

Features	Benefits
• Industry leading flexibility	Suits your application
• Screw, Fast-on or IEC connection	Simplifies design into system
• Worldwide safety approvals	Supports global use
• Up to 11 outputs	Eliminates need for additional supplies
• 3 year warranty	Low cost of ownership

Input		
	Vega 450, 650 and 900	Vega dc (450W)
Input Voltage / Frequency	90-264Vac / 47 - 63 Hz (440Hz with reduced PFC) 900W version is 150-264Vac only, 650W below 150Vac	34 - 75Vdc derate linearly below 44V to 340W at 34V
Input Fuse	16A / 250Vac HBC Fast acting (not user accessible)	20A Fast acting (not user accessible)
Inrush Current	<40A at 25°C and 264Vac (cold start)	<40A at 25°C, ETSI EN300 132-2
Leakage Current	See 'How To Create A Product Description' for details	n/a

The diagram illustrates the relationship between input parameters and output parameters for a fan. The input parameters are categorized into three groups: Converter, Cooling, and Input Connection. The output parameters are categorized into Primary Option and Leakage Current.

Converter

V0	450W (dc in)
V4	450W
V6	650W
V9	900W

Cooling

F	Forward air - standard
Q _d	Forward air - Quiet
R _a	Reverse air
P _{ad}	Reverse air - Quiet fan
C _b	Customer air - no fan

Input Connection

S	Screw
F _d	Fast-on terminal
I _L	IEC320 with switch

Primary Option

V4	F	S	S	F
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Leakage Current
(max leakage current at 263Hz)

Arrows indicate the flow of information from the input parameters to the output parameters. The Converter table has arrows pointing to V4, F, S, S, and F in the Primary Option table. The Cooling table has arrows pointing to F, S, S, and F in the Primary Option table. The Input Connection table has arrows pointing to S, S, and F in the Primary Option table.

Primary Option	F	ac fail, psu+fan inhibit, 5V/100mA standby
	FV	ac fail, psu+fan inhibit, 5V/300mA standby
	xFW_{cd}	ac fail, psu+fan inhibit, 5-15V/1A standby
	E	ac fail, psu+fan enable, 5V/100mA standby
	EV	ac fail, psu+fan enable, 5V/300mA standby
	xEW_{pd}	ac fail, psu+fan enable, 5-15V/1A standby

Leakage Current (max leakage current at 264Vac, 63Hz)	S	Standard 1.5mA
	M	650μA
	L	290μA
	R	175μA
	T	60μA

- a) Not available for Vega 900
- b) Thermocoupled sample recommended to ensure adequate cooling - consult sales
- c) xFX and xEW options increase leakage current by 90µA. Replace 'x' with required output voltage (5FW = 5V standby supply)
- d) Not available for Vega dc

