TECHNICAL SPECIFICATIONS

CAT.No.		7954
SUPPLY CHARACTERISTICS		
Nominal Supply (⏛)		24 - 240 VAC / DC (50 to 60 Hz, ± 2 Hz)
Limits		-15 % to +10 % of ⏛
Power Consumption (Max.)		0.5 VA (@ 24/48 VAC), 4VA (@ 110 to 265 VAC/DC)
RELAY OUTPUT CHARACTERISTICS		
Contact Arrangement		1 C/O (SPDT)
Contact Rating		8A (Resistive) @ 240 VAC / 24 VDC
Contact Material		$AgSnO_2$
Mechanical Life Expectancy		2×10^7
Electrical Life Expectancy		1×10^5
Switching Frequency (Max.)		1800 Operations / hr. @ rated load
Status Indication on panel		Red LED - Relay ON
FEATURE CHARACTERISTICS		
Modes Available		1. ON Delay (A) 2. Cyclic OFF/ON (Sym, Asym) (b) 3. Cyclic ON/OFF(Sym, Asym) (C) 4. Signal ON/OFF (d) 5. Signal Off Delay (E) 6. Interval (F) 7. Signal OFF/ON (G) 8. One Shot Output (H)
Timing Ranges		**h:m** 9:59 **m:s** 9:59 **hr** 999 / 99.9 **min** 999 / 99.9 **sec** 999 / 99.9
Signal Sensing Time		20 ms Max. (DC High), 40 ms Max. (AC High), 100 ms Max. (Low)
Signal Impedance		300 k
Repeat Accuracy		± 0.5% of selected range
Utilization Category	AC-15	Rated Voltage (Ue): 125/240 V, Rated Current (Ie) : 3/1.5 A
	DC-13	Rated Voltage (Ue): 125/250 V, Rated Current (Ie) : 0.22/0.1 A
Dimension (W X H X D) (in mm)		17.5 x 89 x 76
Weight		85 g (unpacked)
Variation in timing due to voltage change		± 0.2 %
Variation in timing due to temperature change		± 1 %
Operating Temperature		-10° C to + 55° C
Storage Temperature		-20° C to + 65° C
Humidity (Non - Condensing)		93 % Rh
Mounting		Base / DIN-Rail (35 mm Sym.)
Terminal capacity		1.5 mm^2 (Pin type lugs)
EMI/EMC		
Harmonic Current Emissions		IEC 61000-3-2 Ed. 3.2 (2009-04) Class A
ESD		IEC 61000-4-2 Ed. 2.0 (2008-12) Level II
Radiated Susceptibility		IEC 61000-4-3 Ed. 3.2 (2010-04) Level III
Electrical Fast Transient		IEC 61000-4-4 Ed. 3.0 (2012-04) Level IV
Surge		IEC 61000-4-5 Ed. 2.0 (2005-11) Level IV
Conducted Susceptibility		IEC 61000-4-6 Ed. 3.0 (2008-10) Level III
Voltage Dips & Interruptions(AC)		IEC 61000-4-11 Ed. 2.0 (2004-03)
Voltage Dips & Interruptions(DC)		IEC 61000-4-29 Ed. 1.0 (2000-08)
Conducted Emission		CISPR 14-1 Ed. 5.2 (2011-11) Class B
Radiated Emission		CISPR 14-1 Ed. 5.2 (2011-11) Class B
Safety		
Test Voltage Between I/P & O/P		IEC 60947-5-1 Ed. 3.0 (2003-11) 2 kV
Impulse Voltage Between I/P & O/P		IEC 60947-5-1 Ed. 3.0 (2003-11) Level IV
Single Fault		IEC 61010-1 Ed. 3.0 (2010-06) Level IV
Insulation Resistance		UL 508 >50 kΩ
Leakage Current		UL 508 <3.5 mA
Degree of Protection		IP 20 for Terminal; IP-40 for Housing
Pollution Degree		II
Type of Insulation		Reinforced
Environmental		
Cold Heat		IEC 60068-2-1 Ed. 6.0 (2007-03)
Dry Heat		IEC 60068-2-2 Ed. 5.0 (2007-07)
Vibration		IEC 60068-2-6 Ed. 7.0 (2007-12) 5g
Repetitive Shock		IEC 60068-2-27 Ed. 4.0 (2008-02) 40g, 6ms
Non-repetitive Shock		IEC 60068-2-27 Ed. 4.0 (2008-02) 30g, 15ms

