APPLICATION

The 75F Outside Air Optimization (OAO) kit includes a 75F economizer controller, CO_2 sensor, Mixed Air Temperature (MAT) sensor, two 10K thermistors for SAT and OAT, and cloud computing software with predictive analytics that provide optimum positioning of the outside air damper on package HVAC units throughout the year using demand controlled ventilation (DCV) and differential enthalpy. Economizer logic is enhanced by predictive analytics to yield increased energy savings and comfort.

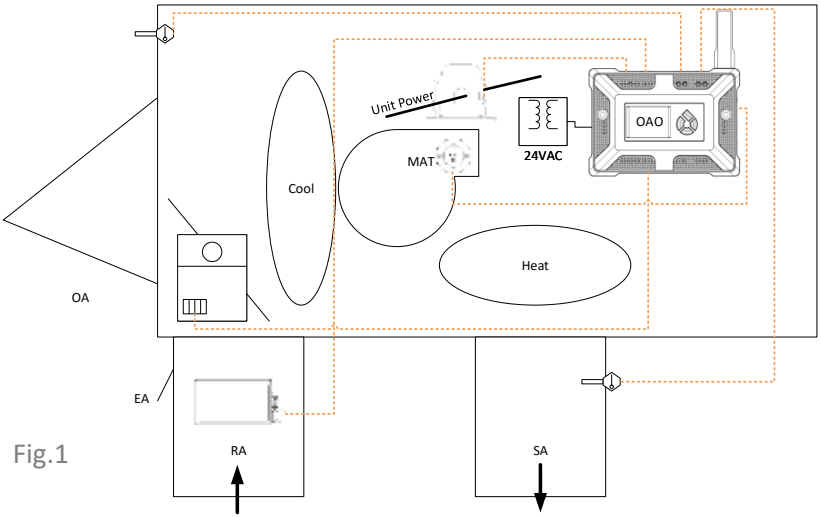

Fig.1

PRECAUTIONS

- Failure to wire devices with the correct polarity when using a shared transformer may result in damage to any device powered by the shared transformer.
- Remove power before installing. Never connect or disconnect wiring with the power applied.
- Do not run the low voltage wiring in any conduit with line voltage.
- Install in accordance with all State and local codes.

FEATURES

- CO_2 Demand Control Ventilation (DCV)
- Comparative Enthalpy Economization
- RTU power consumption monitoring
- *Optional:* Pressure regulation
- *Optional:* Exhaust Fan integration
- *Optional:* CO and NO_2 level monitoring integration with DCV

SPECIFICATIONS

75F OAO Controller

- Supply Voltage: 24VAC
- Analog Input: 0-10VDC
- Analog Output: 2-10VDC or 0-10VDC
- Operating Environment: 41°F – 122°F

ACI CO_2 Sensor

- Supply Voltage: 24VAC
- Output: 0-10VDC
- Measurement Range: 0-2000ppm
- Operating Environment: 32-122F, 0-95%RH

MOUNTING

Mount the CO2 Sensor. The CO_2 sensor must be installed in the return air duct, before the return and outside air mix. Since there might be a substantial pressure difference in duct mounting applications, it is essential to avoid ambient air from infiltrating into the duct mounting box. For correct function, it is mandatory that the sealing of the box cover, the cable entry bushings, the cable feed-through, and the duct entrance are tight. The duct entrance may need extra

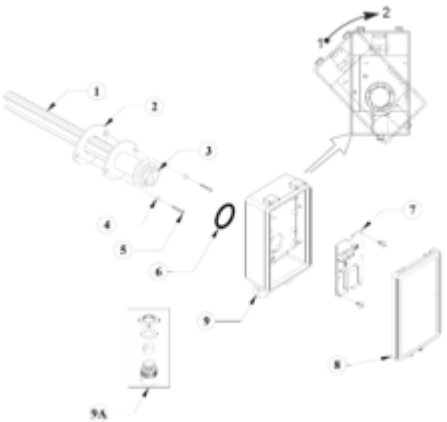

Fig.2

sealing paste to prevent leakage.