OUTPUT VOLTAGES (single output modules)						OUTPUT VOLTAGES (twin output modules)							
Module	Adjustment Range (Volts)		Current (Amps)	Slots	Module	V1 Adjustment Range (Volts)		Current	V2 Adjustment Range (Volts)		Current (Amps)	Slots	
B1L	1.8	- 3.8 _e	20	1	H1L/1L	1.8	-	3.8 _n	12	1.8	- 3.8 _n	8	1
C1	1.8	- 4.1 _e	35	1	H1L/1H					3.9	- 5.5 _d	8	1
C1Y	1.8	- 4.1 _e	40	1	H1L/2					5.6	- 9 _f	6	1
D1L	1.8	- 3.8	50	1.5	H1L/3					9.1	- 16.2 _u	6	1
E1	1.8	- 3.8 _e	60	2	H1L/4					16.3	- 25 _p	4.5	1
F1 _a	1.8	- 3.8	80	2	H1H/1L	3.9	-	5.5 _d	12	1.8	- 3.8 _n	8	1
Z2	1.8	- 3.8 _e	95	3	H1H/1H					3.9	- 5.5 _d	8	1
Z3	1.8	- 3.8 _e	114	4	H1H/2					5.6	- 9 _f	6	1
B1H	3.9	- 5.5 _d	20	1	H1H/3					9.1	- 16.2 _u	6	1
L1	4.2	- 5.5 _d	35	1	H1H/4					16.3	- 25 _p	4.5	1
D2	3.8	- 9 _k	45	1.5	H2/1L	5.6	-	9 _f	10	1.8	- 3.8 _n	8	1
D1H	3.9	- 5.5 _d	50	1.5	H2/1H					3.9	- 5.5 _d	8	1
E2	3.8	- 8 _k	60	2	H2/2					5.6	- 9 _f	6	1
Z18	4.2	- 5.5	66	2	H2/3					9.1	- 16.2 _u	6	1
F2 _a	3.8	- 8	75	2	H2/4					16.3	- 25 _p	4.5	1
Z4	3.9	- 5.5 _d	95	3	H3/1L	9.1	-	16.2 _u	10	1.8	- 3.8 _n	8	1
Z6	3.9	- 5.5 _d	104	3.5	H3/1H					3.9	- 5.5 _d	8	1
B2	5	- 9 _f	25	1	H3/2					5.6	- 9 _f	6	1
B3	9.1	- 16.2 _g	12	1	H3/3					9.1	- 16.2 _u	6	1
C3	9.1	- 16.2 _g	18	1	H3/4					16.3	- 25 _p	4.5	1
D3	8	- 16.5 _g	24	1.5	H5/1L	16.2	-	28	5	1.8	- 3.8 _n	8	1
E3L	8	- 13.9 _i	40	2	H5/1H					3.9	- 5.5 _d	8	1
Z7	8	- 16.5 _g	45	3	H5/2					5.6	- 9 _f	6	1
EE2	7.6	- 16 _g	45	4	H5/3					9.1	- 16.2 _u	6	1
D4	14	- 21.5 _i	18	1.5	H5/4					16.3	- 25 _p	4.5	1
E4	14	- 19.9 _m	30	2	Wide Range Programmable Modules								
E3H	14	- 15	36	2	Module	Voltage Range		Current	Slots				
C4	16.3	- 21.5 _i	14	1	W2 _a	0.25 _w	- 7.5	30	1	Select features from table below			
CC3	18.2	- 32.4 _j	18	2	W5	0.25 _x	- 32	8.5	1				
E5L _v	20	- 24	27	2									
B5	21.6	- 31 _h	6	1	Follow by	F or T	Fixed or Tracking Overvoltage protection						
C5	21.6	- 31 _j	10	1		F or S	Fast-on or Screw output terminals						
D5	21	- 28	15	1.5		R or V	Resistance (0-32kΩ) or Voltage (0-5V) programming						
E5H _v	24	- 28	25	2		1 Inhibit, Fixed Current Limit							
Z19 _{co}	24	- 28	36	3.5		1, 2, 3 or 4	2 Inhibit, Programmable Current Limit (0-5V)						
HH5/3	25.3	- 44.2 _b	5	1			3 Enable, Fixed Current Limit						
DD4	28	- 43 _s	18	3			4 Enable, Programmable Current Limit (0-5V)						
EE4 _c	28	- 38	22.5	4									
HH5/4	32.5	- 53 _t	4.5	1	Follow non wide range modules by F (Fast-on) or S (Screw) output terminals								
BB4	32.6	- 43 _q	10	2									
EE5L _{co}	40	- 48	18	4	Options - Single output Modules*				Options - Twin output Modules*				
C5B4	43	- 48	10	2	N	Output Inhibit, Module Good & Current Sharing				N	Output Inhibit, Module Good & Remote Sense		
EE5H _o	48	- 56	18	4						R	Remote Sense only		
CC5	48.1	- 62 _r	10	2									
DD5	42	- 56	15	3	* see configuring guide								

a) F1, F2 and W2 modules not for Vega 900
b) 38V max for 900W
c) Only available for Vega 900
d) 5.1V max for 900W
e) 3.4V max for 900W
f) 8V max for 900W
g) 15V max for 900W

h) 28V max for 900W
i) 18V max for 900W
j) 30V max for 900W
k) 7.5V max for 900W
l) 12.5V max for 900W
m) 19V max for 900W
n) 3.4V max for 900W

o) 'N' option not available
p) 24V max for 900W
q) 40V max for 900W
r) 60V max for 900W
s) 36V max for 900W
t) 52V max for 900W
u) 15.5V max for 900W

v) 'N' option not available if more than 1 module fitted
w) 500mA min load below 1V
x) 100mA minimum load below 2V

