

Mechanical Specifications

TL Series – Concealed type vertical stack fan coil units, to be concealed behind drywall – 86” tall

TF Series – Exposed type vertical stack fan coil units with fully painted cabinets – 86” tall

TM Series – Mechanical Closet application vertical stack fan coil units, 100% ducted SA – 70” tall

Certifications

Performance: Unit performance is certified by AHRI in accordance with ANSI/AHRI 440-2008: Performance Rating of Room Fan-Coils
Safety: All standard units are agency listed in the United States and Canada and comply with the requirements of the current editions of UL 60335-2-40/C22.2 No. 60335-2-40

Construction

For Concealed applications, (TL units) the cabinets shall be fabricated from 20gauge steel.

For Exposed applications (TF units) the cabinets shall be fabricated from 20ga powder coat steel in one of our standard cabinet colors (Off-White, Light Grey, or Beige) or a custom color at an additional cost.

The cabinets shall be lined with 1-inch fiberglass insulation bonded with a thermosetting resin or grip nails and coated on the airstream side with an acrylic facing. Optional upgrade to ½ -inch closed cell cabinet insulation, which has the same thermal efficiency as 1-inch fiberglass.

The drain pan shall be acrylic (black polyester powder) coated 20gauge galvanized steel or polymer (ABS) available for size and 300/400 in the TL series only. All drain pans are positively sloped in two directions towards the outlet. Metal drain pans shall be insulated on the underside with the same material as the cabinet. The drain hose from the outlet to the condensate riser shall form a running trap. An optional Stainless Steel drain pan is available as well as a float switch. The float switch will close CW control valve upon detection of high-water level in condensate drain pan.

Fan

Backward inclined fan with integrated electronically commutated motor, ECM. Fan must have an over-all minimum efficiency of 58%. Forward curved fans cannot be accepted.

Motors

The fan motor shall be an electronically commutated, EC brushless, type with sealed bearings. All motors have a maximum ambient operating temperature of 140oF and are permanently lubricated. The motor can accept a 0-10VDC signal configured to deliver the specified airflow with no special tools. A three-speed controller board is available allowing the fan to be compatible with a conventional 3 speed thermostat. PSC motors cannot be accepted. Fan wattage listed in schedule must not be exceeded.

The combination of the EC motor operated at 0-10vDC and a 2 position control valve can be excellent for dehumidification. The algorithm that most 0-10 fan control capable thermostats will operate on will start the fan at a minimum cfm (typically 50% of nominal) and maintain this cfm up to 66% of operating time, only ramping up to max (nominal) cfm when far off set point (less than 10% of operating time). With the minimum airflow across the coil, and the CW valve full open, the humidity will be drawn out of the air, as it condenses on the coil. The air velocity will be so low that drafts will not be felt on the skin, the unit will be very quiet, and using less energy.

Disconnect

An unfused service disconnect switch shall be included, mounted inside the unit behind the motor cover. A fused disconnect is available, typically for primary electric heat units with higher MCA.

Coils

The coil shall have 0.0045” ± 0.0005” aluminum fins mechanically bonded to ½-inch diameter with minimum 0.015” tube wall copper tube. The coil shall be factory pressure tested at no less than 300 psig. A manual air vent shall be incorporated at the high point of the connecting pipework to the coil.

Piping Packages

The piping package shall include: Ball type shut-off valves on the coil supply and returns (combined with balancing valves or strainers when used), and a two- or three-way control valve with two-position actuator. Chilled water and hot water valves are normally closed. Control valves are also available in 3 wire floating point or 2-10V DC modulating valves. 2-position or modulating 6-way valves are available for low grade heating water applications. Additionally, balancing valves (manual or automatic) and strainers supplied as riser system dictates. These devices are provided as combo-valves with the shut-off on supply and return and be equipped with PT ports as required.

Electrical Heat

Units with electric heat shall have single power connection and be wired for single-stage operation with an open wire nickel-chrome element. An auto-reset high limit device shall be included.

Filters

A one-inch MERV 10 disposable filter shall be shipped loose with return air access panel. (ships installed on TF exposed units) Units equipped with one inch MERV 10 filters have a rating based on ASHRAE Standard 52.2. The average dust spot efficiency is no less than 35 to 40 percent when tested in accordance with ASHRAE 52.1 atmospheric dust spot method.

Controls - Thermostat

The fan coil manufacturer shall supply a low voltage (24V) digital programmable thermostat with remote sensor and energy savings contacts option for remote mounting, or unit mounted. The thermostat has a PI 0-10VDC fan output control and 2 binary outputs for 2 position NO or NC valve control. Remote mounted thermostats are connected to a terminal strip that is mounted inside the unit. The thermostat is shipped loose for installation after the unit is installed, drywall is applied, and the walls are painted. An optional thermostat with analog valve control, 0-10VDC fan control, and BACNet compatible is available as an option.

