



Medical



Industrial



Test



Broadcast



Comms



Renewable

1000W - 1500W
Modular power supply.

Features	Benefits
• Fast-on output connection	Reduces installation time/errors
• Worldwide Safety Approvals	Supports global use
• Up to 16 outputs	Eliminates need for additional supplies
• Medical Approval available (CA1000)	Simplifies approval process
• 3 Year Warranty	Low cost of ownership



Input	
Input Voltage	Alpha 1000 85 - 264Vac Alpha 1500 85 - 264Vac (1000W below 150Vac input)
Input Frequency	47 - 63Hz (440Hz with reduced PFC - consult sales office)
Input Fuse	20A / 250Vac HBC Fast acting (not user accessible)
Inrush Current	<50A at 25°C and 264Vac (cold start)
Leakage Current	1.1mA max at 264Vac & 63Hz (lower leakage versions available, see configuring guide)
Power Factor	0.99 typical

How To Create A Product Description

The extensive range of output modules and options make it possible to achieve almost any combination of Volts and Amps. To achieve the optimum configuration, please contact our sales office. Alternatively, you can do this manually by using the guide below.

- Calculate total output power to select the appropriate converter, then select required Cooling, Connection, Leakage Current and Controls/ Signals from the following table:

			CA1000LL					
Output Power	1000	(7 slots)		Leakage Current (max leakage current at 264Vac, 63Hz)	empty	Standard 1.1mA		
	1500	(8 slots)			ML	500µA		
		LL		240µA				
		RL		115µA				
		TL		50µA				

- Select Output Modules and options from the "Output Voltages" tables.
Example - if you require 5.2V / 18A with output inhibit :-
a) Select B as closest match for voltage & current and prefix with voltage (eg **5.2B**)
b) add suffix for option (if required)
 '_PA' for parallel/current share (for N+1 redundant applications)
 '_PP' for parallel (to increase current from one PSU)
 '_IN' for inhibit
 '_MF' (only applicable to 1st module) for global inhibit, ac fail and 5V / 50mA standby supply
c) Repeat for other outputs.
Ensure that the total number of slots of all selected modules is within the number allowed for the chosen converter. For example:-
CA1000 5A 12/12E 24G which represents a four output 1000W Alpha with 1.1mA Earth leakage, and the following outputs:
Output 1 = 5V/60A with remote sense
Output 2 = 12V / 8A
Output 3 = 12V / 8A
Output 4 = 24V / 25A with remote sense
- Contact TDK-Lambda to validate configuration and issue a part number.

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
A	4.5	-	5.5	60	2	E	5	-	16	8	5	-	16	8	1
AA	4.5	-	6.2	60	2	EB	4.5	-	5.5	9	4.5	-	5.5	9	1
B	4.5	-	5.5	25	1	EQ	4.5	-	5.5	9	2.7	-	3.9	9	1
BB	4.5	-	6.5	25	1	H	18	-	32	5 _c	18	-	32	5 _c	1
C	5	-	16	16 _a	1	P	18	-	29	5	5	-	16	8	1
D	18	-	29	8	1		Notes: a) 12A max above 12V b) Derate output current by 0.25A / V above 40V c) 1A max above 29V								
F	9	-	15.5	33	2										
G	17.5	-	29	25	2										
J	30	-	48	10 _b	2										
K	18	-	29	15	2										
L	1.8	-	3.2	25	1										
M	5	-	16	8	1										
N	18	-	32	5 _c	1										
Q	2.7	-	3.9	25	1										
R	2.7	-	3.9	60	2										
S	2.5	-	5.7	85	2										
T	1.8	-	3.2	60	2										
U	10	-	21	16	1										
W	4.5	-	5.5	15	1										
Z	4.5	-	5.5	25	1										

Isolation		
Input to Output	Reinforced	2 x MOOPs (3rd edition 60601) - 'LL', 'RL' and 'TL' variants of CA1000 only 4.3kVdc
Input to Earth	Basic	2.3kVdc
Output to Earth / Output to Earth		500Vdc

Output Specification		
Voltage / Current	See output voltages table	
Turn on time	1.5s max	at 90Vac (150Vac for CA1500) 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	75%	typical at 230Vac & 100% rated power, configuration dependent
Hold up	13ms min	at 90Vac and 100% rated power (8ms for CA1500 at 207Vac & 100% rated power)
Ripple and Noise	<2% or 100mV	pk-pk, using EIAJ test method & 20MHz bandwidth
Voltage Accuracy	<1%	of set voltage
Remote Sense	Yes	standard on single output modules
Minimum Load	No	on any output
Temperature Coefficient	<0.02%	of rated voltage per °C
Load Regulation	<0.5% or 25mV	for 0-100% load change, with sense connected (<2% without)
Line Regulation	<0.5%	for 90-264Vac input change (210 - 264Vac for CA1500)
Cross Regulation	<0.2%	for 100% load change on any output
Transient Response	<10%	of set voltage for 50% load change (above 25% load)
Recovery	500µs	for recovery to 1% or 100mV of set voltage (1000µs for 'S' module)
Over Voltage Protection	Standard	for all outputs
Over Current Protection	Standard	for all outputs
Short Circuit Protection	<150%	of rated current, when output voltage <1%
Over Temperature Protection	Yes	shuts down all outputs. Cycle ac off/on to reset Shutdown temperature varies according to ambient, output power and input voltage.