Isolation

Input to Output	Reinforced	2 x MOPPs (3rd edition 60601) - units without xFW or xEW primary option fitted 4kVac, 5.7kVdc type tested to 4kVac (equivalent to 5.7kVdc), production tested to 4.3kVdc.
Input to Earth	Basic	1 x MOOP (3rd edition 60601) 2.3kVdc
Output to Output / Output to Earth		200Vdc

Output Specification

Voltage / Current	See output voltages table	
Turn on time	1.5s max	at 90Vac (150Vac for 900W, 48Vdc for Vega dc) and 100% rated output power
Rise time	<50ms	to 90% of voltage, monotonic rise above 10%
Turn on overshoot	<5% or 250mV	Load type dependent, no overshoot with resistive load
Efficiency	up to 75%	at 230Vac (48Vdc for Vega dc) & 100% rated power, configuration dependent
Hold up	16ms min	at 90Vac (150Vac for 900W) and 100% rated power (10ms min for Vega dc)
Ripple and Noise	<1% or 50mV	pk-pk, using EIAJ test method & 20MHz bandwidth
Voltage Accuracy	<1%	of set voltage
Remote Sense	Yes	standard on single output modules, max 0.75V total line drop. Option for twin output modules
Minimum Load	No	on any output (except W2 and W5 modules which need 0.5A load to achieve full specification)
Temperature Coefficient	<0.02%	of rated voltage per °C
Load Regulation	<0.5% or 50mV	for 0-100% load change
Line Regulation	<0.1%	for 90-264Vac input change (34 - 75Vdc for Vega dc)
Cross Regulation	<0.2%	for 100% load change on any output
Transient Response	<6% or 300mV	of set voltage for 50% load change (above 25% load)
Recovery	500µs	for recovery to 1% or 100mV of set voltage
Over Voltage Protection	Yes	Refer to application notes for details
Over Current Protection (singles)	105-125% 110-170%	of rated current, constant current characteristic For EE2, EE4, EE5L, EE5H, Z2, Z18 and Z19 modules
Short Circuit Protection	<150%	of rated current, when output voltage <1%
Over Temperature Protection	Yes	shuts down all outputs and fan. Cycle ac off/on to reset Shutdown temperature varies according to ambient, output power and input voltage. ac fail signal (if fitted) provides 5ms warning of thermal shutdown

Environment

Temperature	0°C to 65°C operational, -40°C to 70°C storage.
Derating	50°C to 65°C derate total output power and each output current by 2.5% per °C
Low Temp Startup	-20°C
Humidity	5 - 95% RH non condensing
Shock	±3 x 30g shocks in each plane, total 18 shocks 30g shock = 11ms (+/-0.5msec), half sine Conforms to EN60068-2-27, EN60068-2-47, IEC68-2-27, IEC68-2-47, JIS C0041-1987. Conforms to MIL-STD-810E/F, Method 516.5, Pro I, IV, VI
Vibration	Single axis 10 - 500 Hz at 2g (sweep and endurance at resonance) in all 3 planes Conforms to EN60068-2-6, IEC68-2-6 Conforms to MIL-STD-810E, Method 514.4, Pro I, Cat 1, 9
Altitude	5000 metres operational/non operational (IEC inlet 3000m operational, 5000m non operational)
Pollution	Degree 2, Material group IIb
IP Rating	IP 10

