

Better Technology. Better Filters.

Power semiconductor advances are driving conventional filter technology to obsolescence. Traditional laminated silicon-steel filters are struggling to meet the additional demands required by these devices. Compared to conventional technology, **SWF Sine Wave Filters** offer...

- **EXTENDED SYSTEM LIFE** for your AC drive, step-up transformer, and induction motor
- **BETTER MOTOR PROTECTION** for motor windings and bearings
- **HIGHER RELIABILITY** due to cooler, more efficient filter operation
- **HALF THE SIZE & WEIGHT** for a smaller footprint and easier integration and installation
- **NO COST PREMIUM**



CTM Sine Wave Filters - The Future Starts Here

Half the size. Half the weight. Twice the efficiency.

CTM Sine Wave Filters transform the output of Variable Frequency/Speed Drives (VFDs or VSDs) from a Pulse-Width Modulated (PWM) square wave with voltage spikes and high frequency harmonics to a near perfect sinusoidal waveform. The largest companies in the world rely on CTM technology, with more than 200,000 installed units in some of the harshest environments on the planet.

INCREASE ...

Motor Protection

Harmful square waves, voltage spikes, and harmonic distortion are all filtered from the inverter output, reducing motor heating, wear, and winding stress, providing critical motor protection.

Maximum Motor Lead Length

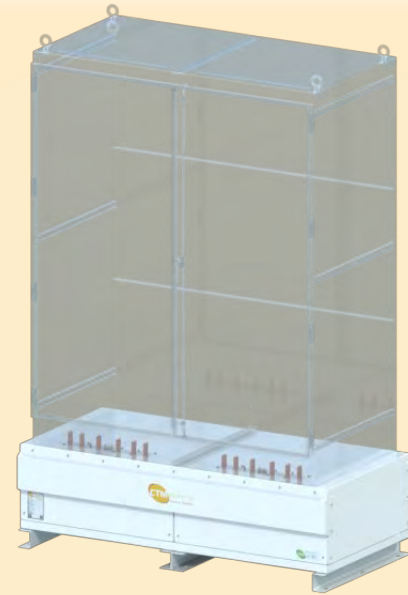
Reflected voltage waves occur when motor lead lengths reach or exceed a characteristic length of the system, which is dependent on the voltage rise times (dV/dt) in the cabling. By filtering the PWM waveform to a near perfect sinusoidal waveform, CTM sine wave filters minimize dV/dt , allowing for longer motor lead lengths (up to 15,000 feet in certain applications).

Motor Longevity

By reducing motor ripple current, CTM sine wave filters reduce motor heat, noise and vibration, thereby extending motor life. Additionally ripple current reduction eliminates torque ripple.

Filter Reliability

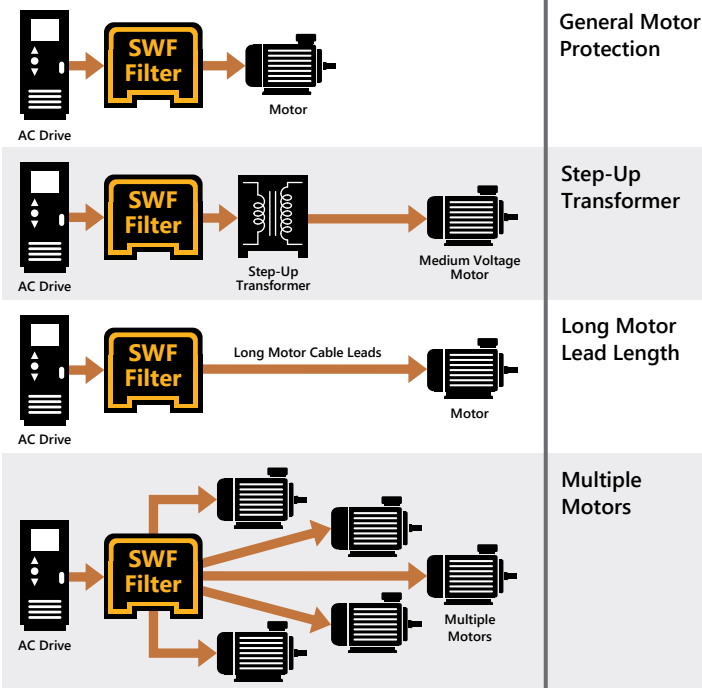
CTM Filters maintain lower temperatures, increasing life and reliability.



Pedestal Cabinet option displayed above.

The **NEMA 3R Pedestal Cabinet** integrates directly below your existing drive cabinet, maximizing power density and reducing system complexity. Contact CTM for additional pedestal cabinet information.

Filter Applications



DECREASE ...

Power Loss

Due to its unique patented design and proprietary materials, CTM Sine Wave Filters operate at higher efficiencies than conventional filter technology, decreasing power loss, minimizing dissipated heat, and reducing total cost of ownership.


