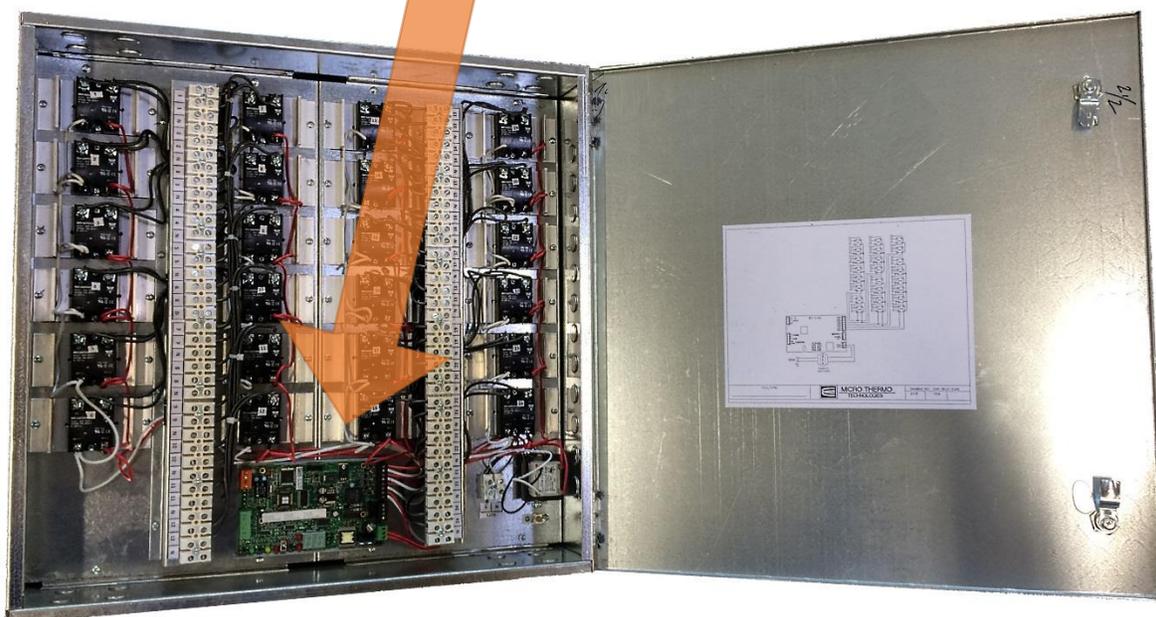


## The Anti-Sweat Energy Saving Controller user's manual

### **Introduction**

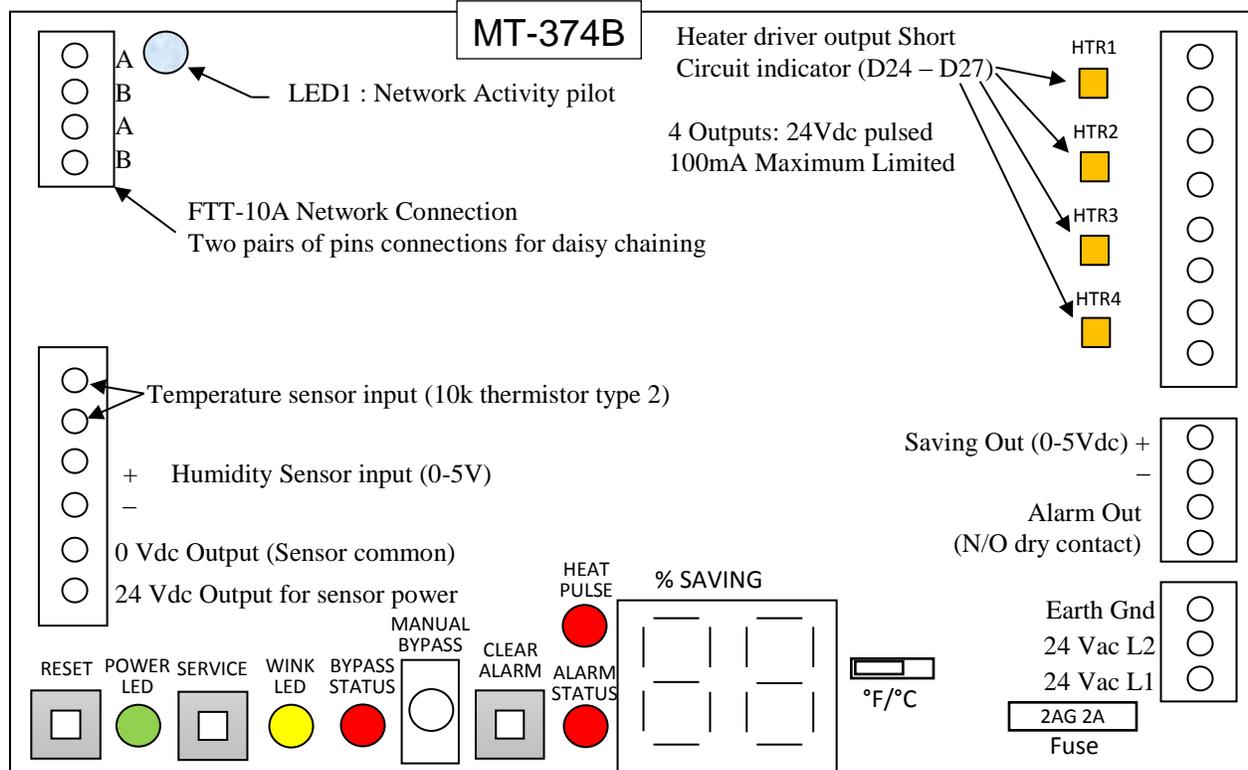
The Anti-sweat Energy Saver model MT-374B is an *MT-Alliance compatible* controller that modulates the power delivered to a maximum of 4 anti-sweat heaters channels pulsed sequentially according to the dew point in the supermarket where the controller is installed. Temperature and humidity measurement are used to calculate how much heating it is required to avoid condensing on glass doors. The processor board work without user interface when networked with an MT-Alliance computer but the Anti-sweat Energy Saver can work as standalone with the Local User Interface MT-364B ordered separately. The Anti-sweat Energy Saving processor board can also host the old version of User Interface MT-3610.