Riser Package

Risers from 3/4" to 3.0" are available in both type "L" and type "M" copper for supply, return and condensate pipes. Riser insulation is available in 1/2-inch to 1" wall thickness for closed cell foam (polyolefin), closed cell elastomeric (similar to Armaflex®) and fiberglass (wrapped with vapor barrier). Insulation thickness shall comply with ASHRAE 90.1. Riser diameter and insulation thickness are subject to physical limitations. Contact Temspec on 4-pipe risers larger than 2.0 inches in diameter. The risers shall have an approximately 3.0-inch swaged expansion at the top end to allow a 3.0-inch insertion of the riser from above without the use of couplings. Risers may be provided plain ended in lieu of swaged for field supplied/installed fittings (similar to Pro-Press®). The riser insulation shall have a flame spread rating of 25 or less and a smoke developed rating of 50 or less in compliance with ASTM E 84. The insulation shall be continuous over the riser length within the height of the cabinet. Provision for insulation beyond the ends of the cabinet shall be the responsibility of the installing contractor. The specification of riser anchoring, expansion loops and fire stopping requirements are not detailed in this specification and are not part of the Temspec fan coils scope.

Return Air Access Panel

The return air access panel shall have a fixed blade return air grille in the lower portion with hinged panel filter access. The return air panel installs flush on to the drywall which has been applied directly to the front of the unit. The panel is of stamped steel construction and shall be finished in standard white baked enamel. The panel secured to the unit by a hook on the bottom edge and sheet metal fasteners to the cabinet. The panel is shipped loose for installation after the unit is installed, drywall is applied, and the walls are painted. There are optional perimeter type "bladeless", and full face panel designed to cover the entire opening for retrofit applications available in sizes from 86" – 94" high x 18" - 26" wide.

For TF exposed units, the return air access panel shall have a fixed blade return air grille in the lower portion with quick release screws in the upper corners to remove the panel and access the filter. panel is of stamped steel construction and shall have the same finish as the cabinet. The return air panel is integral to the cabinet and is shipped installed.

A perimeter type, return air access panel shall cover the RA/access opening on the front of the unit with a side hinged door type for concealed TL or TM series fan coil units. The return air panel installs on a collar/flange ~3" deep with drywall framed out around it. The panel is steel construction and shall be finished in standard white baked enamel (Custom color available for additional charge) The panel secured to the collar on the front of the unit by sheet metal fasteners. The panel is shipped loose for installation after the unit is installed, dry wall is applied, and the walls are painted.

Supply Air Grilles and Registers

Supply air grilles and registers shall be provided for unit mounting locations. The grilles shall be steel, have double deflection airfoil blades and shall be finished in standard white baked enamel (or same finish as the cabinet if provided for a TF exposed units). The grilles shall attach to the collar of the fan coil unit by spring clips. (Screws on the vertical side for TF exposed units) When a unit has more than one supply air opening a balancing damper (horizontal in the front) is included with the grille (register) to balance the air flow (screw holes optional). Any supply air grilles which are part of supply air ductwork shall be provided by the sheet metal contractor. Grilles are shipped loose for installation after the unit is installed, drywall applied, and the walls are painted. (Grilles are shipped installed on TF exposed units) A line-of-sight baffle with acoustical wrap shall be included in units which have left and right or front and back supply air openings. There is also an option to upgrade the supply air grille material to aluminum as well as the option to provide custom colors for return air panels and supply air grilles/registers.

Raised Bases

Raised bases are available in heights of 4, 8, or 12 inches (or custom heights as required). An access panel is available in the 8-inch or taller options. If a condensate pump is required, a minimum 8-inch high raised base with access panel is required.

Fresh Air/Outside Air (OA) Intakes

The unit can be equipped with a fresh air/OA intake. Whether the OA is coming directly from outside, or a pre-treated DOAS, the opening is located in the space below the drain pan. The opening is 6" x 4" (or 4"D round) and can be on the left, right or back. When on the left and/or right, it is towards the front of the cabinet (~1" off the front face). When on the back, it will be located to the side opposite the riser/pipe connection (ie: Riser are on the right of the unit, the OA intake would be towards the left side on the back). When the air comes from a DOAS, a manual sliding damper and filter is provided. When the air comes directly from outside, a motorized (2 position) damper is provided that is interlocked with the SA fan (only open if the SA fan is running). For cold climates, or if desired, a low limit temperature sensor can also be included. Mounted between the intake and the coil. If the air temp drops to 45F or below, the damper will close, the valve will open, and the fan will run to achieve active heat transfer to prevent freezing. The damper will remain in that state until the air temp rises above 55F.

TF Exposed Units – Additional Sheetmetal Accessories

When units are not concealed behind drywall, fully exposed with a painted cabinet, additional sheetmetal accessories are included to complete the installation in the finished space. These include:

Top Extensions to fill the gap from the top of the unit to the ceiling. Top extensions can be two (type EL or ER) or three sided (type EC or EU), their height should include an additional 1 ½" to overlap the top of the fan coil unit. They are powder coated steel, the same finish as the fan coil unit cabinet.

Side Pipe Covers/Block-Off Panels to conceal the riser/pipe connections to the unit. They can be one (type PL), two (type PJ) or three (type PC) sided depending where the pipe connections are located on the fan coil unit cabinet and relative to any walls. They are provided the same height as the cabinet (86") and are typically 6" wide to accommodate any risers, though this dimension can be ordered to suit your installation. They are powder coated steel, the same finish as the fan coil unit cabinet.

