



Series Flow

Variable Volume Fan Operation

Exposed Ceiling Applications

Super Quiet Operation

MODELS: 35SXC NO HEAT • 35SEXC ELECTRIC HEAT • 35SWXC HOT WATER HEAT

The **35SXC Super Stealth™ Series** is designed to produce the lowest radiated sound power levels for a series unit in the industry. The **Super Stealth™** installed in an exposed application has a similar room noise level as an original **Stealth™** unit installed above a ceiling. When paired with a variable volume control sequence, the **Super Stealth™** delivers the lowest sound and highest efficiency HVAC system on the market today.

STANDARD FEATURES:

- ECM/EPIC Fan Technology®.
- Unique 18 ga. (1.31) galvanized steel channel space frame construction provides extreme rigidity and 20 ga. (1.0) casing components.
- 16 ga. (1.61) galvanized steel inclined opposed blade primary air damper. 45° rotation, CW to close. 1/2" (13) dia. plated steel drive shaft. An indicator mark on the end of the shaft shows damper position. Damper leakage is less than 2% of nominal flow at 3" w.g. (750 Pa).
- Super Stealth™ design technology provides significant reductions in radiated sound levels.
- Perforated baffle on primary air discharge optimizes mixing with induced air for rapid and effective temperature equalization. The baffle also converts low frequency primary air valve generated sound into more readily attenuated higher frequencies.
- Pressure independent primary airflow control.

- Multi-point averaging Cross Flow or Diamond Flow sensor.
- Regardless of factory orientation, the unit can be field installed with either right hand or left hand configuration by turning the unit over.
- Universal access panels on three sides of terminal for ease of maintenance and service.
- Motor blower assembly mounted on special 16 ga. (1.61) angles and isolated from casing with rubber isolators.
- Hinged door on fan controls enclosure.
- 13/14" (21), 4 lb. density foil faced Steri-Liner. Meets requirements of NFPA 90A and UL 181.
- Available with electric or hot water supplementary heat.
- All controls are mounted on exterior of terminal providing ready access for field adjustment.
- Each terminal factory tested prior to shipment.
- Single point electrical connection.
- Discharge opening designed for flanged duct connection.

- Full primary air valve low voltage NEMA 1 type enclosure for factory mounted DDC and analog electronic controls.

Controls:

- Digital controls. Factory mounting and wiring of DDC controls supplied by BMS Controls Contractor.
- Requires dynamic fan control.

Options:

- Primary air valve enclosure for field mounted controls.
- Induced air filter, 1" (25) thick, disposable type.
- Toggle disconnect switch (except units with electric heat, when door interlock disconnect is an electric heat option and includes fan).
- Dynamic fan airflow.
- Fan unit fusing.
- Hanger brackets.
- FN2 90° Line Voltage enclosure.
- FN3 Remote Line Voltage control enclosure with pre-wired umbilical cord.

Control Sequences • Fan Powered Terminal Units

HVAC Systems are designed to handle the maximum cooling and heating loads throughout the year, though they operate at part load conditions most of the time. 80% of building operating loads are below 50% of design in cooling and 30% of design in heating. Considering part load conditions is critical for optimizing comfort and energy use when choosing a terminal unit control sequence.

Constant Volume

Traditional FPTUs utilized a constant volume control sequence, where the unit supplies the same volume of air during operation. Thermal comfort is satisfied by modulating primary air in cooling and the heater in heating. The result is a constant airflow with variable temperature depending on zone demand.

Though a constant airflow was believed to provide higher occupant comfort, the ASHRAE research paper (RP-1515) proved differently. The study analyzed the comfort in three buildings on Yahoo’s campus, where the HVAC systems were designed based on 1 CFM/ft². Minimum set points were 30% of the design. After receiving occupant complaints, the minimums were reduced to 10-15%, increasing occupant comfort. This study refuted the assumption that occupants need steady airflow to maintain comfort.