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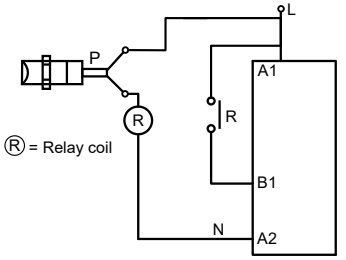
7954
Digital Timer - 8 Functions

CE
RoHS

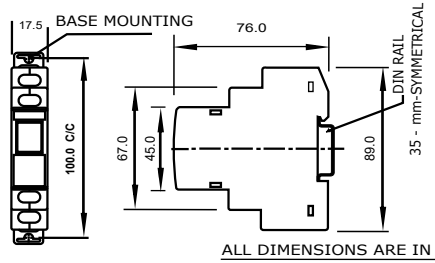
▲ CAUTIONS:

1.Always follow instructions stated in this product.
2.Before installation, check to ensure that the specifications agree with the intended application.
3.Installation to be done by skilled electrician.
4.Automation & Control devices must be properly installed so that they are protected against any risk of involuntary actuations.
5.Using of AC 2 wire Type Proximity Sensor: Please add input relay to prevent false signal sensing due to current leakage of proximity sensor as below.



Use relay coil Voltage of the same Voltage using for Proximity sensor. [Relay coil current should not exceed the maximum current Specified by Proximity sensor.]

OVERALL DIMENSIONS:



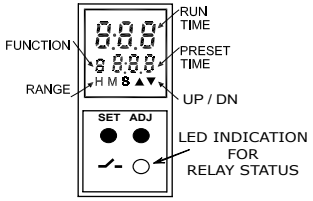
ALL DIMENSIONS ARE IN mm

TERMINAL DETAILS:

Ø3.5 mm	0.4 N.m (3.5 Lb.in) Terminal screw - M2.5
	1 x 0.3 to 2.5 mm^2 Solid Wire
AWG	22 to 14

FEATURES:

- Available with 8 functions
- Wide operating voltage : 24 to 240 VAC / DC
- Multi Range : 0.1 s to 999 h
- Up/Down counting modes
- 3Digit LCD for preset Timer and Run Time
- Clear LED indication of Relay status
- Key lock Function
- Conforms to EMI/EMC as per IEC standards
- Compact size (17.5 mm single width module)



1.PRESET TIME :The Timer Duration selected by the user.
2.RUN TIME : In Down counting (▼) mode it indicates the remaining while in Up counting (▲) mode it indicates the elapsed time.
3.Up/Down (▲▼) blinks during the .Timer Duration(T).

THE KEYS:

KEY	OPERATION	RESULT
SET	Apply Power & Hold Program Mode the key for >3 sec.	
	OR	
ADJ + SET	Press both >3 sec program after power on	
SET	Press in program mode	
ADJ	Press in program mode Edit blinking parameter	
SET	Press for>3 sec. During Timer operation Reset Timer	
ADJ	Press for>3 sec. during Timer operation Select, Edit parameter Lock/Unlock Preset Time	
SET	Press during timer operation Edit Preset Time during Timer operation	

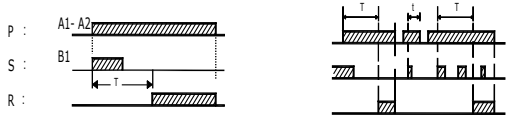
PROGRAMMING INSTRUCTIONS:

Apply power & hold the SET key for >3 sec.OR press both ADJ & SET key for >3 sec.After power ON.Now follow the steps given below

