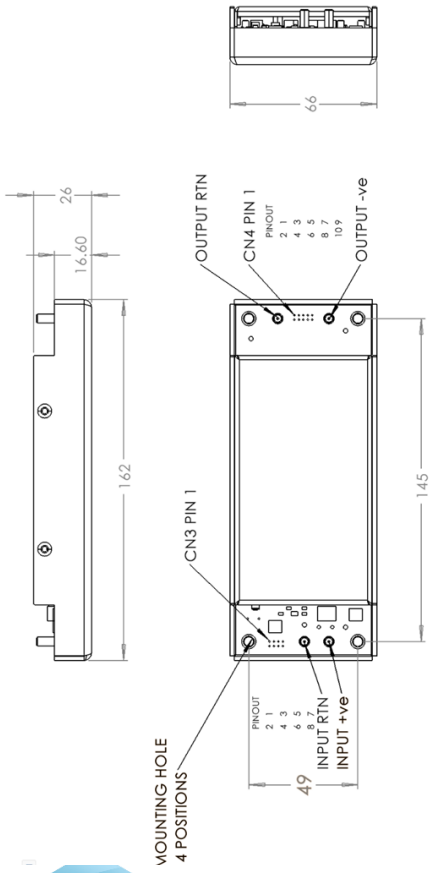
The avanta baseplate cooled DCDC is a mil-spec, low profile, fully compliant, isolated, base plate cooled DCDC power supply with a fully regulated output of up to 300W.

Designed for harsh military applications, the AVMIL-DB-300-12 is available with a wide 9V to 36VDC input for 12V and 28V military systems, for both platform and terminal connected equipment.

Integrated EMC filtering to MIL-STD 461 and surge protection to MIL-STD 704/ 1275/ DEF-STAN 61-5-part 6 issue 5/6/7 allows for direct connection to the supply voltage. The load dump feature provides full ride through protection against the 202V DC surge required to meet the DEF-STAN 61-5-part 6 issue 6 with no loss of output voltage.

Benefit	Feature
No need for additional filters	EMC to MIL-STD 461G Surge & Transient Protection to: MIL-STD 1275E | DEF-STAN 61-5 Part 6 Reverse Polarity Protection
Simple to cool	Base plate cooled
Fits anywhere	Small form factor Aerospace compliant Land compliant Marine compliant
Easy to integrate	Stocked connectors
Available off the shelf	Distributor stocked



TECHNICAL DETAILS

Input Specifications	
Input Voltage	9V to 36V DC (power derated by up to 25% at 9V input)
Max Input Current	14.2A
Input Surge	200V 350ms reducing curve (as per DEF-STAN 61-5 Part 6 Issue 6)
Turn On Voltage	9V
Turn Off Voltage	8V
Threshold	
Output Specifications	
Output Voltage	12V
Load Regulation	+/- 2%
Line regulation	+/- 2%
Output Ripple	<120mV
Maximum Output Current	25A
Protection	
Over Current Protection	125% Typical
Over Voltage Protection	125% Typical
Short Circuit Protection	Continuous, Auto Recovery, Hiccup Mode
Over Temperature	105C at the Centre of the Baseplate
Protection	
Efficiency	
100% Load	91% at Nominal Input Voltage
Turn On Time	30ms
Isolation	
Input to Output	1,500VDC
Input to Case	1,500VDC
Output to Case	1,500VDC
Isolation Resistance Input	100MOhm
to Output	
Switching Frequency	285kHz Typical
MTBF	>100 KHrs
EMC	
Mil Standards	
Mil-Std 461G	CE101, CE102, CS101, CS103,
MIL-Std 1275D,E,F	50ms Hold-Up
MIL-Std 810F	Shock/Vibration
DEF-Standards	
DEF-STAN 59-411	DCE01, DCE02, DCS02, DCS02, DCS12(Option)
DEF-STAN 00-35	
DEF-STAN 61-5 Part 6	Issue 6 Surge and Load Dump

CE / UKCA

Environmental

option m operating temperature -46°C to +90°C (storage -55°C to +105°C)

over temperature shut down 110°C (automatic re-start at 95°C)

conduction cooled through baseplate
operating humidity DO-160E section 6 category B operating altitude 51,000 ft

operating below sea level 1,500 ft
shock & vibration DO-160E Shock +-6g 11ms any direction