Variable Volume

A variable volume sequence modulates the terminal unit fan simultaneous with the primary airflow. Thermal and acoustical design is maintained by reducing airflow as 100% decreases. Air temperature rises slightly as the room demand decreases while sound levels decrease greatly. The details of this sequence are documented in ASHRAE Guideline 36.

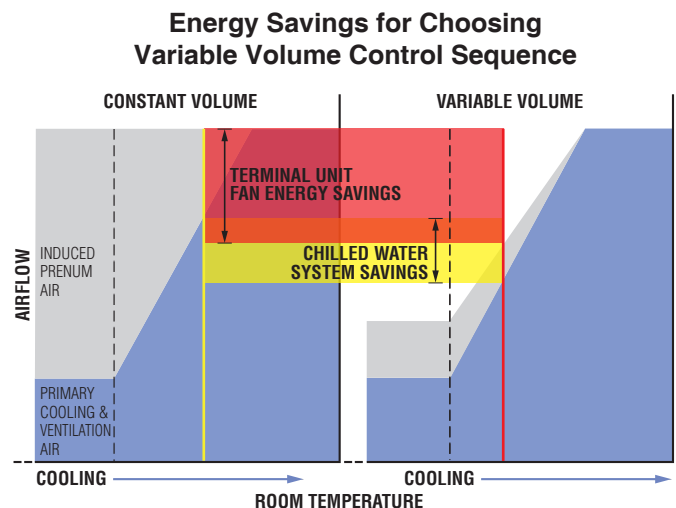
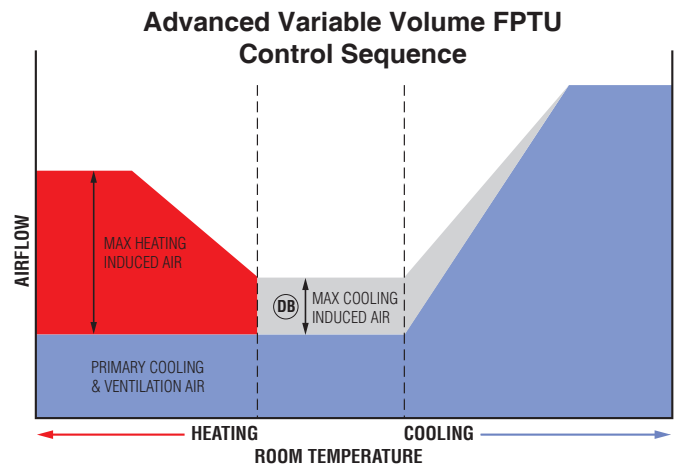
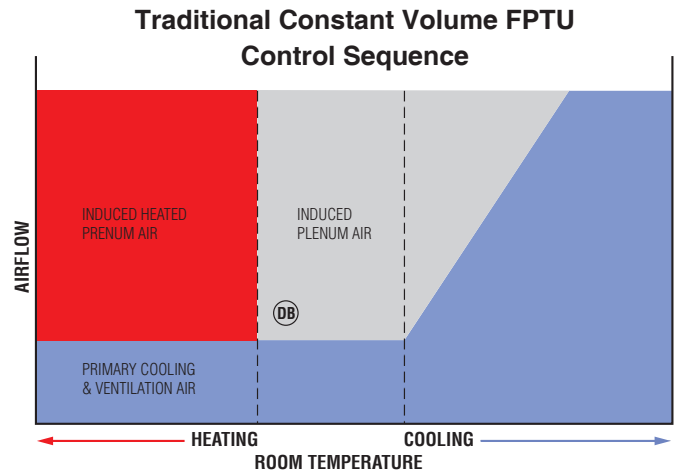
Variable vs. Constant - Energy Savings

The obvious energy savings from using a variable control sequence come from the modulation of the terminal unit fan. As the fan speed slows, the energy use reduces exponentially. What is not so obvious is the energy savings from the air handling unit, chillers and pumps.

