

P R B X

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

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 earch 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

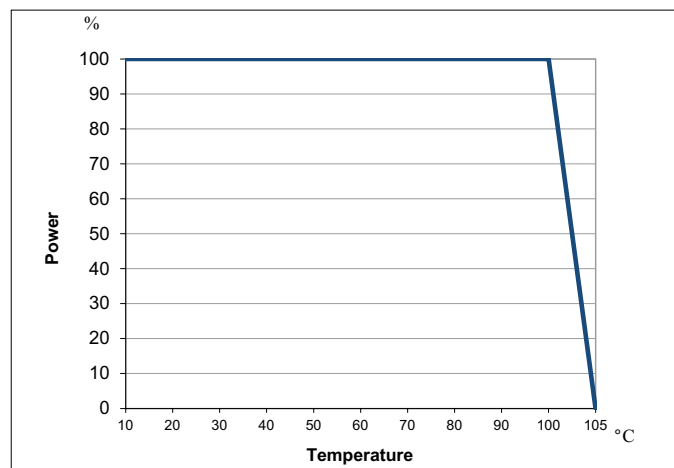
Standards

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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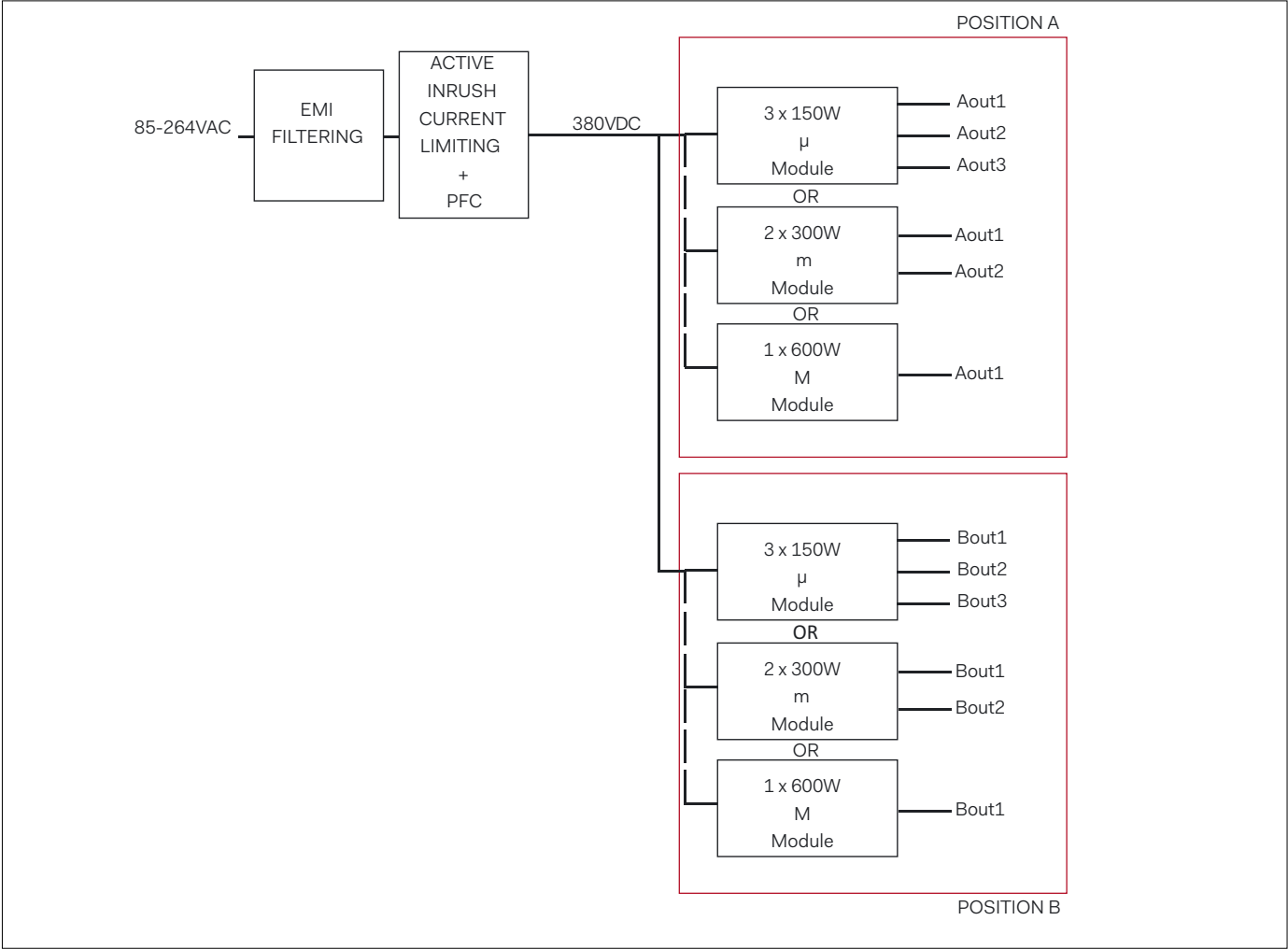
Output		3V3			5V			12V			15V			24V			28V			48V			Unit
Characteristics	Conditions	min	typ	max	min	typ	max	min	typ	max	min	typ	max	min	typ	max	min	typ	max	min	typ	max	Unit
Output voltage		3V3			5			12			15			24			28			48			V
Trim range	Factory set	3		3.6	4.5	5.5	10.8	13.2	13.5	16.5	21.6	26.2	25.2	30.8	43.2	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							%
Load regulation	Vin nom		1			1		0.5		0.5		0.4		0.4		0.4							%
2M board		Each board include 2 identical M modules in parallel for high power configuration																					
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
M board		Each board includes 1 M module below																					
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
m board		Each board includes up to 2 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 board includes up to 3 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