Emissions EN61000-6-3:2007, EN60601-1-2:2001

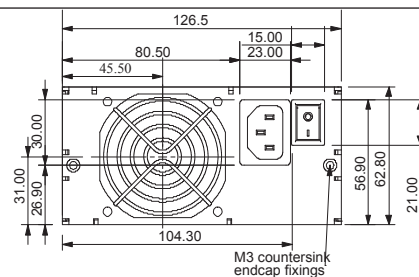
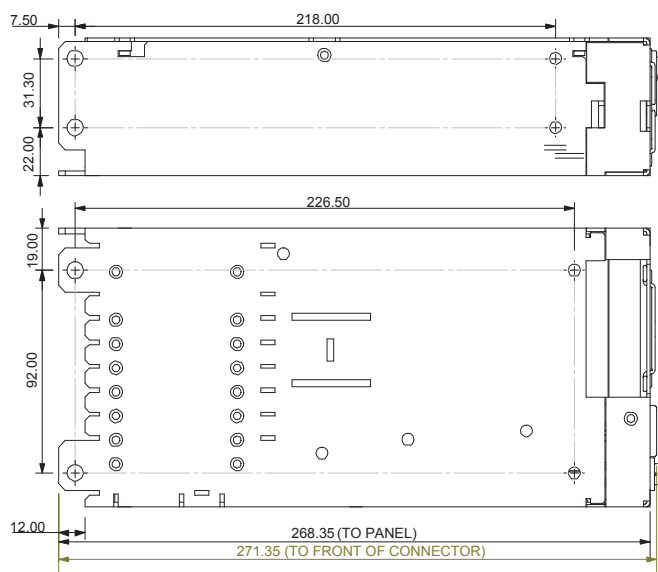
Radiated Electric Field	EN55011, EN55032	(as per CISPR.11/22) Class B (Class A for Vega dc), FCC47 part 15 subpart B see application note for details. Additional filtering required for IEC inlet version. Only for 'S' type leakage variants.
Conducted Emissions	EN55011, EN55032	(as per CISPR.11/22) Class B (Class A for Vega dc), FCC47 part 15 subpart B Only for 'S' type leakage variants. 'M' and 'L' types meet Class A
Conducted Harmonics	EN61000-3-2	Class A - not applicable to Vega dc
Flicker	EN61000-3-3	Compliant - d _{max} only - not applicable to Vega dc

Immunity EN61000-6-2:2005, EN60601-1-2:2001

				Criteria
Electrostatic Discharge	EN61000-4-2	Level 4	Air discharge 15kV, Contact discharge 8kV	A
Electromagnetic Field	EN61000-4-3	Level 3	12V/m	A
Fast / Burst Transient	EN61000-4-4	Level 4 Level 3 for Vega dc	ac input tested to 4.4kV (2kV for Vega dc) dc output tested to 2.2kV (1kV for Vega dc) Tested at 5kHz and 100kHz	A
Surge Immunity	EN61000-4-5	Level 3 Level 2 for Vega dc	Common mode - 2.2kV (1.1kV for Vega dc) Differential - 1.1kV (0.55kV for Vega dc)	A
Conducted RF Immunity	EN61000-4-6	Level 3	12V	A
Power Frequency Magnetic Field	EN61000-4-8	Level 4	30A/m	A
Voltage Dips, Variations, Interruptions	EN61000-4-11	Class 3 na - Vega dc		A B for 5s interruptions

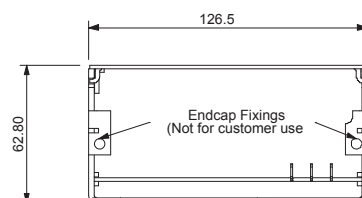
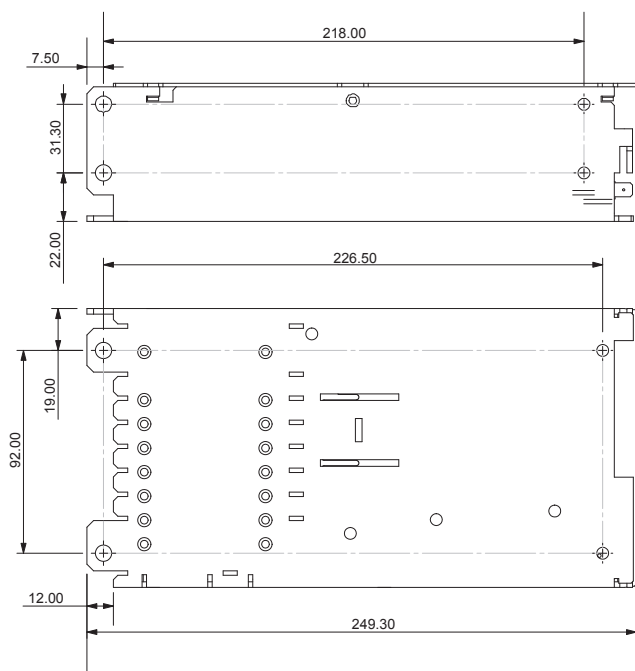
Approvals / Accreditations