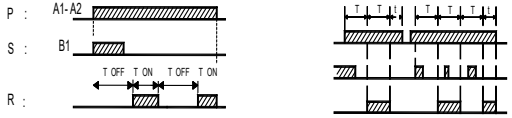
KEY	DISPLAY	RESULT
ADJ	F 5:39 HM	Press ADJ Key to select desired function (e.g F)
SET	F 5:39 HM	Confirms function then range indicator blinks
ADJ	F 5:39 HM	Press ADJ Key to select range (e,g.HM range 'HM')
SET	F 5:39 HM	Confirms range selection. 1st digit of preset time blinks.(For modes 'B' & 'C' two preset times 'on' & 'off' to be set)
ADJ	F 8:39 HM	Press ADJ key to adjust desired preset time digit (e.g. from 5 to 8)
SET	F 8:39 HM	Press Set to confirm 1st digit selection now 2nd digit blinks
ADJ	F 8:09 HM	Change with ADJ Key (e, g, from3 to 0)
SET	F 8:09 HM	Confirms 2nd digit selection ,now 3rd digit of preset Timeb links.
ADJ	F 8:06 HM	Change with ADJ Key (e, g, from9 to 6)
SET	F 8:06 HM	Now UP/DOWN Indicator blinks
ADJ	F 8:06 HM	Change with ADJ Key (e, g,from DOWN to UP)
SET	00.0 F 8:06 HM	Confirms counting mode . Program Over. Timer starts working normally.

TIMING DIAGRAMS:

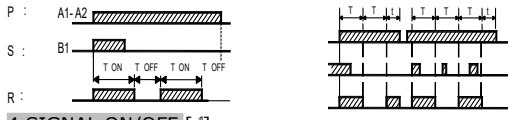
1.ON DELAY [A]



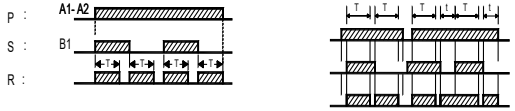
2.CYCLIC OFF/ ON {OFF START (Sym,Asym)} [b]



3.CYCLIC ON/OFF {ON START (Sym, Asym)} [E]



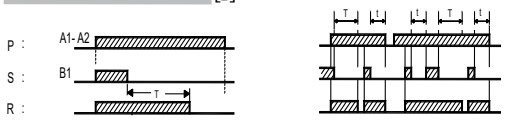
4.SIGNAL ON/OFF [d]



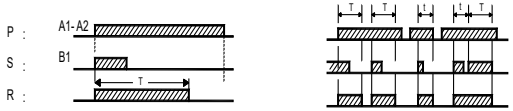
T : PRESET TIME T : PERIOD < T

P : POWERS : SIGNAL R : RELAY

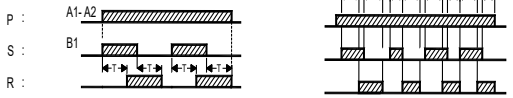
5.SIGNAL OFF DELAY [E]



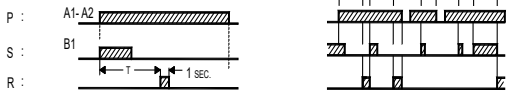
6.INTERVAL [F]



7.SIGNAL OFF/ON [G]



8. ONE SHOT OUTPUT [H]



T : PRESET TIME T : PERIOD < T

P : POWERS : SIGNAL R : RELAY

FUNCTIONAL DESCRIPTION:

1.ON DELAY [A]

The Timer starts when both power (p) and signal (s) are applied .The relay is energized at the end of preset Timer (T) and remains on till power is removed.

2.CYCLIC OFF/ ON {OFF START (Sym,Asym)} [b]

T-ON and T-OFF can be same or different .The relay keeps on changing its status till the power is removed.

3.CYCLIC ON/OFF {ON START (Sym, Asym)} [E]

This function is quite similar to the function "b" but Initially he relay is ON for period T-ON after the power is applied.

4.SIGNAL ON/OFF [d]

The output relay is turned ON for preset Time (T) When ever the signal (S)is applied or removed .(Refer Note :2)

5.SIGNAL OFF DELAY [E]

Output relay become on when signal (S) is applied. The Timer duration (S) is removed .At the end of timer Duration (T) the output relay goes OFF. Signal (S) ,if Applied during the timer duration (S) will re -trigger The timer and the total duration will be extended.

