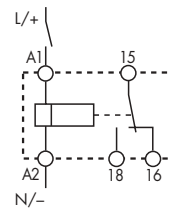
wiring diagram  
(with signal START)

## 87.61



- Mono-function
- 1 pole
- 35 mm rail mounting

**BI:** True OFF delay



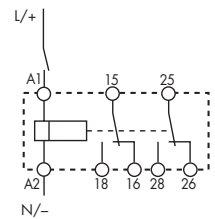
wiring diagram  
(without signal START)

## 87.62



- Mono-function
- 2 pole
- 35 mm rail mounting

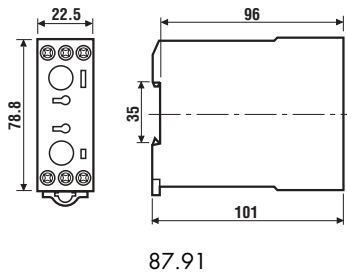
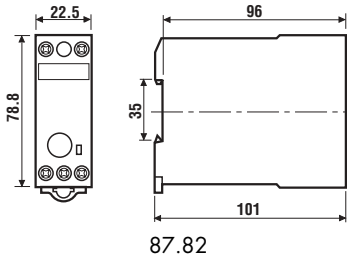
**BI:** True OFF delay



wiring diagram  
(without signal START)

Contact specifications				
Contact configuration		1 CO (SPDT)	1 CO (SPDT)	2 CO (DPDT)
Rated current/Maximum peak current	A	8/30	5/10	5/10
Rated voltage/Maximum switching voltage V AC		250/400	250/400	250/400
Rated load in AC1	VA	2,000	1,250	1,250
Rated load in AC15 (230 V AC)	VA	400	250	250
Single phase motor rating (230 V AC)	kW	0.185	0.125	0.125
Breaking capacity in DC1: 30/110/220 V A		8/0.5/0.2	5/0.5/0.2	5/0.5/0.2
Minimum switching load	mW(V/mA)	300 (10/5)	300 (10/5)	300 (10/5)
Standard contact material		AgCdO	AgCdO	AgCdO
Supply specifications				
Nominal voltage	V AC (50/60 Hz)	24...240	24...240	24...240
	V DC	24...48	24...240	24...240
Rated power AC/DC	VA (50 Hz)/W	5/0.5	1.5/1.5	1.5/1.5
Operating range	AC	(0.85...1.1)U <sub>N</sub>	(0.85...1.1)U <sub>N</sub>	(0.85...1.1)U <sub>N</sub>
	DC	(0.85...1.2)U <sub>N</sub>	(0.85...1.2)U <sub>N</sub>	(0.85...1.2)U <sub>N</sub>
Technical data				
Specified time range		See page 163	See page 163	See page 163
Repeatability	%	± 0.2	± 1	± 1
Recovery time	ms	50	50	50
Minimum control impulse	ms	50	300 ms (A1 - A2)	300 ms (A1 - A2)
Setting accuracy-full range	%	± 5	± 5	± 5
Electrical life at rated load in AC1	cycles	100 · 10 <sup>3</sup>	100 · 10 <sup>3</sup>	100 · 10 <sup>3</sup>
Ambient temperature range	°C	-20...+60	-20...+60	-20...+60
Protection category		IP 20	IP 20	IP 20
Approvals (according to type):			GOST	US

- 22.5 mm wide
- Mono-function and multi-function versions available
- Time scales from 0.05s to 60h
- "1 delayed contact + 1 instantaneous contact" and remote potentiometer version available (type 87.02)
- True OFF delay version (type 87.61/62)
- LED indicator
- 35 mm rail (EN 50022) mount



## 87.82

## 87.91

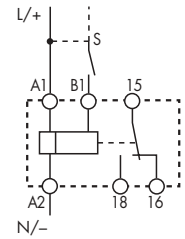
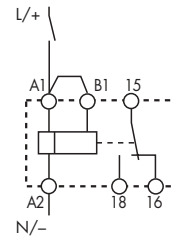
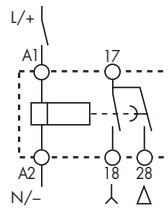


- Mono-function: Star - delta
- 2 pole
- 35 mm rail mounting

- Multi-function
- 35 mm rail mounting

**SD:** Star - delta

- LI:** Asymmetrical recycler (ON starting)
- PI:** Asymmetrical recycler (OFF starting)
- LE:** Signal asymmetrical recycler (ON starting)
- PE:** Signal asymmetrical recycler (OFF starting)



wiring diagram (without signal START)

wiring diagram (without signal START)

wiring diagram (with signal START)