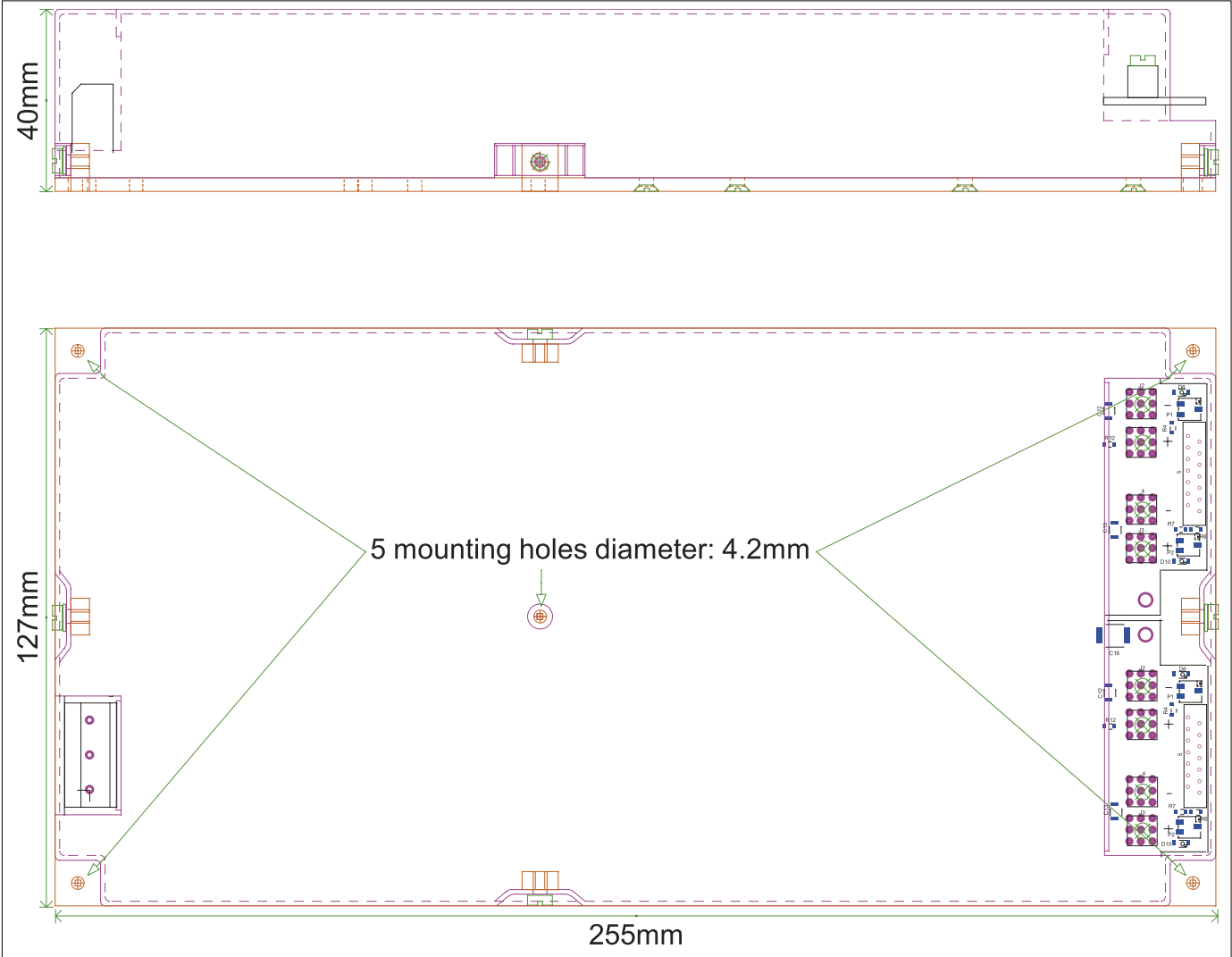
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Block Diagram



