

Model TM-1 Temperature Module

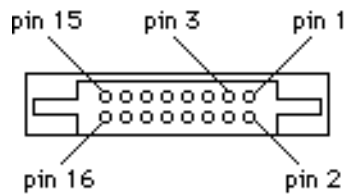
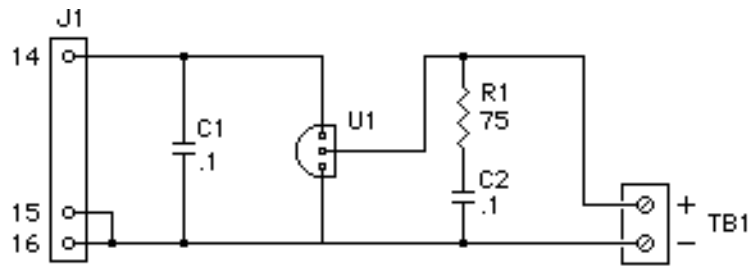
The Sine Systems model TM-1 Temperature Module allows monitoring of room temperature when used with the model RFC-1 Remote Facilities Controller. It is designed to be connected to, and used with, the model RP-8 Relay Panel.

To install the TM-1, remove the two Phillips head screws on the left end of the rear side of the RP-8 Relay Panel. Screw the two 1.5" spacers supplied with the TM-1 into the locations formerly occupied by the screws. Then, install the TM-1 Temperature module on the two spacers using the two removed screws. Install the supplied ribbon cable connector to the existing ribbon cable and insert the connector into J1 on the TM-1 module. To install the connector on an existing cable it will be necessary to temporarily remove the latch portion of the connector to get it on the cable. This is done by prying apart the latches on the ends of the connector and then pulling the connector apart. Connect a two-wire jumper from TB-1 on the TM-1 module to the desired telemetry channel, observing proper polarity.

Using an accurate thermometer located near the TM-1, calibrate the temperature reading for the appropriate telemetry adjustment trimmer for the channel. The telemetry should be calibrated directly in degrees. For example, if the room temperature is 72.5°, the telemetry should be calibrated to "0725" using factory-programmed channel setups, or "72.5 degrees" with user-programmable setups. When calibrated, the TM-1 will monitor room temperature from 5° to 230° with one tenth degree resolution. If an accurate thermometer is not readily available, the TM-1 can be calibrated with a fair degree of accuracy using a digital multimeter. The output voltage of the TM-1 is 10.00 millivolts per degree Fahrenheit. For example, if the voltage across the TM-1 output terminals is 0.7231 volts, the temperature should be calibrated to 72.3°. This technique will typically yield a calibration within $\pm 1^\circ$ of actual temperature.

If desired, the LM34 temperature sensor may be removed from the TM-1 board to allow temperature sensing at a different location from the RP-8 panel. However, it should be kept in mind that a potentially long set of wires is being added which is connected directly to the power supply in the RFC-1 and the susceptibility of the RFC-1 to high voltage transients will be increased. If extension leads are used with the sensor, the following precautions should be taken: First, foil shielded one-pair cable should be used (e.g. Belden 8451) and the shield (drain) should be used for the pin 15/16 connection. All three conductors, including the shield, should not be connected to station ground at any point. Moreover, there should be at least 1500 volts dielectric strength between station ground and any of the three conductors. This insures that the power supply in the RFC-1 continues to remain "floating" and that transients will not be coupled to it. The bypassing components consisting of C1, C2 and R1 should be duplicated on the end of the cable with the LM34. This is especially important in high RF fields.

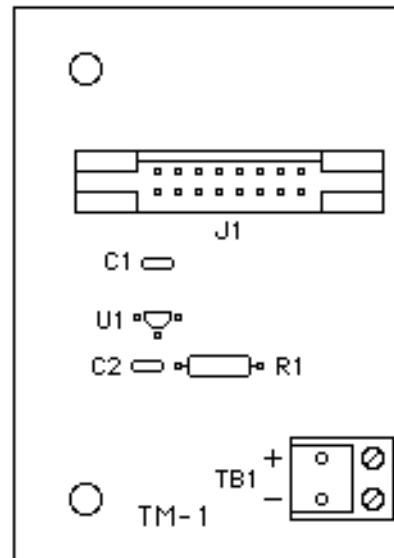
Do not ship the RP-8 Relay Panel with the TM-1 module attached to it. The mechanical load concentrated on the module and support spacers during shipment can cause damage.



J1 Front View

Parts List:

- R1 resistor, 75, 1/4 W, 5%
- C1 capacitor, ceramic, 0.1 μ F
- C2 capacitor, ceramic, 0.1 μ F
- U1 temperature sensor, LM34CZ



Temperature Module
Model TM-1