Timers
Digital Multi-function
Type S 1331

- **µP-based digital multi-function timer**
- **10 functions within delay on operate, interval timer, symmetrical recycler, recycler with fixed ON time, time period multiplier**
- **Time ranges: 0.01 s to 99 h**
- **Digital trigger input for time start and reset**
- **Time stop input**
- **Four yellow LEDs each indicating 25% of remaining time**
- **Connection for NPN sensor**
- **Plug-in module, S-housing**
- **Output: 5 A SPDT relay**
- **LED-indication for relay and power supply ON**
- **AC or DC power supply**

Product Description

Plug-in, µP-based, multifunction time relay with 10 selectable modes of operation and time ranges from 10 ms to 99 h. Function and time range setting by 3 rotary switches in the front. Time setting by two digital thumb-wheel switches in the front. Time controlled by contact, open collector output (NPN) or power supply.

Ordering Key

S 1331 156 230

Housing
Type/function
Output
Power supply

Type Selection

Plug	Output	Supply: 24 VAC	Supply: 115 VAC	Supply: 230 VAC	Supply: 24 VDC
Circular	SPDT	**S 1331 156 024**	**S 1331 156 115**	**S 1331 156 230**	**S 1331 156 724**

Time Specifications

Time ranges	
Selectable by rotary switches	0.01 - 0.99 s 0.1 - 9.9 s 1 - 99 s 0.01 - 0.99 m 0.1 - 9.9 m 1 - 99 m 0.01 - 0.99 h 0.1 - 9.9 h 1 - 99 h
Accuracy	≤ 0.5%, ±20 ms
Repeatability deviation	≤ 0.01%
Time variation	
within rated ambient temp.	0.008%/°C
Reset	
Time and/or relay	Interconnect pins 5 & 7 24 VDC, 5 mA
Time stop	Interconnect pins 7 & 8 24 VDC, 5 mA
Input interruption	≥ 10 ms
Sensor supply output	Pins 6 & 7, pin 6 positive 24 VDC, 10 mA

Output Specifications

Output		SPDT
Rated insulation voltage		250 VAC (rms) (cont./elect.)
Contact ratings (AgCdO)		µ (micro gap) (IEC 60947-5-1/IEC 60337)
Resistive loads	AC 1	5 A, 250 VAC
	DC 1	5 A, 24 VDC
Small inductive loads	AC 15	2 A, 250 VAC
	DC 13	3 A, 24 VDC
Mechanical life		≥ 40 x 10^6 operations
Electrical life		10^5 operations (at max. load)
Operating frequency		≤ typ. 50 Hz
Operating time		< 10 ms
Release time (at nom. supply)		< 6 ms
Dielectric strength		
Dielectric (AC rms) test voltage		≥ 2.0 kVAC (rms) (cont./elect.)
Rated impulse withstand voltage		4 kV (1.2/50 µs) (cont./elect.) (IEC 60664)

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Supply Specifications

Power supply AC types		Overvoltage cat. III (IEC 60664)
Rated operational voltage through pins 2 & 10	230	230 VAC ±15%, 45 to 65 Hz
	115	115 VAC ±15%, 45 to 65 Hz
	024	24 VAC ±15%, 45 to 65 Hz
Voltage interruption		≤ 40 ms
Rated insulation voltage		≥ 250 VAC (rms)
Rated operational power		3.0 VA
Rated impulse withstand voltage		4 kV (1.2/50 µs) (line/neutral)
Power supply DC type		Overvoltage cat. III (IEC 60664)
Rated operational volt.	724	24 VDC ±15% (pin 2 pos.)
Rated insulation voltage		None
Rated operational power		1.5 W
Rated impulse withstand voltage		800 V (1.2/50 µs)

General Specifications

Power ON delay		≤ 150 ms
Power OFF delay		≥ 200 ms
Indication for		
Power supply ON		LED, green
Output ON		LED, yellow
Remaining time to elapse		4 LEDs, yellow, 25% each
Environment		
Degree of protection		IP 20 B
Pollution degree		2 (IEC 60664)
Operating temperature		0° to +50°C (+34° to +122°F)
Storage temperature		-50° to +85°C (-58° to +185°F)
Weight	AC supply	200 g
	DC supply	125 g
Approvals		UL, CSA

Mode of Operation

In connection with all functions automatic start is possible by permanent interconnection of pins 5 & 7.

Function 0: Delay on operate, leading edge, man. start, man. restart, man. time reset.

Function 1: Interval timer, leading edge, man. start, man. restart, man. time reset.

Function 2: Symmetrical recycler, OFF-time first, leading edge, man. start, man. restart, no time reset.

Function 3: Symmetrical recycler, ON-time first, leading edge, man. start, man. restart, no time reset.

Function 4: Delay on operate, trailing edge, man. start, man. restart, man. time reset.

Function 5: Interval timer, trailing edge, man. start, man. restart, man. time reset.

Note: The output relay only operates when the time period is running.

Function 6: Interval timer, trailing edge, man. start, man. restart, man. time reset.

Function 7: Delay on operate, leading edge, man. start, man. restart, man. time reset.
Note: The relay releases on trailing edge, which means the trigger pulse must be of longer duration than the time period.

Function 8: Recycler with fixed ON-time, leading edge, man. start, man. restart, no time reset. Fixed ON-time: approx. 0.5 sec.

Function 9: Time period multiplier, leading edge, man. start, man. restart, man. time reset.

Note: Each pulse input adds the set time the total timing period. Max. time period memory is 256 pulses.

Time stop function: By interconnection of pins 7 & 8 the time function stops, and the output relay remains either released or operated. By disconnection of pins 7 & 8 the remaining time continues to elapse.

Accessories

Socket◊	S 411
Hold down spring◊	HF
Mounting rack	SM 13
Socket cover	BB 4
Front mounting bezel	FRS 2

All 3/4-wire sensor types with NPN open collector output.

For further information refer to "Accessories".
For other AC/DC voltages refer to "General Information".

Function and Time Setting

Adjustable time setting by two digital thumb-wheel switches (1-99)

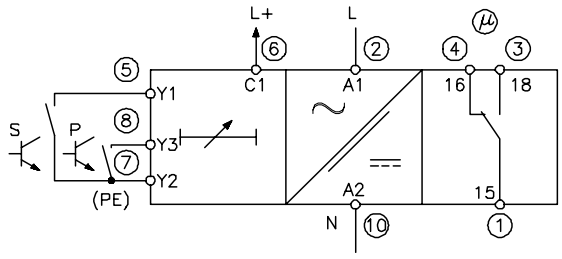
Upper knob:
Time period multiplier x 0.01, x 0.1 and x 1.0.

Centre knob:
Selection of time range (seconds, minutes and hours).

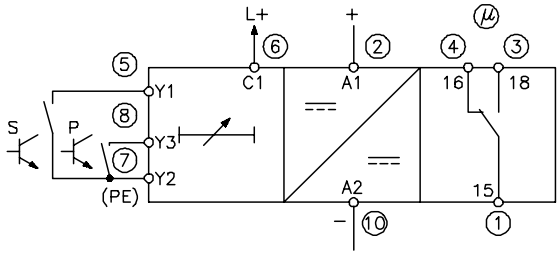
Lower knob:
Selection of function.

Wiring Diagrams

AC



DC



Operation Diagrams