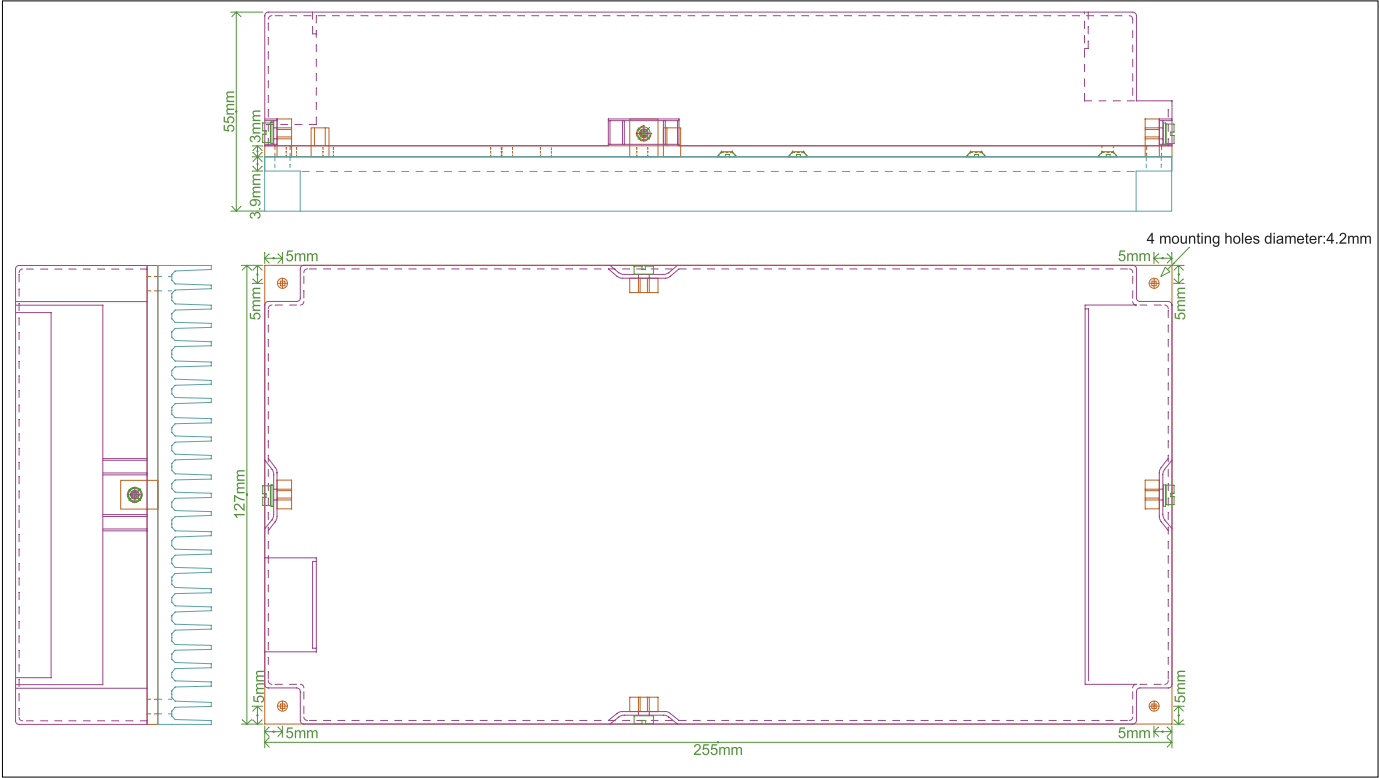
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Mechanical

