

P R B X

POWERBOX Defense Line 300
DBC Series
300W
AC/DC Conduction Cooled

Description

The DBC, very compact and low profile 300W AC/DC power supply in chassis format, incorporates input filtering, input and output protections, very robust mechanical mounting and connection, conformal coating and MIL-STD options required in most of the severe environment for industrial, defense applications. The PSU provides high reliability, high efficiency, input-to-output isolation, soft start and active very low inrush circuit, overtemperature protection, input over/undervoltage lockout. The PSU is configurable with 1 to 2 outputs in many output voltages from 3.3V to 48VDC, other outputs are even possible as semi-standard versions, they are continuously short-circuit proof. The 100°C baseplate allows operation in high temperature environment.

Features

85-264 VAC input voltage ranges , PFC
1-2 isolated outputs
200*80*40mm very low profile
Industrial or ruggedized versions
Active very low inrush current
Many output configurations available
Conduction cooled 100°C baseplate
Safety IEC/EN 60950-1, RoHS lead-free-solder compliant

Options Description

MIL-STD ruggedized (-M)	Meet MIL-STD 461E CE102, MIL-STD 1399-300A, MIL-STD810E shock & vibrations. No laboratory certification.
-40°C operation (-T)	The thermal grade of the DC/DC converters used and other components are changed to comply with low ambient temperature.
Conformal coating (-V)	During manufacturing process , when V option is specified, components and pcb are covered with an acrylic coating to address high level of ambient humidity application.
Heatsink (-H, -H1)	Thermal resistance: 1.8°C/W at natural convection, 0.6°C/W at 2m/s. -H: a 15 mm heatsink is mounted on the baseplate with longitudinal fins. -H1: a 15 mm heatsink is mounted on the baseplate with transversal fins.
IP option (-IP)	Full IP65 enclosed mechanical available.

Electrical Input Data

Operating input voltage	85-264VAC. 120-350VDC.
Frequency	47Hz min, 50Hz typ, 440Hz max.
Power factor	0.96 typ, 230VAC, 50Hz, Pnom.
Input current	4.5A at Vin min.
No-load input power	8W at Vin typ.
Peak inrush current	3A Vin max.
Start-up time	1s typ.
Input fuse	A fuse mounted inside the psu protects against damages in case of a failure.
Fuse type	Schurter, 5A, 3403.0173L.
Transient protection	VDR and common mode input filter.



Electrical Output Data

Redundant operation	Requires external oring diodes.
Paralleling operation	Active current share of identical m-boards with PR signal.
Hold-up time	Yes.
Output current prot.	Constant current mode, automatic recovery.
Overvoltage protection	Typically >120%Vnom, latching type.
Remote on/off	An isolated INHIB signal disable corresponding output voltage when connected to RTN.
Voltage adjustment	90-110%Vnom by build in trimmer or external 0.6-1.25V signal referred to RTN.
Remote sense	V1, V2, total drop <0.5V, positive line drop <0.25V.
Powergood	Common opto-isolated signal referred to RTN. Closed=OK. LED for each output.
Auxiliary bias voltage	5VDC, limited to 200mA.

Environmental

Operating ambient temp.	-20°C to +71°C, see derating (T-option -40°C).
Heatsink temperature	-20°C to +100°C (T-option -40°C).
Storage temperature	-40°C to +125°C.
Over temp. protection	105°C ±5°C base plate, autorecovery <70°C.
Damp heat	MIL STD 810 Proc. 507-2.
Shock	MIL STD 810 Proc. 516.3
Vibrations	MIL STD 810 Proc. 514-5.
MTBF/MIL-HDBK-217F	
	Heatsink GB GF
	40°C 285000 hrs 165000 hrs
	70°C 139500 hrs 82300 hrs
	100°C 86500 hrs 51000 hrs

General

Electric strenght	Input to earth 1500Vrms. Input to output 3000Vrms. Output to earth 500Vrms.
Insulation resistance	>100Mohms.
Dimensions	200 x 80 x 40mm.
Weight	660g approx.
Case	Aluminum natural.

