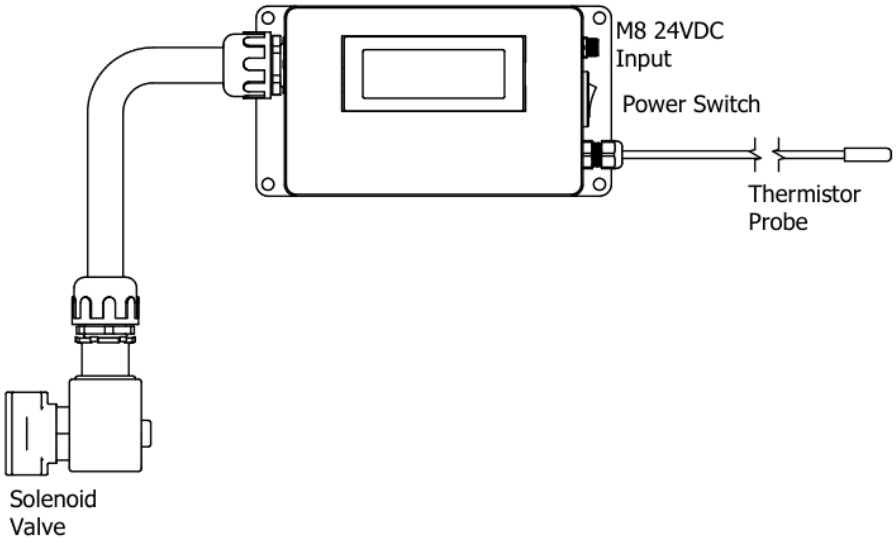
ETC™
ELECTRONIC TEMPERATURE CONTROL FOR COMPRESSED AIR
INSTALLATION AND MAINTENANCE



ETC Ratings

Power Supply Input: 24 VDC 1.5 Amps LPS or Class 2

Temperature Probe: Thermistor, 54" (1.37 m) cable

Max Probe Temperature: 392°F (200°C)

Enclosure Rating: UL IP65

Temperature Rating: -13°F to 140°F (-25°C to 60°C)

Solenoid Valve Pressure Rating: 5-275 PSI (0.34-18.96 Bar)

Max Fluid Temp: 150°F (66°C)

Valve Compatible Fluids: Air, Inert Gases, Water, No. 2 Oil or lighter.

Model 94025/94125/94225 (1/4 NPT)
(up to 40 SCFM / 1133 SLPM)

Model 94050/94150/94250 (1/2 NPT)
(up to 100 SCFM / 2832 SLPM)

Model 94075/94175/94275 (3/4 NPT)
(up to 200 SCFM / 5663 SLPM)

Model 940100/941100/942100 (1 NPT)
(up to 350 SCFM / 9911 SLPM)

THE CONTROLLER SHOULD NOT BE USED IN AN EXPLOSIVE OR FLAMMABLE AREA. PROTECTION PROVIDED BY THE EQUIPMENT MAY BE IMPAIRED IF USED WITH ACCESSORIES NOT PROVIDED OR RECOMMENDED BY EXAIR OR IS USED IN A MANNER NOT SPECIFIED BY EXAIR LLC.

EXAIR's ETC is an electronic temperature control that provides precise control of the EXAIR Cabinet Cooler System. The ETC monitors the temperature inside an electrical enclosure with a thermistor probe and opens the solenoid valve to supply compressed air to the Cabinet Cooler only when cooling is needed. Both the temperature at which cooling starts and the temperature at which it stops are set by the user, so the enclosure is held within the range that suits the equipment inside it without wasting compressed air. The backlit display is easily read from a distance and the probe is compact, which makes it simple to install in tight spaces.



The solenoid valve surface can become hot after prolonged use. Allow it to cool completely before touching.

940 Series Part Numbers

The digits following 940, 941, or 942 indicate valve size (25 = 1/4 NPT, 50 = 1/2 NPT, 75 = 3/4 NPT, 100 = 1 NPT), and a "-2" suffix means two solenoid valves instead of one. The prefix indicates power: 940XX ships as controller-only (customer supplies 24 VDC, 1.5A minimum), 941XX includes an AC/DC power brick (100-240 VAC input) with a NEMA 5-15P to C13 cable, and 942XX includes the same brick with bare leads instead. All models are otherwise identical in design and function, and on two-valve models both solenoids actuate together from a single output.

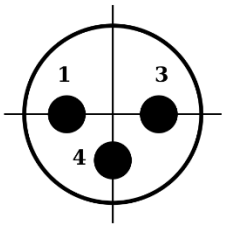
POWERING THE ETC

Use a 24 VDC power supply that is at least 1.5 Amps and suited for the environment in which the unit is installed. Verify the power supply is appropriate and certified for the installation environment. For indoor use and dry location applications, a power supply is available from EXAIR.