BS EN60068-2-27 15g shocks 11ms ½ sine
vibration DO-160E section 8 procedure 8.7.2 test level C1

WEEE directive 2002-96-EC RoHS directive 2002-95-EC

REACH regulations EU-1907-2006 HAZMAT compliant

unit is conformal coated with non-fungus growth compliant coating (option)

EMC and safety

safety approvals EN60950-1:2006
emissions MIL-STD-461E/F,
DEF STAN 59-411 with additional input filter
ESD immunity EN61000-4-2, Level 3
radiated immunity EN61000-4-3, 10V/m, level 3 performance criteria a surge EN61000-4-5, installation class 3, perf criteria a

conducted immunity EN61000-4-6, 10V RMS, perf criteria a

Standard signals and indicators

36V clamped output for auxiliary equipment (max 3A)
global disable: turns off the main output and the auxiliary output, input 0V referenced signal

regulated output disable: turns off the main regulated output(s), output 0V referenced signal

remote sense to compensate for output voltage drops in cables (compensation up to 0.5V across the leads)

global PSU OK: floating open collector: closed = PSU OK, open = PSU FAIL

base plate temperature signal: provides an accurate voltage proportional to the internal PSU temperature. This signal can be used to warn of a potential over temperature situation that may be the result of a system cooling failure, vastly improving the up time of a system

Connections & Pinouts

CN1 Main Input Connector & CN2 Main Output Connector

Pair of M4 studs for connecting + &- Input/Output

CN3 Input Signals Connector

PCB (B8B-PHDSS) mating half is PHDR-08VS housing, crimps SPHD-001T-P0.5

1 Auxiliary output – Unregulated and clamped to 36V DC (max 3A), referenced to input 0V.
2 Input side 0V
3 Disable - connect to input 0V to turn all outputs off, leave open/high to turn all outputs on.
4 n/c
5 n/c
6 n/c
7 n/c
8 n/c

CN4 Output Signals Connector

PCB (B10B-PHDSS) mating half is PHDR-10VS housing, crimps SPHD-001T-P0.5

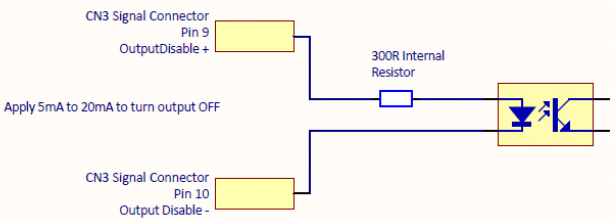
1 n/c
2 Remote sense negative (trim 0.5V max)
3 n/c
4 Remote sense positive (trim 0.5V max)
5 DC OK - (emitter of an opto isolator 20mA max) Short = DC OK
6 DC OK + (collector of an opto isolator 20mA max) Short = DC OK
7 n/c
8 Base plate temperature signal (23 deg C = 580mV),
referenced to the output 0V VO = (+6.25 mV/°C × T °C) + 424 mV

Temperature (T) Typical VO
+125°C +1205 mV
+100°C +1049 mV
+25°C +580 mV
0°C +424 mV
-25°C +268 mV
-40°C +174 mV

9 Output disable (+) (5v applied across this pin and pin 10 disables the regulated output)
10 Output disable – (used in conjunction with pin 9)

Signals Control

Output Disable



Apply a potential to the input pins in excess of 5mA to turn unit off

Example 1
5V supply

Target I= 10mA
R=300R

I=(Vsupply-2V) / 300
I=0.01A or 10mA

In this example the internal 300 ohms resistor is adequate and 5V can be applied straight to the disable pins

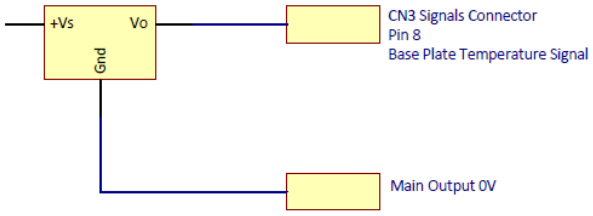
Example 2
28V supply

Target I = 10mA

R = (V supply - 2V) / 10mA
R = (28 - 2) / 10mA
R = 2,600 ohms
R = 2K6R - 300R = 2,300R

An external current limit resistor of 2K3 in series with a 28V rail

Temperature output



This signal is referenced to the Zero Volt output.

