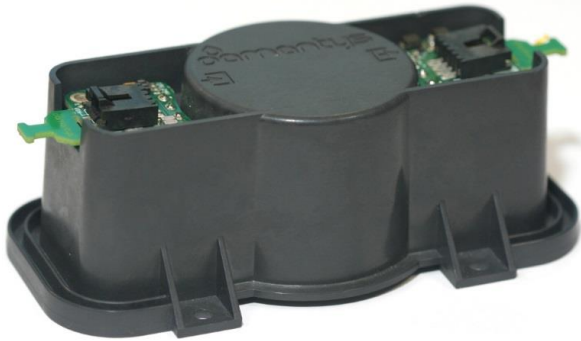


The Amantys isolated DC-DC Converter is optimised for use with Amantys Gate Drives and provides a high performance, high isolation power supply for a wide range of demanding 3.3kV to 6.5kV IGBT applications, for 2-level and multi-level applications.



- High isolation voltage 12kV
- Dual input voltage: 15V (D2) or 24V (D4) variants
- Output power: 20W - 24V supply; 8W – 15V supply
- High efficiency up to 90%
- Operating temperature range -40°C to +85°C
- Output short circuit and overload protection
- Input overvoltage protection
- Input reverse polarity protection
- LED status indication
- EN 50155 compliant with conformal coating
- IEC 61800-5-1 compliant for variable speed drives
- Thermal shock and vibration to IEC 61373
- EMC compliant to EN 50121-3-2, EN 50121-5, IEC 61800-3
- Lead free design, RoHS compliant
- 12 months warranty

Absolute Maximum Ratings

Permanent damage may occur if the Absolute Maximum Ratings are exceeded

Parameter	Notes	Units	Min	Typ	Max
Input Voltage	Configured for 15V input	V			20
	Configured for 24V input	V			30
Output current		mA			1100
Input Current		mA			1200
Working voltage	Peak repetitive input to output	kV			12.0
Operating temperature		°C	-40		85
Storage temperature		°C	-40		85

Electrical Characteristics (15V input mode)

All data refers to +25 °C and 15.0 V input unless otherwise stated

Parameter	Notes	Units	Min	Typ	Max
Input current	No load	mA	10	22	50
	Load 100mA	mA		180	
	Load 200mA	mA		320	
	Load 400mA	mA		560	
Turn on threshold		V		7.5	
Turn off threshold		V		7.0	
Output voltage	No load	V		26	
	Load 100mA	V		21	
	Load 200mA	V		20	
	Load 400mA	V		18	
Output Power		W	0		8
Output resistance		Ω		3	

Electrical Characteristics (24V input mode)

All data refers to +25 °C and 24.0 V input unless otherwise stated

Parameter	Notes	Units	Min	Typ	Max
Input current	No load	mA	10	19	50
	Load 200mA	mA		230	
	Load 400mA	mA		390	
	Load 800mA	mA		760	
Turn on threshold		V		7.5	
Turn off threshold		V		7.0	
Output voltage	No load	V		28	
	Load 200mA	V		22	
	Load 400mA	V		22	
	Load 800mA	V		21	
Output Power		W	0		20
Output resistance		Ω		2.0	

General electrical specifications

All data refers to +25°C unless otherwise stated

Parameter	Notes	Units	Min	Typ	Max
Coupling capacitance	Primary to secondary side	pF		6	10
Immunity to dV/dt		kV/μs	50		
Internal capacitance	Between Vout and GND-OUT	μF		50	
Short circuit protection	Input current with output shorted (15V mode)	mA		150	
	Input current with output shorted (24V mode)	mA		110	
Short circuit protection	Output current with output shorted (15V mode)	mA		890	
	Output current with output shorted (24V mode)	mA		1060	
Reverse polarity protection	Indefinite - automatic recovery, 2.6A PTC fused				

Standards Compliance

All data refers to +25°C unless otherwise stated

	Notes	Test Standard
Impulse test (Type test)	25 kV 1.2/50 μs input/output to base	
	40 kV 1.2/50 μs input to output	
Dielectric test (Type test)	11.6 kVrms input/output to base, 50 Hz, 60 sec	
	18.5 kVrms input to output, 50 Hz, 60 sec	
Partial discharge (Type test and production test)	≥11.0 kV rms extinction, <10 pC, input to output	
EMC Immunity	EN 50121-3-2 Rolling Stock, EN 50121-5 Trainside, IEC 61800-3 Variable Speed Drives	
Electrostatic discharge	Air ±8 kV, contact ±6 kV, Perf Criterion B	IEC 61000-4-2
Radiated immunity	10 V/m 80-2000 MHz, Perf Criterion A	IEC 61000-4-3
Fast burst immunity	±4 kV, Perf Criterion A	IEC 61000-4-4
Surge immunity	±2 kV, Perf Criterion B	IEC 61000-4-5
Conducted immunity	10 Vrms, Perf Criterion A	IEC 61000-4-6
Magnetic field immunity	100 A/m AC, 300 A/m DC, Perf Criterion A	IEC 61000-4-8
Damped osc. voltage	2.5 kV line-earth, Perf Criterion B	IEC 61000-4-12
Radiated emissions (E-field)	20-230/230-1000 MHz, 50/57 dBμV/m q-pk, 3 m	EN 55011 class A, group 1
Conducted emissions	0.15-0.5/0.5-30 MHz 99/93 dBμV/m quasi-pk	EN 55016-2-1