Environment	
Temperature	0°C to 70°C operational, -40°C to 70°C storage (max 12 months).
Derating	50°C to 70°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	3000 shocks, each of 10g (16ms) half sine
Vibration	10 - 200 Hz at 1.5g
Altitude	3000 metres operational (5000m non operational)
Pollution	Degree 2, Material group IIIb
IP Rating	IP 10

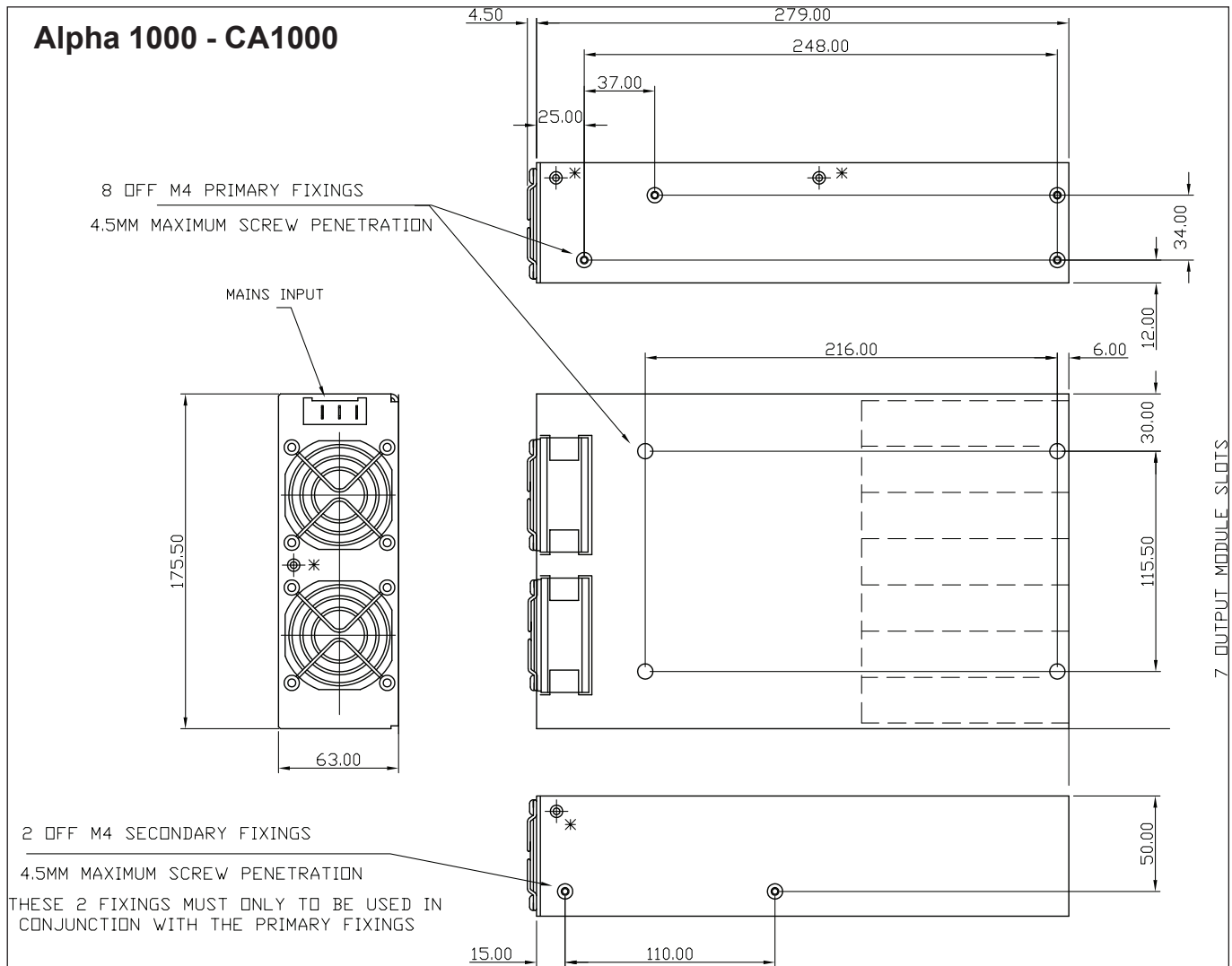
Product, Generic & Collateral Standards			
Low Voltage Power Supply, EMC	EN61204-3:2001	Compliant to High Severity Immunity	Class A emissions
Medical Electrical Equipment, EMC	EN61601-1-2:2001	Compliant	Class A emissions
Immunity for residential, commercial and light industrial environments	EN61000-6-1:2001	Compliant	
Immunity for industrial environments	EN61000-6-2:2001	Compliant	
Emissions for industrial environments	EN61000-6-4:2001	Compliant	

