

## Commissioning & Testing

### SR 4000 Speed Relay



*Why Accept Anything Less?*

**Commissioning and testing must only be carried out by a qualified and competent technician who is fully familiar with the plant to which the “Rotech” equipment is installed.**

1. The SR 4000 Speed Relay monitors the speed of a drive and gives a signal if the speed of the drive falls below or rises above its normal running speed, the output relay of the SR 4000 can be connected to give a variety of control functions.
  - 1.1 The output relay can be connected to sound an alarm, bring on a warning light, etc
  - 1.2 Can be connected into the motor control circuit to switch off / trip out the drive motor.
  - 1.3 It can be connected into the motor control circuit of a conveyor, machine, etc, preceding the drive to which it is fitted, to stop the delivery of material, etc to the drive that has slowed down or stopped.
  - 1.4 With the use of additional control relays and / or timers the above functions can be combined, plus many others created.
2. Use of the automatic start up delay is optional, this feature is normally only required when the SR 4000 is connected as in 1.2 above and the time taken to reach normal, running speed is several seconds longer.

#### **SETTING UP**

1. Check that all connections are correct and any links fitted to select the running speed range.
2. Turn the potentiometer on the SR 4000 Speed Relay fully anti – clockwise.
3. Start the drive.
4. “Supply On” and “Relay On” indicators should be illuminated and “Input” indicator should be pulsing or partly illuminated.
5. Turn the potentiometer slowly clockwise until the “Relay On” indicator extinguishes.
6. Now turn potentiometer anti – clockwise until “Relay On” indicator just illuminates.
7. The SR 4000 Speed Relay is now set to de- energise if the speed of the drive decreases below that set on the potentiometer.
8. If the drive is subject to temporary short period decreases in speed that you wish to ignore, the potentiometer can be turned further anti- clockwise to say 80% or 70% etc, of normal speed, the SR 4000 Speed Relay will then only de – energise if the speed of the drive falls below this setting.
9. Test by starting and stopping the drive, when running normally “Relay On” indicator will be illuminated, observe that when the stop button is pressed, as soon as the drive speed decreases below that set on the potentiometer, the “Relay On” indicator extinguishes.



# Testing & Troubleshooting

## SR 4000 Speed Relay

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**IMPORTANT- All connections and dis-connections must be made with mains power supply switched off.**

- 1 Under normal running conditions "Supply On" and "Relay On" indicators should be illuminated.
2. "Input" indicator should be observed to pulse on and off when the drive is running slowly. At higher speeds on/off pulses become blurred and indicator is illuminated but not at full brightness. When fitted to higher speed drives the input can be tested by stopping drive and observing that at final few rpm before stopping "Input" indicator pulses on and off. When stopped "Input" indicator can be in either on or off condition. If no input signal is observed, check connections to shaft encoder are correct, if input signal is still not observed proceed to 6.
3. If input signal is present but the SR 4000 cannot be set up correctly then proceed as follows:-
  - 3.1 Turn potentiometer fully clockwise, if "Relay On " indicator does not extinguish, then the speed range selected is to low, change speed range links on terminals to select a higher range.
  - 3.2 Turn potentiometer fully anti-clockwise, if "Relay On" indicator is not illuminated then speed range selected is to high, change speed range links on terminals to select a lower range.
4. "Relay On" indicator extinguishes but does not stop drive motor, check correct connections have been made to SR 4000 relay terminals (no contacts 4 & 5) and that all external connections to motor control circuit are correct.
5. Testing the SR 4000 Speed Relay
  - 5.1 NON- W Types (DC Sensors) Only
    - Disconnect shaft encoder connections to terminals 7, 8 & 9
    - Disconnect any speed range links to terminals 10, 11 & 12
    - Connect a small switch or push button between terminals 8 & 9
    - Simulate input pulses by switching on and off
    - "Input" indicator should illuminate / extinguish and "Relay on" indicator should illuminate.
    - Set switch to off position, "Relay On" indicator should extinguish (on low speed units this may take several seconds)
  - 5.2 "W" Types (AC Sensors)
    - Disconnect shaft encoder connections to terminals 1 or 2 & 3
    - Disconnect any speed range links to terminals 10,11 & 12
    - Connect a small, insulated switch or push button between terminals 2 & 3
    - Simulate input pulses by switching on and off
    - "Input" indicator should illuminate / extinguish and "Relay On" indicator should illuminate
    - Set switch to off position, "Relay On" indicator should extinguish (on low speeds this may take several seconds)
6. Satisfactory completion of the above tests indicates that the SR 4000 Speed Relay is operating correctly
  - If when the shaft encoder is re connected the system is still not operational, then the problem is either with the installation cables or the shaft encoder
  - See Shaft Encoder installation data sheet for information on testing Shaft Encoders.