EXAIR offers two power supply options: model 902700 with a NEMA 5-15P line cord, and model 902800 with bare leads for hard-wired installations.

Power connects to the controller through the M8 connector. Pin 1 is +24 VDC, pin 3 is ground, and pin 4 is not connected.

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M8 Power Connector
(face view)

Pin 1 +24 VDC
Pin 3 Ground (0 VDC)
Pin 4 Not connected

INSTALLATION

1. Install EXAIR's Cabinet Cooler System by following the "Installation and Maintenance Sheet" that was included with that product.

2. Connect the compressed air supply to the ETC solenoid valve, paying attention to the flow direction arrow on the brass valve body (in and out). The solenoid valve should be located downstream from a filter and before the Cabinet Cooler. For ease of connecting the solenoid valve to the compressed air pipe, the electrical coil can be detached from the valve body by using a flat blade screwdriver to remove the metal clip that holds the coil to the valve body. Connect the compressed air line to the Cabinet Cooler and re-install the electrical coil, securing it to the valve using the clip. Take care to reinstall the spring washer and retaining washer in the correct locations.

3. Prior to the electrical hook up, install the ETC controller in a location that is convenient for adjustment of the temperature settings. Do not permanently wire the ETC. Do not position the ETC in a space where it is difficult to disconnect the power cord. It should not be mounted in direct sunlight. Always consider the best location that is convenient for the installation of piping air to the Cabinet Cooler as well as connecting the unit to a power source. Mounting holes of the ETC are located on the flanges on the sides of the enclosure. It is recommended that all four holes be used (if possible) for a secure mounting that will minimize breakage.

4. The ETC can be shipped with an AC/DC power supply and either a NEMA 5-15P to C13 cord or a bare-lead cord for easy hook up. The power supply is easy to use throughout the world as it accepts input voltages from 100V-240 VAC, and frequency of 50/60 Hz without having to change any internal connections of the controller. Always follow all necessary wiring codes along with the lockout and tagging procedure of your facility. Make sure the AC/DC power supply is suitable and rated for the environment it is being used in.

5. The temperature probe has a 54" (1.37m) cable. Use a wire tie wrap (not supplied) to neatly bundle any excess cable. Route the probe cable into the electrical enclosure through an existing entry or a suitable sealed fitting so that the enclosure rating is maintained.

Probe Placement

The probe is not sensitive to mounting orientation and can be positioned anywhere inside the electrical enclosure. Mount it near the equipment that is most sensitive to heat and away from the cold airstream leaving the Cold Air Distribution Kit, since air blowing directly on the probe will read colder than the enclosure and cause the Cabinet Cooler to shut off early. Do not kink the probe cable.

CONTROLLER SETUP

When the controller is powered on it starts at the main menu. The ETC has a single operating mode. Press "Program" to enter the settings, then use the "+" and "-" switches to set each value and press "Program" to advance to the next one:

1. Temperature Units. Select °F or °C. All displayed and stored values use the selected unit.

2. Cool Down Temperature. The temperature at which cooling begins. When the enclosure reaches this temperature, the solenoid valve opens and the Cabinet Cooler runs.

3. Turn Off Temperature. The temperature at which cooling stops. When the enclosure cools to this temperature, the solenoid valve closes and the Cabinet Cooler shuts off.

After the last value is entered, the screen returns to the main menu. Press "Start/Stop" to begin operation. The ETC will continue to cycle between the two temperatures until it is stopped or power is removed.

The Turn Off Temperature must be set lower than the Cool Down Temperature. Both values are adjustable within the range of **13°F to 176°F (-10°C to 80°C).**

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Selecting the Temperature Settings

Choose settings that keep the electronics in the enclosure operating without cooling further than necessary, which only wastes compressed air. For most applications a Cool Down Temperature of 90 to 95°F (32 to 35°C) is sufficient. Most electronic components are rated to 104°F (40°C), and some newer components are rated to 122°F (50°C); for those, a Cool Down Temperature of 104 to 111°F (40 to 44°C) is adequate. Check the manual for the equipment inside the enclosure for its maximum temperature rating.

The difference between the two settings determines how often the Cabinet Cooler cycles. A separation of about 4°F (2°C) is a good starting point. A narrower separation holds the enclosure closer to a single temperature but cycles the solenoid valve more frequently. A wider separation reduces cycling and compressed air use but allows a larger temperature swing inside the enclosure.