Emissions EN61000-6-3:2007, EN60601-1-2:2007		
Radiated Electric Field	EN55011, EN55032	(as per CISPR.11/22) Class A see application note for details. Only for 'S' type leakage variants.
Conducted Emissions	EN55011, EN55032	(as per CISPR.11/22) Class A Only for 'S' type leakage variants.
Conducted Harmonics	EN61000-3-2	Class A
Flicker	EN61000-3-3	Compliant - d _{max} only

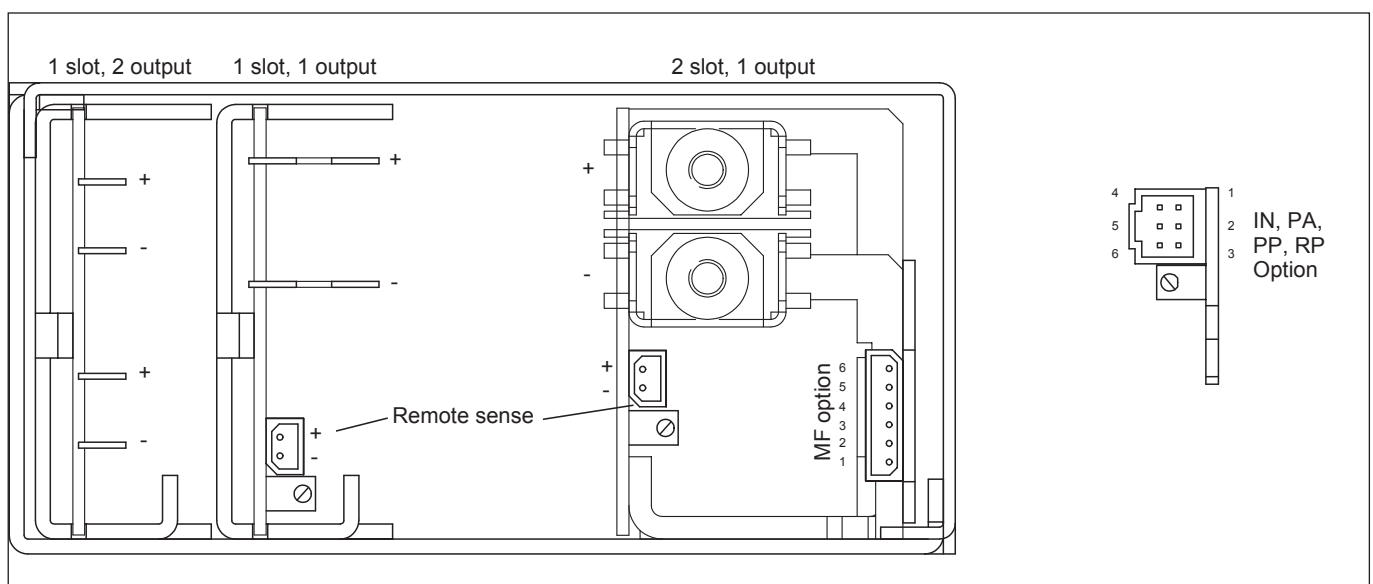
Immunity EN61000-6-2:2005, EN60601-1-2:2007				Criteria
Electrostatic Discharge	EN61000-4-2	Level 4	Air discharge 15kV, Contact discharge 8kV	A
Electromagnetic Field	EN61000-4-3	Level 3	12V/m	A
Fast / Burst Transient	EN61000-4-4	Level 4	ac input tested to 4kV dc output tested to 2kV Tested at 5kHz and 100kHz	A
Surge Immunity	EN61000-4-5	Level 3	Common mode - 2.2kV Differential - 1.1kV	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		A B for 5s interruptions
Voltage Fluctuations	EN61000-4-14	Class 3	For 100 - 240Vac nominal	A

