

# P R B X

POWERBOX Defense Line 1200  
DBA Series  
1200W  
AC/DC Conduction Cooled

## Preliminary

### Description

The DBA series, very compact and low profile AC/DC power supply up to 1200W 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 6 outputs in many output voltages from 2V to 54VDC, 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

85-264VAC or 120-350VDC input voltage ranges  
1-6 isolated outputs up to 1200W  
255 x 127 x 40mm very low profile  
Power Factor Correction EN61000-3-2  
Active very low inrush limitation  
Surge and transient protection  
Many output configurations available  
Conduction cooled 100°C baseplate. No derating  
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) -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.

### Electrical Input Data

Operating input voltage 85-264VAC. 120-350VDC.  
Frequency 44Hz min, 50Hz typ, 440Hz max.  
Power factor 0.96 typ, 230VAC, 50Hz, Pnom.  
Input current 16A at Vin min.  
No-load input power 15W at Vin typ.  
Peak inrush current 4A Vin max.  
Start-up time 3s typ.  
Input fuse A fuse mounted inside the psu protects against damages in case of a failure.  
Fuse type Littlefuse, 15A, 0218015.MXP.  
Transient protection Yes.



Parallel operation	Possible.
Redundant operation	Requires external oring diodes.
Hold-up time	Yes.
Output current limitation	All outputs are protected against short circuit, automatic recovery.
Thermal considerations	Baseplate should not exceed 100°C.
Thermal protection	OTP protection, automatic restart.
Overvoltage protection	Incorporated on each output.
Remote on/off	An isolated INHIB signal disable corresponding output voltage when connected to RTN.
Overvoltage adjustment	90-110%Vnom.
Remote sense	V1, V2, total drop <0.5V, positive line drop <0.25V.
Auxiliary bias voltage	Limited to 200mA.
Paralleling signal	Parallel only identical outputs (voltage and power).

### 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.  
Damp heat MIL STD 810 Proc. 507-2.  
Shock MIL STD 810 Proc. 516.3  
Vibrations MIL STD 810 Proc. 514-5.  
MTBF MTBF calculation for a specific part number has to be ordered.

### General

Electric strenght Input to each 1500Vrms.  
Input to output 3000Vrms.  
Output to earth 500Vrms.  
Insulation resistance >100Mohms.  
Dimensions 255 x 127 x 40mm.  
Case Aluminum natural.  
Weight 1500g without heatsink.