The PCB must be handled carefully and protected from electrostatic discharge.

- Place the O-ring around the hole at the back of the box.
- Electrical cable entry: The box has a factory mounted cable entry bushing. Never feed more than one cable through each cable entry bushing, or else gas might leak through.
- Mounting the tube: Drill a 1” diameter hole for the sampling probe and two holes for the 5/32” diameter screws into the air duct and mount the tube with the gasket. The sampling probe should be mounted with the largest locking knob on top. The unit can be mounted with the air coming from the left or right.
- Attaching the sensor box is made to the sampling probe by a snap-in bayonet fitting. Orient the box onto the sampling probe so that the box upside is on the same side as the largest locking knob. When the probe is fitted into the notches of the box, turn the box clockwise until stop.

For additional detail, please refer to the installation manual provided with the ACI CO_2 Sensor.

Mount the 75F Controller. To mount the 75F OAO controller, we recommend using two #8 – 1.5” Sheet metal screws. The controller may be mounted on the chassis of the unit, on the duct work, or any secure location.

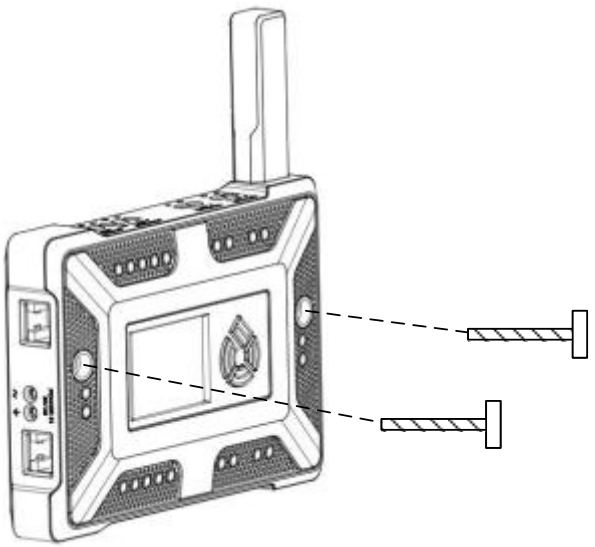

Fig.3

WIRING

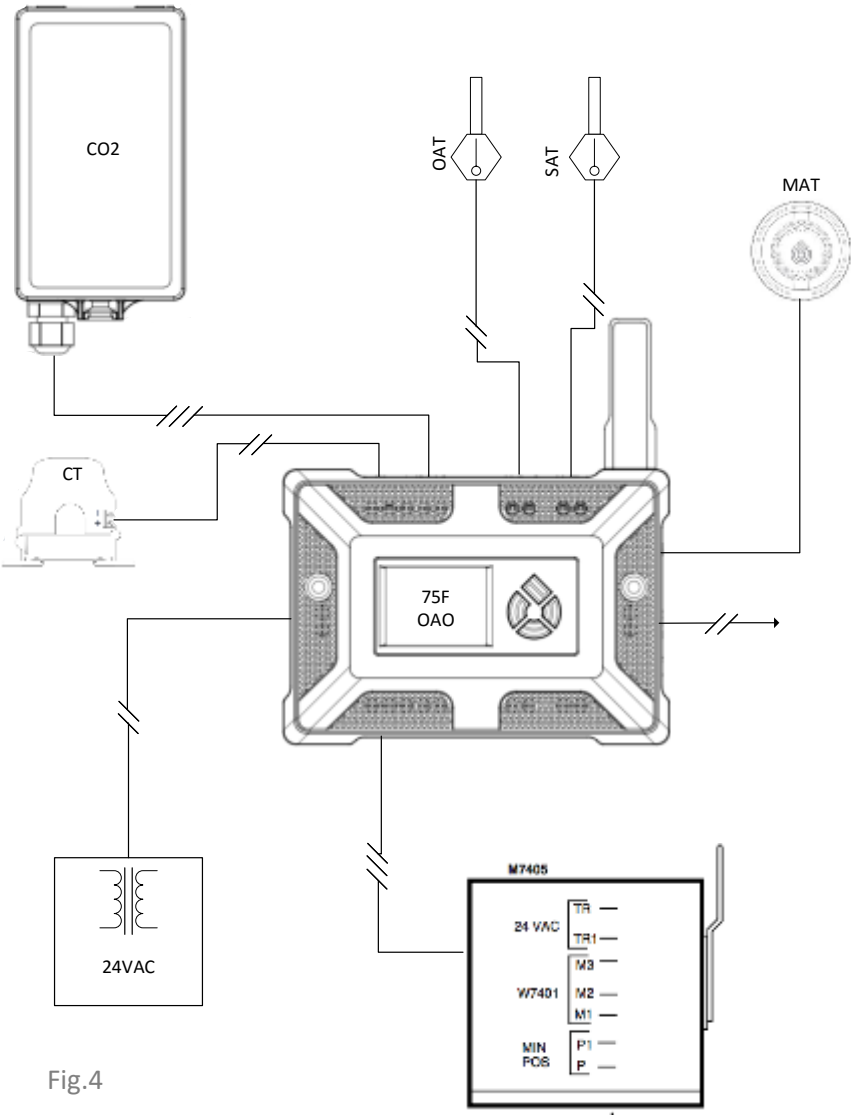

Fig.4

Disconnect power. 18AWG T-stat wire is recommended. Follow the wiring diagram above to wire the controller, economizer actuator, CO_2 sensor, MAT sensor, OAT, and RAT sensors.

Powering the Controller. To power the controller, use 18/2AWG run from the 24VAC transformer using the same polarity as any of the other

devices connected to that transformer.

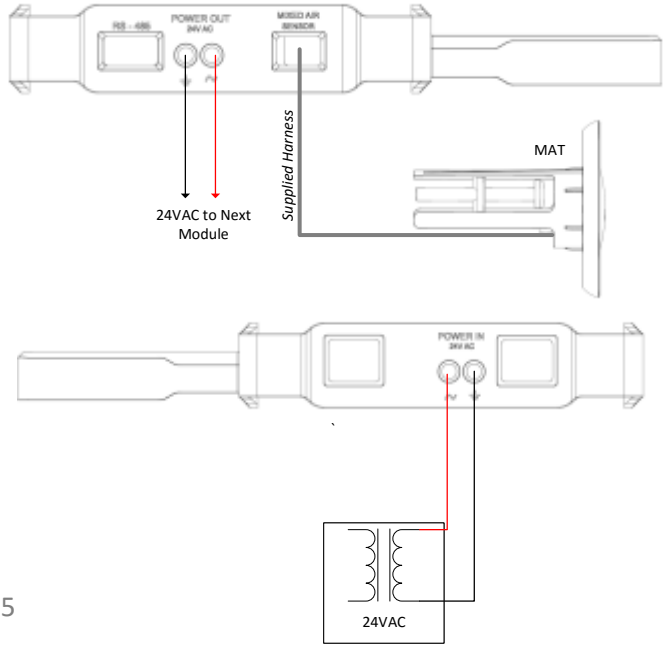

Fig.5

Wiring the CO2 Sensor. Using 18/3AWG run from the CO2 Mounting location to the 75F OAO controller and wire according to the wiring diagram in Fig.6.