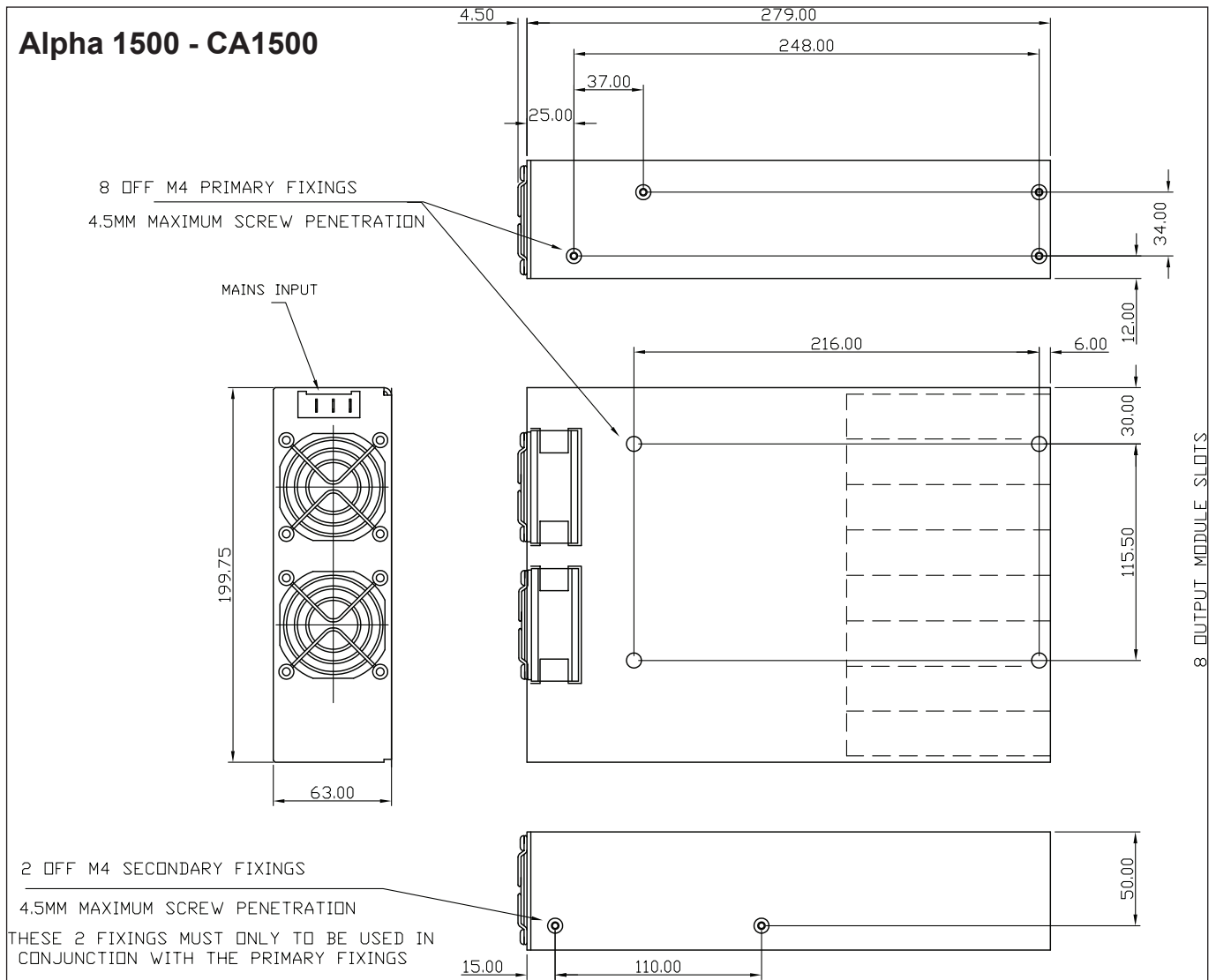
Approvals / Accreditations	
IEC/EN 60950-1, UL60950-1 / CSA 22.2 No 60950-1	File E135494
IEC/EN 60601-1, UL/CSA 60601-1, ANSI/AAMI ES60601-1 CAN/CSA-C22.2 No 60601-1-08	File E349607 (not CA1500, only for LL, RL and TL leakage variants)
CE Mark (EN60950-1)	LV Directive 2006/95/EC
CB certificate and Report 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).	

Alpha 1000 - CA1000



Option Connections





Option Connections					
Pin	IN option	PA option	PP option	RP option	MF option
1	n/c	+ Sense	+ Sense	+ Sense	Inhibit (low)
2	Module Good	Module Good	n/c	- Sense	5V supply
3	Inhibit	Star point	n/c	Control 2	Power Fail
4	n/c	- Sense	- Sense	n/c	0V
5	- Power	- Power	n/c	Control 1	Inhibit (high)
6	- Power	Star point	n/c	n/c	n/c



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