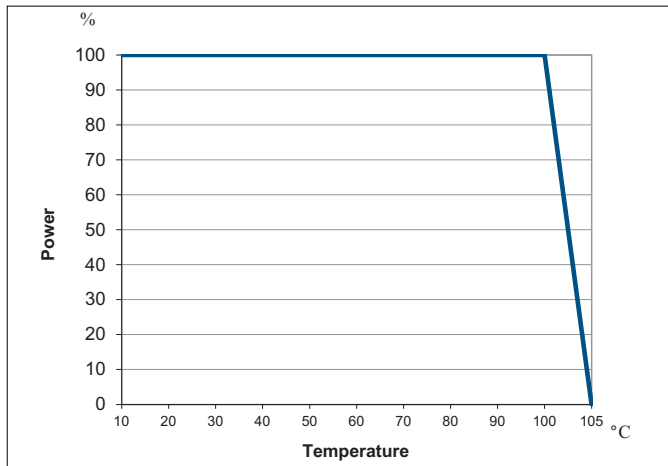
### Standards

Safety standards Built to meet IEC60950-1, EN60950-1.  
EMC  
Surges Built to meet EN61000-4-5, 1kV, Criteria B.  
2kV, Critiera A.  
Electrostatic discharge Built to meet EN61000-4-2, 8000V, Critiera B.  
Fast transients/burst Built to meet EN61000-4-4, 4000V, Critiera 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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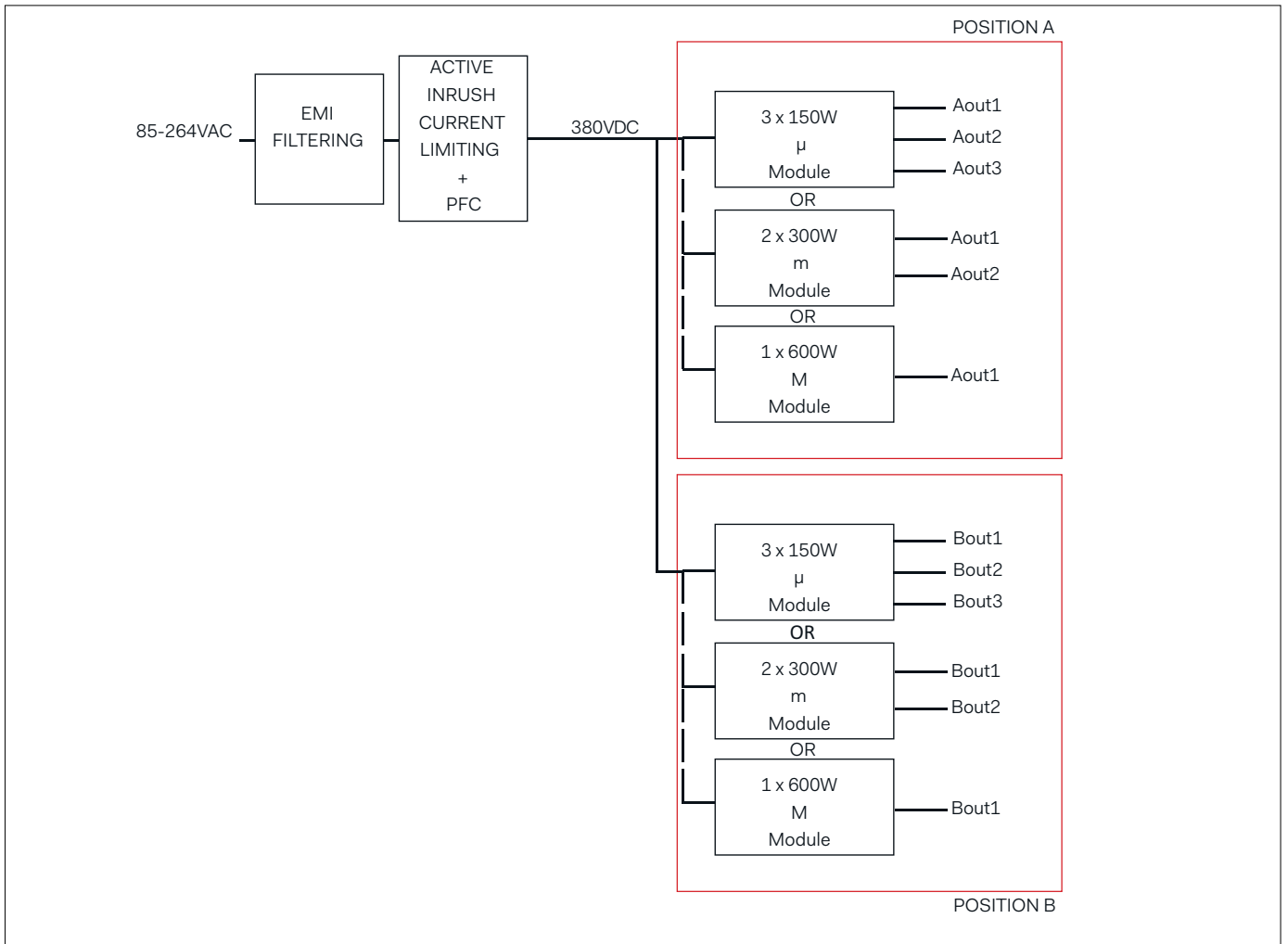
Output Characteristics	Conditions	3V3		5V		12V		15V		24V		28V		48V		Unit
		min	typ	max	min	typ	max	min	typ	max	min	typ	max	min	typ	
Output voltage		3V3		5		12		15		24		28		48		V
Trim range	Factory set 3	3.6	4.5	5.5	10.8	13.2	13.5	16.5	21.6	26.2	25.2	30.8	43.2	51.8	V	
Overvoltage protection		4.5		6.5		14.9		18.5		29.1		34		58		V
Output noise	20Mhz	75		75		100		100		100		100		150		mVpp
Efficiency		75		83		85		84				83		84		%
Load regulation	Vin nom	1		1		0.5		0.5		0.4		0.4		0.4		%
<b>2M board</b>	<b>Each board include 2 identical M modules in parallel for high power configuration</b>															
Output current		0	160	0	160	0	100	0	80	0	50	0	43	0	25	A
Max power		528		800		1200		1200		1200		1200		1200		W
Output power limit		184	208	184	208	115	135	92	112	58	78	48	58	28	34	A
<b>M board</b>	<b>Each board includes 1 M module below</b>															
Output current		0	80	0	80	0	50	0	40	0	25	0	21.5	0	12.5	A
Max power		264		400		600		600		600		600		600		W
Output current limit		92	104	92	108	57.5	67.5	46	56	29	39	24	29	14	17	A
<b>m board</b>	<b>Each board includes up to 2 m modules below</b>															
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
<b>μ board</b>	<b>Each board includes up to 3 μ modules below</b>															
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



