MITSUBISHI ELECTRIC
COOLING & HEATING

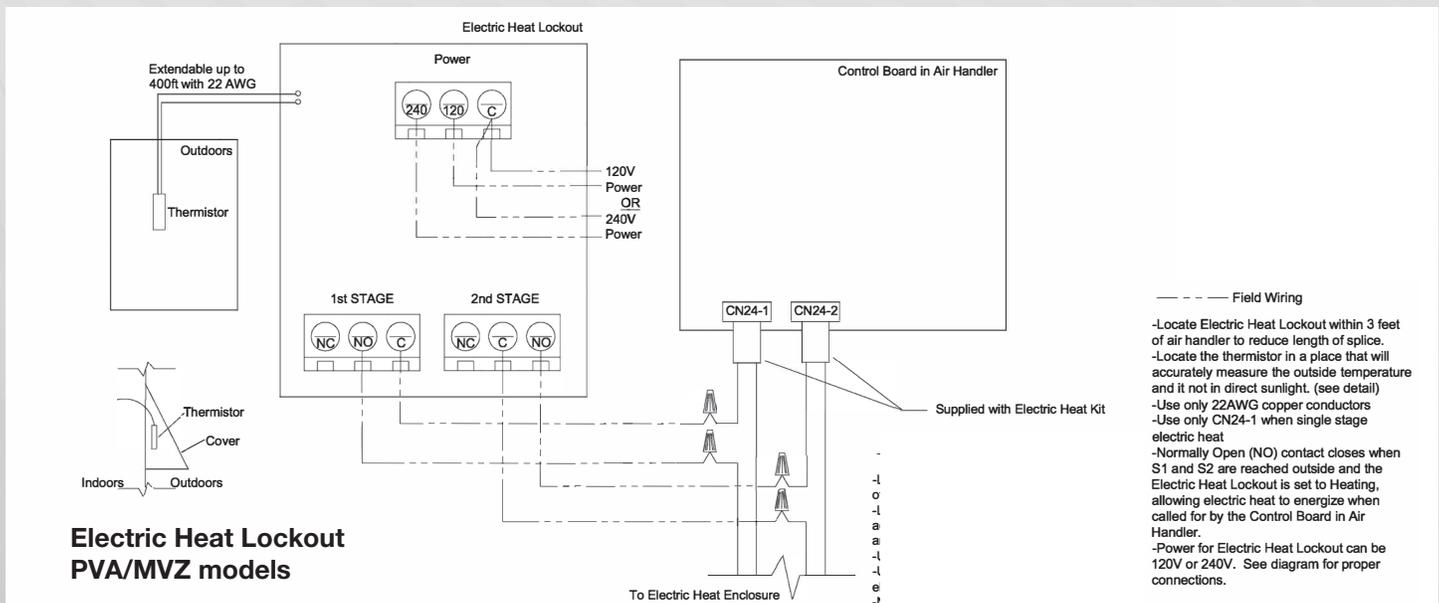# ELECTRIC HEAT LOCKOUT CONTROLLER

ETC-211000-MIT

Product Overview

The ETC-211000-MIT is a digital two stage temperature control. It is designed to be used with the PVA and MVZ air handlers when auxiliary electric heaters are included on the installation. It has a remote sensor to be mounted where it can accurately sense the outdoor ambient.

For enhanced energy efficiency, it's recommended that the ETC-211000-MIT be used on all PVA and MVZ heat pump systems that incorporate backup electrical heat. When set up properly, the control will prevent the electric heat from energizing when the outside temperature is high enough for the heat pump alone to achieve space set point. Without the control there are times the electric heat will energize when unnecessary to heat the space. Such as coming out of setback or if someone manually turns up the temperature in the space more that a few degrees depending on the system operating set up. Also, building codes and regulations in certain areas require such a device. Check the code requirements in your area.

Features

▸ Microprocessor based electronic temperature control with a built-in non-volatile EPROM to retain settings even after a power outage.

▸ Remote sensor that can be spliced for sensing up to 400 ft. with 22AWG wire.

▸ Simple keypad programming of set point temperature, differential.

▸ LCD readout of sensor temperature, control settings, relay status and onboard diagnostics.

▸ Lockout switch to prevent tampering by unauthorized personnel.

▸ User selectable Fahrenheit/Celsius scales.

Electric Heat Lockout
PVA/MVZ models

- Locate Electric Heat Lockout within 3 feet of air handler to reduce length of splice.
- Locate the thermistor in a place that will accurately measure the outside temperature and it not in direct sunlight. (see detail)
- Use only 22AWG copper conductors
- Use only CN24-1 when single stage electric heat
- Normally Open (NO) contact closes when S1 and S2 are reached outside and the Electric Heat Lockout is set to Heating, allowing electric heat to energize when called for by the Control Board in Air Handler.
- Power for Electric Heat Lockout can be 120V or 240V. See diagram for proper connections.