**Boards presentation:**

The processor board.

The processor board powered from an external 24 Vac 40 VA transformer is an autonome controller with alarm and fail safe features that can drive up to 4 SSR channels with MOSFET. It can be configured through a LonWorks FTT-10A network or with the local user interface board. Any required settings are saved in its non volatile memory and the firmware can be updated remotely via the network. It host a LED display that show the % of energy saved.



**Component description:**

**%Saving:** This display the percentage of energy saved compare to having the heater ON 100% of the time. A 0-5Vdc output signal is provided to monitor savings.

**Reset Button:** When reseted the 374B controller will not drive the heaters for 60 seconds

**Power LED:** Remain ON as long as the board is powered with 24VAC.

**Service Button:** Use this button to pair the 374B controller with the MT Alliance PC.

**Manual Bypass:** Flip this switch to disable the power savings. The heaters will heat at 100%. This bypass is for emergency usage. Don't leave it like this forever.

Alarm Status: This LED latches if one sensor is missing for longer than Dew Point Set Time or when dew point is higher than Dew Point High Limit for longer than Dew Point Set Time. The output power will be forced to 100% and will display FP for Full Power, %Saving will be 0, there will be no alarm sound but the normally open dry contact will remain close as long as the Alarm status is ON. If thereafter the dew point becomes lower than the limit, the Alarm Status LED will remain ON but the output power for heating will not be forced to full any more.

Clear Alarm Button: Use this button to reset the alarm status. Alarm will be repeated after Dew Point Set Time if the Dew Point is still too high or if sensor still not fixed.

°F/°C Unit selector: Put jumper on the °C side to have temperature and dew point display in Celsius. No jumper or jumper on the left side will display temperature and dew point in °F. This jumper has no effect when the Anti-sweat Energy Saving Controller is in non-standalone mode nor to the LonMark Object temperature/dew point reading unit shown at the PC.

LED1: near the network connector indicate the activity on the FTT-10A network.

When a message is transmitted from the node (TX), this LED will flash in green.

When a message is receive from the network (RX), this LED will flash in red.

When messages are receive and transmit at the same time, this LED will flash yellow.

This feature is useful to diagnostic communication to the network and if the service pin activate the transmission of the neuron ID message for the installation process.

LED D24 to D27 near the Heater Driver connector light if the channel is overloaded.

There are 4 outputs to connect to the external SSR. A 100 mA auto resettable fuse protects each one. If current is over 100 mA for this output the polyfuse will open and the LED will blink. It may have too many SSR connected in parallel to this channel. If the over current condition disappear the system return to normal operating mode without any required action.

When an over current condition exists on a channel it will not affect the normal operation of the others.

The HEAT PULSE LED show the duty cycle of the driving pulse delivered to the 4 Heater Driver outputs.

Wink LED is ON for 1 sec and OFF for 4 sec when the program is running normally.