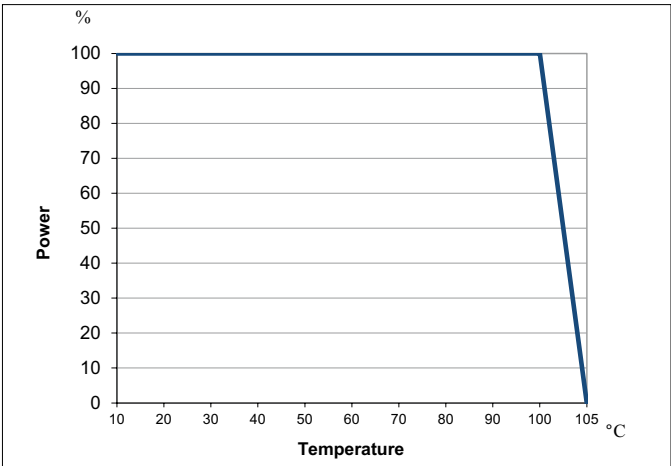
Standards

Safety standards	Built to meet IEC60950-1, EN60950-1.
EMC	
Surges	Built to meet EN61000-4-5, 1kV, Criteria B. 2kV, Criteria A.
Electrostatic discharge	Built to meet EN61000-4-2, 8000V, Criteria B.
Fast transients/burst	Built to meet EN61000-4-4, 4000V, Criteria B.
Harmonics	Built to meet EN61000-3-2.
Flickers	Built to meet EN61000-3-3.
	Built to meet EN61000-4-3, -6, -11.

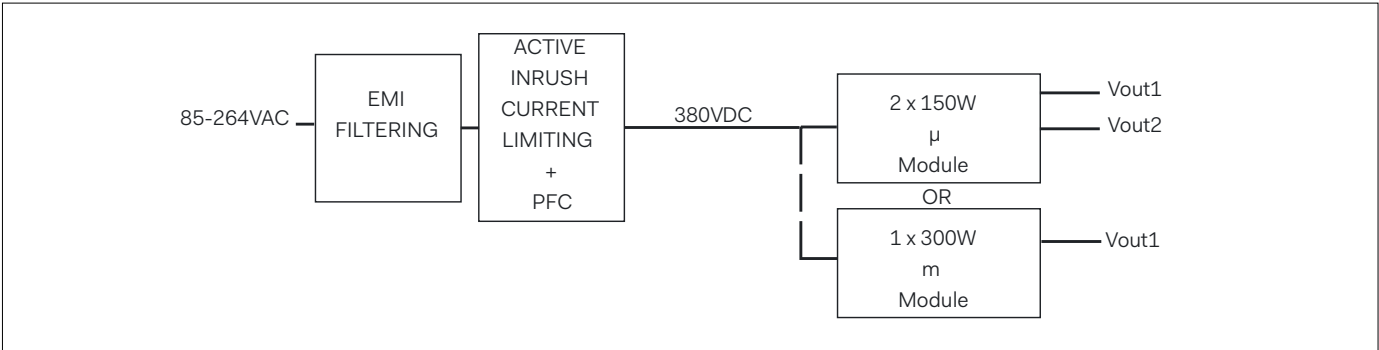
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Output		3V3			5V			12V			15V			24V			28V			48V			
Characteristics	Conditions	min	typ	max	min	typ	max	min	typ	max	min	typ	max	min	typ	max	min	typ	max	min	typ	max	Unit
Output voltage		3V3			5			12			15			24			28			48			V
Trim range	Factory set	3		3.6	4.5		5.5	10.8		13.2	13.5		16.5	21.6		26.2	25.2		30.8	43.2		52.8	V
Overvoltage protection		4.5			6.5			14.9			18.5			29.1			34			58			V
Output noise	20Mhz	100			100			150			150			150			150			200			mVpp
Efficiency		75			83			85			84			84			83			84			%
Load regulation	Vin nom	1			1			0.5			0.5			0.4			0.4			0.4			%
m board		Each includes up to 1 m modules below																					
Output current		0		45	0		40	0		25	0		20	0		12.5	0		10.7	0		6.25	A
Max power		150			200			300			300			300			300			300			W
Output current limit		54	64		46	52		29	35		23	26		14.5	17		12.5	14.5		7.2	8.2		A
μ board		Each includes up to 2 μ modules below																					
Output current		0		22.7	0		20	0		12.5	0		10	0		6.25	0		5.3	0		3.1	A
Max power		75			100			150			150			150			150			150			W
Output current limit		25	31		23	26		14.5	17		11	14		7.2	8.2		6.2	7		3.6	4.4		A