6.INTERVAL [F]

When Signal (S) is applied ,The Timer Starts and the Output trelay is energized .The output relay be comes OFF at the end of timer duration (T).

7.SIGNAL OFF/ON [G]

When Signal (s) is applied or removed ,The relay changes . Its state after timer duration (T) (Refer Nots : 2)

8.ONE SHOT OUTPUT [H]

When Signal (s) is applied ,the timer duration (T) Starts. At the end of Timer duration (T), the relay gets energized for approximately 1 sec.(Refer Note:2)

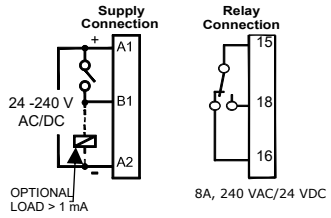
1.For power -on operation the terminal B1 and A1 must.

2.In case of all modes except mode G a change in Signal (s) status during the Timing Duration (T),does not affect output status but resets timing and re-triggers timing.

3.Output de-energises when device enters PROGRAM MODE and starts new cycle after coming out of. PROGRAM MODE.

4.Loads which have current requirement 1mA,con only be used as Optional Load . For e.g Contactor coil ,AC Relay Coil, etc,

CONNECTIONS:



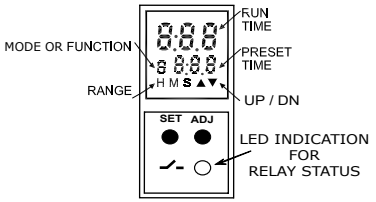
Note:

Product innovation being a continuous process. We reserve the right to alter specification without any prior notice.

TECHNICAL SPECIFICATIONS

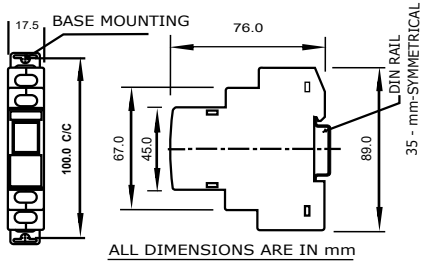
Cat. No.:		7957
SUPPLY CHARACTERISTICS		
Nominal Supply (⇔)		24 - 240 VAC / DC
Supply Variation		-15 % to + 10 % of ⇔
Supply Frequency		50 to 60 Hz, +/- 2Hz
Power Consumption (Max.)		0.5 VA (@ 24/48 VAC), 4VA (@ 110 to 265 VAC/DC)
RELAY OUTPUT CHARACTERISTICS		
Contact Arrangement		1 C/O (SPDT)
Contact Rating		8A (Res.) @ 240 VAC / 24 VDC
Contact Material		Ag Alloy
Mechanical Life Expectancy		2 x 10^7
Electrical Life Expectancy		1 x 10^5
Switching Frequency (Max.)		1800 Operations / h @ rated load
Status Indication on panel		Red LED - Relay ON
FEATURE CHARACTERISTICS		
Functions Available		Refer "Timing diagrams of Functions"
Timing Ranges		h:m 9:59 / m:s 9:59 / h 999 99.9 / min 999 99.9 / s 999 99.9
Signal Sensing Time		20 ms Max. (DC High), 40 ms Max. (AC High), 100 ms Max. (Low)
Signal Impedance		300 k
Repeat Accuracy		+/- 0.5 % of selected range
Variation in timing due to voltage change		+/- 0.2%
Variation in timing due to temperature change		+/- 1%
Operating Temperature		-10°C to + 55°C
Storage Temperature		-20°C to + 65°C
Humidity (Non-Condensing)		93% (Rh)
Mounting		Base / Din - Rail (35 mm Sym.)
Weight (Unpacked)		85 g (approx.)
Initiate Time		40 ms
Reset Time		< 200 ms
Utilization Category	AC-15	Rated Voltage (Ue):120/240 V:, Rated Current (Ie):3.0/1.5 A
	DC-13	Rated Voltage (Ue):125/250 V:, Rated Current (Ie):0.22/0.1 A
Dimension (W X H X D) in mm		17.5 X 89 X 76
EMI/EMC		
Harmonic Current Emissions		IEC 61000-3-2 Ed. 3.2 (2009-04) Class A
ESD		IEC 61000-4-2 Ed. 2.0 (2008-12) Level II
Radiated Susceptibility		IEC 61000-4-3 Ed. 3.2 (2010-04) Level III
Electrical Fast Transient		IEC 61000-4-4 Ed. 3.0 (2012-04) Level IV
Surge		IEC 61000-4-5 Ed. 2.0 (2005-11) Level IV
Conducted Susceptibility		IEC 61000-4-6 Ed. 3.0 (2008-10) Level III
Voltage Dips & Interruptions (AC)		IEC 61000-4-11 Ed. 2.0 (2004-03)
Voltage Dips & Interruptions (DC)		IEC 61000-4-29 Ed. 1.0 (2000-08)
Conducted Emission		CISPR 14-1 Ed. 5.2 (2011-11) Class B
Radiated Emission		CISPR 14-1 Ed. 5.2 (2011-11) Class B
Safety		
Test Voltage Between I/P & O/P		IEC 60947-5-1 Ed. 3.0 (2003-11) 2 kV
Impulse Voltage Between I/P & O/P		IEC 60947-5-1 Ed. 3.0 (2003-11) Level IV
Single Fault		IEC 61010-1 Ed. 3.0 (2010-06)
Insulation Resistance		UL 508 >50 kΩ
Leakage Current		UL 508 <3.5mA
Degree of Protection		IP 20 for Terminal; IP 40 for Housing
Pollution Degree		II
Type of Insulation		Reinforced
Environmental		
Cold Heat		IEC 60068-2-1 Ed. 6.0 (2007-03)
Dry Heat		IEC 60068-2-2 Ed. 5.0 (2007-07)
Vibration		IEC 60068-2-6 Ed. 7.0 (2007-12) 5 g
Repetitive Shock		IEC 60068-2-27 Ed. 4.0 (2008-02) 40 g, 6 ms
Non-repetitive Shock		IEC 60068-2-27 Ed. 4.0 (2008-02) 30 g, 15 ms

