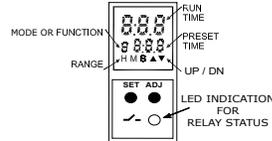


TECHNICAL SPECIFICATIONS

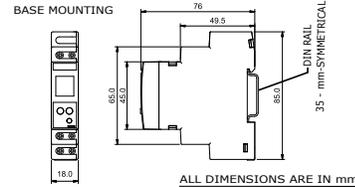
Cat. No.:	7957				
SUPPLY CHARACTERISTICS					
Nominal Supply (±)	24 - 240 VAC / DC				
Supply Variation	-15 % to + 10 % of ±				
Supply Frequency	50 to 60 Hz, +/- 2Hz				
Power Consumption (Max.)	0.5 VA (@ 24/48 VAC), 4VA (@ 110 to 265 VAC/DC)				
RELAY OUTPUT CHARACTERISTICS					
Contact Arrangement	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	m:s	h	min	s
	9:59	9:59	999	999	999
			99.9	99.9	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:



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

OVERALL DIMENSIONS:



TERMINAL DETAILS:

	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.



TS7957

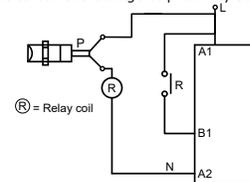
Digital Timer - 18 Functions

FEATURES:

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

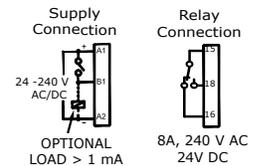
CAUTIONS:

- Always follow instructions stated in this product.
- Before installation, check to ensure that the specifications agree with the intended application.
- Installation to be done by skilled electrician.
- Automation & Control devices must be properly installed so that they are protected against any risk of involuntary actuations.
- 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 :



KEY FUNCTIONS:

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

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

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

Programming Instructions

Apply power & hold the set key for >3 s.

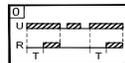
OR
Press both ADJ & SET key for >3 s after power ON.
Now follow the steps given below;

KEY DISPLAY RESULT

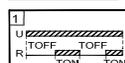
- | | | |
|--|--|---|
| | | Press ADJ Key to select desired function (e. g. F) |
| | | Confirms function then range indicator blinks |
| | | Press ADJ Key to select range (e. g. HM range 'HM') |
| | | Confirms range selection. 1st digit of preset time blinks. (For modes '1', '2' & 'G' two preset times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

Timing Diagrams of Functions:

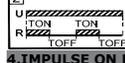
1.ON DELAY [0]



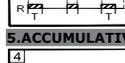
2.CYCLIC OFF/ON {OFF Start, (Sym, Asym)} [1]



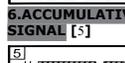
3.CYCLIC ON/OFF {ON start, (Sym, Asym)} [2]



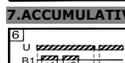
4.IMPULSE ON ENERGIZING [3]



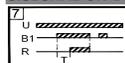
5.ACCUMULATIVE DELAY ON SIGNAL [4]



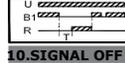
6.ACCUMULATIVE DELAY ON INVERTED SIGNAL [5]



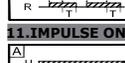
7.ACCUMULATIVE IMPULSE ON SIGNAL [6]



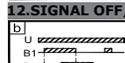
8.SIGNAL ON DELAY [7]



9.INVERTED SIGNAL ON DELAY [8]



10.SIGNAL OFF DELAY [9]



11.IMPULSE ON/OFF [A]



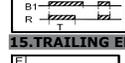
12.SIGNAL OFF/ON- TYPE 1 [B]



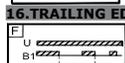
13.LEADING EDGE IMPULSE1 [X]



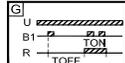
14.LEADING EDGE IMPULSE 2 [Δ]



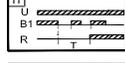
15.TRAILING EDGE IMPULSE 1 [E]



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 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 IMPULSE [X]

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 [E]

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, Toff starts. Relay energizes at the end of Toff period. Then, Ton starts irrespective of signal level and relay de-energize at the end of Ton 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.