A current of < 1mA can be driven from this device

The Formula to calculate temperature is

T = (VO - 424mV) / 6.25mV

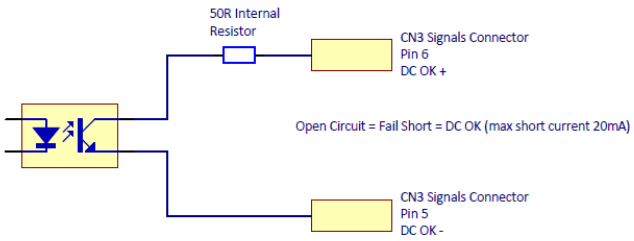
Example 1
Where VO = 580mV

T = (580 - 424) / 6.25
T = 25C

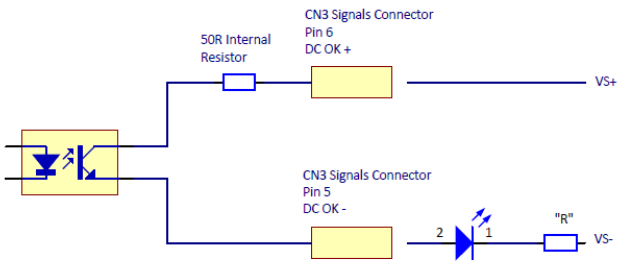
Example 2
Where VO = 1049mV

T = (1049 - 424) / 6.25
T = 100C

DC OK



Both these pins are isolated so can pe tied to any rail to achieve a signal



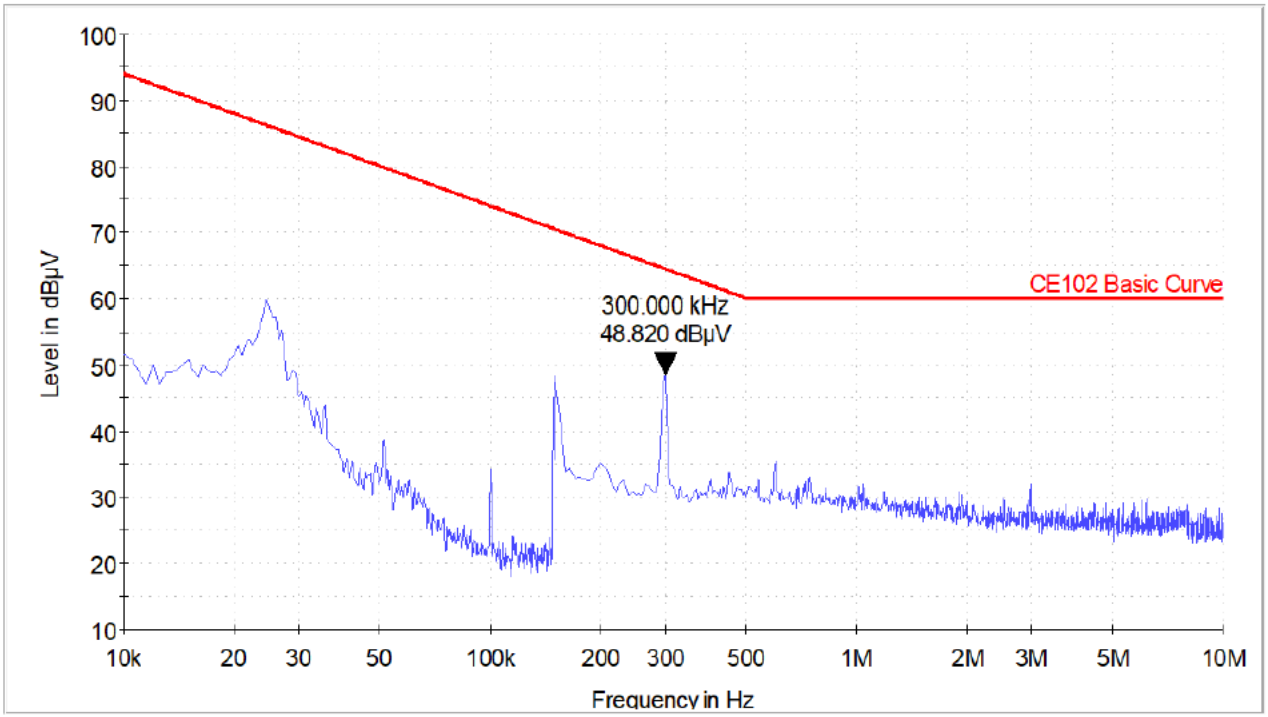
The above circuit shows how an LED can be driven from the DC OK signal

