TACHOMETER WITH SCALE FACTOR MODEL CT202D

Features

- 4 digit bright 7 segment display for RPM
- Scale factor settable for different rotors with different number of keyways/teeth
- Two separate alarm outputs user settable
- Suitable for use with electromagnetic sensor. Can be modified for proximity sensor.
- Front panel LED indication for signal status
- Rear configuration lock to prevent tampering with configuration,
- Aesthetically designed front panel with touch type membrane switches housed in ABS cabinet

Specifications:

- Display : 4 digit 7 segment Red LED display for RPM
  2 LEDs to indicate relay status
  1 LED to indicate input signal status
- Range : 20 to 9999 RPM
- Displayed RPM : (RPM of rotor x No of teeth) ÷ Scale Factor
- Sensor : Electromagnetic sensor (Can be factory modified for proximity sensor)
- Scale Factor : 1-99 user settable depending on number of teeth/keyways on rotor being used
- Alarm Limits : 2 separate alarm outputs with user settable limits
- Relay Outputs : 2 sets of NO-P-NC contacts of 5 Amp/220V AC contact rating
- Alarm Logic : Relay 1 ON when RPM > Set Point-1
  Relay 2 ON when RPM > Set Point-2
- Configuration Lock : By rear jumper (open to lock) for preventing tampering with the scale factor
- Accuracy : +/- 1 RPM in the range of 20 to 9999 RPM
- Size : 96mm x 96mm
- Depth : 180mm
- Supply : 220V AC ± 15%

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REAR TERMINAL CONNECTIONS

- **10,11,12: L,N and E:** Line and Neutral terminals to connect 220V AC mains. Earth terminal is connected to mains Earth
- **13,14,15: NO-P-NC (Limit-1) :** Normally Open, Pole, Normally closed contacts of Relay-1
- **16,17,18: NO-P-NC (Limit-2) :** Normally Open, Pole, Normally closed contacts of Relay-2
- **2,3: Prog Lock Terminals:** After settings have been made, remove jumper to prevent changes in Scale Factor from front panel
- **7,8,9: +12v-SIG-GND:** Input signal from the Proximity sensor.

DIRECTIONS FOR CONFIGURATION

- Connect 220V AC mains on rear terminals marked as 'L' & 'N'. Ensure that the earth on terminal marked 'E' is connected to Mains Earth. This reduces the problems of electrical noise to the equipment increasing its safety and reliability.
- Ensure that the jumper on rear terminals 'Prog. Lock' is connected. This allows changes to be made to the settings

- **Set Point -1 Setting**
  - Press the Mode switch till the green LED marked SET-1 comes ON. The display indicates the current Set Point-1.
  - Use the Increment and Decrement switches to change the value.
  - The range is 0-9999 RPM
  - Logic for Relay: Relay-1 ON when RPM > Set Point-1
  - Front panel LED marked RL-1 also comes ON
  - After changes have been made, press Mode switch to save setting and go to next.

- **Set Point-2 setting**
  - After the previous setting, the green LED marked as SET-2 comes ON. If not, press the Mode switch till the SET-2 LED comes on. The display indicates the current Set Point-2
  - Use the Increment and Decrement switches to change the value.
  - The range is 0-9999 RPM
  - Logic for Relay: Relay-2 ON when RPM > Set Point-2
  - Front panel LED marked RL-2 also comes ON
  - After changes have been made, press Mode switch to save setting and go to next.

- **Scale Factor Setting**
  - After the previous setting, the green LED marked as SCALE comes ON. If not, press the Mode switch till the SCALE LED comes on. This represents the number of teeth in the rotor.
  - Displayed RPM = (RPM of rotor x No of teeth) ÷ Scale Factor
  - Use Increment and Decrement switches to make changes. The rear Prog Lock jumper needs to be open for changes to be made.
  - After settings have been done, press Mode switch again. The display now returns to indicate the current RPM.

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NOTE: After changes have been made, ensure that the rear jumper on Prog Lock terminals is removed to prevent any changes in the Scale Factor from the front panel.

DIRECTIONS FOR USAGE

- Once the instrument has been configured as detailed above, it is ready to use.
- A cut-out of 92mm x 44mm is required for mounting the panel equipment. The instrument is pushed in from the front and held tightly in the panel by screwing the two side clamps from the rear.
- To connect the signal and supply wires for the digital encoder, refer to the pin-connections label on the top of the instrument or as detailed in the manual.
- Ensure that the shield of the sensor cable is connected to the signal negative.
- Mount the Proximity sensor in the same plane as the rotor. Ensure that the front tip of the sensor is only about 3-5mm away from the teeth of the rotor. The Electromagnetic sensor should also be mounted rigidly to prevent any shake during operation.
- The sensor wires should be well separated from the AC wiring and the wiring to the rear relay contact terminals. This helps to reduce noise to give a more stable reading of the RPM displayed.
- When the equipment is switched ON, the display indicates the current RPM. This usually takes about 1-2 seconds on power On.
- The Signal LED marked as SIG glows with the input signal. For high value of RPM, it may appear as permanently ON.

Maintenance

- If the displays are blank and no LED is glowing
  - Remove the rear two screws and push the terminal plate to slide out the equipment.
  - Remove the cartridge fuse of 200mA and check for continuity. If open, then replace.
  - Check the continuity of the mains input. This is done by first removing the external AC wiring and measuring the resistance across L and N rear terminals. The resistance should be 1KΩ approximately. If open, then either is transformer primary open, or the series choke is open. Check the continuity.
  - If the mains continuity is present, then confirm the 5V DC at Pin 3 of 7805 regulator. This is easily visible as it is the regulator attached to the heat sink. Measure the voltage between Pins 2 and 3 of the regulator.
  - The main microcontroller is in a 40 Pin IC socket. Just press the IC down to ensure that it has not come out of the socket.

For any other faults, please consult the manufacturer and send product for servicing.

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