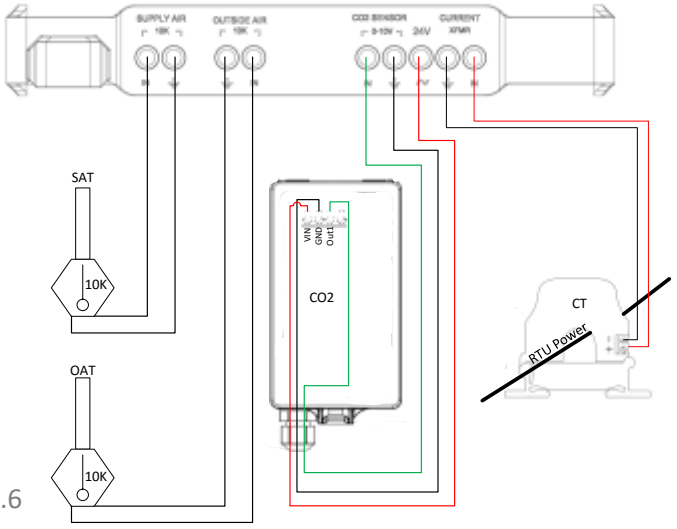

Fig.6

Placement of the MAT Thermistor. Connect the stripped wire of the thermistor to the controller as shown in Fig.6 Using the provided bracket, mount the MAT sensor near the intake of the blower.

Wiring the Actuator. Use 18/3AWG T-stat wire to connect the 75F controller to the actuator motor. Connect the terminals for Power, Ground, and Signal (+), Fig.7.

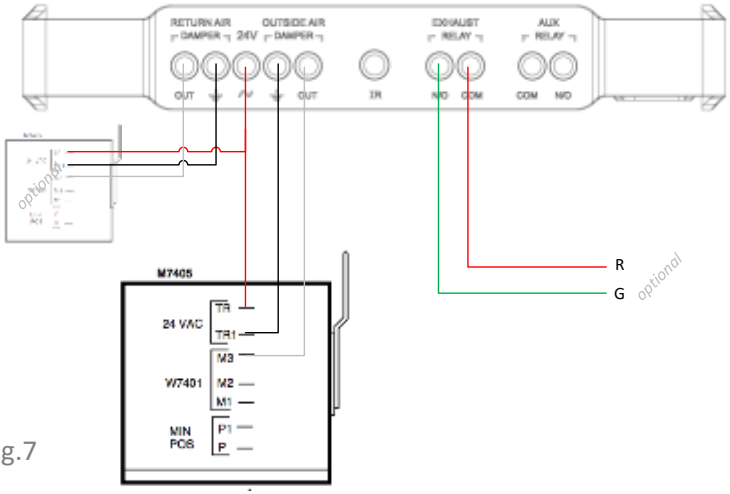

Fig.7

PAIRING

Pair the OAO controller as an OAO in Setup > Settings > System Devices > OAO. Once power is supplied to the system OAO should read default room.

1. Press the Right button on the OAO Module until “Advertising” is displayed.

Fig.8

2. On the CCU press “Pair OAO” from Setup > Settings > System Devices > OAO.

4. Enter the PIN displayed on the OAO on the CCU to confirm intended device being paired.

Fig.9

3. When the Bluetooth pairing process is complete on the Tablet the OAO module will read only “OAO” until the CM and Tablet are reconnected. Now pair other modules or snap the Tablet back onto the CM. The OAO will begin communicating over the 900Mhz channel. Once communicating over long range the OAO controller will display relevant information.

Fig.10

CONFIGURATION / CONFIRMATION

Once paired, ensure that the sensors are reading accurately. To do this go to the Central Control Unit (CCU) or the 75F installer app on iPhone or Android device.

Test the OAO actuator. To do this from the CCU (can also be done from the 75F Installer app) go to Setup > Settings > Damper Testing. Run the damper to 100% open. Verify at the actuator that the outside damper is 100% open. **It may take up to 90 seconds from the time you make the change for the damper to move. Run the actuator to 50% and ensure the outside damper closes to 50% open. If the damper fails to meet one or both tests, you may need to readjust the damper arm positions.

To test the actuator from the Smart Node, press the right button twice to reach the “Outputs” page. Go down to Analog 1. Press the right to highlight the output voltage. From here, you can force the output to the desired signal. Response should be immediate.

TROUBLESHOOTING

PROBLEM	SOLUTION
No display	No power to controller. Check voltage to controller is 24VAC.

75F TECHNICAL SUPPORT

If you need more information, please visit www.75f.io/support. Here installers will find instructional videos, installation guides, and more. You can also call 888.590.8995 x2 if you need technical support.