General specifications

All data refers to +25°C unless otherwise stated

Parameter	Notes	Units	Min	Typ	Max
Operating temperature		°C	-40		85
Storage temperature		°C	-40		85
Humidity	Compliant to EN 50155 Railways Applications Electronic Equipment Used on Rolling Stock with conformal coating	%		85	95
Material flammability rating	UL94V-0 rated				
Pollution degree	Class 2				
Weight		g		228	
Maximum altitude	Derate above this: Amantys to advise	m			2000
Reliability - See Note 1	Failure rate (normal life) - Calculated	FIT		125	
	Lifetime (end of life) - Calculated	years		20	
Environmental compliance	Reach				
	RoHS				
Creepage	Input to output	mm	80		
	Input or output to mounting base	mm	65		
Clearance	Input to output	mm	65		
	Input or output to mounting base	mm	42		

Notes:

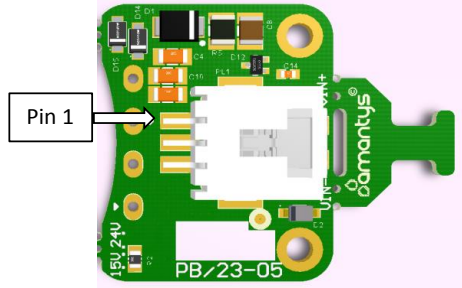
- 1 - Failure rate and lifetime are calculated figures and can not be warranted by Amantys Power Electronics Limited.

Interfaces

Interface	Description	Manufacturer	Part Number
Input	3 way connector	TE Connectivity (Tyco)	AMP - 104257-2 - Housing, Receptacle, 3-way
Output	4 wayconnector	TE Connectivity (Tyco)	AMP - 104257-3 - Housing, Receptacle, 4-way

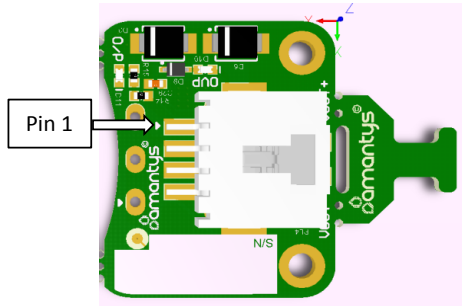
Power Supply Input

Pinout	Voltage	Pins
Supply	0V	1
Supply	V _{dc}	2
Supply	0V	3



Power Supply Output

Pinout	Voltage	Pins
Supply +	V _{dc}	1
Tx1	AC	2 (Reserved)
Tx2	AC	3 (Reserved)
Supply -	0V	4



