

## SineWave Nexus™ Filter Specification

### 1. GENERAL

- 1.1 The SineWave Nexus filter shall provide a sine wave output voltage when driven from PWM inverters.
- 1.2 The SineWave Nexus filter shall be three-phase, rated 380V/480V to 600V (+/- 10%), rated for 2A to 160A, and consist of suitable values of inductance and capacitance.
- 1.3 The SineWave Nexus filter shall be listed per UL-508, marked per CE, and certified per CSA C22.2
- 1.4 The SineWave Nexus filter shall be as manufactured by MTE Corporation, SWN series.

### 2. PERFORMANCE

- 2.1 The SineWave Nexus filter shall be rated for nominal system voltage (380V/480V to 600V, +/- 10%) and full load current (2A to 160 A).
- 2.2 The SineWave Nexus filter shall have maximum insertion loss of 10% at 60 Hz.
- 2.3 The SineWave Nexus filter shall provide specified functionality with output cable lengths up to 4572 m.
- 2.4 The SineWave Nexus filter shall be rated to operate in ambient temperatures from -40°C to 60°C under open air conditions or from -40°C to 55°C in enclosed conditions.
- 2.5 The SineWave Nexus filter shall operate at rated current with a maximum average winding temperature rise of 135°C.
- 2.6 An over temperature switch is provided to indicate adverse filter heating.
- 2.7 The SineWave Nexus filter shall be capable of continuously operating at 100% of rated current.
- 2.8 The SineWave Nexus filter shall be capable of one (1) minute of operation at 150% of rated current.
- 2.9 The SineWave Nexus filter shall function properly for inverter switching frequencies from 2 kHz to 8 kHz.
- 2.10 The SineWave Nexus filter shall have Total Harmonic Voltage Distortion (THVD) performance below 5% at 4kHz and above.
- 2.11 The SineWave Nexus filter shall support drive output frequencies from 6 Hz to 75 Hz without derating. Drive output frequencies from 75 Hz to 120 Hz shall be supported with derating.
- 2.12 The SineWave Nexus filter shall be no less than 98% energy efficient.
- 2.13 The SineWave Nexus filter shall have a common mode attenuation of -20dB (>90% PWM common mode RMS voltage reduction) at 4kHz and above.
- 2.14 The SineWave Nexus filter shall have sound pressure of not more than 75 dB at one (1) m when operated at 2kHz.
- 2.15 The SineWave Nexus filter shall function as rated at altitudes up to 1000 m.
- 2.16 The SineWave Nexus filter shall have an insulation system to provide 3000 V RMS of dielectric strength coil-to-coil and coil-to-core.

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### 3. CONSTRUCTION

- 3.1 The SineWave Nexus filter construction shall utilize copper wire or copper foil for the windings.
- 3.2 The SineWave Nexus filter shall utilize a class N insulation system, maximum temperature 200°C. Sheet insulation shall be Dupont Nomex 410.
- 3.3 The SineWave Nexus filter shall have a core to carry the magnetic flux comprised of laminations of electrical grade silicon steel.
- 3.4 The core of the SineWave Nexus filter shall be locked in place using steel banding.
- 3.5 All terminations shall be copper alloy taps or UL-recognized terminal blocks.
- 3.6 The SineWave Nexus filter shall be vacuum-dipped and baked with epoxy resin.
- 3.7 The SineWave Nexus filter shall be suitable for mounting within a low-voltage variable frequency drive enclosure (or shall be mounted inside a NEMA 1/2/3R enclosure). Mounting brackets shall be painted ASTM structural steel or structural aluminum.
- 3.8 The common mode capacitor and auto-transformer assembly shall be one module with mounting provisions and wired to a terminal block for customer connection.
- 3.9 (If the SineWave Nexus filter shall be mounted inside a NEMA 1/2/3R enclosure,) The SineWave Nexus filter enclosure shall be constructed of steel with a baked enamel finish. Openings shall be provided for sufficient convective air flow for cooling. Forced air cooling shall not be required to provide adequate cooling.