IEC/EN 62368-1, UL62368-1 / CSA 22.2 No 62368-1	File E135494
IEC/EN 60950-1, UL60950-1 / CSA 22.2 No 60950-1	File E135494
IEC/EN 60601-1, UL/CSA 60601-1, ANSI/AAMI ES60601-1 CAN/CSA-C22.2 No 60601-1-08	File E349607 (not Vega dc, only for L, R and T leakage variants)
IEC/EN 61010-1	File E331788
CE Mark (EN62368-1)	Low Voltage Directive (LVD), electromagnetic compatibility (EMC) and Restriction of Hazardous Substances (RoHS)
CB certificate and Report available on request	<i>Please check with technical sales for status of approvals</i>
Designed and manufactured under the control of ISO9001 and ISO13485 (including risk management).	

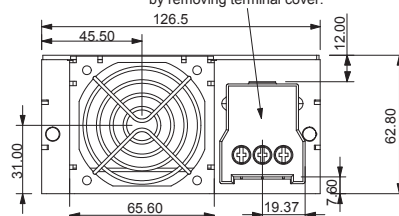
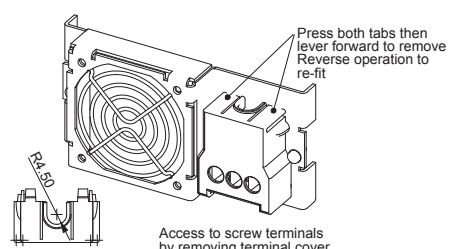
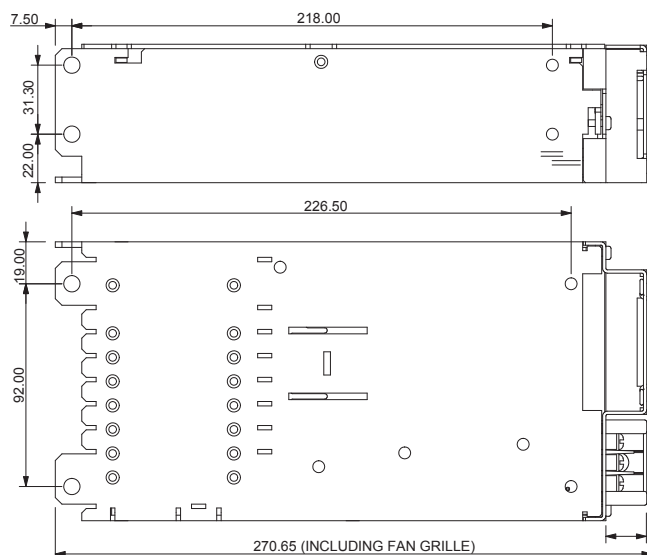


IEC-320 Connector Case

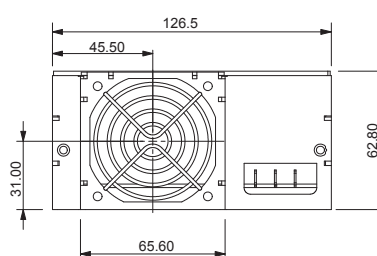
All versions have:-
8 x M4 Customer fixings
Max thread penetration:- 4.5mm



Customer Air Case (no fan)



Screw & Fast-on Terminal Case





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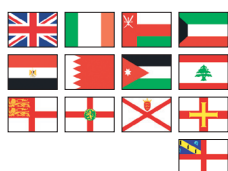
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