Derating Curve

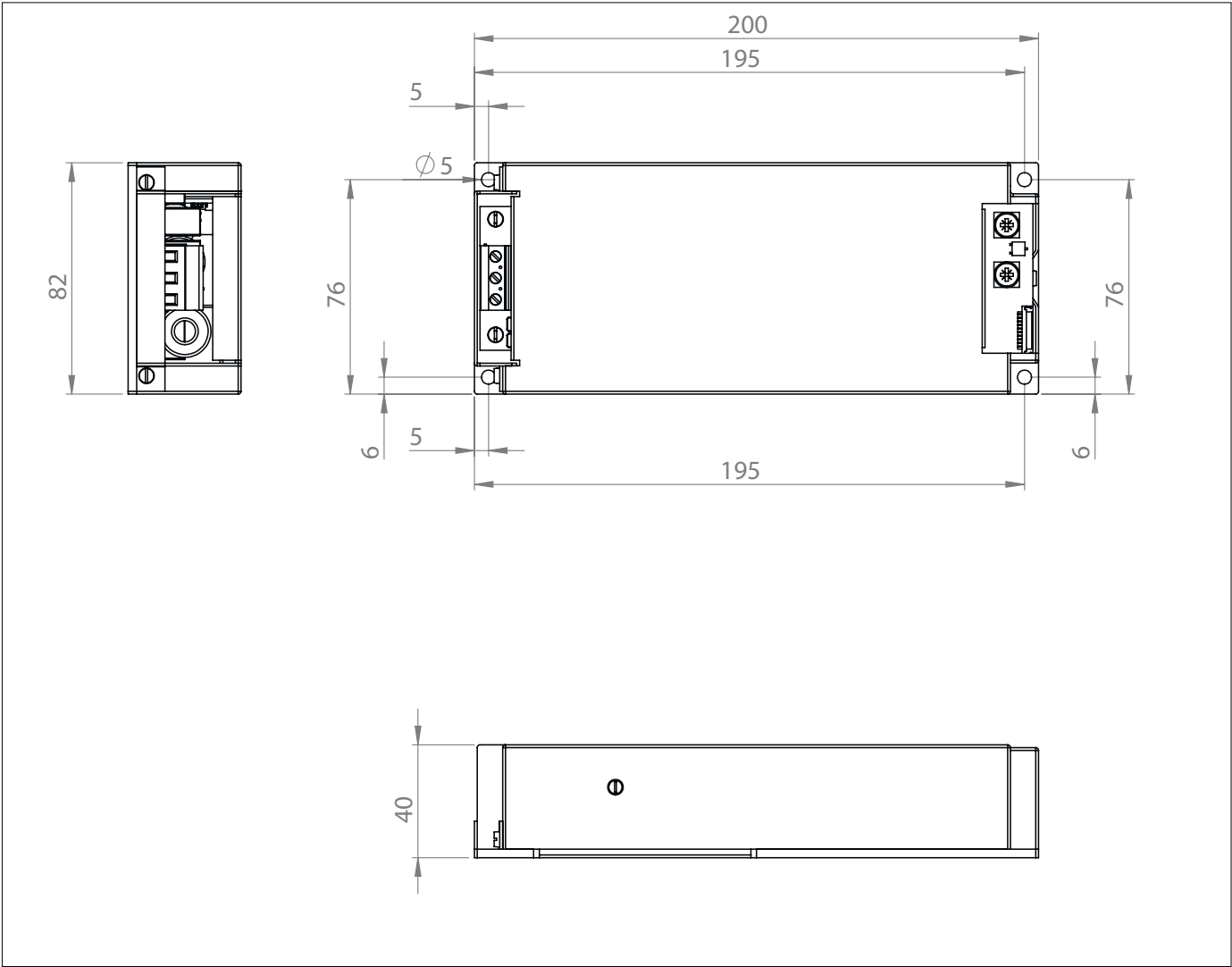


Block Diagram



