MTE

AN SL INDUSTRIES COMPANY

MTE Series A Sine Wave Filters

Sine Wave Filters

Series A 2kHz-8kHz Filters for Motor Protection

MTE SERIES A SINE WAVE FILTERS are designed to provide a Sine Wave output voltage when driven from Variable Frequency Drives or other types of PWM inverters with switching frequencies from 2kHz to 8kHz. For Variable Frequency Drive (VFD) applications, MTE Sine Wave Filters eliminate the problem of motor/cable insulation failures, heating, and audible noise. Sine Wave Filters also reduce electromagnetic interference (EMI) by eliminating the high dV/dt associated with inverter output waveforms.

APPLICATIONS - For alternative energy applications, such as wind driven generators, where an inverter is used to return power to the utility distribution system through a step-up transformer, these filters meet the requirements of IEEE-519 and permit the use of standard transformers.

Added cable protection and the economy of using standard grade electrical wire is a significant benefit of using the MTE Sine Wave Filter to protect against long lead drive to motor excess voltage problems.

SINE WAVE FILTER SELECTION - For variable and constant torque applications, select filters based on the current rating of the motor. Filter current ratings have been designed to meet the NEC requirements. For applications that use motors with current ratings that exceed NEC values, select a filter with a current rating equal to or greater than that of the load. Where a single filter feeds multiple motors select the filter based on the total motor current.

For inverters feeding isolation transformers select a filter with a current rating equal to or greater than that of the transformer primary current. Power and frequency converter applications which use PWM inverters to supply a wide range of loads require that the output of the Sine Wave Filter must feed a Delta–Wye isolation transformer with the primary sized to the Sine Wave Filter full load current.

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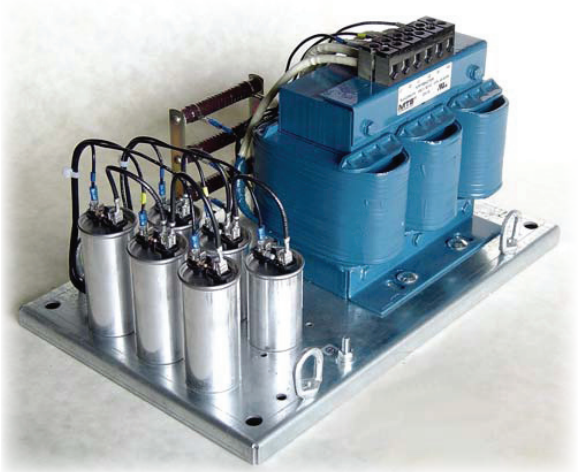


PRODUCT SELECTION: See MTE Sine Wave Filter Selection Brochure or visit the MTE website at www.mtecorp.com for complete product selection. ***Please note that Series A Sine Wave Filters can only be used with PWM inverters with switching frequencies between 2kHz and 8kHz.***

BASIC SPECIFICATION RANGES - The Sine Wave Filter is available in voltage ranges of 200–230VAC, 380-480VAC, or 550-600VAC & for motor sizes from 1.5 Hp to 700 Hp. The Sine Wave Filter has a continuous current rating of 100% RMS & an intermittent current of 150% for 1 minute. Harmonic voltage distortion feeding a transformer at full load & at 60Hz is 5% maximum. Harmonic voltage distortion feeding a motor at full load & at 60Hz is 5% typical.

INSTALLATION OPTIONS: Panel-mount or NEMA 1, 2 and 3R enclosures are available.