FRONT FACIAL:



1. **PRESET TIME:** The Timer Duration selected by the user.
2. **RUN TIME:** In Down counting (▼) mode it indicates the remaining while in Up counting (▲) mode indicates the elapsed time.
3. **Default Mode:** Down counting (▼)
4. Up/Down (▲▼) blinks during the Timer Duration (T)

OVERALL DIMENSIONS:



TERMINAL DETAILS:

Ø3.5 mm	0.4 N.m (3.5 Lb.in) Terminal screw - M2.5
	1 x 0.3 to 2.5 mm^2 Solid Wire
AWG	22 to 14

Wire Strip Length = 6.5 mm. Use Cu wire of 75°C only.

AWG	CURRENT (A)
14	8
16	6.4
18	4.8
20	3.2
22	1.6

The timers shall be placed in an enclosure that is minimum 200% of the size of the timer in the end use application.

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7957
Digital Timer - 18 Functions

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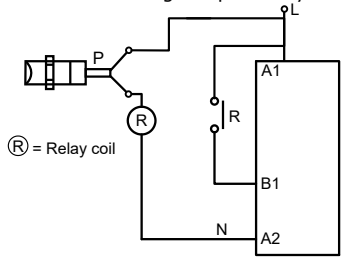
FEATURES:

1. Compact size
2. Available with 18 functions
3. Wide timing range from 0.1 sec - 999 h
4. Wide operating voltage : 24 to 240 VAC / DC
5. 3-Digit LCD Display
6. Time & Mode setting through easy key operations.
7. Up/Down Counting Modes
8. Clear LED indication for Relay Status
9. Key Lock Function

▲ CAUTIONS:

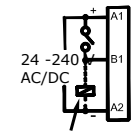
1.Always follow instructions stated in this product.
2.Before installation, check to ensure that the specifications agree with the intended application.
3.Installation to be done by skilled electrician.
4.Automation & Control devices must be properly installed so that they are protected against any risk of involuntary actuations.
5.Using of AC 2 wire Type Proximity Sensor: Please add input relay to prevent false signal sensing due to current leakage of proximity sensor as below.



