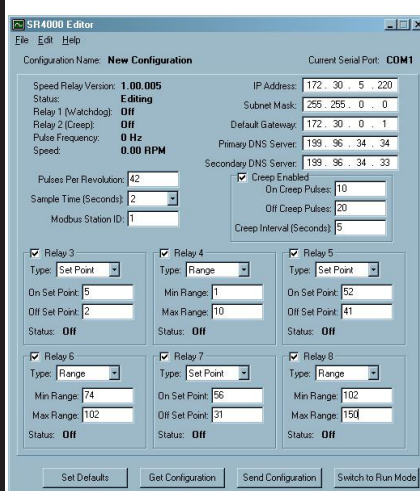


FEATURES

- Creep Detection
- Watchdog
- 8 Control Output Relays (1 creep, 1 watchdog, 6 with speed settings)
- Modbus TCP/IP Data Port
- RS-232 Serial Edit Port
- LCD Display for Speed (RPM) and Raw Frequency (Hz.)



Speed Relay 4000 Editor

DESCRIPTION

The RPM detector is a laser-based sensor that sends pulses based on the speed of a rotating shaft wrapped with reflective tape. The number of pulses per revolution is used in a timed calculation to derive the number of revolutions per minute (RPM). The serial edit interface allows you to select how often samples are taken (1, 2, 5, or 10 seconds) and how many pulses per revolution for a particular shaft size.

Creep detection is based on the number of pulses received within a given time period. There are three parameters for this feature that can be changed using the Serial Edit Port: Creep On Pulses, Creep Off Pulses, and the Creep Off Timer. The Creep relay is energized whenever the number of Creep On Pulses is exceeded. The Creep relay will only be de-energized when the Creep OFF Timer has expired with less than the Creep Off Pulses.

You can specify separate energization and de-energization speeds for each of the 6 relays. The way each relay is used will depend on the mode selected. There are two modes called 'Range' and 'Setpoint' when are defining relay parameters.

Setpoint Mode:

You define at what speed the relay is de-energized, and at what speed the relay is energized. The OFF RPM setpoint must be less than the ON RPM setpoint. For example, if your setpoints were 25 RPM de-energized and 50 RPM energized, then the algorithm would work as follows. When increasing speed from 0 the relay is off. When it reaches 25 RPM the relay is still de-energized. When it gets to 50 RPM the relay is energized. Any speed above 50 RPM, the relay stays energized. When the RPM decreases, the relay will not de-energize until the speed is less than or equal to the OFF RPM setpoint (25 RPM in this case).

Range Mode:

You define at what speed the relay is energized and at what speed the relay is de-energized. The ON RPM must be less than the OFF RPM. For example, you could define that relay 1 energizes at 25 RPM and de-energizes at 50 RPM. This creates an RPM range in which the relay is energized.

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HIGHLIGHTS

The Speed Relay 4000 (SR4000) is based on a high-speed ARM™ processor. It is designed to function as an RPM detector for a rotating shaft. The number of pulses from the laser detection device is translated into RPM that is monitored by the application running on the ARM processor. The RPM and frequency are displayed on an LCD display on the enclosure. There are eight relays on the SR4000. The device can detect creep and energize the creep relay. A Watchdog relay is energized while the SR4000 is active. The other 6 relays can be activated at chosen speed settings. The RPM can be sent to a SCADA host via MODBUS TCP/IP protocol.

SR4000 SPEED RELAY

HIGHLIGHTS

The Watchdog relay will be energized while the SR4000 is operational. When the SR4000 is in the edit mode, the Watchdog relay will be de-energized.

There is a RS-232 Serial Edit Port for configuring the parameters. This port allows you to set all the necessary parameters for the speed relay. All parameters are stored in non-volatile memory. No special software is required to use the Edit Port. Use a terminal program such as MS HyperTerm to configure the parameters.

There is an Ethernet port (RJ-45) that can be used to get data from the SR4000 over Modbus TCP/IP. You initialize the IP information and Modbus ID from the Serial Edit Port.

The LCD display will show two values, the calculated RPM and the raw HZ from the detection device used.

ELECTRICAL DATA

Input Power Options:
24VDC, 48VDC,
125VDC, 110VAC

Operation Temperature:
-20C to 70C

Sensing Distance:
25 to 610mm (~ 1 to 24 inches)

Speed Range:
0 to 3 kHz

Power Consumption:
20Watts (Maximum)

8 SPDT Relays
277VAC/30VDC at 3A across con-
tacts

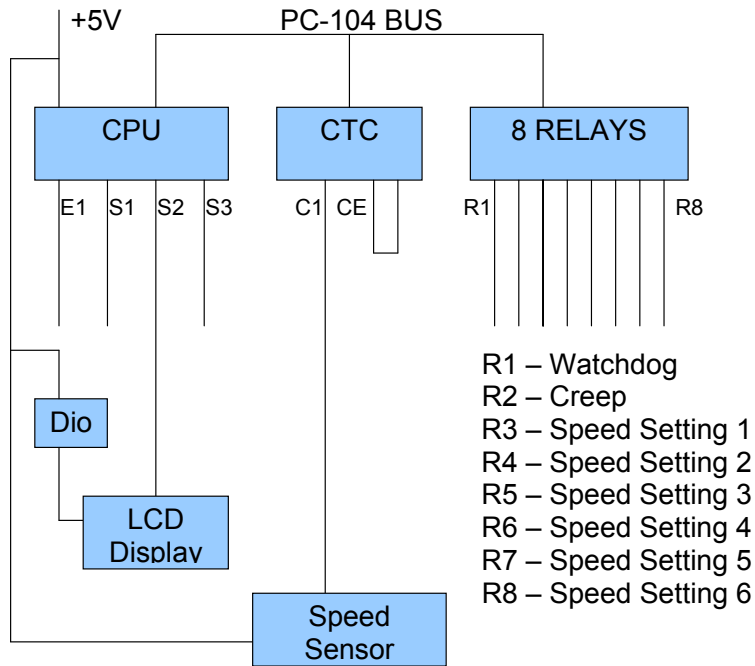
Reflective Tape Speed Sensor
Internally Powered

LCD Display
Internally Powered

MECHANICAL DATA

Enclosure: NEMA 12, Wall Mount,
12 L x 12 W x 6 H inches

Speed Relay 4000



- R1 – Watchdog
- R2 – Creep
- R3 – Speed Setting 1
- R4 – Speed Setting 2
- R5 – Speed Setting 3
- R6 – Speed Setting 4
- R7 – Speed Setting 5
- R8 – Speed Setting 6

- E1 – Ethernet RJ45 10/100 Modbus Slave
- S1 – Serial RS-232 Debug Port 115200
- S2 – Serial RS-232 LCD 9600
- S3 – Serial RS-232 EDIT 9600

- C1 – Input Counter (TTL signal and common)
- CE – Enable Counter Jumper

- R1-R8 – Relays (NO, NC, Common)

Speed Relay 4000
Schematic

