

# Mesta DPM™ Active Harmonic Filter

- Actively eliminates harmonic distortion
- Provides active power factor correction
- Meets IEEE-519-2014



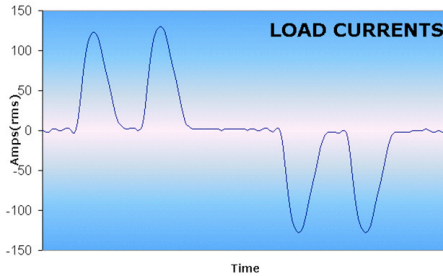
Pioneers in Power Electronics

# Features

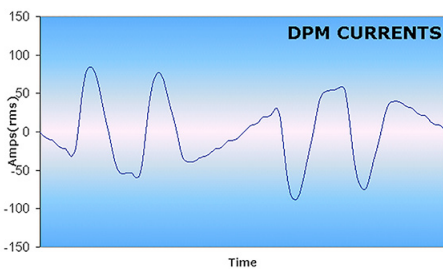
- Actively reduces harmonic distortion to below 5%
- Instantly reacts to varying loads
- Improves power factor to near unity
- Parallel system installation
- 98% operational efficiency
- Advanced LCD touchscreen display
- Balances three phase loads
- Corrects for single/multiple loads
- UL and CUL listed

# Benefits

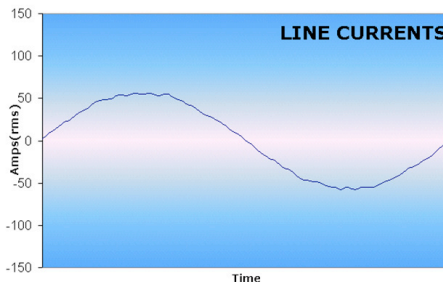
- Facilitates IEEE-519-2014 compliance
- Eliminates high transient harmonics during sudden load changes
- Decreases utility costs
- Accommodates large scale applications
- Lowers operating costs and increases reliability
- Provides detailed power information
- Increases usable system capacity
- Enables cost effective solutions
- Ensures quality production and standards



Sample DC Bridge Load  
Power Factor (PF) =0.70  
Total Harmonic Distortion (THD) =69.72%



480V-50A-3 phase delta Mesta DPM™  
Approximately 85% loaded



Actual current drawn from utility  
Power Factor (PF) =1.00  
Total Harmonic Distortion (THD) =2.54%

## Correcting the Currents

### Harmonic Distortion

Electronic equipment and controls, such as AC/DC motor drives, AC/DC heating equipment, computers, and other commonly used devices immensely overburden electric utilities with harmonic distortion. These nonlinear loads, uniquely characterized, with high current crest factor (CF) and low power factor (PF), create harmonic distortion within facilities and on the utility grid. This harmonic distortion can result in the overheating of electrical apparatus, premature equipment failure, and higher utility costs. Many electrical consultants are including compliance with IEEE 519-2014 in their design specifications to help reduce these problems and avoid penalties that can be imposed by electrical utilities.

### The Mesta DPM™ (Digital Power Manager™)

The Mesta DPM™ (Digital Power Manager) is a true Active Filter, and it is a comprehensive solution for harmonic mitigation and power factor correction. Its implementation does not require detailed knowledge regarding the nature of the load(s) or the type of harmonics present. The Mesta DPM™ responds to the exact need as it develops. The degree of the load non-linearity, which determines the amount, as well as, the type of harmonics involved, will determine the activity of the filter.

Shown to the left are actual current waveforms of a non-linear load with 69.72% total harmonic distortion (THD), the corrective current of a Mesta DPM™, and the resulting sinusoidal line current. The resulting sinusoidal line current in this example has a THD of less of 3% and a power factor 1.00.

# Applications

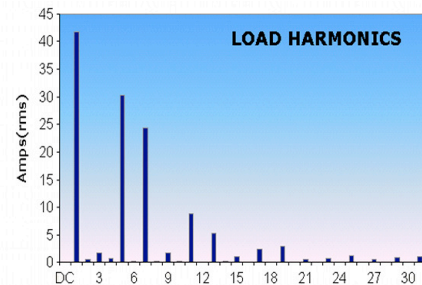
The Mesta DPM™ is a critical addition to a plant that is being required to become IEEE-519 compliant. It is a proven technology that ensures a comprehensive solution for harmonic mitigation and power factor correction.

- OEM Switchgear & Motor Control Centers
- Industrial Manufacturing Factories
- Water Treatment Plants
- Heat Treating Facilities
- Waste Water Plants
- Material Growth Facilities
- Food Processing Plants
- Mass Transit Facilities
- Hospitals
- HVAC Applications

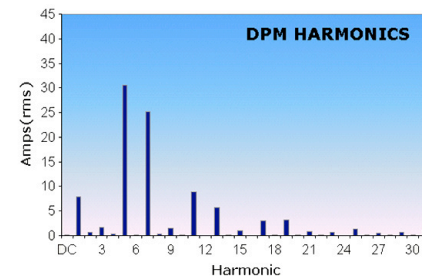
**The Mesta DPM™ gives you the advanced control and proven reliability that your facility needs to solve its power quality issues.**

## Mitigating Harmonics

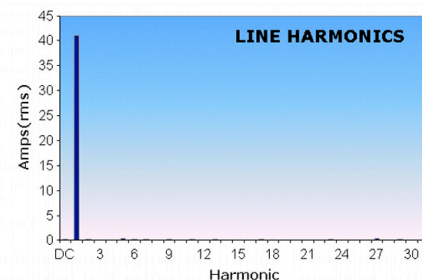
The Mesta DPM™ output coexists in parallel with the utility voltage, while it is precisely phase-locked and voltage-equalized. The unit utilizes high frequency current sensors to continuously monitor the load harmonics and instantaneously directs the energy/current flow in and out of its IGBT based inverter to make the resulting line current harmonic free, balanced, and at unity power factor. The graphs to the right represent the individual harmonics created by a non-linear test load, the corrective current that is provided by the active harmonic filter, and the resulting line harmonics.



