

## SineWave Guardian Filter Specification

1. General
  - 1.1 The SineWave Guardian filter shall provide a sine wave output voltage when driven from PWM inverters.
  - 1.2 The SineWave Guardian filter shall be three-phase, rated 380 V to 480 V (+/- 10%), rated for 2 A to 1500 A, and consist of suitable values of inductance and capacitance.
  - 1.3 The SineWave Guardian filter shall be listed per UL-508, marked per CE, and certified per CSA C22.2
  - 1.4 The SineWave Guardian filter shall be as manufactured by MTE Corporation, SWG series.
2. Performance
  - 2.1 The SineWave Guardian filter shall be rated for nominal system voltage (380 V to 480 V, +/- 10%) and full load current (2A to 1500 A).
  - 2.2 The SineWave Guardian filter shall have maximum insertion loss of 6% at 60 Hz.
  - 2.3 The SineWave Guardian filter shall provide specified functionality with output cable lengths up to 4572 m.
  - 2.4 The SineWave Guardian 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 Guardian filter shall operate at rated current with a maximum average winding temperature rise of 135°C.
  - 2.6 The SineWave Guardian filter shall be capable of continuously operating at 100% of rated current.
  - 2.7 The SineWave Guardian filter shall be capable of one (1) minute of operation at 150% of rated current.
  - 2.8 The SineWave Guardian filter shall function properly for inverter switching frequencies from 2 kHz to 8 kHz.
  - 2.9 The SineWave Guardian filter shall have no more than 5% harmonic voltage distortion at 2 kHz.
  - 2.10 The SineWave Guardian 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.
  - 2.11 The SineWave Guardian filter shall be no less than 98% energy efficient.

- 2.12 The SineWave Guardian filter shall have sound pressure of not more than 75 dB at one (1) m when operated within specified limits.
  - 2.13 The SineWave Guardian filter shall function as rated at altitudes up to 1000 m.
  - 2.14 The SineWave Guardian filter shall have an insulation system to provide 3000 V RMS of dielectric strength coil-to-coil and coil-to-core.
3. Construction
- 3.1 The SineWave Guardian filter construction shall utilize copper wire or copper foil for the windings.
  - 3.2 The SineWave Guardian filter shall utilize a class N insulation system, maximum temperature 200°C. Sheet insulation shall be Dupont Nomex 410.
  - 3.3 The SineWave Guardian 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 Guardian 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 Guardian filter shall be vacuum-dipped and baked with epoxy resin.
  - 3.7 The SineWave Guardian 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 (If the SineWave Guardian filter shall be mounted inside a NEMA 1/2/3R enclosure,) The SineWave Guardian 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.