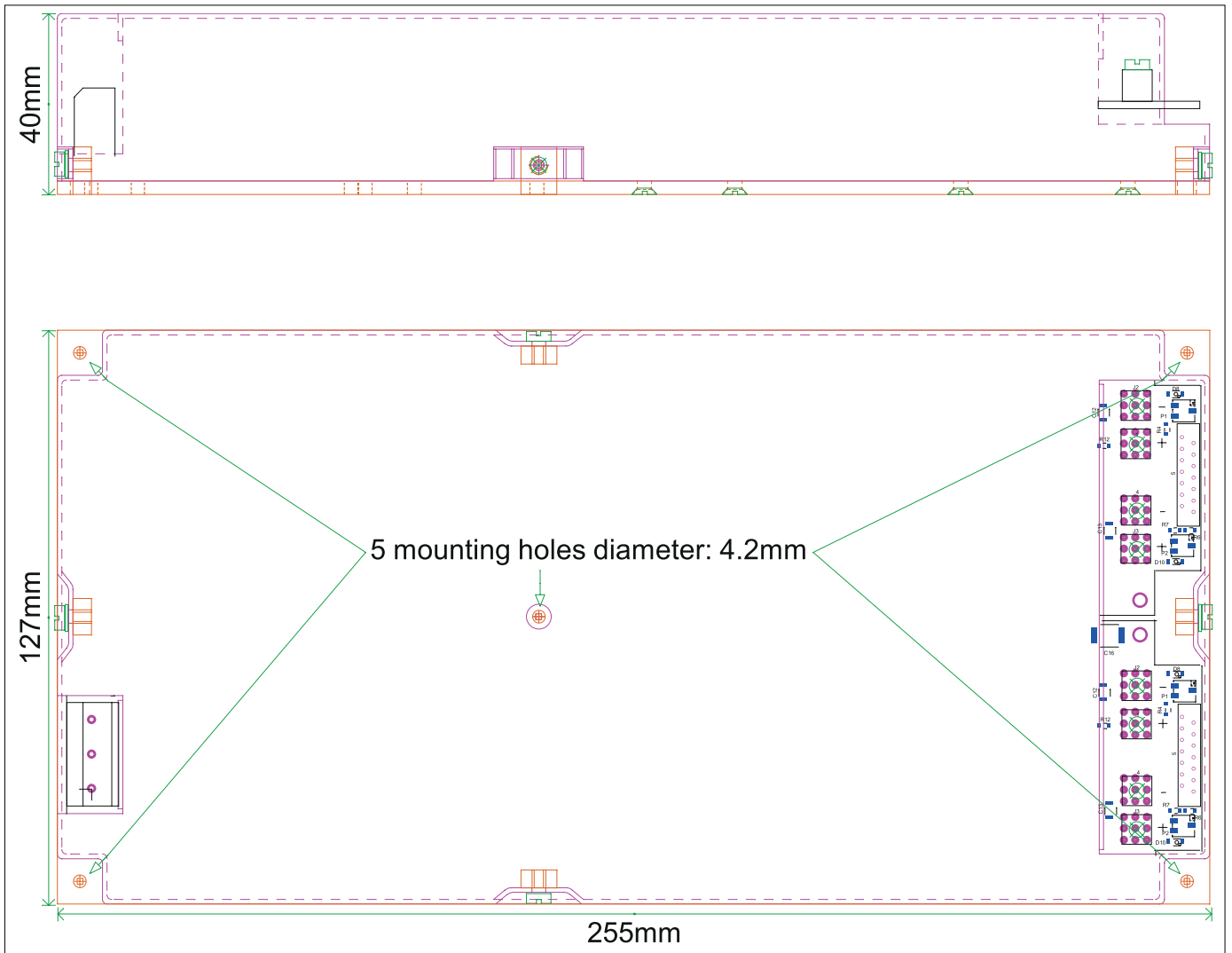
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Block Diagram



