ST-110/ST-111 (NPN)
ST-112/ST-113 (PNP)

Electronic Reset Timer

SLIMLINE
MONITORING RELAYS

ORDERING CODE

TYPE	MODEL	VOLTAGE	POWER SUPPLY	RELAY CONTACTS
ST	110	230V	AC	DP

SEE PAGE 60 FOR ORDERING OPTIONS

Application Examples

- Safety control on elevator door closure.
- Control of access boom in multi storey car parks.
- Automatic starting of stand-by system.
- Off delay timer in conveyor and numerous other applications.
- Pile-up detection on canning or bottling lines.
- Energy saving in large corridors (buildings or mines) through delayed switching off of lights.
- Gap detection on canning or bottling lines.
- Low RPM under-speed or slip detection on conveyor belts.
- Extending of high speed impulses.
- Delayed release after sensor or limit switch operation.

Features

- Failsafe feature.
- Programmable functions: delayed ON, interval (one shot), both withhold or pulse reset.
- Programmable in six independent overlapping time ranges.
- Direct interface with DC three-wire NPN (ST-110/ST111) and PNP
- (ST-112/ST113) sensors.
- High speed electronic reset.
- High repetitive accuracy.
- Time adjustment on calibrated scale, 0-100%.
- 5A double pole relay output (10A SPDT offered on request).
- Time Ranges: ST-110/ST112: Up to 120 sec.
  ST111/ST113: Up to 240 min.
- Extended time ranges available up to 200 hours on special order.

Description of Operation

The **ST-110/ST-111/ST-112/ST-113** are programmable multi-range timers for high speed electronic reset applications. The ST-110/ST-112 covers a time range of 0,15 to 120 seconds while the ST-111/ST-113 covers a range of 10 seconds to 240 minutes. Time adjustment is provided in six overlapping ranges. The units interface readily with three wire NPN/PNP proximity sensors, potential free contacts or limits switches, providing high speed reset operation. The timer is reset by closing the contact between the reset inputs. If another reset occurs before the set time period has expired, the timer is set back to zero and a new timing cycle is initiated. The units can be programmed to operate in either one of the following modes:

1. Delayed On Operation, Hold Reset: When power is applied, the relay remains de-energised until reset occurs. When the reset contact is released, the timer starts running and the relay energises when the set time has elapsed. When the reset contact closes again, the relay switches off and the timer assumes a “reset and hold” mode. When the reset contact releases, the timer starts running, and the relay remains off until the set time has elapsed. When the set time has expired, the relay switches on until another reset occurs.

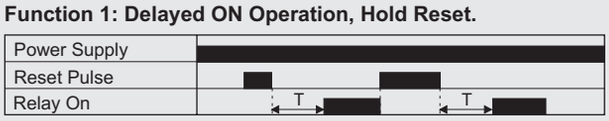
2. Delayed On Operation, Pulse Reset: When power is applied, the relay remains de-energised until a reset occurs. When the reset contacts closes, the timer starts running and the relay energises when the set time has elapsed. When the reset contact closes again, the relay switches off and the timer starts running immediately, irrespective of the duration of the reset contact closure. When the set time has elapsed, the relay switches on until another reset occurs.

3. Interval Operation, Hold Reset: When power is applied to the unit, the relay remains de-energised until a reset occurs. When the reset contact closes, the relay energises and the timer assumes a “reset and hold” mode. When the reset contact releases, the timer starts running and the relay remains energised until the set time has elapsed. When the set time has expired, the relay switches off until another reset occurs.

4. Interval Operation, Pulse Reset: When power is applied to the unit, the relay remains de-energised until a reset occurs. When the reset contact closes, the relay switches on and the timer starts running immediately, irrespective of the duration of the reset contact closure. When the set time has elapsed, the relay switches off until another reset occurs.

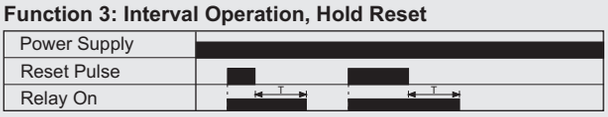
Operational Diagrams

Function 1: Delayed ON Operation, Hold Reset.



