MTE CORPORATION

Series B Matrix Filter®

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8% & 5% Harmonic Filters for 208 - 600 VAC 50/60Hz

MTE Matrix Filters meet the IEEE 519 requirements of removing harmonic distortion on virtually any kind of six pulse rectifier. These power supplies are commonly found in three phase electronic equipment such as adjustable speed motor drives, welders, battery chargers, servo drives and other equipment.

Harmonics are a problem

Harmonic distortion has become an increasing concern for commercial, industrial, and residential users of electrical (especially electronic) equipment and specifying engineers alike. Harmonics not only waste energy, but they reduce equipment life, electrical system reliability, system efficiency and equipment productivity.

Guaranteed results

Unlike other harmonic filter technologies, the performance of MTE Matrix Harmonic Filters is guaranteed! On AC variable frequency, variable torque drive applications (fans & pumps), Matrix filters will meet the guaranteed maximum levels of THID (total harmonic current distortion) at full load. Additionally, Matrix filters will not cause power system resonance nor attract harmonics from other non-linear loads.

Meets international power quality standards such as: IEEE-519, G5/4, AS2279, EN61000.

No system analysis is required to select and apply Matrix Filters

Harmonic Performance (Convert 6-pulse Drives to Multi-pulse)

Matrix filters allow users to achieve attenuation of harmonics to levels below those previously attainable only by using 12 or18-pulse rectification methods. Use standard 6-pulse drives and our M5 Series Matrix Filters in place of 18-pulse rectifiers and use our M8 Series in lieu of 12-pulse rectifiers.

UL Listed (UL-508)

Matrix Harmonic filters are UL Listed (File E180243) for both USA and Canada.

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Product Selection: **See** TR-1703 **for Matrix Series B selection guides and option details.**

Installation Options: **Matrix Harmonic Filters are available in a variety of enclosure options. The standard enclosure meets the requirements of both Nema 1 & Nema 2. The Nema 3R provides weather protection and is available in optional stainless or galvanized steel construction. Optional Serpent /rodent screens can be added to block small animals from entering enclosures. For maximum flexibility, Matrix filters are also offered as open panel construction for integration into customer panels and enclosures .**

Electrical Options: **Various contactor options may be added to provide for filter bypass and leading KVAR cancellation to enhance compatibility with standby power and support service requirements.**

Model Number Code System: M (5 or 8) X Y _ _ _ _

- Matrix Filter
- 5% or 8% Total Harmonic Current Distortion (THID)
- Mechanical Configuration: P = Panel Mount; G = General Purpose NEMA I or II; W = NEMA 3 R; N = Industrial
- Indicates Physical Size: B, C, D, E, F (B is smallest)
- Current Rating (i.e. 0044 is 44 Amps)
- Voltage & Frequency Code: A=208-240 60Hz, C=385-415 50Hz, D=480 60Hz, E=600 60Hz

Typical uses include:

- Mission critical facilities
- AC variable frequency drives
- DC adjustable speed drives
- Electronic welders
- Battery chargers
- Fans and Pumps
- Water Treatment Facilities
- Induction heating equipment
- Elevator drives

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Product Specifications Matrix Series B

Refer to The Matrix Series B User Manual for Detailed Specifications

Matrix Filters are designed to operate and will achieve guaranteed performance under the following Service Conditions:

Load: 6 pulse rectifier, operating in variable torque mode and chosen from the standard selection table.
For constant torque application select filter rating based on the appropriate application note*: AN-0106*
Input voltage: Nominal voltage VAC +/- 10%, 3 Phase
Frequency: Nominal Frequency ± .75 Hz
Input voltage line unbalance: 1%
Maximum source impedance: 6.00%
Minimum source impedance: 1.5%
Service Factor: 1.00

Ambient Temperature (Operating)

Enclosed Filters: -40 to +40 degrees C
Open Panel Filters: -40 to +50 degrees C

Storage Temperature: -40 to +90 degrees C

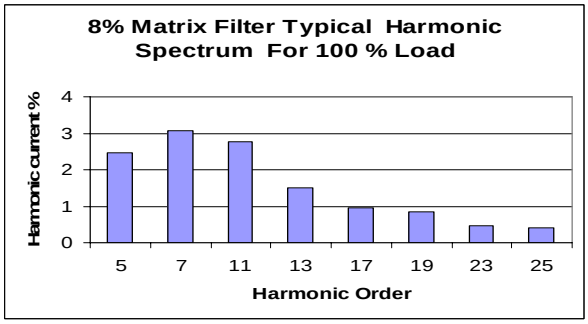
Altitude: 0 to 3300 Feet above sea level without derating
Relative Humidity: 0 to 95% non-condensing

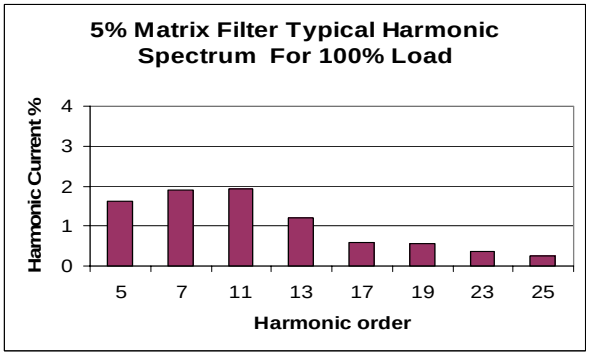
Agency Approvals

UL and cUL listed to UL508 and CSA-C22.2 No 14-95
File E180243 (3 – 1000 HP, 120VAC through 600 VAC
50. 50/60, 60 Hz Three Phase

Performance

Total Harmonic Current Distortion:
Eight Percent Filter: 8% Max at full load
Five Percent Filter: 5% Max at full load





Performance Guarantee

Select and install the appropriate Matrix Harmonic Filter in a variable torque AC variable frequency drive application, within our published system limits and we guarantee that the input current distortion will be less than or equal to 5% THID (for M5 Series filters) or 8% THID (for M8 Series filters) at full load. If a properly sized and installed filter fails to meet its specified THID level, MTE will provide the necessary modifications or replacement filter at no charge. TDD will typically be even lower than THID.

Matrix filters can also provide similar performance in other drive applications such as constant torque, DC drives and other phase controlled rectifiers, but actual THID levels can vary by load and/or speed and therefore cannot be guaranteed. Consult factory for assistance when applying Matrix filters on these types of equipment

MINIMUM SYSTEM REQUIREMENTS

The guaranteed performance levels of this filter will be achieved when the following system conditions are met
Source impedance: 1.5% minimum to 6.0% max. Frequency: 60 Hz ± 0.75 Hz System voltage: Nominal System Voltage (line to line) ±10% Balanced line voltage: within 1%
Background voltage distortion: 0%THVD
The presence of background voltage distortion will cause motors and other linear loads to draw harmonic currents. Likewise, additional harmonic currents may flow into the Matrix filter if there is harmonic voltage distortion already on the system.

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