

McQuay MD Drives

How can I provide reliable variable frequency drive (VFD) fan control of my HVAC equipment and lower costs?

The solution is the McQuay MD drive—a VFD specifically designed for HVAC equipment, without the added cost of general-purpose VFD products. The McQuay MD drive is optimized to provide superior harmonic performance and improved efficiency in variable-torque pump and fan applications. Advanced motor control logic and a robust diode bridge design help reduce excess motor noise and provide more reliable operation. Expert application support from McQuay can help you optimize the MD drive for your rooftop, air handler or vertical self-contained system and for your application.

Benefits

- Better harmonic performance and improved efficiency.** Because the MD drive is optimized for variable-torque applications, such as HVAC systems, it has significantly less capacitance than general-purpose VFD products that support both variable and constant-torque loads. This eliminates losses from excess capacitance and typically results in the same level of harmonic performance as general-purpose VFD products equipped with 3% line reactors.
 - Lower VFD cost.** The MD drive eliminates the added cost of providing capacitance that exceeds the requirements of the HVAC system. In addition, McQuay can analyze your application and determine whether or not the added cost for accessory line reactors can be eliminated while still complying with IEEE 519 harmonic distortion requirements.
 - More robust components for reliable operation.** One of the primary causes of premature VFD failure is voltage spikes that damage the diode bridge and power circuits of the VFD. The McQuay 460 volt MD diode bridge is designed with a 1600 volt PIV rating. This provides at least 33% more safety factor for 460-volt applications than the typical PIV ratings of most general-purpose VFD diode bridges. This also provides protection over the full life of the VFD, versus drives that rely on MOV technology.
 - Advanced switching algorithm for precise motor control and quieter operation.** The MD drive uses a “sensorless flux vector” algorithm for precise motor control. It senses the load torque, then it adjusts the frequency and phase angle to precisely match the required torque. This has the added benefit of reducing audible motor noise without risking motor damage from high carrier frequencies in the output waveform. Other VFD products use algorithms that merely maintain the proper frequency-to-voltage ratio. This often results in higher audible noise levels unless high carrier frequencies are used.
 - Factory-installed to improve reliability and reduce field labor costs.** MD drives are selected to precisely match the amperage draw of the motor and come factory wired, configured and tested to minimize field labor. VFD parameters are specially selected to match the unit controls to help reduce start-up time.
 - “Greenest” VFD on the market.** The McQuay MD drive is the only VFD on the market certified to meet the stringent ROHS requirements of the European Union (EU). This includes the elimination of lead-based solder, cadmium, and other environmentally damaging substances from the product. It also exceeds the EU target levels for recyclable content.
- * 600 volt, 2-20 hp VFDs include 3% line reactors. Other VFDs have equivalent protection built in.



Easy Specification, Installation and Operation

Including an MD drive on a McQuay applied rooftop system, air handler or vertical self-contained system can be as simple as selecting a VFD for the unit and any accessory options (such as manual bypass and line reactors). The proper motor amperage draw for the unit is predetermined.

The MD drive comes factory-installed, wired, configured and tested for your application to minimize field labor. Its parameters are specially selected to match up with unit controls for easy startup and reliable operation. Specific application requirements—such as locating the drive to provide proper temperature and humidity control for outdoor applications—are addressed with pre-engineered solutions.

All adjustments and monitoring are done at a keypad and display on the MD drive, making possible fast diagnostics and easy adjustment for reliable operation.

Acceleration and deceleration times can be adjusted to match the VAV system. Carrier frequencies can be adjusted to find the right balance between lower noise and longer motor bearing life. Jump frequencies can be programmed into the MD drive to avoid operation at damaging resonant frequencies. An operator manual for the MD drive, specific to McQuay products, clearly outlines diagnostic and adjustment procedures.

For more information on the MD drive or McQuay applied rooftop, air handler or vertical self-contained systems, contact your local McQuay representative. To locate your representative, visit www.mcquay.com or call (800) 432-1342.



RoofPak™ Applied Rooftop Systems and Air Handlers - 15 to 150 tons



Maverick II™ Commercial Rooftop Systems 30 to 50 tons



Vertical Self-Contained Systems 15 to 125 tons



Vision™ Indoor and Skyline™ Outdoor Air Handlers 900 to 65,000 cfm