### Contact specifications

Contact configuration		2 NO (DPST-NO)	1 CO (SPDT)
Rated current/Maximum peak current	A	8/30	8/30
Rated voltage/Maximum switching voltage	V AC	250/400	250/400
Rated load in AC1	VA	2,000	2,000
Rated load in AC15 (230 V AC)	VA	400	400
Single phase motor rating (230 V AC)	kW	0.185	0.185
Breaking capacity in DC1:	30/110/220 V A	8/0.5/0.2	8/0.5/0.2
Minimum switching load	mW(V/mA)	300 (10/5)	300 (10/5)
Standard contact material		AgCdO	AgCdO

### Supply specifications

Nominal voltage	V AC (50/60 Hz)	24...240	24...240
	V DC	24...48	24...48
Rated power AC/DC	VA (50 Hz)/W	5/0.5	5/0.5
Operating range	AC	$(0.85...1.1)U_N$	$(0.85...1.1)U_N$
	DC	$(0.85...1.2)U_N$	$(0.85...1.2)U_N$

### Technical data

Specified time range		See page 163	See page 163
Repeatability	%	$\pm 0.2$	$\pm 0.2$
Recovery time	ms	50	50
Minimum control impulse	ms	—	50
Setting accuracy-full range	%	$\pm 5$	$\pm 5$
Electrical life at rated load in AC1	cycles	$100 \cdot 10^3$	$100 \cdot 10^3$
Ambient temperature range	°C	-20...+60	-20...+60
Protection category		IP 20	IP 20

Approvals (according to type):



GOST



## ORDERING INFORMATION

Example: 87 series multi-function timer 8 A, 1 CO (SPDT) contact, with (24...240)V AC (50/60 Hz) and (24...48)V DC supply.

**8 7 . 0 1 . 0 . 2 4 0 . 0 0 0 0**

**Series** \_\_\_\_\_

**Type** \_\_\_\_\_

0 = Multi-function  
(AI, BE, CE, DI, DE, EE α, GI, SW, ON, OFF)

1 = ON delay (AI)

2 = ON pulse (DI)

3 = Symmetrical recycler: ON start (SW)

4 = Signal OFF delay (BE)

6 = True OFF delay (power OFF) (BI)

8 = Star - delta (SD)

9 = Asymmetrical recycler (LI, LE, PI, PE)

**Supply voltage**

240 = { (24...48)V DC  
(24...240)V AC  
(24...240)V AC/DC for 87.61 and 87.62

**Supply version**

0 = AC (50/60 Hz)/DC

**No. of poles**

1 = 1 pole

2 = 2 pole for 87.02/62

2 = 2 NO DPST-NO) for 87.82

## TECHNICAL DATA

### EMC SPECIFICATIONS

TYPE OF TEST		REFERENCE STANDARD	
Electrostatic discharge	- contact discharge	EN 61000-4-2	8 kV
	- air discharge	EN 61000-4-2	8 kV
Radio-frequency electromagnetic field (80 ÷ 1000 MHz)		EN 61000-4-3	10 V/m
Fast transients (burst) (5-50 ns, 5 kHz) on Supply terminals		EN 61000-4-4	6 kV
Surges (1.2/50 µs) on Supply terminals	- common mode	EN 61000-4-5	4 kV
	- differential mode	EN 61000-4-5	—
Radio-frequency common mode (0.15 ÷ 80 MHz) on Supply terminals		EN 61000-4-6	10 V
Radiated and conducted emission		EN 55022	class B

### OTHER DATA

Signal control (B1)			
- current absorption	1 mA		
- max cable length (capacity of ≤ 10 nF / 100 m)	≤ 250 m		
Power lost to the environment	<b>87.01/02/11/21/31/41/91</b>	<b>87.61/62</b>	<b>87.82</b>
- without contact current	W 5	1.5	8
- with rated current	W 15	7	18
Max wire size	solid cable		stranded cable
	mm <sup>2</sup>	1x4 / 2x2.5	1x4 / 2x1.5
	AWG	1x12 / 2x14	1x12 / 2x16
Screw torque	Nm 1.2		

