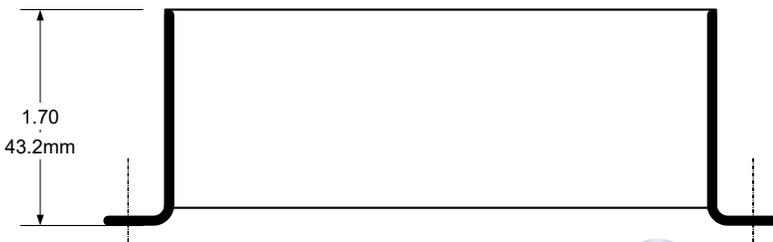
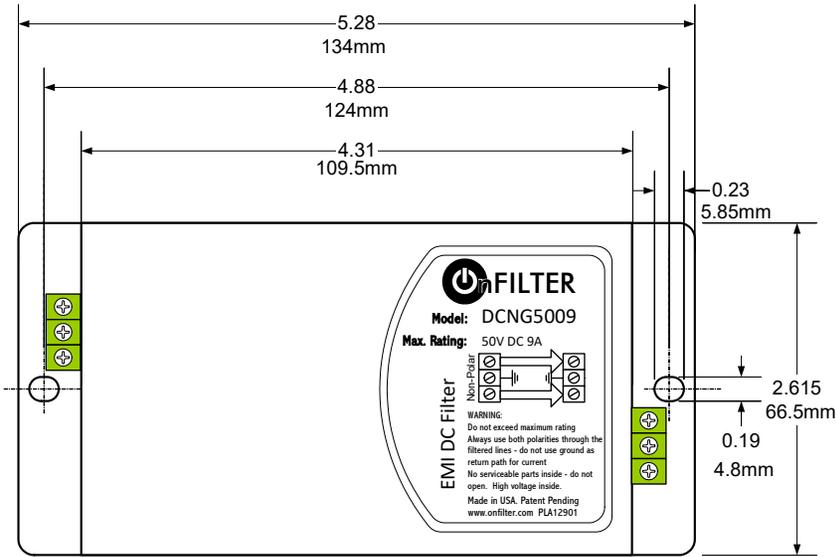


## Filter Mounting

DCNG5009 can be placed on any surface. Its ground terminal is connected to the enclosure - keep this in mind when mounting the filter on a conductive surface. While DCNG5009 can be mounted in any direction, if current through the filter is expected to be close to its limit please place it upright for better heat dissipation. Screws up to SAE #8 or metric M4 are recommended.



# DC EMI Filter

## Model DCNG5009



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## User's Guide



## Overview

DC EMI filter suppresses high-frequency signals on your DC power lines reducing harmful interference that can cause equipment malfunction and even damage to sensitive components. OnFILTER' DC EMI filter is specifically designed to provide maximum suppression of noise generated by switched power supplies, voltage converters and similar sources.

## Basics

DC EMI filter is non-polar, i.e. it doesn't matter which terminal is positive and which is negative. It does matter, though, where is the input and where is the output. DC EMI filter is most effective when the noise source is connected to the terminals on the left (away from the label) and the part of the circuit you want to protect from EMI - on the right (close to the label).

 <b>CAUTION</b>
<p>Always connect both positive and negative lines of power supply through the filter as shown in application diagrams, even if one of the of the power supply lines (usually negative) is grounded. Failure to do so may result in filter malfunction, overheating and fire, as well as in damage to your equipment</p>

## Grounding

DC EMI filter has separate ground which is not galvanically connected to any of the terminals of the power lines. Always ground the filter to your equipment' ground via grounding (middle) terminal. Both middle terminals on each side are electrically connected inside, so grounding one of them is sufficient.

## Customer and Technical Support

For customer service and technical support contact factory at 831-824-4052 or info@onfilter.com or your local authorized OnFILTER representative -- see distributor' section at www.onfilter.com

## Important Notice

All statements, technical information, and recommendations related to OnFILTER's products are based on information believed to be reliable, but the accuracy or completeness is not guaranteed. Before using this product, you must evaluate it and determine if it is suitable for your intended application. You assume all risks and liability associated with such use. Any statements related to the product which are not contained in OnFILTER's current publications, or any contrary statements contained on your purchase order shall have no force or effect unless expressly agreed upon, in writing, by an authorized officer of OnFILTER, Inc.