Use relay coil Voltage of the same Voltage using for Proximity sensor. [Relay coil current should not exceed the maximum current Specified by Proximity sensor.]

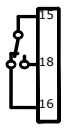
CONNECTIONS DIAGRAM :

Supply Connection



OPTIONAL LOAD > 1 mA

Relay Connection



8A, 240 V AC
24V DC

KEY FUNCTIONS:

1. Used as ENTER key to jump to next setting & save the settings edited.
2. RUN MODE RESTART: Press SET key continuous for >3 sec during RUN Mode to restart the timing operation.
3. Press SET key once to edit PRESET time in RUN mode

1. Used to edit the modes & timing ranges.
2. Keypad LOCK/UN-LOCK: Press ADJ key for >3 sec during RUN time mode.

1. Used to enter in program edit mode after power ON.

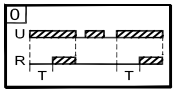
Programming Instructions

Apply power & hold the set key for >3 s.
OR
Press both ADJ & SET key for >3 s after power ON.
Now follow the steps given below;

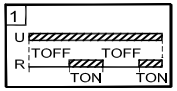
KEY	DISPLAY	RESULT
ADJ	F5:39 HM	Press ADJ Key to select desired function (e. g. F)
SET	F5:39 HM	Confirms function then range indicator blinks
ADJ	F5:39 HM	Press ADJ Key to select range (e. g. HM range 'HM')
SET	F5:39 HM	Confirms range selection. 1st digit of preset time blinks. (For modes '1', '2' & 'G' two preset times 'On' & 'Off' to be set)
ADJ	F8:39 HM	Press ADJ key to adjust desired preset time digit (e. g. from 5 to 8)
SET	F8:39 HM	Press Set to confirm 1st digit selection, now 2nd digit blinks
ADJ	F8:09 HM	Change with ADJ Key (e. G. from 3 to 0)
SET	F8:09 HM	Confirms 2nd digit selection, now 3rd digit of preset Time blinks.
ADJ	F8:06 HM	Change with ADJ Key (e. g. from 9 to 6)
SET	F8:06 HM	Now UP/DOWN Indicator blinks
ADJ	F8:06 HM	Change with ADJ Key (e. g. from DOWN to UP)
SET	00.0 F8:06 HM	Confirms counting mode. Program Over. Timer starts working normally.

Timing Diagrams of Functions:

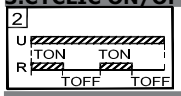
1.ON DELAY [0]



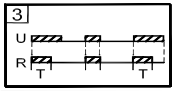
2.CYCLIC OFF/ON {OFF Start, (Sym, Asym)} [1]



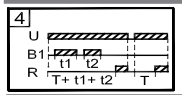
3.CYCLIC ON/OFF {ON start, (Sym, Asym)} [2]



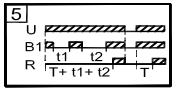
4.IMPULSE ON ENERGIZING [3]



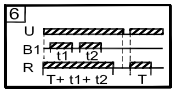
5.ACCUMULATIVE DELAY ON SIGNAL [4]



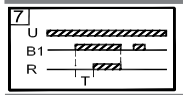
6.ACCUMULATIVE DELAY ON INVERTED SIGNAL [5]



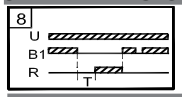
7.ACCUMULATIVE IMPULSE ON SIGNAL [6]



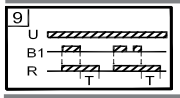
8.SIGNAL ON DELAY [7]



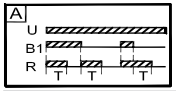
9.INVERTED SIGNAL ON DELAY [8]



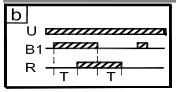
10.SIGNAL OFF DELAY [9]



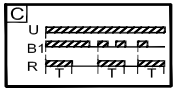
11.IMPULSE ON/OFF [A]