When a wink command is received from the Alliance, the duty cycle change to 4 sec ON and 1 sec OFF. The board must be reset to end the wink command.

### Physical Installation:

The Anti-sweat Energy Saving board comes on a snaptrack. Remove the board from the snaptrack and secure the snaptrack on a solid surface inside of an electric panel using screws. Put back the Anti-sweat Energy Saving board by clipping it on the snaptrack.

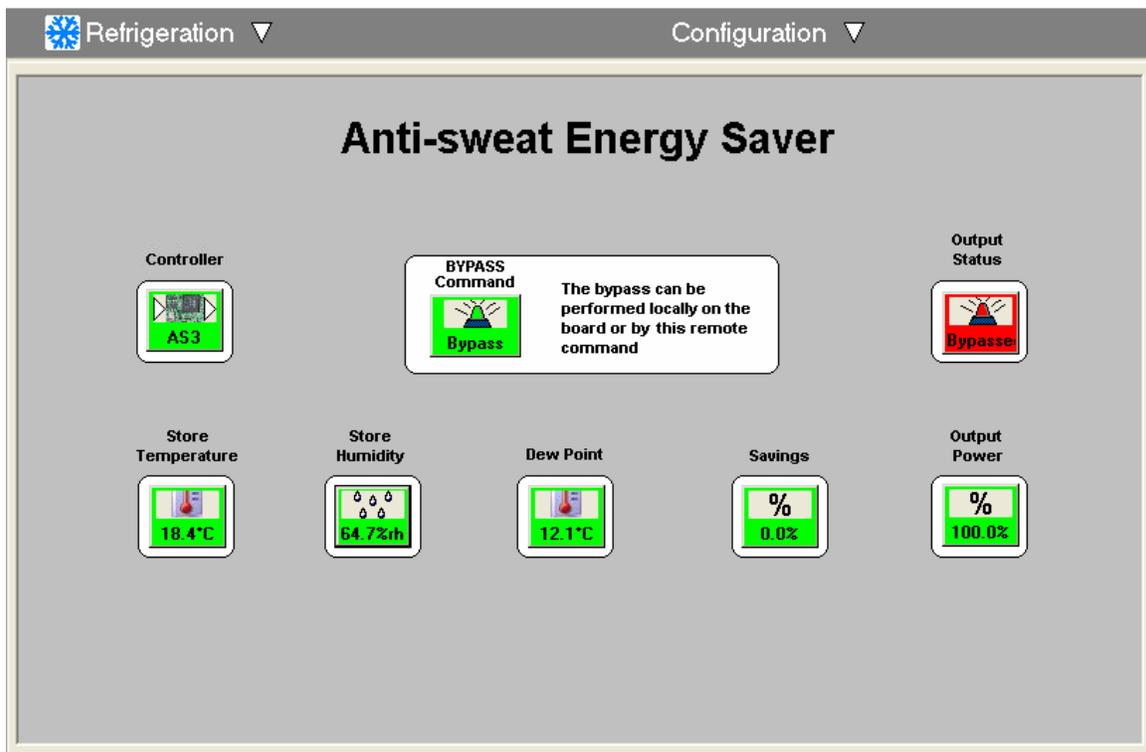
Make all wiring connection accordingly to the diagram connection on page 1 or on a drawing provided from Parker Hannifin Engineering advisor. Use a Micro Thermo Temperature and Humidity combo sensor p/n 023-0026.

A connection to earth ground must be made for proper 24VAC power filtering, and provide EMC and ESD protection for the FTT-10A transceiver.

### MT-Alliance Installation:

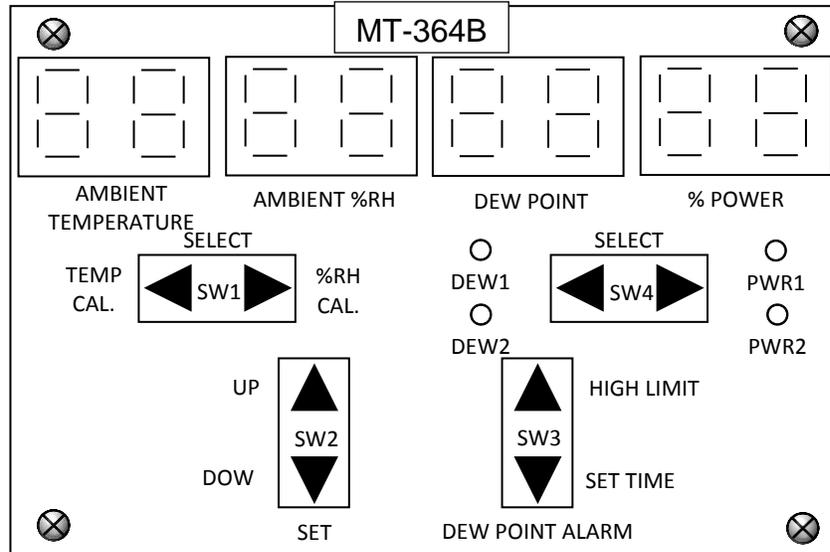
The MT-374B can be installed on MTA 7.2.3 or later but it is possible to install it on version 6.0 with a patch supplied by MTT technical support.