**TIME SCALES**

Type	Function Code	Function	s	s	s	min	min	min	h	h	h	h
			0.05	0.15	0.5	0.05	0.15	0.5	0.05	0.15	0.5	3
			1	3	10	1	3	10	1	3	10	60
87.01/ 87.02	AI	ON delay	•	•	•	•	•	•	•	•	•	•
	BE	Signal OFF delay	•	•	•	•	•	•	•	•	•	•
	CE	Signal ON and OFF delay	•	•	•	•	•	•	•	•	•	•
	DI	ON pulse	•	•	•	•	•	•	•	•	•	•
	DE	Signal ON pulse	•	•	•	•	•	•	•	•	•	•
	EE a	Signal OFF pulse	•	•	•	•	•	•	•	•	•	•
	GI	Fixed pulse (0,5s) delayed	•	•	•	•	•	•	•	•	•	•
	SW	Symmetrical recycler: ON start	•	•	•	•	•	•	•	•	•	•
87.11	AI	ON delay	•	•	•	•	•	•	•	•	•	
87.21	DI	ON pulse	•	•	•	•	•	•	•	•	•	
87.31	SW	Symmetrical recycler: ON start			•							
87.41	BE	Signal OFF delay	•	•	•	•	•	•	•	•	•	
87.61/ 87.62	BI	True OFF delay (power OFF)		0.15 2.5	•	0.07 1.3		•				
87.82	SD	Star - delta ( $T_{IJ} = \sim 60$ ms)				•						
87.91	LI	Asymmetrical recycler (ON starting)	•	•	•	•	•	•	•	•	•	•
	LE	Signal asymmetrical recycler (ON starting)	•	•	•	•	•	•	•	•	•	•
	PI	Asymmetrical recycler (OFF starting)	•	•	•	•	•	•	•	•	•	•
	PE	Signal asymmetrical recycler (OFF starting)	•	•	•	•	•	•	•	•	•	•

NOTE: time scales and functions must be set before energising the timer.

**FUNCTIONS**

<b>U</b> = Supply Voltage
<b>S</b> = Signal switch
<b>C</b> = Output Contact

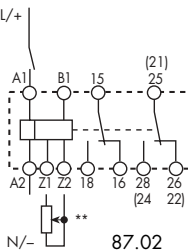
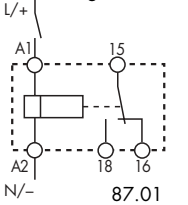
LED** Green	Timing	NO output contact	Timed		Contacts DIP switch	Instantaneous*	
			Open	Closed		Open	Closed
	None	Open	15 - 18 25 - 28*	15 - 16 25 - 26*	Up	21 - 24*	21 - 22*
	In progress	Open	15 - 18 25 - 28*	15 - 16 25 - 26*		21 - 22*	21 - 24*
	In progress	Closed	15 - 16 25 - 26*	15 - 18 25 - 28*		21 - 22*	21 - 24*
	None	Closed	15 - 16 25 - 26*	15 - 18 25 - 28*	Down	21 - 22*	21 - 24*

\* 25-26-28 only for type 87.02 with 2 timed contacts. 21-22-24 only for type 87.02 with 1 instantaneous contact + 1 timed positioning the front DIP switch.  
 \*\* The LED on types 87.61 and 87.62 is illuminated when supply voltage is supplied to timer.

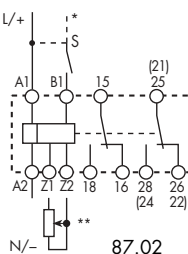
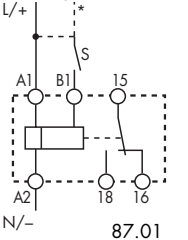
Without signal Start= Start via contact in supply line (A1). With signal Start = Start via contact into control terminal (B1).  
 With DC supply, positive polarity has to be connected to B1 terminal (according to EN 60204-1).

**Wiring diagram**

**Multi-function without signal START**



**with signal START**



\* A voltage other than the supply voltage can be applied to the command START (B1).  
 Example:  
 A1 - A2 = 230 V AC  
 B1 - A2 = 24 V AC

\*\* Type 87.02: regulated using an external potentiometer (10 kΩ - 0.25 W).

NB.: remove link between Z1-Z2 and position the Timer potentiometer on "zero".