Consider a room at part-load conditions in the cooling mode served by a fan-powered terminal unit operating with either a constant volume or variable volume control sequence. The sequences require different quantities of primary air to maintain the space temperature. The constant volume terminal unit induces large amounts of plenum air into the airflow, increasing its temperature. Requiring additional primary air to maintain comfort. The same unit with a variable sequence requires less primary air because there is little induction and the air delivered to the space will be very close to design temperature.

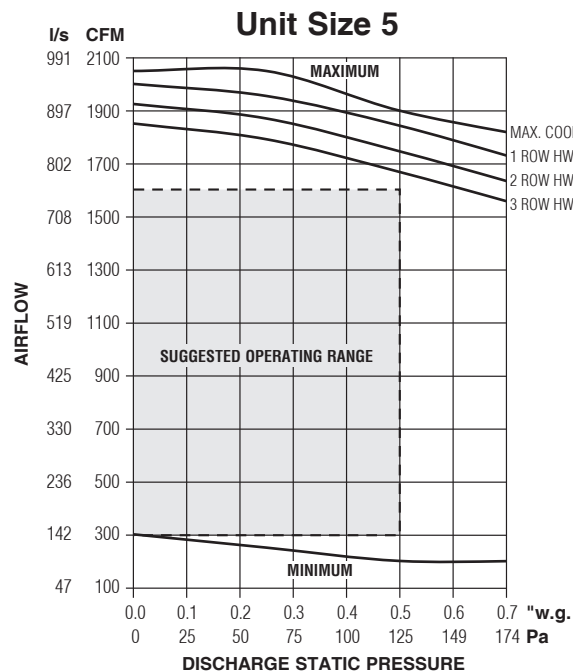
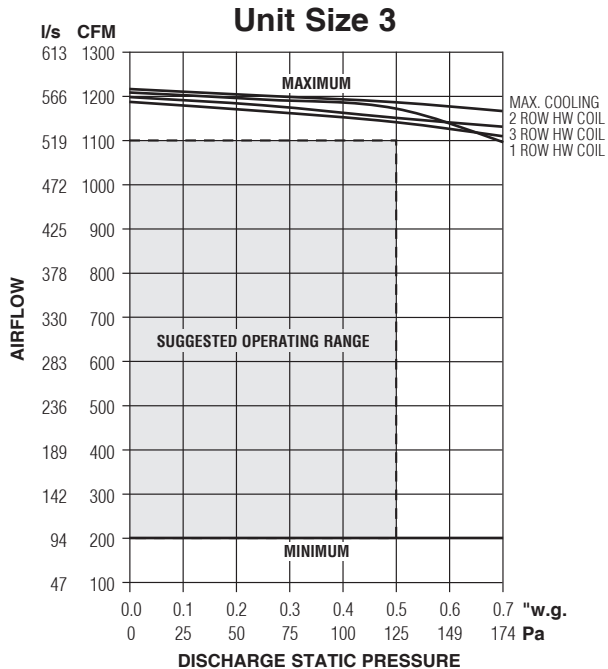
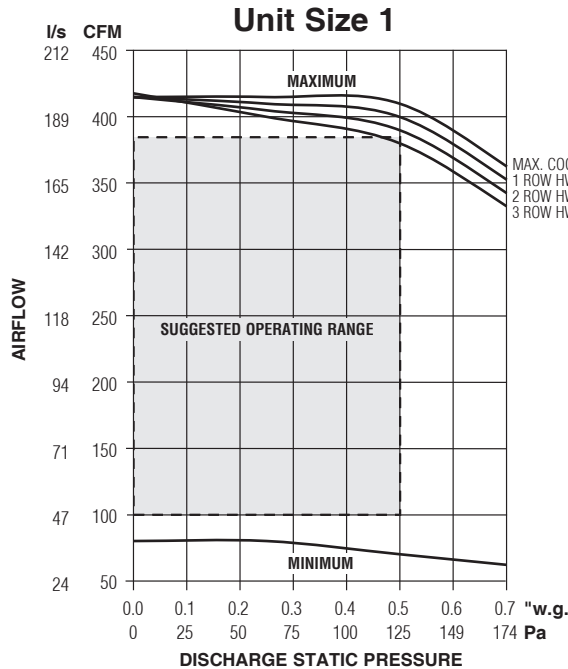
Reducing the primary air saves fan energy from the air handling unit, chilled water flow from the pumps, and work by the chillers. Selecting a variable volume sequence impacts the energy use of the entire HVAC system. Depending on the location of the building, the savings could be up to 7.5% of the total building energy use.