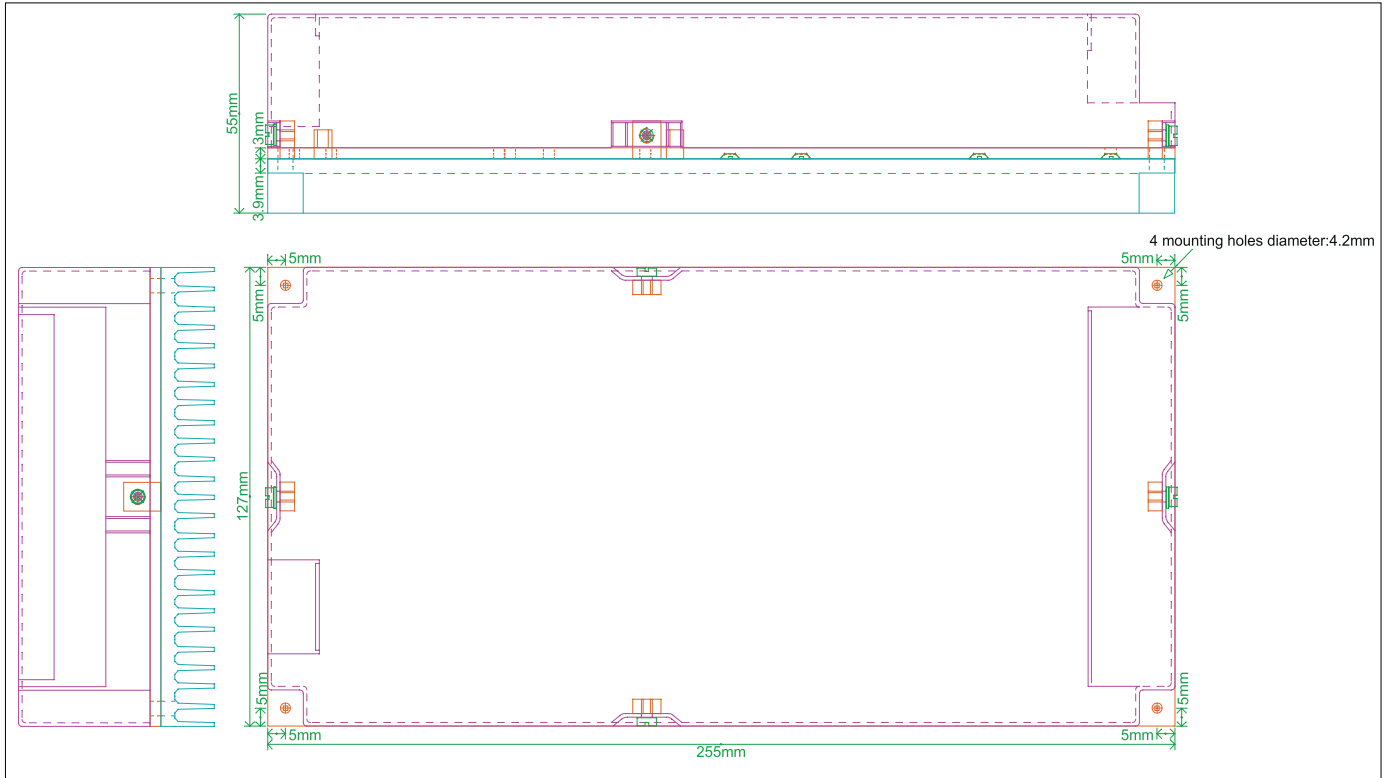
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Mechanical