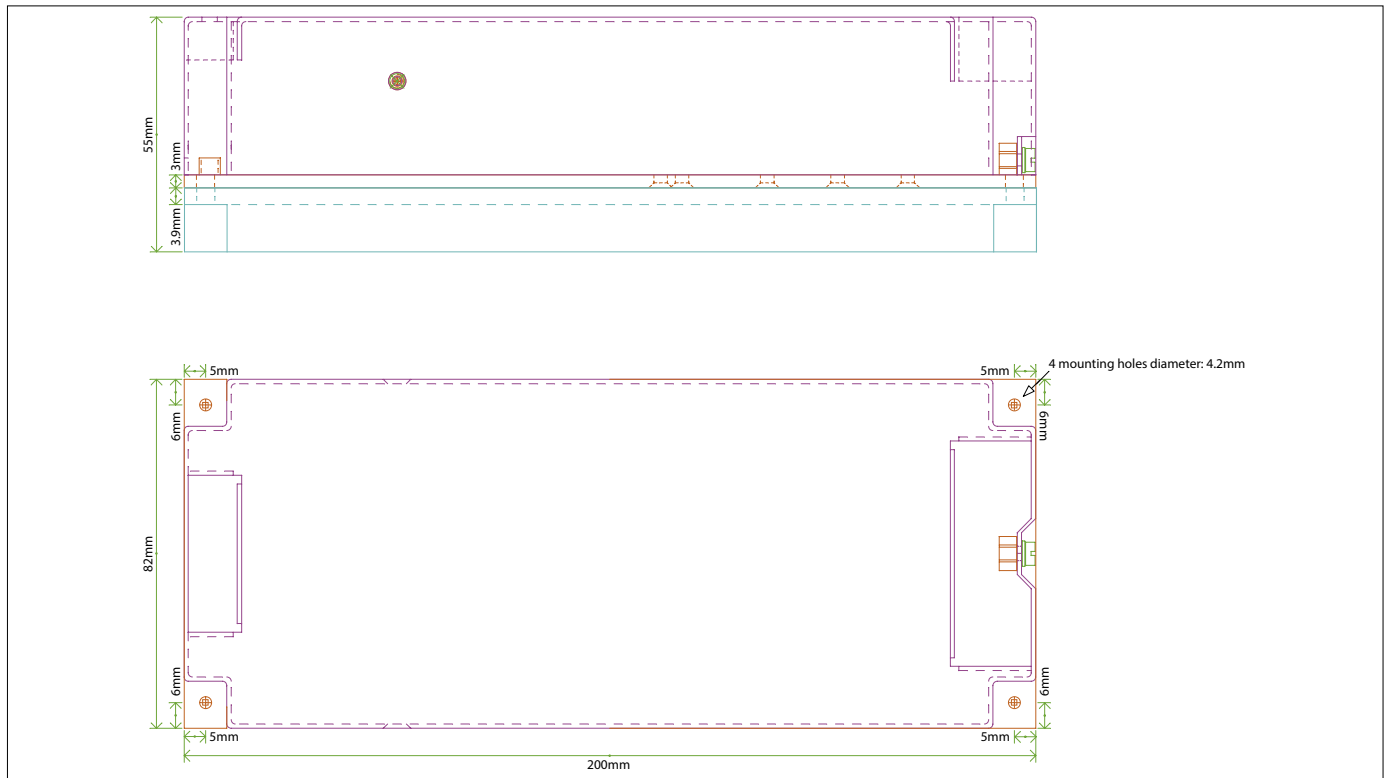
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Mechanical

