



Scroll Solid State Module – Motor Protection Trouble shooting

There are five PTC (Positive Temperature Coefficient) internal thermistors connected in series that react with avalanching resistance in the event of high temperatures. Four of the thermistors are used to sense motor temperatures, and the fifth is used as a discharge temperature sensor. The thermistor circuit is connected to the protector module terminals S1 and S2.

When any thermistor reaches a limiting value, the module interrupts the control circuit and shuts off the compressor. After the thermistor has cooled sufficiently, it will reset. However, the module has a 30 minute time delay before reset after a thermistor trip.

Phase Protection

The phase protection capabilities of the INT69SCY Module will sense the correct phase sequence of L1, L2, and L3 incoming power. At completion of the compressor installation, the three phase power must be wired in the correct 120 degree phase sequence that will ensure the compressor will start and operate in the correct clockwise rotation.

When the Int69SCY trips on phase loss a delay of 5 minutes is activated and then a new attempt to restart. If all three phases are present then the compressor will continue to run, if not the module will lockout. There can be 10 attempts to restart before the module will lock out and then only can be reset by reestablishing incoming power to the module.

Module and Sensor Functional Check

To check for proper control circuit operation, the following procedure is recommended:

1. Disconnect power.
2. Disconnect one terminal either S1 or S2 on the module
3. Reapply power, the compressor should not start.
4. Disconnect power
5. Reconnect the sensor leads to the module
6. Reapply power, the compressor should start.

If the compressor fails to start after this procedure the sensor circuit and the correct phasing should be evaluated using the following procedures.

1. Disconnect power
2. Check Verify correct phase lead orientation.
3. Check all electrical terminal connections for possible loose or broken connections
4. Check the resistance of the sensors at S1 and S2 terminals. The resistance readings should be between 250 and 1250 ohms at room temperature. The trip resistance is 10,000 ohms or higher and reset resistance is 3000 ohms +/- 500 ohms.
5. Reapply power.

CAUTION: Use an Ohmmeter with a maximum of 9 VAC for checking, do not attempt to check continuity through the sensors with any other type of instrument. Any external voltage or current applied to the sensors may cause damage requiring compressor replacement.

The following field trouble shooting procedure can be used to evaluate the solid state control circuit.

1. If the compressor has been operating and has tripped on the protector, allow the compressor to cool for at least one hour before checking. This allows time for the motor to cool and the control circuit to reset.
2. Disconnect control circuit power to de-energize the module. Connect a jumper across the wires connected to the M1 and M2 terminals on the module. This will by-pass the module control contacts.
3. Reconnect control circuit power. If the compressor will not operate with the jumper installed, then the problem is external to the module. If the compressor operates with the module bypassed, but will not operate when the jumper is removed, then the module is defective.