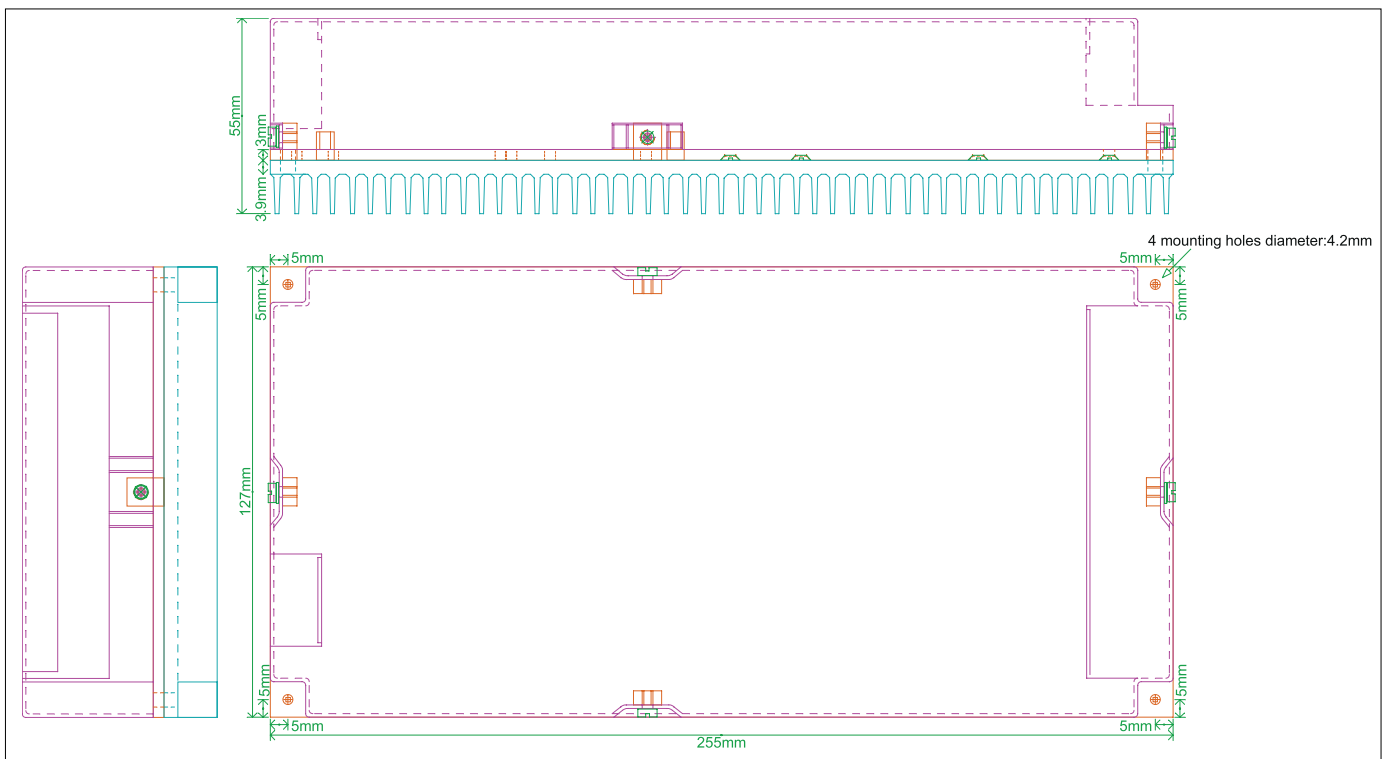


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Mechanical - H Option

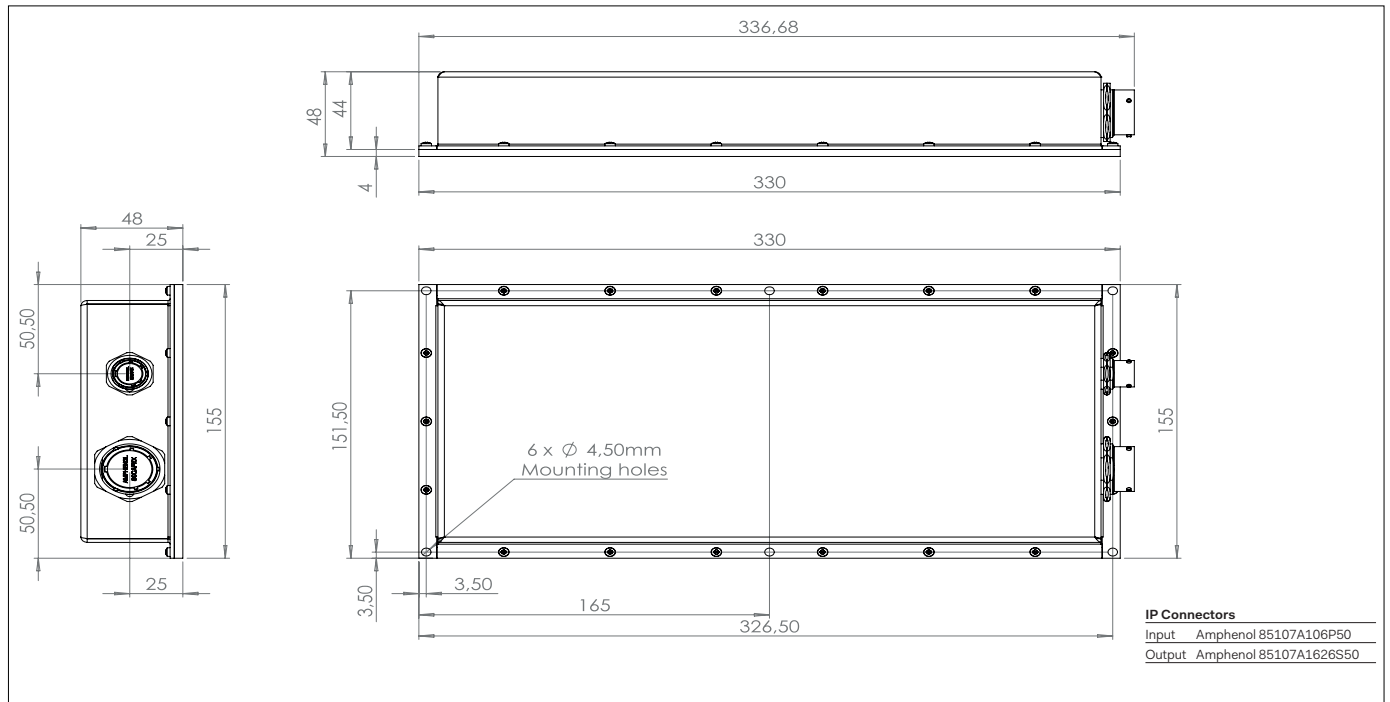


Mechanical - H1 Option



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Mechanical - IP Option





Pin Connection

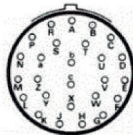
Description	Pin	Connector	
<b>Input screw type connector GMKDS 3/3-7.62</b>			
1	J1-1	Earth	
2	J1-2	Neutral AC/N	
3	J1-3	Line AC/L	
<b>Output 2M-board power connectors</b>			
OUT+	J1	Wurth Pres Fit M4 Ref: 7461095	
OUT-	J2	Wurth Pres Fit M4 Ref: 7461095	
<b>Output M-board power connectors</b>			
OUT+	J1	Wurth Pres Fit M4 Ref: 7461095	
OUT-	J2	Wurth Pres Fit M4 Ref: 7461095	
<b>Output m-board power connectors</b>			
OUT1+	J1	Wurth Pres Fit M3 Ref: 7461093	
OUT1-	J2	Wurth Pres Fit M3 Ref: 7461093	
OUT2+	J3	Wurth Pres Fit M3 Ref: 7461093	
OUT2-	J4	Wurth Pres Fit M3 Ref: 7461093	