Electric Fluting (Bearing Current)

Common-mode (bearing) current can have disastrous effects on induction motors, leading to electric fluting and premature bearing failure. CTM offers the only sine wave filters that do not introduce common-mode currents.

Design Footprint

At half the size and weight of laminated silicon-steel technology, CTM filters take up less space and are easier to integrate into existing systems.

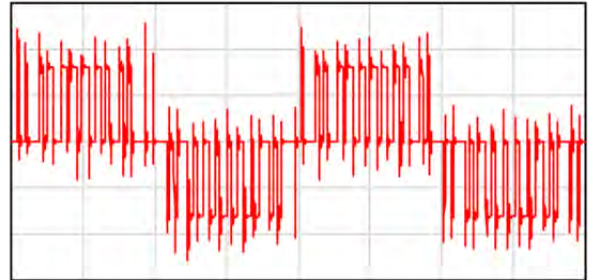
PERFORMANCE SPECIFICATIONS

Harmonic Voltage Distortion	<5% @ 2 kHz
Voltage Range	Up to 500 V
Fundamental Frequency	6 - 70 Hz (higher with de-rating) - For up to 200 Hz applications, see S2F Series Sine Wave Filters
Switching Frequency	2 - 20 kHz Above 8 kHz, contact CTM for application verification
Current Range	100 - 840 A
Overload Capability	150% rated current for 1 minute
Maximum Ambient Temperature	50 °C (122 °F) (higher with de-rating)
Motor Cable Length	Up to 15,000 feet
Enclosure Options	<ul style="list-style-type: none"> • Open Panel • Stand-Alone Cabinet (NEMA 3R) • Pedestal Cabinet (NEMA 3R) - Contact CTM directly for pedestal inquiries
Agency Recognitions	 1446

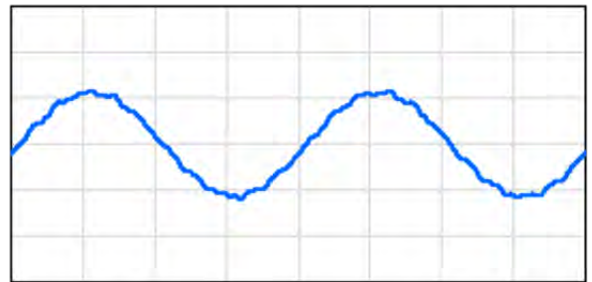


Motor Voltage Waveform

Without Filter

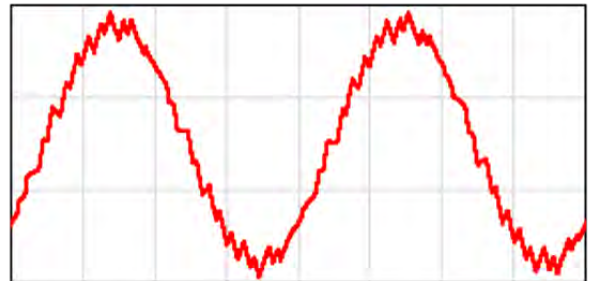


With CTM Filter

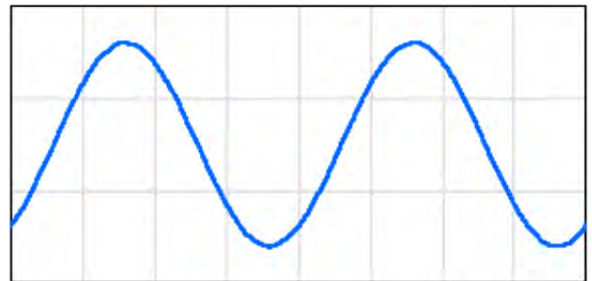


Motor Current Waveform

Without Filter



With CTM Filter



Note: Information is for reference only. Data subject to change without notice.

SELECTION TABLES: Open Panels

Size filters based on the Full Load Amps (FLA) of the drive. The filter current rating must be greater than or equal to the FLA. Order filters by CTM Part Number online at ctmmagnetics.com/contact-us, or call us directly at [480.967.9447](tel:480.967.9447).



