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Electrical System Inductive Filter/Transformer

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PRODUCT DESCRIPTION

The PowerOp Filter (formerly named the T7 EMI Facility Filter) is a unique, passive, variable-inductor filter/transformer designed to improve 60Hz power performance in your building by filtering out current harmonics or 'noise' created by non-linear loads. Current harmonics are created by non-linear electrical loads (DC power supplies for personal and office equipment, modern lighting, variable-frequency motor controllers, etc.) that introduce emission currents, disruption currents, and leakage current into the fundamental 60Hz frequency powering your building's electrical loads. In the presence of harmonics, additional heat is created and power is drawn through the meter to satisfy the load. By mitigating these harmonics, the PowerOp Filter improves your building's Power Quality and reduces energy consumption and kW power demand. The PowerOp Filter is patented with the USPTO. UL® group STD 1283. The PowerOp Filter is manufactured in ISO-certified facilities. The PowerOp Filter is not a power-factor correction (PFC) device, capacitor-based device, or a transient voltage surge suppression (TVSS) device. The PowerOp Filter is a passive, inductive transformer installed on the neutral-side of the electrical circuit.

FEATURES AND BENEFITS

The PowerOp Filter improves power quality by filtering current harmonics from your building's electrical system. The PowerOp Filter is suitable for use in most any electric sub-panels, up to 480 VAC, that have a neutral current and do not already have a dedicated secondary transformer connected to the sub-panel.

FEATURE	ADVANTAGES AND POTENTIAL BENEFITS
Current harmonic mitigation	7-12+%* decreased building energy consumption; 2-6%* decreased building power demand; lower system current should lower equipment heating; extend equipment life; improve equipment performance, and decrease equipment downtime.
Variable-inductor technology	Designed for wide-range of current harmonic frequencies in operational situations, greatly broadening building-type applicability; no tuning required.
Passive design	When properly installed, the PowerOP Filter operates without outside input. The device consumes no power, so it neither consumes nor wastes energy.
Long-lasting design	10 year expected lifetime.
Low maintenance costs	Device requires no outside monitoring, maintenance, or upkeep.

*In commercial applications; individual results may vary.

APPLICATION

The PowerOp Filter is recommended for use in buildings:

- Up to 480 VAC single-phase and three-phase electrical sub panels where neutral-wired loads are present.
  - + Combination of linear and non-linear loads on individual sub panels.
  - + The number and percentage of non-linear electrical loads in your building.
  - + The number and percentage of non-linear electrical loads in neighboring buildings.

The PowerOp Filter is not recommended for use in:

- Three-phase delta-wired or wye-wired electric sub panels
- Two hot wire sub panels with no neutral current.

USING THE DEVICE

The PowerOp Filter is intended for use in electrical sub-panels with an operating voltage of 480 VAC or lower. The PowerOp Filter is installed in each sub-panel in your building, in parallel on the neutral bar, during normal operations in about 1 hour. The installation procedure includes testing for efficacy to ensure measurement of current through the PowerOp Filter to confirm the installation. Detailed instructions are provided to all commercial customers with their shipment. Installation must be performed by a licensed, manufacturer-approved electrician.

PROPERTIES AND SPECIFICATIONS

Size	3.5"L x 2.5"W x 2.5"D
Weight	0.3 lbs.
Temperature range	0 - 150 F
Max. ambient temperature	150 F
Max. current	20A
System frequency	50/60 Hz
Operating voltage	Up to 480 VAC

THEORY OF OPERATION

The PowerOp Filter is an inductive/transformer filter designed to attract and mitigate the current harmonics above the fundamental (50/60 Hz) frequency. By creating an alternate current flow-path to the neutral bar — with a lower impedance than the neutral bar itself for these frequencies — the PowerOp Filter attracts the harmonic waveforms produced by non-linear loads.

The PowerOp Filter:

- Attracts the 3rd, 5th, 7th, 9th, 11th and higher current harmonics without tuning
- Filters and reduces current harmonics
- Does not attract energy at the fundamental (50/60 Hz) frequency

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