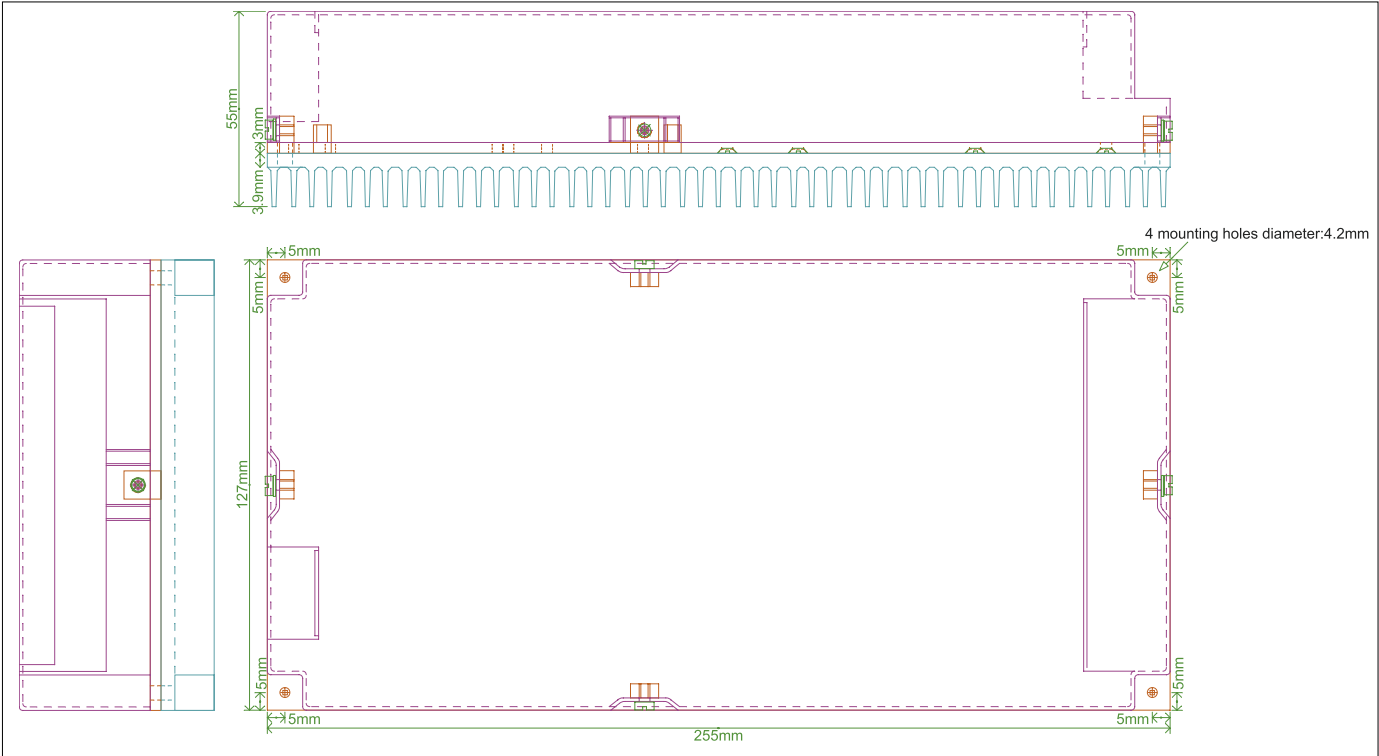


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Mechanical - H Option

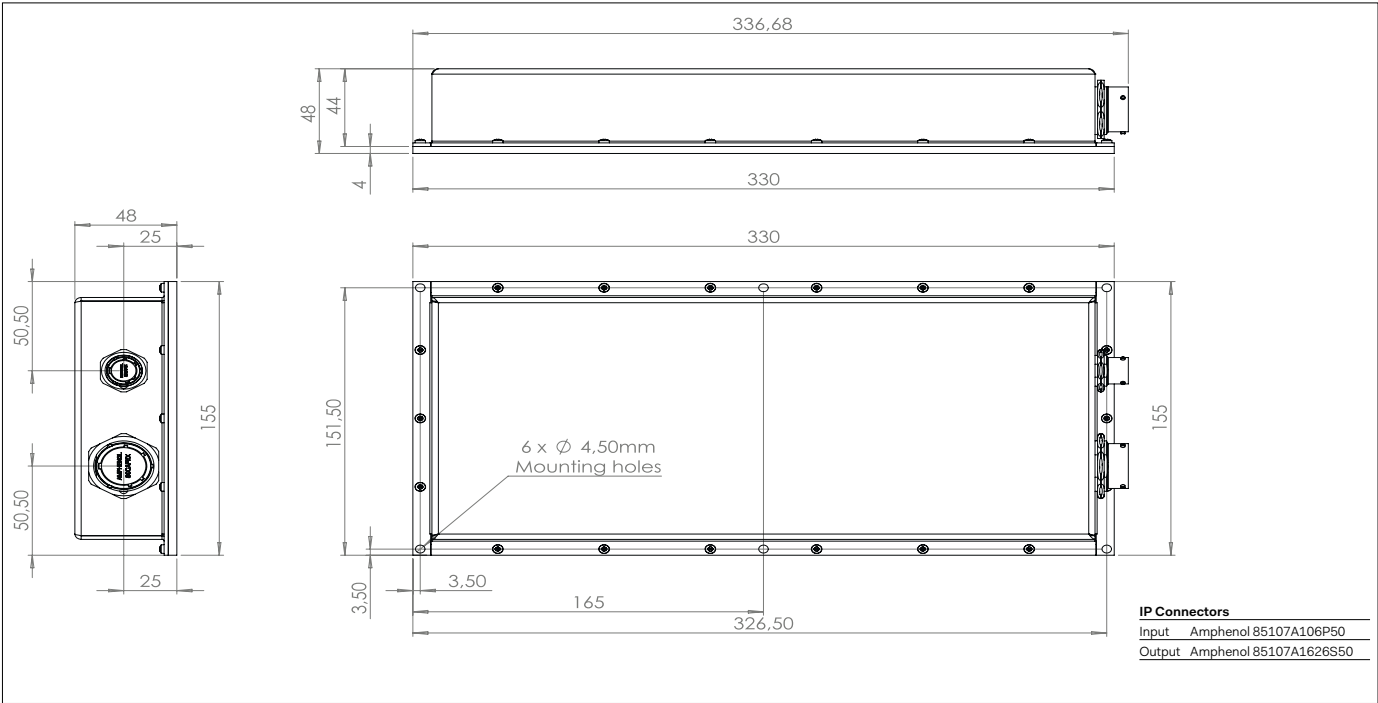


Mechanical - H1 Option



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Mechanical - IP Option



Pin Connection

Description	Pin	Connector	
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 2M-board power connectors			
OUT+	J1	Würth Press Fit M4 Ref : 7461095	
OUT-	J2	Würth Press Fit M4 Ref : 7461095	
Output M-board power connectors			
OUT+	J1	Würth Press Fit M4 Ref : 7461095	
OUT-	J2	Würth Press Fit M4 Ref : 7461095	
Output m-board power connectors			
OUT1+	J1	Würth Press Fit M3 Ref : 7461093	
OUT1-	J2	Würth Press Fit M3 Ref : 7461093	
OUT2+	J3	Würth Press Fit M3 Ref : 7461093	
OUT2-	J4	Würth Press Fit M3 Ref : 7461093	
Output µ-board power connector 6 Pins Male			
OUT1+	J1-1	Würth TBL3117691311700006	
OUT1-	J1-2		
OUT2+	J1-3		
OUT2-	J1-4		
OUT3+	J1-5		
OUT3-	J1-6		
Signals Wurth 690368191472 Female Male 2*7 pins			
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