Example
VS+ is 12V, VS- is 0V
LED current is 20mA, LED voltage is 2V
"R" = (12-2) / 20mA
"R" = 10 / 0.02
R = 500 ohms
Placing a 500 ohm resistor in series with a 20mA LED will provide a DC OK

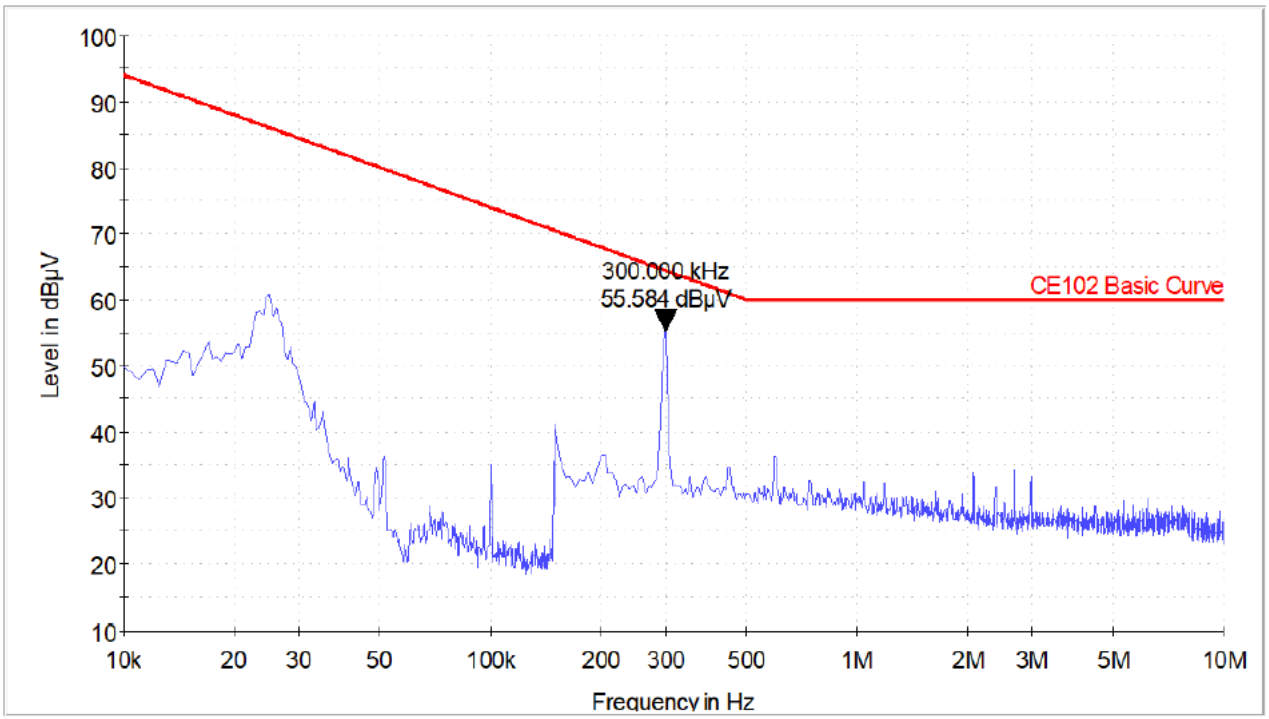
LED ON = DC OK OFF = DC Fail

EMC Characteristics

MIL-Std 461G, CE102



28V Line



28V Rtn