The 35SXC Super Stealth Unit provides these benefits while significantly reducing radiated sound, resulting in the most energy and acoustically efficient system on the market today.



Performance Data

EPIC ECM Motor Fan Curves – Airflow vs. Downstream Static Pressure
35SXC Super Stealth™ Series • Series Flow



Electrical Data

Unit Size	EPIC ECM Motor FLA				
	Motor HP	120V	208V	240V	277V
1	*	2.2	1.6	1.5	1.5
3	*	5.0	3.4	3.3	3.3
5	*	9.0	6.1	5.8	5.6

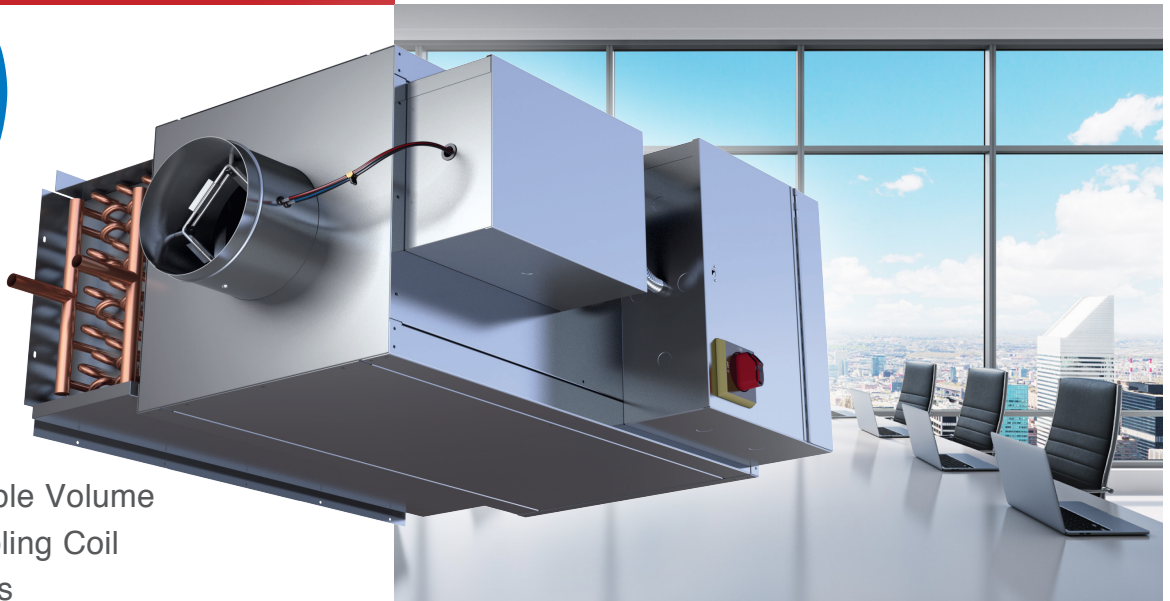
* The EPIC ECM is a variable horsepower motor. Refer to Selectworks schedule for actual power consumption.
 FLA = Full load amperage.
 All motors are single phase/60 Hz.