Function 2: Delayed ON Operation, Pulse Reset

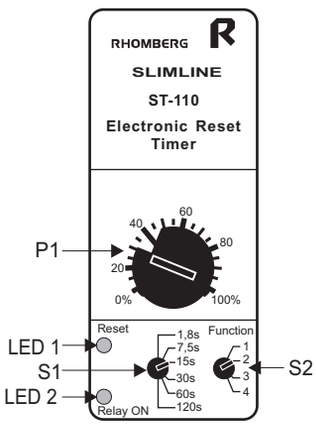
Function 3: Interval Operation, Hold Reset



Function 4: Interval Operation, Pulse Reset

T = set time

Description of Controls



P1: **The Time Setting** is adjusted on P1. Maximum setting of 100% corresponds with the time selected on S1.

S1: **The Time Range** is set on S1.

S2: **The Timing Function** is set on S2.
Position 1: Delayed ON operation, hold reset.
Position 2: Delayed ON operation, pulse reset
Position 3: Interval operation, hold reset.
Position 4: Interval operation, pulse reset.

LED 1: The LED marked **"Reset"** illuminates whenever the reset input is activated, ie. the reset contact is closed.

LED 2: The LED marked **"Relay ON"** glows dimly when power is on, but the relay is de-energised. The light illuminates brightly 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

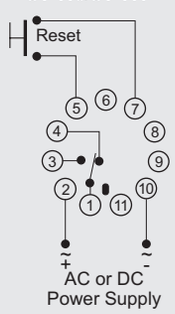
Reset Input

Limit switch or contact:
To be connected between pin 5 and pin 7.

DC sensor (NPN or PNP):
- Brown wire to be connected to pin 6 (+)
- Blue wire to be connected to pin 7 (-).
- Black wire to be connected to pin 5.

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.*

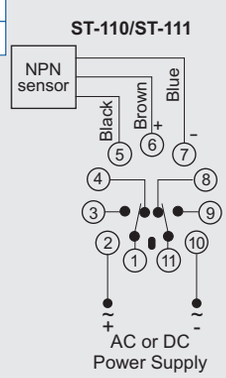
ST-110/ST-111



APPLICATION 1

Single pole (SPDT) reset with dry contact or switch.

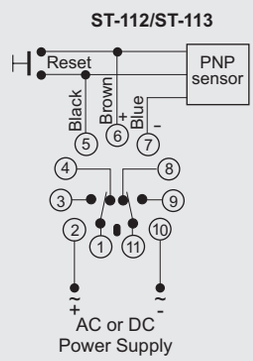
ST-110/ST-111



APPLICATION 2

Double pole (DPDT) reset with DC sensor (NPN)

ST-112/ST-113



APPLICATION 3

Double pole (DPDT) reset with dry contact in parallel with a PNP sensor

Note: *DPDT supplied as standard. For further information on sensor refer to our Detechtor Catalogue.*

Technical Specifications

POWER SUPPLY

AC: Supply voltage: 12, 24, 110, 230, 400, 415, 525V ±15%
Isolation (reset input to power supply): 2kV
Power consumption: 3VA (approx.)
6VA for 415, 525V (approx.)

DC: Supply voltage: 10-30V, 48,60,110V ±15%
Isolation: no galvanic isolation
Power consumption: 100mA (10-30V),
30mA for higher ranges.

ST-110/112

Switch S1	Time Ranges
1,8s	- Up to 1,8s
7,5s	- Up to 7,5s
15s	- Up to 15s
30s	- Up to 30s
60s	- Up to 60s
120s	- Up to 120s

ST-111/113

Switch S1	Time Ranges
220s	- Up to 220s
7,5m	- Up to 7,5m
15m	- Up to 15m
60m	- Up to 60m
120m	- Up to 120m
240m	- Up to 240m

Extended time ranges available on special order:
- 6, 12, 5 and 25 hours
- 50, 100, and 200 hours

RESET INPUT:

Reset time: 2milliseconds
Short circuit current: 1mA
Open circuit voltage: 8.2V

12V DC OUTPUT:

Voltage tolerance: 10-15V DC
Source current: 30mA (max.)

Additional information in Section J, page 131.