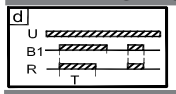
12.SIGNAL OFF/ON- TYPE 1 [B]



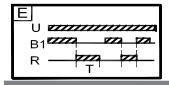
13.LEADING EDGE IMPULSE1 [X]



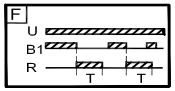
14.LEADING EDGE IMPULSE 2 [Δ]



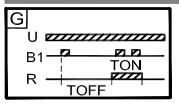
15.TRAILING EDGE IMPULSE 1 [E]



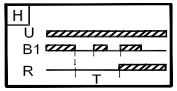
16.TRAILING EDGE IMPULSE 2 [Φ]



17.DELAYED IMPULSE [Γ]



18. INVERTED SIGNAL ON DELAY-TYPE 2 [H]



Functional Description

1.ON DELAY [0]

Timing commences when supply is present. R energizes at the end of the timing period.

2.CYCLIC OFF/ON {OFF Start, (Sym, Asym)} [1]

T-ON and T-OFF can be same or different. The relay (R) keeps on changing its status until power is removed.

3.CYCLIC ON/OFF {On Start, (Sym, Asym)} [2]

This function is quite similar to the function '1' but initially the relay (R) is ON for period T-ON after the power is applied.

4.IMPULSE ON ENERGIZING [3]

After power ON, R energizes and timing starts. R de-energizes after timing is over.

5.ACCUMULATIVE DELAY ON SIGNAL [4]

Time commences as supply is present and switch B1 is open. Closing switch B1 pauses timing. Timing resumes when switch B1 is opened again. R energizes at the end of timing.

6. ACCUMULATIVE DELAY ON INVERTED SIGNAL [5]

Time commences as supply is present and switch B1 is closed. Opening switch B1 pauses timing. Timing resumes when switch B1 is closed again. R energizes at end of timing.

7. ACCUMULATIVE IMPULSE ON SIGNAL [6]

When supply is ON, R energizes. When switch B1 is closed timing is suspended and remains suspended till switch B1 is opened again. Interrupting supply resets timer.

8.SIGNAL ON DELAY [7]

Permanent supply required. Timing starts when switch B1 is closed. R energizes at end of timing period and de-energizes when B1 is opened.

9.INVERTED SIGNAL ON DELAY [8]

Timing will commence when supply is present and switch B1 is open. R energizes after timing. If B1 is closed during timing period, timing resets to the beginning of cycle.

10.SIGNAL OFF DELAY [9]

Permanent supply is required. R energizes when switch B1 is closed. Timing commences after S is opened and then the relay de-energizes.

11.IMPULSE ON/OFF [α]

Permanent supply is required. R energizes for the timing period when B1 is opened or closed. When timing commences, changing state of B1 does not affect R but resets timer.

12.SIGNAL OFF/ON [B]

When switch B1 is closed or opened for preset time 'T,' the relay changes its state after time duration T.

13.LEADING EDGE IMPULSE1 [χ]

A permanent supply is needed. When B1 is closed, output relay energizes until timing irrespective of any further action of B1.

14.LEADING EDGE IMPULSE 2 [Δ]

Permanent supply is required. when switch B1 is closed, and remains closed output relay energizes until timing is over. If B1 is opened during timing, R resets.

15.TRAILING EDGE IMPULSE 1 [ε]

Permanent supply required. when B1 is opened, R energizes and de-energizes when timing is over. If B1 is closed during timing R resets.

16.TRAILING EDGE IMPULSE 2 [ϕ]

Permanent supply is required. When switch B1 is opened, R energizes and will de-energize when timing is over. If B1 is pulsed during timing period it Will have no effect on R.

17.DELAYED IMPULSE [Γ]

when switch B1 is closed, T_{OFF} starts. Relay energizes at the end of T_{OFF} period. Then, T_{ON} starts irrespective of signal level and relay de-energize at the end of T_{ON} period.

18. INVERTED SIGNAL ON DELAY-TYPE 2 [H]

Timing starts only upon signal 'B1' transition high to low. During timing or after completion of Time (i.e. relay on), any signal transition is ignored. To reset the timer supply has to be interrupted.