



VARIABLE SPEED DRIVES

(Frequency Inverters) with
Fans for HVAC Applications
Information Centre

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With Fans for HVAC Applications



Eltadrive Variable Speed Drive IP66



IP66 Variable Speed Drive

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The preferred method of controlling our fans is to use the controls options listed within our product literature as these models have been fully tested to ensure longevity of product life and satisfactory operation.

Where an existing controller is being utilised the following precautions should be taken.

Motor Types

The use of frequency inverters should be restricted to three phase AC induction motors, for other motor types contact Elta Fans.

Frequency Inverter Types

The frequency inverter used to drive motors up to 690 V must be fitted with Pulse Width Modulation (PWM) with vector control.

Installation

Manufacturer's instructions for fan and frequency inverter must be adhered to.

dV/dT Filters

Motors designed for rated voltages up to 690 V, when driven by frequency inverter, do not require the use of dV/dT filters, provided they comply with the following criteria.

Motor rated voltage: $V_{nom} < 460V$

Peak voltage at the motor terminals (max):
 $\leq 1600V$

dV/dt inverter output (max):
 $\leq 5200V/\mu s$

Inverter Rise Time (min.):
 $\leq 0.1\mu s$

MTBP Time between pulses (min):
 $\leq 6\mu s$

Cable Sizing

Frequency Inverter manufacturer recommendations must be adhered to.

Drive output cables should always be multicore types, and the use of single core cables is to be avoided. Where a single cable is inadequate for the current rating, parallel multicore cables should always be used. The maximum cable length will vary with the drive rating, whether input or output filtering is installed, and will generally increase with increasing power.

Cable Capacitance is an important factor due to the nature of output signal created by PWM outputs which can lead to excessive temperatures and reduced operational life as well as nuisance tripping. The type of cable recommended by the frequency Inverter manufacturer must be adhered to.

Cable screening

It is strongly recommended that the cable be screened. This is essential to meet many of the relevant EMC standards. Refer to Frequency Inverter Manufacturer instructions.

Programming Considerations

The following are key recommendations when using Frequency Inverters with our products designed for frequency inverter use.

Maximum Speed: 50Hz

Minimum Speed: 20Hz

Switching Frequency: $>2kHz$ & $<5kHz$

Acceleration Time: 30s

Deceleration method: Coast to stop

Further Information

Contact Elta Fans for any queries regarding the use of Variable Speed Drives.

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