Specifications

Specifications	
Sensor	Thermistor, 1.94" long x 0.25" diameter, 8 ft. cable
Power Consumption	120/208/240 VAC: 100 milliamps
Control Ambient Temperature	
Operating	-20° F to 140° F (-29° C to 60° C)
Storage	-40° F to 176° F (-40° C to 80° C)
Ambient Humidity	0 to 95%, RH, Non-condensing
Enclosure	NEMA 1, Plastic
Agency Approvals	UL Listed, File E94419, Guide XAPX
	CSA Certified, File LR68340, Class 4813 02

Typical Application

Example:

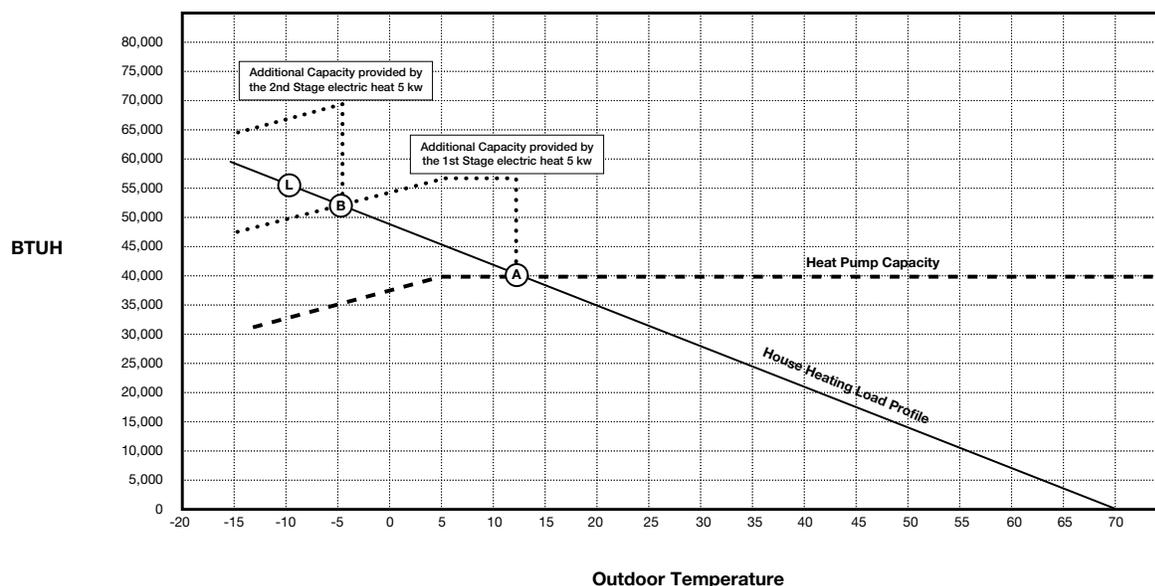**Structure heat loss is "55,000 btuh at -10° F" outdoor design temperature**

PUZ-HA36 Hyper Heat Outdoor unit with a PVA-36 multi-position air handler

10 KW (34,120 btuh) Electric heat with two stages of 5 KW (17,060 btuh) each

The best way to set the outdoor electric heat lockout is to do a load calculation and load profile as shown below. This will provide the most energy efficient operation and homeowner comfort. As usual, calculate the structure heat loss at the local outdoor design temperature. In this example, the heating loss is 55,000 btuh at an outdoor design temperature of -10°F. This is shown at the point "L". Plot a line from there to the outdoor temperature of "70° F" with no heat loss. This is the load profile of the structure.

Next, plot the capacity of the heat pump as shown below including the derate at lower outdoor temperatures. The point where these lines cross will show where the first stage electric heat should be allowed to energize at point ("A"). Plot the electric heating capacity for the first stage electric heat as shown. The point where this line crosses the load line ("B") indicates where the second stage electric heat should be allowed to energize. In this example the first stage electric heat (CN24-1) should be allowed to energize at approximately "12° F" outdoor temperature. The second stage electric heat (CN24-2) should be allowed to energize at approximately "-5° F" outdoor temperature. If there is only one stage of electric heat, only (CN24-1) needs to be set at point ("A").

A differential of 3F ON and OFF at each stage should be suitable.

Outdoor Temperature

(L) Calculated heat loss at outdoor design temperature

(B) Temperature set point to allow first stage of electric heat to energize (CN24-1)

(A) Temperature set point to allow second stage of electric heat to energize (CN24-2)