Sample DC Bridge Load  
Power Factor (PF) =0.70  
Total Harmonic Distortion (THD) =69.72%



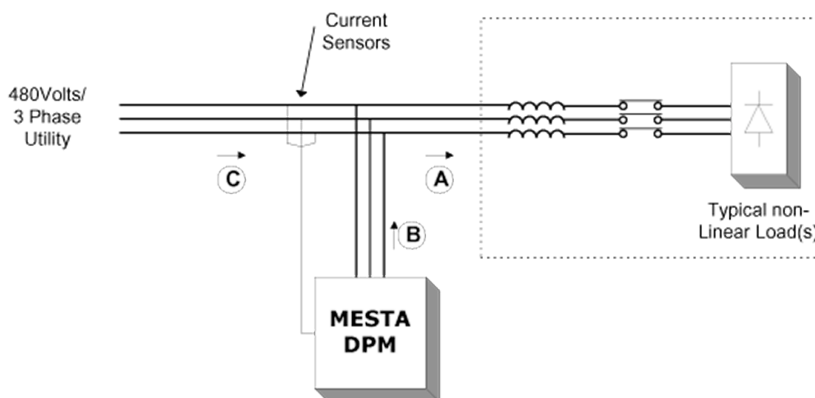
480V-50A-3 phase delta Mesta DPM™  
Approximately 85% loaded



Actual current drawn from utility  
Power Factor (PF) =1.00  
Total Harmonic Distortion (THD) =2.54%

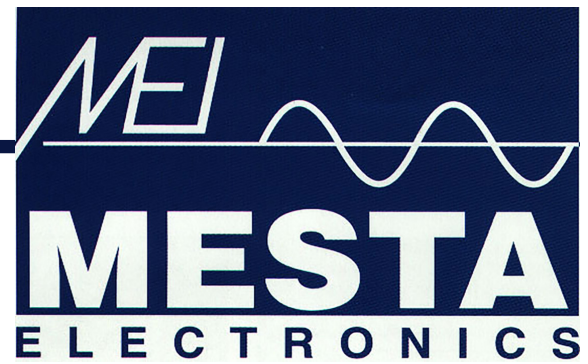
## DPM™ Installation

The parallel installation of the Mesta DPM™ results in higher overall efficiency than series installed devices. Because of the parallel installation, the DPM™ does not need to be sized to provide 100% of the current required by the loads. It only has to be sized to provide the harmonic and out of phase current drawn by the non linear loads, creating a much more efficient solution to harmonic distortion.



# Commitment to Quality & Service

Mesta's cutting edge technology and products emerge from our outstanding engineering and production teams. From design to shipment, our products are extensively tested to meet and exceed our customers' expectations and industrial standards. We strive to make advanced technology, high reliability, and customer satisfaction synonymous with the Mesta name.



## Mesta DPM™ Active Harmonic Filter Specifications

Model	Total Corrective Current	Dimension (WxHxD in)	Weight (lbs.)	Losses/Max Load (kw)
<b>NEMA-1 Enclosures</b>				
3AC2DPM050-480-1	50	21x53x14.25	230	.9
3AC2DPM100-480-1	100	21x53x14.25	270	1.7
3AC2DPM150-480-1	150	27x63.5x16.5	440	2.5
3AC2DPM200-480-1	200	27x63.5x16.5	480	3.3
3AC2DPM300-480-1	300	33x75x18	630	5.1
<b>Open Panel Mounts</b>				
3AC2DPM050-480-0	50	16.9x45x12.7	135	.9
3AC2DPM100-480-0	100	16.9x45x12.7	175	1.7
3AC2DPM150-480-0	150	22x54x13.7	245	2.5
3AC2DPM200-480-0	200	22x54x13.7	280	3.3
3AC2DPM300-480-0	300	27x56x13.7	400	5.1

### Electrical

Voltage: 480, 400, 240, 208 VAC +12%, -15%, 3 phase, 3 wire plus gnd

Voltage: 600 (rated at 40A, 80A, 120A, 160A, 240A)

Frequency: 60 or 50 Hz, ± 5 Hz

### Performance Specifications

Limit harmonic current to <5% TDD immediately upstream of installation point (IP) as per IEEE 519-2014, table 2

Power Factor: Near unity (.99) immediately upstream of IP

Line Current Balancing: ± 2% immediately upstream of IP

Efficiency: 98% efficient at full load

Crest Factor Capability: 3.0

Parallel Unit Installation: Up to 10 DPM™ units

### Overload Protection

Output is electronically current limited to 300% peak, 100% rms

Class T fuses provide redundant overload protection

Electronic over temperature protection

### Third Party Certifications

UL & CUL Listed

### Indicators and Controls

LCD touchscreen display provides power quality information, operating parameters, operational status

Touchscreen functions: Run, Stop, Menus, Parameter Setup

Ethernet and RS232 interfaces for remote communication

Relay contacts provide system run, fault and max load status (3 relays rated @ 125 VAC/0.5A or 24VDC/1.0A)

Remote enable input

### Physical

Operating Temperature: 0 to +40 C ambient without derating

Humidity: 95% maximum non-condensing

Storage Temperature: -20 to +40 C

Cooling: internal forced air

Altitude: ≤1000m, derated 1% per 100m above 1000m

Power: hardwired internal (top or bottom access)

### Options (consult factory)

Ethernet/IP & Modbus TCP connectivity

Enclosure types

Specifications are subject to change without notice

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