<b>Output µ-board power connector 6 Pins Male</b>			
OUT1+	J1-1	WURTH TBL3117691311700006	
OUT1-	J1-2		
OUT2+	J1-3		
OUT2-	J1-4		
OUT3+	J1-5		
OUT3-	J1-6		
<b>Signals Wurth 690368191472 Female Male 2*7 pins</b>			
µ-board	m-board	M-board	2M-board
J5-1 : ACFAIL	J5-1 : ACFAIL	J5-1 : ACFAIL	J5-1 : ACFAIL
J5-2 : PGOOD	J5-2 : PGOOD	J5-2 : PGOOD	J5-2 : PGOOD
J5-3 : RTN	J5-3 : RTN	J5-3 : RTN	J5-3 : RTN
J5-4 : INHIB	J5-4 : INHIB	J5-4 : NC	J5-4 : NC
J5-5 : +5VAUX	J5-5 : +5VAUX	J5-5 : +5VAUX	J5-5 : +5VAUX
J5-6 : NC	J5-6 : S1+	J5-6 : NC	J5-6 : NC
J5-7 : NC	J5-7 : S1-	J5-7 : NC	J5-7 : NC
J5-8 : ADJ1	J5-8 : ADJ1	J5-8 : NC	J5-8 : NC
J5-9 : NC	J5-9 : PR1	J5-9 : PR1	J5-9 : PR1
J5-10 : NC	J5-10 : NC	J5-10 : NC	J5-10 : NC
J5-11 : ADJ2	J5-11 : PR2	J5-11 : INHIB	J5-11 : INHIB
J5-12 : NC	J5-12 : S2+	J5-12 : S1+	J5-12 : S1+
J5-13 : NC	J5-13 : S2-	J5-13 : S1-	J5-13 : S1-
J5-14 : ADJ3	J5-14 : ADJ2	J5-14 : ADJ1	J5-14 : ADJ1