LED Status Indication

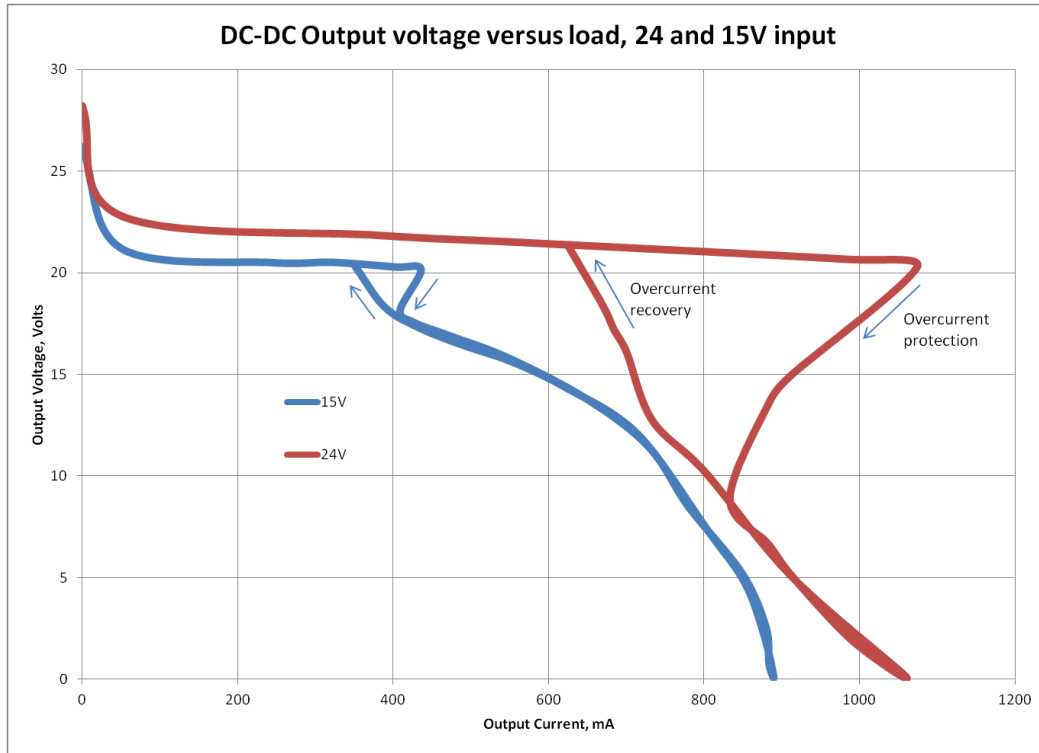
Green LED	Red LED	Indication
ON	OFF	Output voltage present - DC-DC Converter operational
ON	ON	Output overvoltage - See Note 1 below

Notes:

- 1) If the Red LED comes on check that the input voltage is correct.

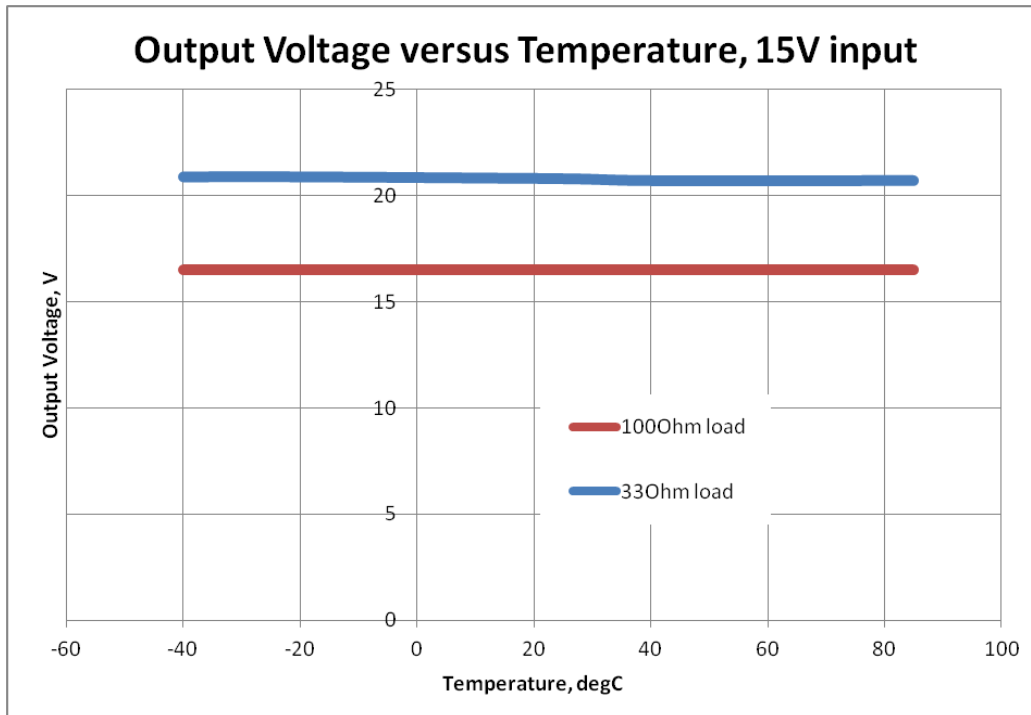
Typical Performance Graphs

Output voltage vs Output current ($V_{in} = 15V$ and $V_{in} = 24V$)

