

Trane TR-200 Series Start-Up Check List



1. Reference Material

- a. TR-200 Installation, Operation and Maintenance Manual.
- b. Customer Connection Diagram (specific for the order).
- c. Schematic Diagram (specific for the order).

2. Pre-Installation Checks

- a. Compare the drive model number to what was ordered.
- b. Be sure the following are for the same voltage:
 - i) Drive.
 - ii) Power line.
 - iii) Motor.
- c. Record the following motor data:
 - i) Voltage
 - ii) Frequency
 - iii) Full load current
 - iv) Full load speed
 - v) Power (Parameter 0-03 factory default is INTERNATIONAL, parameters related to kW will be accessible and HP parameters will be inaccessible. Recommend changing parameter 0-03 to NORTH AMERICAN to access HP parameters.)
- d. Be sure that rated drive current is greater than or equal to the total full load current of all motors which will be driven at once.
- e. Check motor wiring:
 - i) A disconnect or contactor between the drive and the motor may need to be interlocked to the drive or else nuisance trips may occur.
 - ii) Multiple motors have individual motor overload and short circuit protection.
 - iii) No power factor correction capacitors between the drive and the motor.
 - iv) Two speed motors must be wired permanently for full speed.
 - v) Y-start, Δ -run motors must be wired permanently for run.
 - vi) Part winding start motors must be wired permanently for run.

3. Installation Checks

- a. Verify appropriate short circuit protection is provided at the input of the drive. Specific fuse requirement necessary for UL (see instruction manual)
- b. Measure phase to phase line voltage and ensure measured voltage is within drive specification (see instruction manual)
- c. Measure phase to ground voltage. If any measured phase voltage is greater than 60% of phase to phase voltage, RFI circuit will automatically adjust. See parameter 14-50.
- d. Environmental concerns.
 - i) Suitable for drive enclosure type, NEMA1, NEMA12
 - ii) Max 95% relative humidity, non-condensing.
 - iii) 14°F to 113°F ambient temperature range (typical).
 - iv) 3300 foot maximum elevation with no de-rating.
 - v) Non-corrosive environment or unit conformal coated.
- e. Mounting
 - i) No heat sink fins exposed out the back.
 - ii) Drive mounting clearances observed (see instruction manual)
 - iii) No excessive vibration.
 - iv) Keep dirt and debris out of the drive
 - v) Use knock-outs provided or conduit entry plates for wire entry. (gland plates)
- f. Connections and Wiring
 - i) Check all wiring connections are secure.
 - ii) Each drive grounded individually, no daisy chain grounds.
 - iii) 0-10Vdc and mA signal wires protected from noise.

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- iv) Separate runs for input power, motor power, and control wiring.
- v) Note some control connections may be 115VAC.
- vi) Motor thermistor wires separate from load wires.

4. Powering Drive

- a. Double check all wire connections (correct terminal connection, correct tightness)
- b. All RUN commands off, all speed commands set to zero.
- c. Switch Power on.
- 1. d. Display and PWR LED on.

5. Setting Up the Drive for the Motor — *This step is essential!*

- a. Parameter 1-03, TORQUE CHARACTERISTICS (For single motor applications factory default is ok - AUTO ENERGY OPTIMUM. VT. For multiple motors change to VARIABLE TORQUE.)
- b. Parameter 1-20 kW or 1-21 HP, MOTOR POWER parameter 0-03 will determine if parameter 1-20 -OR- parameter 1-21 is accessible, other parameter is hidden
- c. Parameter 1-22, MOTOR VOLTAGE
- d. Parameter 1-23, MOTOR FREQUENCY
- e. Parameter 1-24, MOTOR CURRENT
- f. Parameter 1-25, MOTOR SPEED
- g. Parameter 1-29, run AUTOMATIC MOTOR ADAPTATION

6. Check Additional Parameter Settings

- a. Parameter 4-12, MIN. FREQUENCY (6Hz for fans, 18Hz for pumps)
- b. Parameter 4-14, MAX. FREQUENCY (typically set to 60Hz)
- c. Parameter 3-41, RAMP 1 UP TIME (60 sec for fans, 10 sec for pumps)
- d. Parameter 3-42, RAMP 1 DOWN TIME (60 sec for fans, 10 sec for pumps)
- e. Parameter 5-12, COAST INVERSE (sets function of Terminal 27 – set to NO OPERATION if external signal not required)

7. Operational Tests — HAND

- a. Check the motor's rotation from the drive, parameter 1-28 [ENABLE]. If incorrect, reverse two leads between the drive and the motor.
- b. If a bypass is provided, check the motor's rotation in bypass mode. If incorrect, reverse two input power lines. This will not change drive motor rotation.
- c. Accelerate the motor to full speed and verify operation.
- d. Decelerate the motor to a stop and verify operation.
- e. Slowly operate the motor over the speed range and check for resonance. Adjust parameters 1-64 [0-500%] & 1-65 [s] and 4-60.0 thru 4-64 to eliminate resonance.

8. Operational Tests — AUTO, Open Loop (parameter 1-00 set to OPEN LOOP)

- a. Parameter 3-02, MIN. REFERENCE (usually set at zero)
- b. Parameter 3-03, MAX. REFERENCE (usually the same as parameter 4-14)
- c. Ensure that the drive follows run/stop commands from the system.
- d. Ensure that the drive follows the speed command from the system.

9. Operational Tests — Auto, Closed Loop (parameter 1-00 set to CLOSED LOOP)

- a. Set up the PID control parameters as required. (Use Quick Menu>Function Setups>Closed Loop Settings>Single Zone Int. Setpoint (typical))
- b. Ensure the drive follows run/stop commands from the system.
- c. Ensure the drive responds to the feedback signal from the system.

10. Final Adjustments

- a. Set up parameter 1-73, FLYING START [ENABLED], if required.
- b. Copy parameters to other setups as required, parameter 0-51
- c. Copy parameters to the LCP, parameter 0-50 (select All to LCP)