See Anti-sweat MTA installation Guide PUID 72-MTA-1037 for MT Alliance installation and configuration.



## The Local User Interface

With this piggyback board the user can view and enter all the configuration parameters that set the workable values on site via 4 *momentary rocker switches*. The user may read Ambient Temperature, % Relative Humidity, Dew Point and % Power values on four 2 digits 7 segments LED displays.



### **Configuration of the Anti-sweat Energy Saver with the Local User Interface.**

There are four rocker switches on the Local User Interface Board:

SW1: to select the temperature or humidity parameter for calibration.

SW2: to increment or decrement the value of the selected parameter.

SW3: to select the High Limit or Set Time of Dew Point Alarm

SW4: to select the transfer function parameters of the control.

In normal position, the Local User Interface Board is in Monitor Mode. In this mode the displays show the temperature and humidity read by the respective sensors, (local or via a remote SNVT), the dew point calculated from the current temperature and humidity, and the % power delivered to the antisweat heaters according to the transfer function control parameters.

The standalone mode is factory set to 1 to enable setup changes via the local user interface. Once installed in Alliance V6+ this mode is changed to 0 to be exclusively controlled by the PC with its own set of settings. To enable local UI again change the LonMark Object UCPTModeStandAlone to "1". Settings configured locally and used in standalone mode are different from those configured by the PC through the network.

To change a settings the SET button is used in conjunction with any other switch on the Local User Interface Board to increase or decrease the corresponding (flashing) value by pushing the SET switch Upward or Downward respectively. First select the parameter by pushing and maintaining the corresponding button (SW1, SW3 and SW4) in the desired position. While holding, push on the SET button (SW2) Upward to increase the value and Downward to decrease the value. Press and hold for fast increase/decrease.

Temperature Calibration (Offset)

On the Local User Interface Board, select the **Temperature** parameter by pushing and maintaining the SW1 button at the CAL. TEMP. position, the TEMPERATURE display will start to blink to indicate that the system is ready to change the value. While holding, push the SW2 SET switch in Up or Down position to change the Temperature value in the corresponding direction. Disabled when temperature is coming from SNVT.

Humidity Calibration (Offset)

On the Local User Interface Board, select the **Humidity** parameter by pushing and maintaining the SW1 button at the CAL. HUM. position, the HUMIDITY display will start to blink to indicate that the system is ready to change the value. While holding, push the SW2 SET switch in Up or Down position to change the Humidity value in the corresponding direction. Disabled for SNVT %RH.

Dew Point Alarm High Limit Setting (1-99°F)

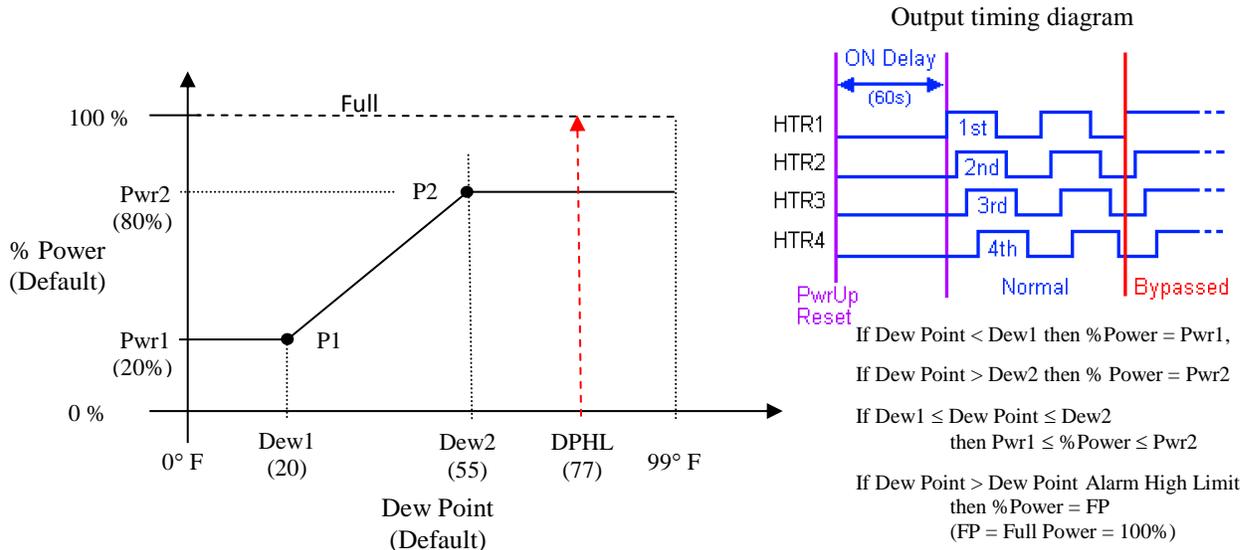
On the Local User Interface Board, select the **Dew Point Alarm** parameter by pushing and maintaining the SW3 button at the HIGH LIMIT position, the DEW POINT display will start to blink the HIGH LIMIT value. While holding, push the SW2 SET switch in Up or Down position to change the Dew Point Alarm High Limit value in the corresponding direction.

