

New Variable Speed Modulating System



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- The Compressor has a V Star Bristol Compressor



BUILT IN THE USA



VSTAR™

- ◆ PROVEN BENCHMARK QUALITY - BUILT ON SOLID H82J PLATFORM.
- ◆ 1200 - 3600 RPM FOR COOLING, BOOSTS TO 4800 FOR HEATING.
- ◆ PERMANENT MAGNET MOTOR.
- ◆ NO NEED FOR:
 - START RELAY
 - START CAPACITOR
 - RUN CAPACITOR
 - CONTACTOR
- ◆ 24 VOLT INPUT, 2 STAGE THERMOSTAT.
- ◆ FULLY VARIABLE 0-10 VOLT SPEED INPUT (WITH VARIABLE OPTIONS)
- ◆ MOD BUS COMMUNICATION VIA RS485.
- ◆ ONE COMPRESSOR FOR:
 - ALL VOLTAGES & HERTZ
 - SINGLE OR THREE PHASE
- ◆ LED FAULT INDICATION FOR TROUBLESHOOTING
- ◆ SOFT START & SHUTDOWN PREVENTS UNNECESSARY STRESS ON UNIT.
- ◆ DELTA P STARTING AT ALL OPERATIONAL CONDITIONS.





H82J Platform

- Lubrication system enhanced for low speed operation
- Speed Range 1200 rpm to 3600 rpm for cooling
- Boost to 4800 rpm at heating conditions



Variable Frequency Drive

- World Class Partner – Vacon
- Flexible control from simple 2-step to fully variable
 - 24 Volt input for 2-stage thermostat
 - Fully variable communications via RS485

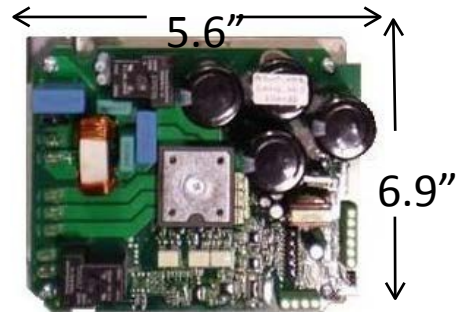


Permanent Magnet Motor

- Improved Efficiency at “A” point and Part Load

Benchmark “VStar”

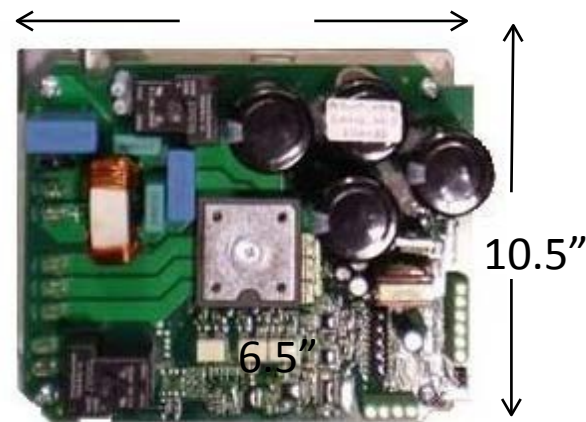
Variable Frequency Drive (VFD) Sizes



3 Ton Drive:

5.6" x 6.9" (depth 4.5")

3T and below capacity systems



5 Ton Drive:

6.5" x 10.5" (depth 6.8")

Between 3T & 5T capacity systems



Benchmark “VStar”

System Application Options



Three Discrete Inputs:

1. Hi
2. Lo
3. Sel

I. Simple Two Stage T’Stat

- Two AC speeds – Hi and Lo
- Two HP speeds – Hi and Lo
- Reversing Valve position - “Sel”

II. Multiple Discrete Speeds

- Up to 7 AC speeds - AC only system
- Up to 7 HP Speeds – Split between AC/HP

III. Full Variable – Communicating T’Stat

- Any speed within compressor design range
- RS-485 – “Modbus”, standard protocol
- RS-485 – “Climatalk”, under development
- Optional 0-10V input for Variable Speeds

Typical Application



12000 Evaporator



12000 Evaporator



12000 Evaporator



36000 compressor

Example of The System



- The compressor in this case is a 36000 unit
- It has a speed range between 1200 rpm and 3600 rpm in cooling
- It has a boost facility up to 4800rpm in heating



- This unit comes with pre connected manifolds
- Optional Quick Disconnects allow installation with pre-charged “Line Sets”
- This eliminates the need for refrigeration charging



- The air handlers also have valves for easy installation
- The modulating valve is shown here
- Each unit has a TX valve to “meter “ the refrigerant



- The Compressor has a digital value, in this case 36k it is 36
- Each Evaporator has a value depending on the size of the unit
- If these units were all 12k then they would have a value of 12 each





- If they were different sizes they would be given a value dependant on the size
- The value represents the speed of the compressor that will provide the cooling capacity





- The electronics interprets the value and adjusts the signal voltage which speeds or slows the compressor on demand
- Each air handler has its value in the can bus board



*Display with Black Rondó
Polymer Cover Plate*



- Each Cabin has its own touch screen control
- This controls the speed of the fan and the flow of refrigerant
- The units “talk “ to each other and the compressor with a twisted pair of wires via a can bus board.



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- The first control turned on will decide if the unit will cool or heat
- This unit will send a signal to the compressor control to run the unit at a third capacity
- The valve opens allowing refrigerant to flow into the evaporator



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- The fan speed will vary depending on the temperature differential between set point and actual
- If when the room is satisfied the fan slows to “1” and the can bus send the signal to slow the speed by the value or if it is the only unit running to stop the compressor



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- When another unit tries to heat when the unit is cooling then an optional heater fitted in the coil or retrofitted is available

Heat Module

