



Guide Specification

Base Bid Temprite Model TMM –make-up air unit(s) designed for indoor application. The unit discharge shall be designed for easy adaptation to external duct work or optional accessories. The unit(s) shall be capable of delivering ____ CFM at ____ ESP using a ____ horsepower (open) (TEFC) motor operating on 208/230/460/3/60.

BURNER SECTION

The line burner shall be capable of delivering ____ BTUH firing on (natural gas) (propane) (propane air mixture) at an inlet pressure of ____ (inches water column, PSIG) and in accordance with (manufacturer's standard) (FM) (IRI) requirements. Both burner and blower shall be compensated for an altitude of ____ feet above sea level. Manifold to be located outside of air stream. An observation port shall be located to provide view of pilot and main flame.

Unit(s) shall be supplied with a wide range burner with a modulating turndown ratio of up to 25: 1. Adjustable profile plates shall be provided and sized to maintain the required velocity across the line burner. The operation of the burner shall be programmed through the flame safeguard with timed prepurge and flame-sensed by means of a (flame rod) (ultra violet scanner).

The burner assembly and gas manifold shall be completely prepped and factory tested prior to shipment and shall be controlled by a (discharge duct stat) (discharge duct stat with room override control).

UNIT CASING

Unit casing and accessories shall be fabricated from heavy-gauge bright spangled galvanized steel suitably reinforced to insure rigidity. All casings shall be air tight. Complete access shall be provided to all components. This includes the blower, burner, and electrical components.

BLOWER SECTION

Each unit shall be supplied with centrifugal forward curve, DWDI fan(s) rated in accordance with AMCA standards. The fan or fans shall be mounted on a solid shaft for single blowers and a hollow shaft for double blowers. Shaft designed for a maximum operating speed not to exceed 75% of its first critical speed. Bearings are to be external heavy-duty industrial prelubricated type. Blowers to be driven by a V-belt package sized with a capacity of 25% greater than the motor horsepower. Multiple belt applications will be matched sets. Drives are to be (fixed) (adjustable). Maximum outlet velocity ____ FPM. Motor to be externally mounted on adjustable slide base. Belt guard shall be provided for protection.

CONTROL ENCLOSURE

The unit(s) shall be supplied with a control compartment and all controls mounted within this compartment are to be wired to a numbered terminal strip. All wiring is to be color coded and in accordance with the NEC. A circuit diagram of the approved electrical drawing is to be laminated to the inside of the control cabinet door. All electrical components shall bear the U.L. label.

STANDARD CONTROLS

1. Main fan starters and overloads
2. Control circuit fuses
3. High temperature limit switch
4. Flame safeguard with alarm contacts
5. Flame rod sensor
6. Ignition transformer
7. Automatic pilot valve
8. Main gas automatic safety shutoff valve
9. Modulating control system
10. Air proving differential switch
11. Control transformer
12. Maxitrol Series 14 control
13. Cold start freeze protection

OPTIONAL ACCESSORIES

1. Motorized inlet damper
2. V-bank filter box with filters
3. Insulation
4. Vibration hangers or mounting feet
5. Mild weather shutdown
6. Clogged filter switch
7. Disconnect switch
8. Remote control station
9. Maxitrol modulation (Series 44)
10. High gas pressure regulator (required over 1/2 PSIG through 900 MBH input and over 5 PSIG for all larger inputs)
11. UV flame detection (mini or purple peeper)
12. Circuit analyzer (up to 10 points)
13. Painted galvanized casing
14. U.L. labeled control panel
15. Vertical arrangements
16. Mixed air section
17. TracRite control system



Guide Specification – TracRite Control System

Unit shall have mixing box with outside air and return air dampers with modulating actuator controlled by TracRite DDC control system. In the heating operation the TracRite DDC control system shall digitally control the outside air quantity from a nominal minimum of 20% to 100% with integrated gas valve control at all room concentrations of CO₂. In the cooling operation the TracRite DDC control system shall digitally control the outside air quantity from a nominal minimum of 0% to 100%.

The return air inlet shall include a self-calibrating flow measuring station with a grid of velocity pressure probes with spacing no greater than 12" over the entire face of the return air opening. Samples shall be smoothed to provide accurate data that is delivered to the TracRite DDC controller every two seconds. The DDC control system shall be capable of electronically displaying the return air/outside air ratio within 5% accuracy at all damper positions.

The TracRite DDC control module shall have full BACNET compatibility. Display shall have a minimum of two line, sixteen character display.

The TracRite DDC control system shall be capable of controlling mixing dampers in: (Choose One)

Manual Mode: The "Manual" mode allows manual positioning of the outside air (O.A.) damper and return air (R.A.) damper by changing the damper position setpoint.

Mixed Air Temperature Mode: The "Mixed Air Temperature" mode shall provide automatic control of the mixed air temperature by modulating the O.A. damper and R.A. damper to maintain the mixed air temperature setpoint. As the mixed air temperature increases above the setpoint more outside air shall be introduced.

Building Pressure Mode: The TracRite DDC control system shall be capable of controlling mixing dampers in "Building Pressure" mode. The manufacturer shall provide a pressure transducer capable of detecting positive and negative building pressure in the range of -0.05" W.C. to +0.05" W.C. The "Building Pressure" mode shall provide automatic building pressure control by modulating the O.A. damper and R.A. damper to maintain the indoor building pressure setpoint. As the building pressure decreases below the setpoint more outside air shall be introduced.

The TracRite DDC control system shall include but not limited to the following controls required for standard operation:

- Time of day operation with normal, holiday, and override schedules.
- Timed freeze protection to prevent heater from discharging unheated air into the building.
- Inlet temperature economizer shall turn burner off when inlet temperature equals desired discharge air temperature as fuel savings mode.
- Heating and cooling On-Off night setback control in unoccupied mode as fuel savings.
- Keypad and display for remote control capabilities and alarm indication.
- Indicating lights for maintenance trouble shooting.



• Guide Specification – TracRite Control System

The display functions of the remote keypad display for the TracRite DDC control system shall include but not be limited to the following:

- Return air temperature
- Outside air temperature
- Discharge air temperature
- Mixed air temperature
- Maximum allowable temperature rise
- Actual temperature rise
- Current percent of outside air
- Current building pressure (optional)
- Current damper input voltage
- Current burner input voltage
- Fan operating hours since last reset
- Fan start cycle count since last reset
- Burner operating hours since last reset
- Burner start cycle count since last reset
- Cooling interlock operating hours since last reset
- Cooling interlock cycle count since last reset
- Critical alarm conditions:
 - Airflow switch failure
 - Unit on, fan off
 - Unit off, fan on
 - Low discharge temperature
 - Safety circuit open
 - Burner jumped

The control settings available on the remote keypad display for the TracRite DDC control system shall include but not be limited to the following:

- Heating setpoint
- Cooling setpoint
- Economizer setpoint
- Setback setpoint
- Freeze protection setpoint
- Maximum discharge air temperature setpoint
- Minimum discharge air temperature setpoint
- Minimum ventilation option and setpoint
- Time of day schedule selection and setpoints
 - Normal 5/7 schedule
 - Holiday schedule
 - Manual override