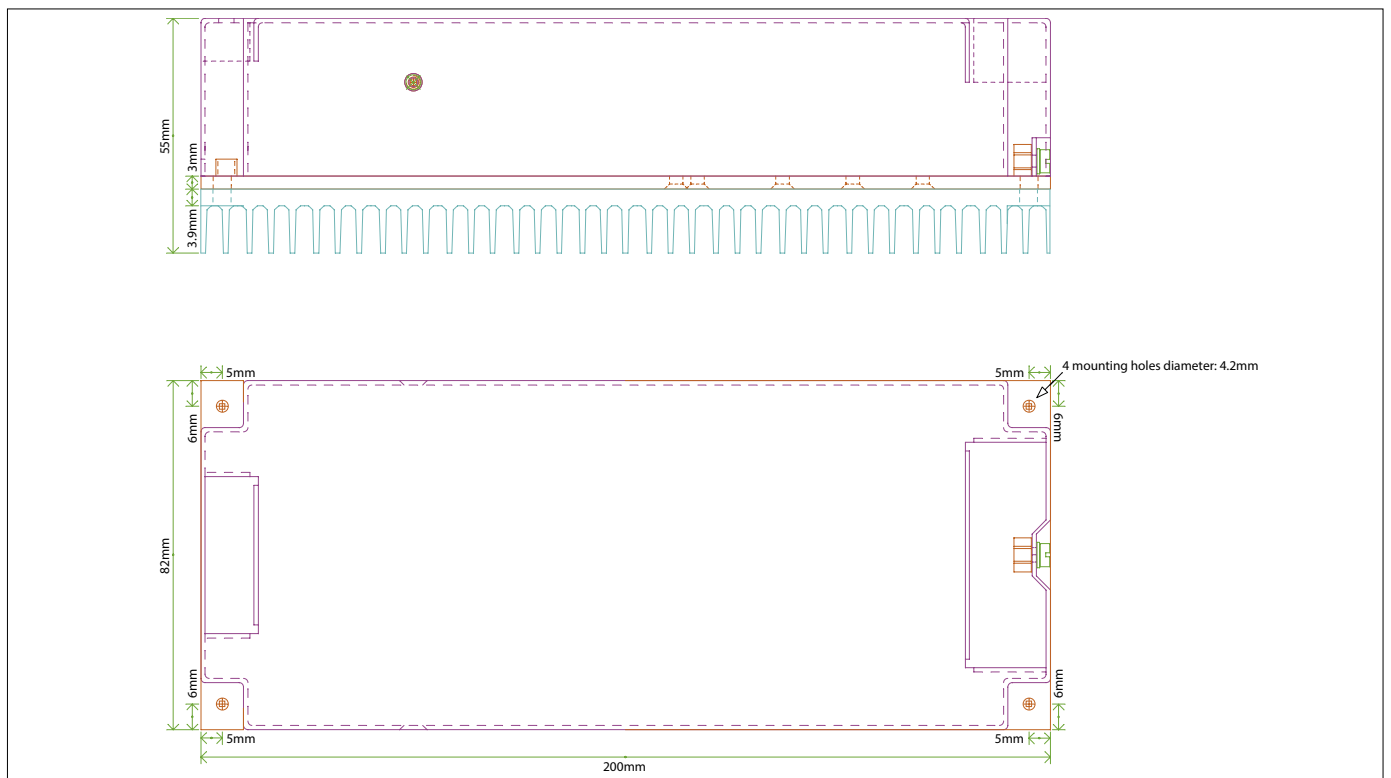


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Mechanical - H Option



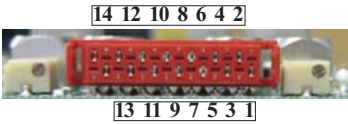
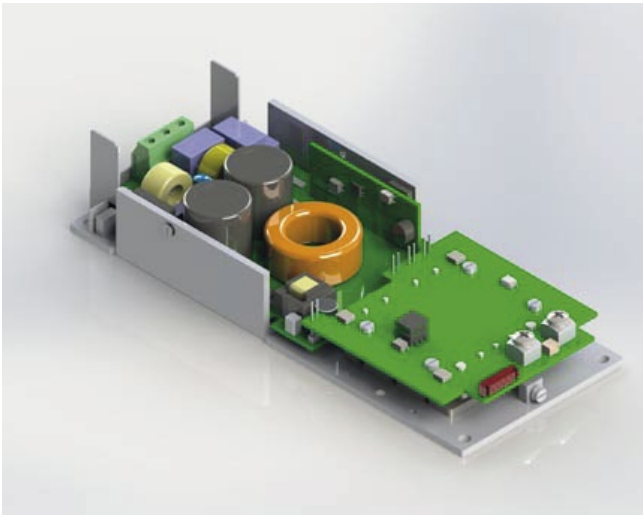
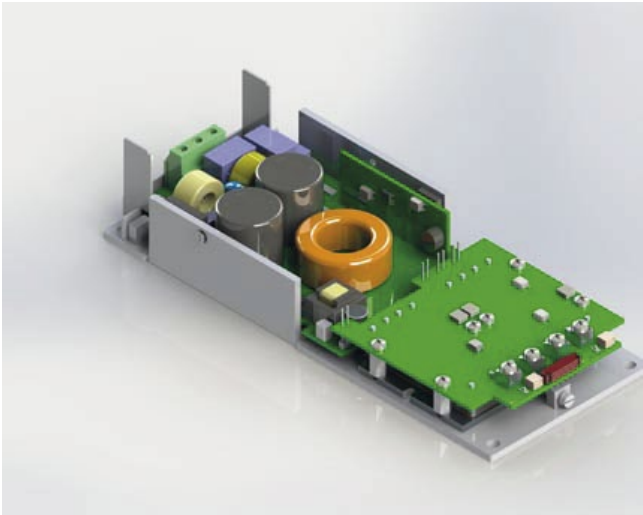
Mechanical - H1 Option



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Pin Connection

Description	Pin	Connector
Input screw type connector GMKDS 3/3-7.62		
1	J1-1	Earth
2	J1-2	Neutral AC/N
3	J1-3	Line AC/L
Output m-board power connector		
OUT1+	J1	Würth Pres Fit M3 Ref : 7461093
OUT1-	J2	Würth Pres Fit M3 Ref : 7461093
Output µ-board power connectors		
OUT1+	J3	Würth Pres Fit M3 Ref : 7461093
OUT1-	J4	Würth Pres Fit M3 Ref : 7461093
OUT2+	J1	Würth Pres Fit M3 Ref : 7461093
OUT2-	J2	Würth Pres Fit M3 Ref : 7461093
Signals Wurth 690368191472 Female Male 2*7 pins		
µ-board	m-board	
J5-1 : ACFAIL	J3-1 : ACFAIL	
J5-2 : PGOOD	J3-2 : PGOOD	
J5-3 : RTN	J3-3 : RTN	
J5-4 : INHIB	J3-4 : NC	
J5-5 : +5VAUX	J3-5 : +5VAUX	
J5-6 : S1+	J3-6 : NC	
J5-7 : S1-	J3-7 : NC	
J5-8 : ADJ1	J3-8 : NC	
J5-9 : NC	J3-9 : PR1	
J5-10 : NC	J3-10 : NC	
J5-11 : NC	J3-11 : INHIB	
J5-12 : S2+	J3-12 : S1+	
J5-13 : S2-	J3-13 : S1-	
J5-14 : ADJ2	J3-14 : ADJ1	



Authorised, valued-added distributor

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