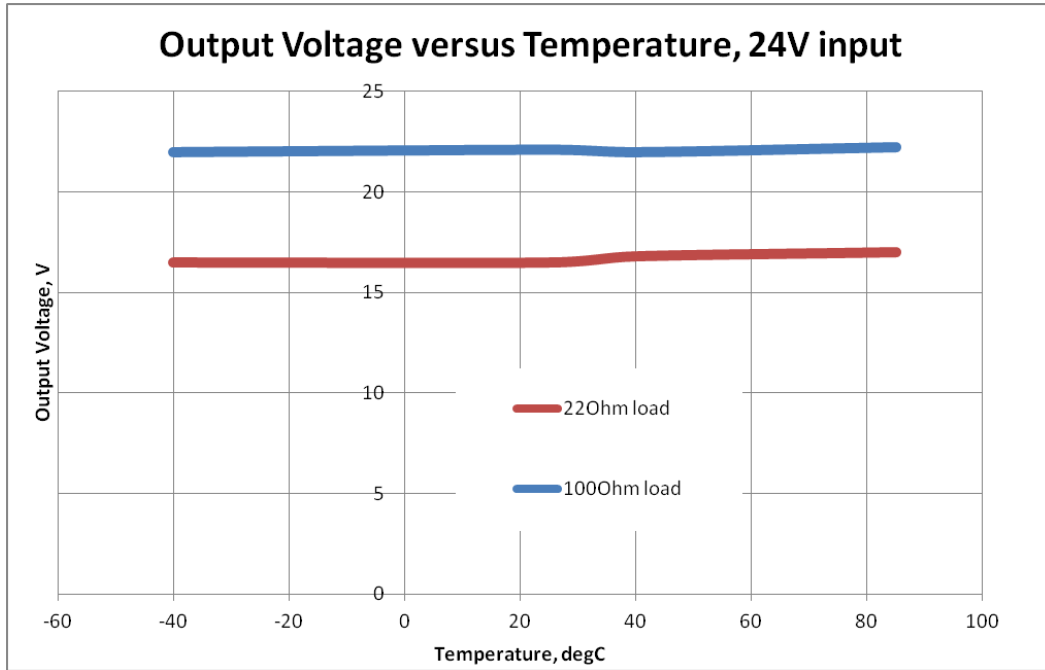


Output voltage vs temperature

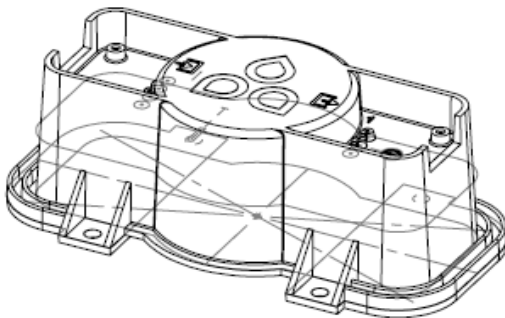
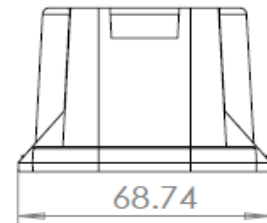
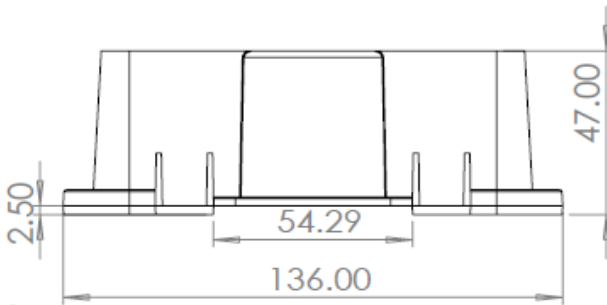
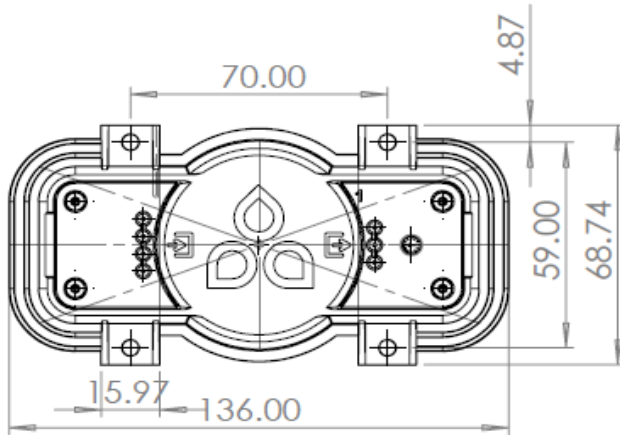
$V_{in} = 15V$, Load = 50Ω, 100Ω, 200V



Output voltage vs temperature
Vin = 24V, Load = 25Ω, 50Ω, 100V



Outline Drawings



Note: All dimensions in mm

Drilling Template

Scale 1:1 drilling template available from Amantys on request.

Legal Disclaimer

This data sheet specifies devices but cannot promise to deliver any specific characteristics. No warranty or guarantee is given - either expressly or implicitly - regarding delivery, performance or suitability. Amantys Power Electronics Limited reserves the right to make modifications to its technical data and product specifications at any time and without prior notice. The general terms and conditions of delivery of Amantys Power Electronics Limited apply.

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