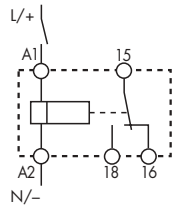
<b>Type 87.01</b> <b>87.02</b>		<b>(AI) ON delay.</b> Apply power to timer. Output contacts transfer after preset time has elapsed. Reset occurs when power is removed.
		<b>(DI) ON pulse.</b> Apply power to timer. Output contacts transfer immediately. After the preset time has elapsed, contacts reset.
		<b>(GI) Fixed pulse (0.5s) delayed.</b> Apply power to timer. Output contacts transfer after preset time has elapsed. Reset occurs after a fixed time of 0.5s. 0.5s.
		<b>(SW) Symmetrical recycler: ON start.</b> Apply power to timer. Output contacts transfer immediately and cycle between ON and OFF for as long as power is applied. The ratio is 1:1 (time on = time off).
		<b>(BE) Signal OFF delay.</b> Power is permanently applied to the timer. The output contacts transfer immediately on closure of the Signal Switch (S). Opening the Signal Switch initiates the preset delay, after which time the output contacts reset.
		<b>(CE) Signal ON and OFF delay.</b> Power is permanently applied to the timer. Closing the Signal Switch (S) initiates the preset delay, after which time the output contacts transfer. Opening the Signal switch initiates the same preset delay, after which time the output contacts reset.
		<b>(DE) Signal ON pulse.</b> Power is permanently applied to the timer. On momentary or maintained closure of Signal Switch (S), the output contacts transfer, and remain so for the duration of the preset delay, after which they reset.
		<b>(EE a) Signal OFF pulse.</b> Power is permanently applied to the timer. On opening of the Signal Switch (S) the output contacts transfer, and remain so for the duration of the preset delay, after which they reset.
		<b>Permanently ON.</b> Selecting the function ON when power is applied to the relay the first contact transfers immediately and remains in that position.
		<b>Permanently OFF.</b> The contact returns to the original position when the OFF function is selected.

**FUNCTIONS**

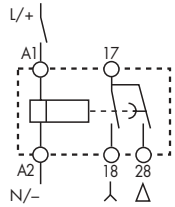
**Wiring diagram**

**Monofunction**

without signal START

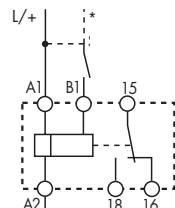


- 87.11
- 87.21
- 87.31
- 87.61



87.62

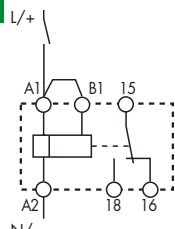
with signal START (S)



87.41

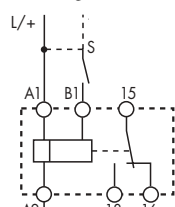
**Asymmetrical recycler**

without signal START



87.91

with signal START (S)



87.91

Type		
87.11		<b>(AI) ON delay.</b> Apply power to timer. Output contacts transfer after preset time has elapsed. Reset occurs when power is removed.
87.21		<b>(DI) ON pulse.</b> Apply power to timer. Output contacts transfer immediately. After the preset time has elapsed, contacts reset.
87.31		<b>(SW) Symmetrical recycler: ON start.</b> Apply power to timer. Output contacts transfer immediately and cycle between ON and OFF for as long as power is applied. The ratio is 1:1 (time on = time off).
87.61		<b>(BI) True OFF delay (power OFF).</b> Apply power to timer (minimum 300ms). Output contacts transfer immediately. Removal of power initiates the preset delay, after which time the output contacts reset.
87.62		<b>(SD) Star - delta.</b> Apply power to timer. The star contact (λ) closes immediately. After preset delay has elapsed the star contact (λ) resets. After a further fixed time of ~60 ms the delta contact (Δ) closes and remains in that position, until reset on power off.
87.82		<b>(SD) Star - delta.</b> Apply power to timer. The star contact (λ) closes immediately. After preset delay has elapsed the star contact (λ) resets. After a further fixed time of ~60 ms the delta contact (Δ) closes and remains in that position, until reset on power off.
87.41		<b>(BE) Signal OFF delay.</b> Power is permanently applied to the timer. The output contacts transfer immediately on closure of the Signal Switch (S). Opening the Signal Switch initiates the preset delay, after which time the output contacts reset.
87.91		<b>(LI) Asymmetrical recycler (ON starting).</b> Apply power to timer. Output contacts transfer immediately and cycle between ON and OFF for as long as power is applied. The ON and OFF times are independently adjustable.
		<b>(PI) Asymmetrical recycler (OFF starting).</b> Apply power to timer. Output contacts transfer after time T1 has elapsed and cycle between OFF and ON for as long as power is applied. The ON and OFF times are independently adjustable.
		<b>(LE) Signal asymmetrical recycler (ON starting)</b> Power is permanently applied to the timer. Closing Signal Switch (S) causes the output contacts to transfer immediately and cycle between ON and OFF, until opened.
		<b>(PE) Signal asymmetrical recycler (OFF starting).</b> Power is permanently applied to the timer. Closing the Signal Switch (S) initiates delay T1 after which the output contacts transfer and continue to cycle between OFF and ON, until the Signal Switch is opened.