NOTES:

- The ECM is pressure independent and constant volume in operation at factory or field set point within the shaded area. Airflow does not vary with changing static pressure conditions. The motor compensates for any changes in external static pressure or induced air conditions such as filter loading.
- Airflow can be set to operate on horizontal performance line at any point within shaded area using the airflow volume controller provided.
- Fan curves shown are applicable to 120, 208, 240 and 277 volt, single phase ECM's. ECM's, although DC in operation, include a built-in AC/DC converter.

FAN POWERED TERMINAL UNITS

33SZ CHILLED WATER SERIES



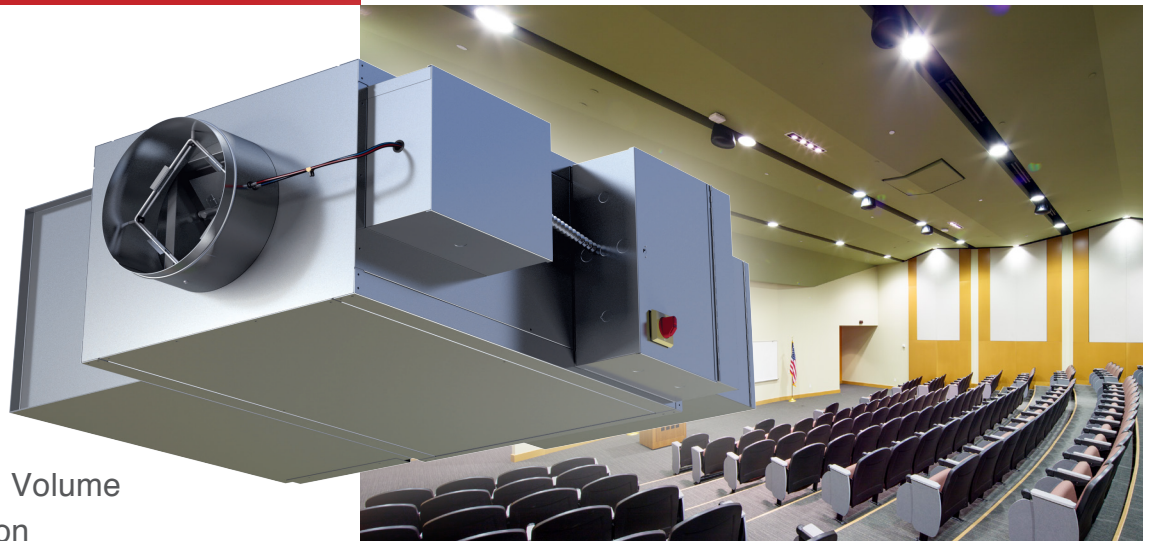
Series Flow
Constant or Variable Volume
Chilled Water Cooling Coil
DOAS Applications

MODELS: 33SZ NO HEAT • 33SZE ELECTRIC HEAT • 33SZW HOT WATER HEAT

The **33SZ Series** Fan Powered Chilled Water Terminal Units (FPCWTU) enhance Nailor's already efficient and flexible Series Fan Terminal Unit product line. The 33SZ incorporates a cooling induction coil to use in conjunction with a DOAS (Dedicated Outdoor Air System). Useful in a variety of commercial and educational applications, like classrooms, office space, laboratories and auditoriums, the 33SZ provides a flexible, industry familiar unit that excels at zone sensible cooling while the dedicated outdoor air inlet delivers ASHRAE 62.1 ventilation requirements.

FAN POWERED TERMINAL UNITS

35SST STEALTH™ SERIES



Series Flow
Constant or Variable Volume
Super Quiet Operation

MODELS: 35SST NO HEAT • 35SEST ELECTRIC HEAT • 35SWST HOT WATER HEAT

The **35SST Stealth™ Series** has been especially designed for the most demanding applications where premium quality design and performance characteristics are desired. Utilizing Stealth™ design technology, this terminal unit has low sound levels that lead the industry.