Rated Current (A _{RMS})	Est. Motor HP ¹	Filter Power Losses (Watts)		OPEN PANEL		
		At 60 Hz Only ²	60 Hz / 2 kHz ³	Part Number ⁴	Size (in) (H x W x D)	Weight (lbs)
100	75	396	642	SWF0100A00	22.8 x 24.0 x 15.6	143
130	100	498	879	SWF0130A00	22.8 x 24.0 x 15.6	167
160	125	534	927	SWF0160A00	22.8 x 24.0 x 15.6	166
200	150	711	1194	SWF0200A00	23.8 x 24.9 x 17.1	191
240	200	882	1305	SWF0240A00	23.8 x 24.9 x 17.1	214
300	250	1062	1173	SWF0300A00	23.8 x 24.9 x 17.1	215
360	300	1149	1290	SWF0360A00	25.8 x 27.0 x 18.1	262
420	350	1227	1398	SWF0420A00	25.8 x 27.0 x 18.1	273
480	400	1326	1518	SWF0480A00	25.8 x 27.0 x 18.1	290
540	450	1404	1614	SWF0540A00	27.8 x 29.0 x 19.4	331
600	500	1653	1905	SWF0600A00	27.8 x 29.0 x 19.4	354
720	600	1746	2028	SWF0720A00	27.8 x 29.0 x 19.4	365
840	700	1764	2076	SWF0840A00	27.8 x 29.0 x 19.4	384

¹ Motor HP estimated based on typical conditions. Actual HP will vary with application. Size filter based on drive FLA.

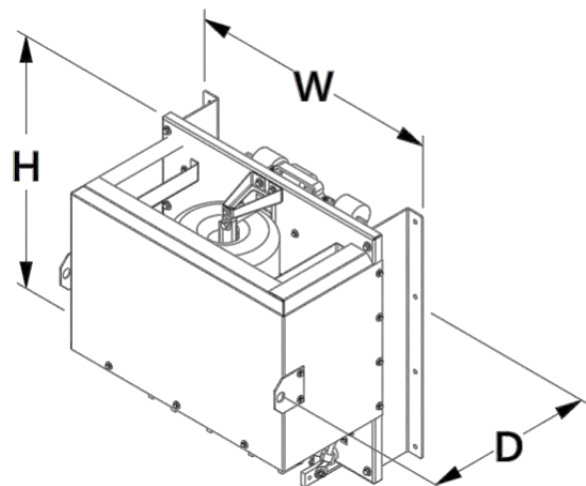
² Loss calculations performed at rated current, 60 Hz, and 20 °C ambient.

³ Loss calculations performed at rated current, 60 Hz with 2 kHz switching frequency, and 20 °C ambient. THD-i is 14.7%.

⁴ Use [Part Number System \(page 6\)](#) to select options. Unspecified options will be assumed to carry the default "-0000" option number.

With a compact design, CTM Open Panels easily integrate within an AC drive enclosure, or can be designed into a new product.

- **Compact Form Factor** for design into existing cabinets
- **Lowest Cost Solution** with no additional enclosure requirements
- **Highest Power Density** when compared to other enclosure solutions



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SELECTION TABLES: Cabinets, NEMA 3R

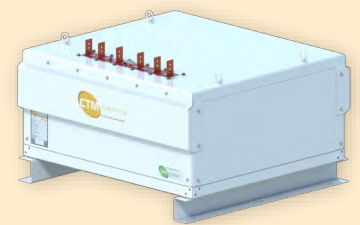
Size filters based on the Full Load Amps (FLA) of the drive. The filter current rating must be greater than or equal to the FLA. Order filters by CTM Part Number online at ctmmagnetics.com/contact-us, or call us directly at [480.967.9447](tel:480.967.9447).



Rated Current (A _{RMS})	Est. Motor HP ¹	STAND-ALONE CABINET		
		Part Number ²	Size (in) (H x W x D)	Weight (lbs)
100	75	SWF0100AS3	48.0 x 26.2 x 31.4	344
130	100	SWF0130AS3	48.0 x 26.2 x 31.4	368
160	125	SWF0160AS3	48.0 x 26.2 x 31.4	368
200	150	SWF0200AS3	48.0 x 26.2 x 31.4	392
240	200	SWF0240AS3	48.0 x 26.2 x 31.4	415
300	250	SWF0300AS3	48.0 x 26.2 x 31.4	416
360	300	SWF0360AS3	54.5 x 30.2 x 35.4	502
420	350	SWF0420AS3	54.5 x 30.2 x 35.4	512
480	400	SWF0480AS3	54.5 x 30.2 x 35.4	529
540	450	SWF0540AS3	54.5 x 30.2 x 35.4	569
600	500	SWF0600AS3	54.5 x 30.2 x 35.4	592
720	600	SWF0720AS3	54.5 x 30.2 x 35.4	603
840	700	SWF0840AS3	54.5 x 30.2 x 35.4	622

PEDESTAL CABINET

Contact CTM for
Additional Information
and Order Inquiries



¹ Motor HP estimated based on typical conditions. Actual HP will vary with application. Size filter based on drive FLA.