Dew Point Alarm Set Time (0-99 min, default is 5)

On the Local User Interface Board, select the **Dew Point Alarm** parameter by pushing and maintaining the SW3 button at the SET TIME position, the DEW POINT display will start to blink the SET TIME value. While holding, push the SW2 SET switch in Up or Down position to change the Dew Point Alarm Set Time value in the corresponding direction.

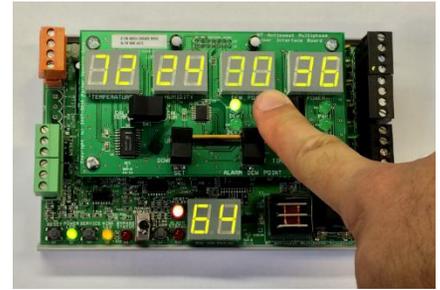
Transfer Function Parameter Setting.

The transfer function of the control is based on two points (P1, P2) each one identified by two coordinates on a DEW/PWR graphic: P1 (DEW1, PWR1) and P2 (DEW2, PWR2) used to modulate the output power according to the dew point.



### DEW1 and DEW2 Setting (1-99°F)

Select the **Dew Point** parameter by pushing and maintaining the SW4 button at the DEW1, DEW2 position (left side). To change between DEW1 and DEW2 parameters release and push the button in the same direction. One of the DEW LED will be illuminated to indicate the selection. The DEW POINT display will start to blink the respective value. While holding, push the SW2 SET button in Up or Down position to change the dew point value in the corresponding direction.



### PWR1 and PWR2 Setting (0-100%)

Select the **% Power** parameter with the SW4 switch by pushing and maintaining at the PWR1, PWR2 position (right side). To change between PWR1 and PWR2 parameters release and push the button in the same direction. One of the PWR LED will be illuminated to indicate the selection. The % POWER display will start to blink the respective value. While holding, push the SW2 SET button in Up or Down position to change the power value in the corresponding direction

The Local User Interface Board can be removed from the Processor Board if desired after the configuration process. The parameters are saved on the processor board between configuration sessions. Without the Local User Interface Board the configuration may be done with the MT-Alliance through the network configuration properties of the node accessed by its LonMark Object form of the Command/Status tab of the Custom Node information tool.

Please note: If you change the standalone mode you must configure it in the same mode it is intended to run. In other word if you run the Anti-sweat Energy Saver with standalone mode = 0 you must configure it with MT-Alliance through the network then the Local User Interface Board can't be used any more. Only remote and local bypass command work in both mode.

## **Operation**

Unless bypass is ON at power up the Anti-sweat Energy saver will prevent heating for 60 sec. When running it will pulse each heater channel sequentially with a duty cycle according to the % Power. If dew point is higher than Dew Point High Limit for longer than Dew Point Set Time the output power will be forced to Full Power, there will be no alarm sound but the normally open dry contact will remain close as long as the Alarm status is ON. If thereafter the dew point becomes lower than the limit, the Alarm Status LED will remain ON but the output power for heating will not be forced to full any more. This alarm function can be used to detect repetitive moisture problem.

If the temperature or the humidity value comes from the network via a SNVT and the communication fails, the reading will switch to the local sensor. If no remote sensor and no local sensor temperature or humidity is found the corresponding missing sensor display and the Dew Point display will show bars "- -" the system will put the Outputs to a full power 100% duty cycle and the % Power will show "FP" for Full Power and the %Saving will be 0%. You will get the alarm status after the Dew Point Set Time expires.