

# ST-500

## Multi-start Attempt Unit

# SLIMLINE

MONITORING RELAYS



### ORDERING CODE

TYPE	MODEL	VOLTAGE	POWER SUPPLY	RELAY CONTACTS
ST	500	230V	AC	DP

SEE PAGE 60 FOR ORDERING OPTIONS

## Application Examples

- Repeated starting attempts of standby generator sets with start failure alarm output.

## Features

- Programmable number of starts: 3 to 8.
- Adjustable cranking time: 1 to 10 seconds.
- Starts failure alarm output.

## Description of Operation

The **ST-500** is designed to initiate repetitive starting of standby generator sets. The maximum number of start attempts and the cranking time are adjustable.

**Starting:** When power is applied to the ST-500, the starter relay will energise to initiate the first start attempt. If power supply to the ST-500 remains uninterrupted, the first attempt will be followed by a succession of starts with pauses in between. The cranking time is equal to the pause and can be adjusted. If the start attempt is successful, power supply to the ST-500 should be interrupted as soon as the generator set is running, thus preventing further cranking of the starter motor.

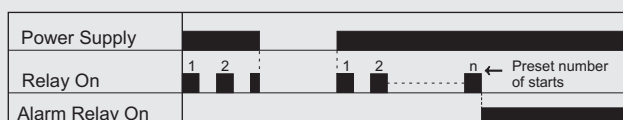
**Starter Failure Alarm:** If the generator set fails to start

after the set number of attempts, the starter sequence will be terminated and the start failure alarm relay will energise.

**Generator Start-up Detection:** Successful start-up can be detected by:

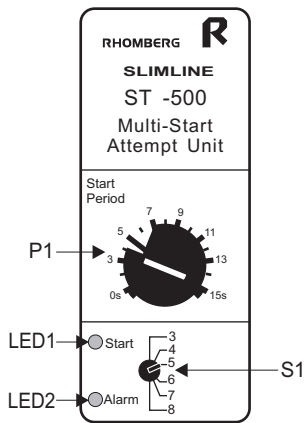
- Monitoring the output RPM of the generator set with the SC-320 tachometer relay.
- Monitoring the output frequency of the generator set with the SP-320 frequency Monitor.
- Monitoring the output voltage of the generator set with the SP-220 or SP-230 voltage comparator.

## Operational Diagram





## Description of Controls



P1: The **Cranking Time** is adjusted on P1.

S1: The **Maximum Number of Start Attempts** is set on S1.

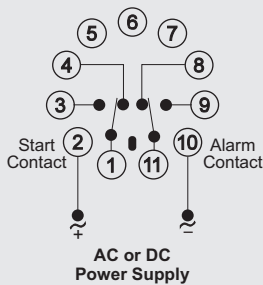
LED1: The green LED marked **“Start”** will illuminate whenever the start relay energises.

LED2: The red LED marked **“Alarm”** will illuminate when the start failure alarm relay is energised.

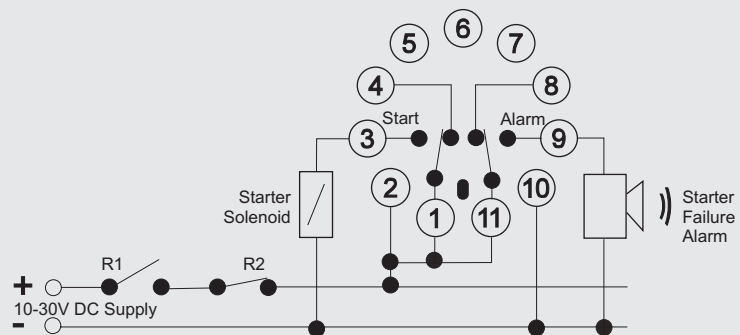
## Wiring and Connection

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

Start Relay	
Normally open	1 + 3
Normally closed	1 + 4
Alarm Relay	
Normally open	11 + 9
Normally closed	11 + 8



**APPLICATION 1**  
Standard connection



**APPLICATION 2**

Typical wiring:  
R1 = Mains failure contact, closing when starting is required.  
R2 = Start inhibit contact, opening when the generator set has started (see “Generator start-up detection” in Description of Operation)

## Technical Specifications

### POWER SUPPLY

**AC:** Supply voltage: 48, 60, 110, 230V ±15%  
Power consumption: 3VA (approx.)

**DC:** Supply voltage: 48, 60, 110V ±15%  
Power consumption: 30mA

**AC/DC:** Supply voltage: 10 - 30V AC/DC  
Power consumption: 100mA

**RESET:** Power supply to be interrupted for at least 0,5 seconds.

**NUMBER OF STARTS:** 3 to 8 (programmable).

**DURATION OF START ATTEMPT:** Adjustable from 1 to 10 seconds.

**DURATION OF PAUSE:** Equal to set duration of start attempt.