## Warranty; Limited Remedy; Limited Liability.

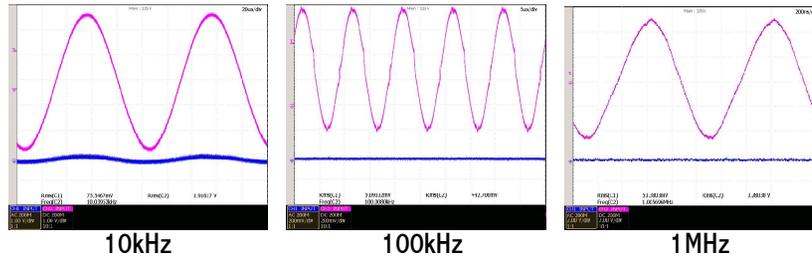
This product will be free from defects in material and manufacture for a period of one (1) year from the time of purchase. OnFILTER, INC. MAKES NO OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

If this product is defective within the warranty period stated above, your exclusive remedy shall be, at OnFILTER's option, to replace or repair the OnFILTER product or refund the purchase price of the OnFILTER product.

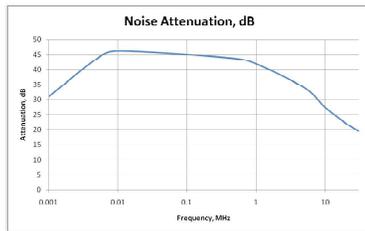
Except where prohibited by law, OnFILTER, Inc. will not be liable for any indirect, special, incidental or consequential loss or damage arising from this OnFILTER's product, regardless of the legal theory asserted.

## Specification

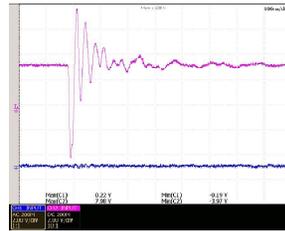
Max. DC Supply Voltage	50V
Maximum DC current	9A
Power Connections	Terminal Block
Terminal Spacing	5mm
Wire max. Crosssection	2.5mm <sup>2</sup> or 14AWG



Typical Performance of DC Filter



Attenuation vs. Frequency



Impulse Response

Typical Performance of DC Filter

## Applications

DC EMI filter can be used in two main ways outlined below:

**Prevent propagation of noise from the power supply that generates EMI**

Power supply and/or power supply lines in your equipment may contain unacceptable amount of noise. This noise can be suppressed using DC filter in the configuration shown below.

Figure 1 shows recommended connection of DC EMI filter to block the noise from a switched power supply to the rest of the circuit or to a single EMI-sensitive device.

As you see, both polarities of the DC power go through the filter - see CAUTION section on page 2.



Figure 1. Filter Connection With Noisy Power Source

If one of the power lines in your equipment where you are planning to use DC filter is running through ground of the equipment, i.e. only one wire (usually positive polarity) comes to the load while the other polarity is conducted through equipment chassis, you must separate either power supply or the load from ground and use connection diagram in Figure 2 where already grounded power line terminal is connected to equipment ground as shown. Please read CAUTION statement on page 2.



Figure 2. Filter Connection With Noisy Power Source and One Line Running Through Ground

## Prevent propagation of noise from the device that generates EMI

If you know that a specific part in your equipment is a source of noise that propagates throughout DC power lines in the equipment, it makes sense to electrically isolate that noise source so that only DC power may go through, but the high-frequency noise passage is effectively blocked. For this use recommended connection of Figure 3.



Figure 3. Filter Connection With Noisy Load

Just like mentioned in the previous section, if one of the power lines in your equipment where you are planning to use DC filter is running through ground of the equipment, i.e. only one wire (usually positive polarity) comes to the load while the other polarity is conducted through equipment chassis, you must separate either power supply or the load from ground and use connection diagram in Figure 4 where already grounded power line terminal is connected to equipment ground as shown. Please read CAUTION statement above.



Figure 4. Filter Connection With Noisy Load and One Line Running Through Ground

## Installation

### Placement

If you are trying to protect EMI-sensitive device in your tool from noise on your DC power line, install the filter near that sensitive device. This will reduce induced voltages and currents from noise sources on the wires between the output of the filter and the device.

If you are trying to protect your DC power line from noise generated from a particularly noisy device, place filter close to that device in order to reduce induced voltages and currents from wires from this noise source onto other wires and equipment.

If noise is generated by a power supply, place filter between this supply and the rest of the circuitry. If any of the devices in your equipment are not particularly sensitive to EMI or may generate EMI by themselves, such as relays, stepper motors and alike, connect these devices on the “noisy” side of the circuit in order to prevent propagation of noise to sensitive devices and to reduce current load on filter.

### Connecting the Filter

Connections are made using plug-in terminal blocks as shown. If any of plug-ins are misplaced, you can order replacements from OnFILTER or buy them from Wurth Electronics (part # 691352710003)