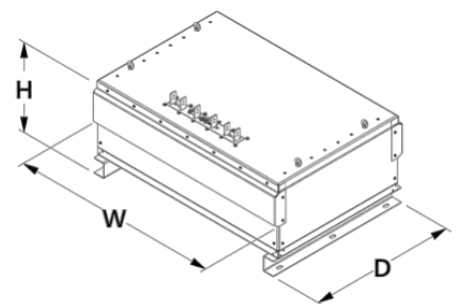
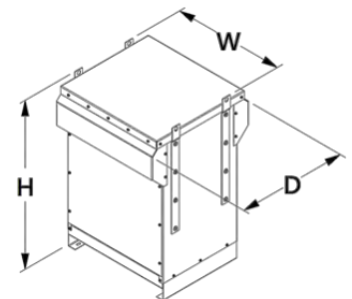
² Use [Part Number System \(page 6\)](#) to select options. Unspecified options will be assumed to carry the default "-0000" option number.

CTM Stand-Alone Cabinets provide drop in place solutions with environmental protection.

- **NEMA 3R** rating provides protection from the elements, including rain, snow, and dust
- **Drop In Place Solution** allows easy integration into existing motor control systems

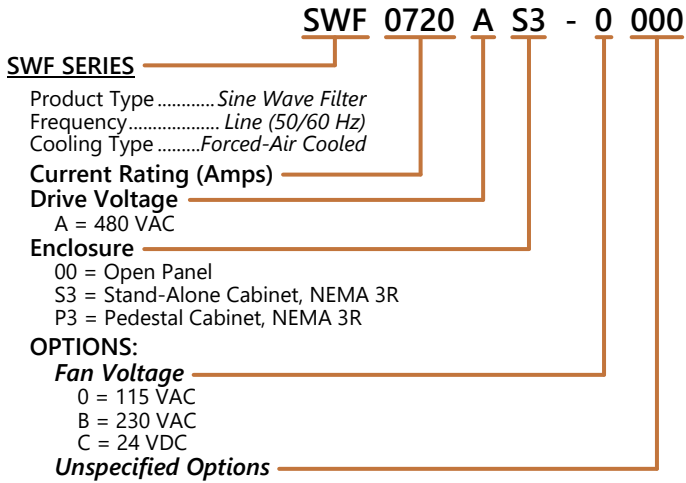
By integrating a sine wave filter Pedestal Cabinet with a variable speed drive (VSD) cabinet, CTM has simplified the entire motor control system.

- **Single, Integrated Product** for easy shipping and field installation
- **Maximized Power Density** by minimizing design footprint
- **Maintain Existing VSD Protection Rating** with a sealed, NEMA 4 compatible gland plate.

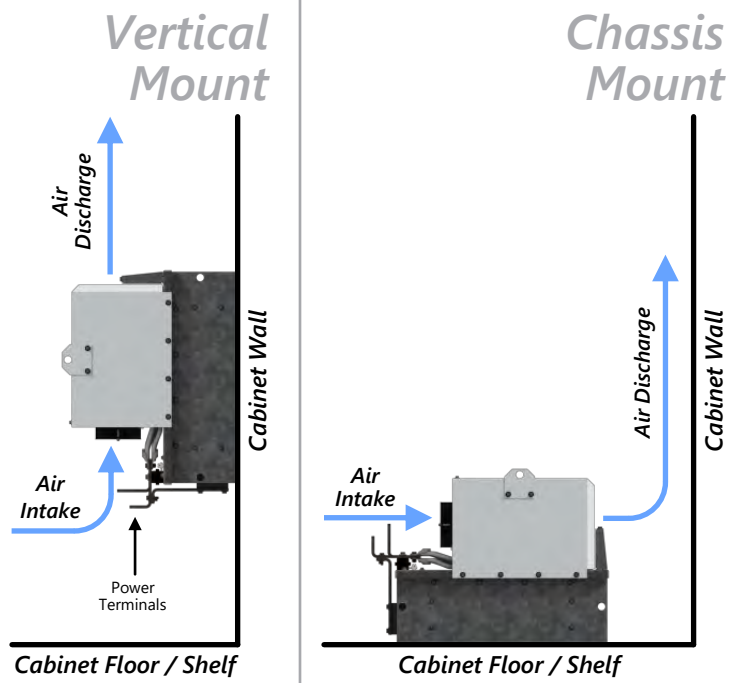


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Part Numbering System



Panel Mount Arrangements



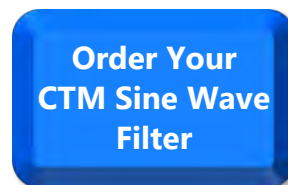
Cabinet Solutions



Stand-Alone



Pedestal (samples)



Scan for CTM Contact Information:



Additional information is available online from the following sources:

- [SWL Liquid Cooled Sine Wave Filters](#) (line frequency, liquid cooled)
- [S2F High Frequency Sine Wave Filters](#) (for up to 200 Hz)
- [RPL Liquid Cooled Reactors](#) (liquid cooled reactors for heavy duty operation)
- ctmmagnetics.com

Contact us online at:

ctmmagnetics.com/contact-us

Final product specifications subject to change