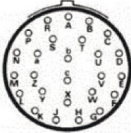
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Connector Pin Allocation (-IP Version)

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

Output Dual Maxi Board (1 output 90A max)

J2 Output

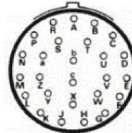


SOURIAU Female
85107A1626S50A7

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)

J2 Output

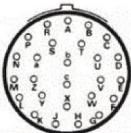


SOURIAU Female
85107A1626S50A7

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)

J2 Output



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)

Figure 12: Where Board (3 outputs 20, 40, 60, 80, 100, 120, 140, 160, 180, 200, 220, 240, 260, 280, 300, 320, 340, 360, 380, 400, 420, 440, 460, 480, 500, 520, 540, 560, 580, 600, 620, 640, 660, 680, 700, 720, 740, 760, 780, 800, 820, 840, 860, 880, 900, 920, 940, 960, 980, 1000, 1020, 1040, 1060, 1080, 1100, 1120, 1140, 1160, 1180, 1200, 1220, 1240, 1260, 1280, 1300, 1320, 1340, 1360, 1380, 1400, 1420, 1440, 1460, 1480, 1500, 1520, 1540, 1560, 1580, 1600, 1620, 1640, 1660, 1680, 1700, 1720, 1740, 1760, 1780, 1800, 1820, 1840, 1860, 1880, 1900, 1920, 1940, 1960, 1980, 2000, 2020, 2040, 2060, 2080, 2100, 2120, 2140, 2160, 2180, 2200, 2220, 2240, 2260, 2280, 2300, 2320, 2340, 2360, 2380, 2400, 2420, 2440, 2460, 2480, 2500, 2520, 2540, 2560, 2580, 2600, 2620, 2640, 2660, 2680, 2700, 2720, 2740, 2760, 2780, 2800, 2820, 2840, 2860, 2880, 2900, 2920, 2940, 2960, 2980, 3000, 3020, 3040, 3060, 3080, 3100, 3120, 3140, 3160, 3180, 3200, 3220, 3240, 3260, 3280, 3300, 3320, 3340, 3360, 3380, 3400, 3420, 3440, 3460, 3480, 3500, 3520, 3540, 3560, 3580, 3600, 3620, 3640, 3660, 3680, 3700, 3720, 3740, 3760, 3780, 3800, 3820, 3840, 3860, 3880, 3900, 3920, 3940, 3960, 3980, 4000, 4020, 4040, 4060, 4080, 4100, 4120, 4140, 4160, 4180, 4200, 4220, 4240, 4260, 4280, 4300, 4320, 4340, 4360, 4380, 4400, 4420, 4440, 4460, 4480, 4500, 4520, 4540, 4560, 4580, 4600, 4620, 4640, 4660, 4680, 4700, 4720, 4740, 4760, 4780, 4800, 4820, 4840, 4860, 4880, 4900, 4920, 4940, 4960, 4980, 5000, 5020, 5040, 5060, 5080, 5100, 5120, 5140, 5160, 5180, 5200, 5220, 5240, 5260, 5280, 5300, 5320, 5340, 5360, 5380, 5400, 5420, 5440, 5460, 5480, 5500, 5520, 5540, 5560, 5580, 5600, 5620, 5640, 5660, 5680, 5700, 5720, 5740, 5760, 5780, 5800, 5820, 5840, 5860, 5880, 5900, 5920, 5940, 5960, 5980, 6000, 6020, 6040, 6060, 6080, 6100, 6120, 6140, 6160, 6180, 6200, 6220, 6240, 6260, 6280, 6300, 6320, 6340, 6360, 6380, 6400, 6420, 6440, 6460, 6480, 6500, 6520, 6540, 6560, 6580, 6600, 6620, 6640, 6660, 6680, 6700, 6720, 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