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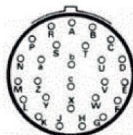
Connector Pin Allocation (-IP Version)

Input Connection	Type	Pin	Description
J1 Input	 AMPHENOL Male 451 07A 106P50	A	NC
		B	AC / L
		C	AC / L
		D	Earth
		E	AC / N
		F	AC / N

Output Dual Maxi Board (1 output 90A max)	Pin	Description
 SOURIAU Female 85107A1626S50A7	A	Output +
	B	Output +
	C	Output +
	D	Output +
	E	Output +
	F	Output +
	G	Output +
	H	Output +
	J	Output +
	K	Output +
	L	Output +
	M	Output +
	N	Output -
	P	Output -
	R	Output -
	S	Output -
	T	Output -
	U	Output -
	V	Output -
	W	Output -
	X	Output -
	Y	Output -
	Z	Output -
	a	Output -
	b	INHIB
	c	RTN

Output 2* Maxi Board (2 outputs 45A max)	Pin	Description
 SOURIAU Female 85107A1626S50A7	A	Output1 A +
	B	Output1 A +
	C	Output1 A +
	D	Output1 A +
	E	Output1 A +
	F	Output1 A +
	G	Output2 B +
	H	Output2 B +
	J	Output2 B +
	K	Output2 B +
	L	Output2 B +
	M	Output2 B +
	N	Output1A -
	P	Output1A -
	R	Output1A -
	S	Output1A -
	T	Output1A -
	U	Output1A -
	V	Output2 B -
	W	Output2 B -
	X	Output2 B -
	Y	Output2 B -
	Z	Output2 B -
	a	Output2 B -
	b	INHIB
	c	RTN

Output 2* Mini Board (4 outputs 22.5A max)	Pin	Description
 SOURIAU Female 85107A1626S50A7	A	Output1 A +
	B	Output1 A +
	C	Output1 A +
	D	Output2 A +
	E	Output2 A +
	F	Output2 A +
	G	Output1 B +
	H	Output1 B +
	J	Output1 B +
	K	Output2 B +
	L	Output2 B +
	M	Output2 B +
	N	Output1A -
	P	Output1A -
	R	Output1A -
	S	Output2A -
	T	Output2A -
	U	Output2A -
	V	Output1 B -
	W	Output1 B -
	X	Output1 B -
	Y	Output2 B -
	Z	Output2 B -
	a	Output2 B -
	b	INHIB
	c	RTN

Output 2* Micro Board (6 outputs 15A max)	Pin	Description
 SOURIAU Female 85107A1626S50A7	A	Output1 A +
	B	Output1 A +
	C	Output2 A +
	D	Output2 A +
	E	Output3 A +
	F	Output3 A +
	G	Output1 B +
	H	Output1 B +
	J	Output2 B +
	K	Output2 B +
	L	Output3 B +
	M	Output3 B +
	N	Output1A -
	P	Output1A -
	R	Output2A -
	S	Output2A -
	T	Output3A -
	U	Output3A -
	V	Output1 B -
	W	Output1 B -
	X	Output2 B -
	Y	Output2 B -
	Z	Output3 B -
	a	Output3 B -
	b	INHIB
	c	RTN