Typical applications include:

- HVAC Fans
- Deep Well Pumps on VFDs
- Multi Motor Common Drive Conveyer Systems
- Variable Frequency Power
- Linear Drive Motors
- Old Non Inverter Duty Motors used with Modern VFDs
- Underground Ventilation
- Critical Process Controls Systems

Model Number Code Configuration: SW A X Y _ _ _ _ X YY

- Sine Wave filter
- Series Version. A, B, C, X
  - "X" denotes non-standard configurations
- Mechanical Configuration
  - P = Panel Mount
  - G = General Purpose NEMA 1 or 2
  - W = NEMA 3R
- Indicates Physical Size: A, B, C, D, etc. (A is smallest)
- Current Rating (i.e. 0045 is 45 Amps)
- Voltage
  - A = 200 – 230VAC, D = 380 – 480VAC, E = 550 – 600VAC
- Options
  - 01 NC Overtemp

DRIVING POWER QUALITY

Product Specifications - 2kHz-8kHz Sine Wave Filters

Refer to the Series A Sine Wave Filter User Manual for Detailed Specifications

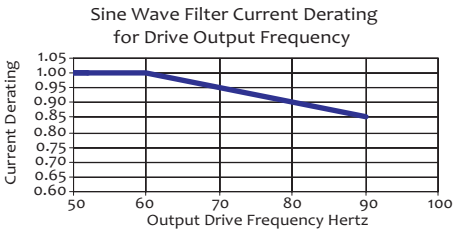
Performance:

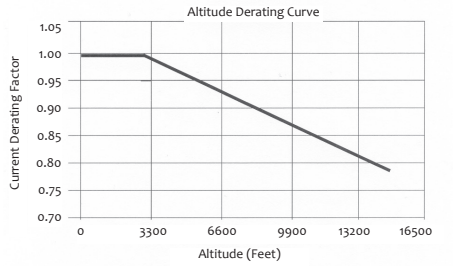
Harmonic Voltage Distortion when feeding a:

Transformer at full load and at 60Hz:	5% maximum
Motor at full load and at 60Hz:	5% typical

Ratings:

Continuous Current Rating	100% RMS
Intermittent Current Ratings:	150% for 1 minute
Minimum Inverter Switching Frequency:	2kHz
Maximum Inverter Switching Frequency:	8kHz
Nominal Inverter Operating Frequency:	60Hz
Minimum:	0Hz
Maximum with de-rating:	90Hz
Altitude without de-rating:	1000 meters
Maximum Motor Lead Length:	15,000 feet
Maximum ambient temperature:	50° C open filters
	40° C enclosed filters
Insertion Loss:	10% of rated voltage maximum
Audible Noise:	
Maximum Audible Noise Level at Two Meters for Standard Configuration:	76dB-A





Output Compatibility/Loading: Conventional 3 phase motors. Standard step-up transformer with 4% minimum output impedance, "No load" continuous operation

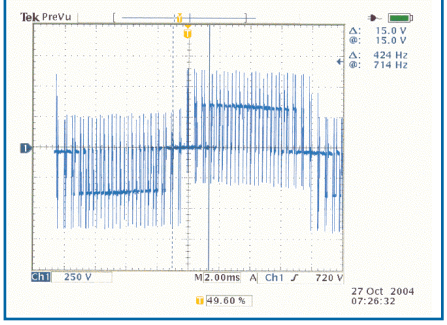
Agency Approvals, UL& cUL: Listed to UL508 type MX and CSA-C22.2 No 14-95, File E180243
3HP to 1000HP, 120VAC to 600VAC, 50/60Hz Three Phase

Note: Short Circuit rating not required under Exception No.1 of UL508A SB4.2.1

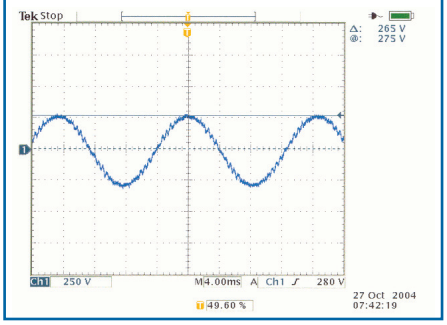
Data subject to change without notice.

MTE Sine Wave Filters help eliminate the high dV/dt associated with inverter output waveforms in applications where the distance between the motor and the inverter is up to 15,000 feet.

Raw output voltage waveform



Output Voltage after Sine Wave Filter



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Form SW-PSP-E June 2012
Supersedes Form SW-PSP-E January 2011

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