

# ST-210

## Multi-function Asymmetrical Reset Timer

# SLIMLINE

MONITORING RELAYS



### ORDERING CODE

TYPE	MODEL	VOLTAGE	POWER SUPPLY	RELAY CONTACTS
ST	210	230V	AC	DP

SEE PAGE 60 FOR ORDERING OPTIONS

## Application Examples

- Operation of air-piece extractors in multi-cycle machinery.
- Provision for cooling time on control circuit of point soldering machines.

## Features

- Failsafe feature.
- 6 Programmable reset functions with hold or pulse reset or both, and power supply on reset
- Programmable in 6 independent overlapping time ranges up to 120 seconds.
- Direct interface with DC three-wire NPN sensor.
- High speed electronic reset.
- High repetitive accuracy.
- Time adjustment on calibrated scale, 0-100%.
- 5A double pole relay output (10A SPDT offered on request).

## Description of Operation

The **ST-210** is a programmable multi-function, multi-range timer for high speed applications. Both the ON-cycle as well as the OFF cycle can be adjusted independently in 6 overlapping ranges. The unit interfaces directly with DC three-wire NPN sensors or potential free contacts providing high speed reset operation. The timer is reset by closing the contact between the reset input pin 5 and pin 7. If another reset occurs before the set time period has expired, the timers is set back to zero and a new timing cycle is initiated. This unit may be programmed to operate in one of the following modes:

**A. Pulse Reset:** When power is applied, the unit remains de-energised until a reset occurs. When the reset contact closes, the timing period T1 is initiated and the relay de-energised. When the timing period T1 has elapsed, the relay energises for second timing period T2. After T2 has elapsed, the relay de-energises. This sequence (T1 + T2) is referred to as the timing cycle. The relay remains de-energised until the next reset pulse.

**B. Hold Reset:** When power is applied, the unit remains de-energised until the reset contact is released. The release of the reset contact starts a single timing cycle (T1 + T2). If the reset contact is closed during or after the initial timing cycle (T1 + T2), the relay will de-energise. Once the reset contact is opened, another timing cycle (T1 + T2) is initiated.

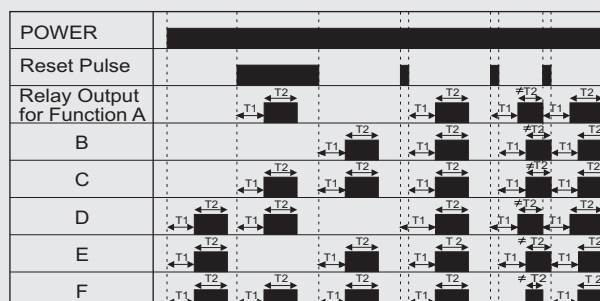
**C. Pulse + Hold Reset:** When power is applied, the unit remains de-energised until a reset occurs. When the reset contact closes, the first timing period T1 is initiated with the relay de-energised. When T1 has elapsed, the relay energises for the second timing period T2. When the reset contact opens, another timing cycle (T1 + T2) is initiated.

**D. Power Supply + Pulse Reset:** When power is applied to the unit, the first timing period T1 is initiated and the relay remain de-energised. When T1 has elapsed, the relay energises for the second timing period T2. If the reset contact is closed after the initial timing cycle, another timing cycle (T1 + T2) is initiated.

**E. Power Supply + Hold Reset:** When power is applied to the unit, the first timing period T1 of the cycle is initiated and the relay remains de-energised. When T1 has elapsed, the relay energises for the second timing period T2. If the reset contact is closed during or after the initial timing cycle (T1 + T2), the relay will de-energise. Once the reset contact is opened, another timing cycle (T1 + T2) is initiated.

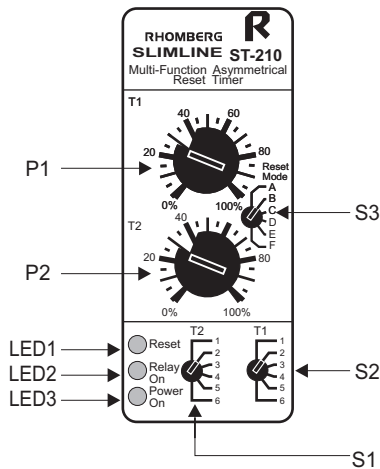
**F. Power Supply + Pulse + Hold Reset:** When power is applied to the unit, the timing cycle (T1 + T2) is immediately initiated. Should the reset contact be opened or closed during or after the initial timing cycle, a new timing cycle (T1 + T2) is initiated.

## Operational Diagram





## Description of Controls



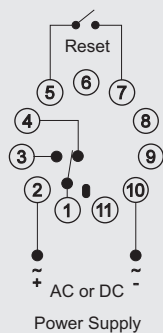
- P1: The **time setting of the first cycle T1** is adjusted on P1. Maximum setting of 100% corresponds with the time scale selected on S1.
- P2: The **time setting of the second cycle T2** is adjusted on P2. Maximum setting of 100% corresponds with the time scale selected on S2.
- S1: The **time range** of the first cycle is set on S1.
- S2: The **time range** of the second cycle is set on S2.
- S3: The **reset mode** is set on S3.
- LED 1: The LED marked **“Reset”** illuminates each time the reset input is activated, i.e. The reset contact is closed.
- LED 2: The LED marked **“Power on”** illuminates when power is applied to the unit.
- LED 3: The LED marked **“Relay on”** illuminates when the relay is energised.

## Wiring and Connection

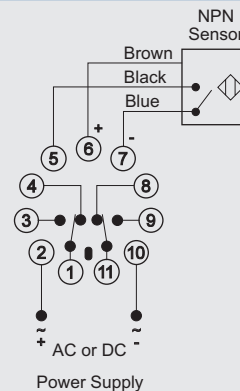
Power Supply	
Phase/Positive	Pin 2
Neutral/Negative	Pin 10

Relay Contacts SPDT	
Normally open	1 + 3
Normally closed	1 + 4
Relay Contacts DPDT	
Normally open	1 + 3
Normally closed	1 + 4
Normally open	11 + 9
Normally closed	11 + 8

Reset Input
Limit switch or contact to be connected between pin 5 and pin 7
<b>DC NPN Sensor:</b>
Brown wire to be connected to pin 6 (+)
Blue wire to be connected to pin 7 (-)
Black wire to be connected to pin 5
<i>Note: For extended wiring, screened wire is recommended to eliminate erratic switching due to noise or electromagnetic interference. The screen should be connected to pin 7 or earth.</i>



**APPLICATION 1**  
Reset with a dry contact or switch



**APPLICATION 2**  
Reset with a NPN DC sensor

## Technical Specifications

POWER SUPPLY	
<b>AC:</b>	Supply voltage: 12, 24, 110, 230, 400, 415, 525V ±10% Isolation (reset to power supply): 2kV Power consumption: 3VA (approx.) 6VA for 400, 415, 525V (approx.)
<b>DC:</b>	Supply voltage: 10-30V, 48, 60, 110V DC ±15% Isolation: no galvanic isolation Power consumption: 100mA (10-30V) 30mA for higher ranges

RESET INPUT	
Reset time:	6ms
Short circuit current:	2mA
Open circuit voltage:	8,2V
12V DC Output: Voltage tolerance:	10-15V DC
Source current:	30mA (max.)

Switch Position	Time Ranges:
1	- up to 1,8s
2	- up to 7,5s
3	- up to 15s
4	- up to 30s
5	- up to 60s
6	- up to 120s