TROUBLESHOOTING

Controller Indicators

The three indicators are independent. Green indicates the ETC is running. Yellow indicates standby, either idle at the menu or being programmed. Red indicates the solenoid valve is open. Red appears only while green is on, and green stays on with it.

The screen does not light. Verify the power supply and the M8 connections.

The valve does not actuate. Confirm the ETC has been started with "Start/Stop" and that the enclosure temperature has reached the Cool Down Temperature. Verify the Turn Off Temperature is set below the Cool Down Temperature.

The Cabinet Cooler runs continuously. The heat load may exceed the capacity of the Cabinet Cooler, or the Turn Off Temperature may be set below what the system can reach. Verify the compressed air supply pressure and volume, and confirm the enclosure is sealed.

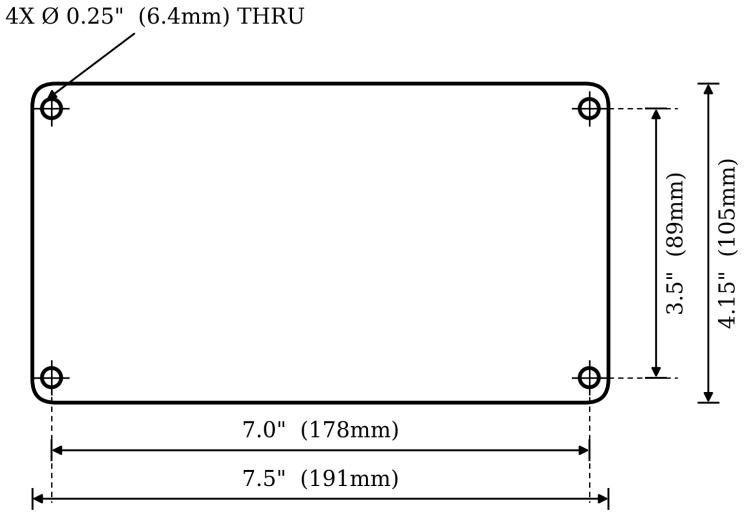
The Cabinet Cooler cycles too frequently. Increase the separation between the Cool Down Temperature and the Turn Off Temperature.

The displayed temperature does not match other equipment in the panel. Verify the probe is not in the cold airstream from the Cold Air Distribution Kit and is not in contact with a heat source or a cold surface. Reposition the probe as needed.

Readings or switching are inconsistent. The ETC may be located in an area with excess electronic noise. Separate the ETC controller, wiring, and probe cable as far as possible from the noise source(s).

MOUNTING

To mount the ETC position the enclosure with the flanged sides oriented vertically for mounting. **Before drilling or inserting screws, verify that no electrical wires, conduits, or other utilities are located behind the mounting surface.** Align the enclosure so that all four 1/4" holes in the flanges are accessible for fastening. Secure the enclosure using 1/4" machine screws with appropriate nuts or threaded inserts for the mounting surface or use 1/4" self-tapping screws when mounting directly to metal panels or walls. Tighten all fasteners evenly to ensure the enclosure is firmly mounted without over-torquing, which could damage the flanges or mounting surface.



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CLEANING, MAINTENANCE AND STORAGE

Periodically inspect the ETC unit, solenoid and temperature probe for damage. If any damage is observed, do not use the equipment and contact EXAIR for replacement parts as applicable.

Organic solvents such as paint thinner, as well as very acidic or basic solutions can damage the outer enclosure or graphic overlay of the controller. Clean with soft cloth or mild detergent.

When storing the ETC, make sure that the ambient temperature and humidity are within the rated values. If the ETC has been stored at an ambient temperature of -10°C or below, the unit must sit at room temperature for at least three hours before using it for the ETC to function properly.

EQUIPMENT ENVIRONMENTAL RATINGS

Installation Category II (Transient Over-voltage)
Pollution Degree 2 (Temporary conductivity caused by condensation)
Altitude Limit: 6,562 ft (2,000 m)
Humidity: 80% RH non-condensing
ETC controller is intended for indoor use only

WARRANTY

There is a one-year warranty against defects in workmanship and materials. Defective products must be returned prepaid for repair or replacement at EXAIR's option. This warranty applies under conditions of normal use but does not apply to defects that result from intentional damage, negligence or unreasonable use or exposure. The ETC has no serviceable parts internally. Warranty is void if there is evidence of tampering.

If you have any questions or problems, please contact an EXAIR Application Engineer at:

Toll Free: 1-800-903-9247 (US & Canada)
Toll Free Fax: 866-329-3924 (US & Canada)
E-mail: techelp@exair.com
Telephone: 513 671-3322 outside of US & Canada
Fax: 513 671-3363 outside of US & Canada
Website: www.exair.com

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