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CFE400M

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Features	Benefits
Convection cooled	Silent operation
 Reinforced isolation 	Simplifies equipment design
Full digital control	Improves Product Performance
 ErP and Climate Savers Gold Level 	Minimises heat in system
5 Year Warranty	Low cost of ownership

300W convection / 400W fan cooled, AC-DC power supply



Input				
Input Voltage	85-264Vac (100-240Vac nominal)	Input Frequency	47 - 63Hz (440Hz with reduced PFC - consult sales office)	
Input Harmonics	EN61000-3-2 compliant	Power Factor	0.79 minimum	
Input Fuse	Dual fuses (Live + Neutral) Fast acting (not user accessible)	Inrush Current	<25A at 25°C and 230Vac (cold start) (meets EN61000-3-3).	
Earth Leakage Current140μA at 120Vac (60Hz), 280μA max at 240Vac (60Hz)Worst case leakage current is less than 300μA at 240Vac, 63Hz (normal condition, 0.5mA Single Fault Condition) Touch Current is <100μA NC, <500μA SFC at 264Vac, 60Hz				

Qu	Quick Selector (Standard models). Additional variants available - see below						
	Output Convection cooled units / units without fan			Units with top fan			
Valta	Current	U-Chassis		Cover + Chassis		Cover + Chassis	
VOILS	(fan/conv)	Description	Order Code	Description	Order Code	Description	Order Code
12V	33.3A / 25A	CFE400M-12-5C-N1UML-NT	U7Y0032	CFE400M-12-5C-N1CML-NT	U7Y0087	CFE400M-12-5C-TFCML-NT	U7Y0098
24V	16.7A / 12.5A	CFE400M-24-5C-N1UML-NT	U7Y0054	CFE400M-24-5C-N1CML-NT	U7Y0101	CFE400M-24-5C-TFCML-NT	U7Y0112
48V	8.3A / 6.25A	CFE400M-48-5C-N1UML-NT	U7Y0123	CFE400M-48-5C-N1CML-NT	U7Y0134	CFE400M-48-5C-TFCML-NT	U7Y0145



Isolation				
Input to Output	Reinforced	2 x MOPPs (3rd edition 60601) 4kVac, 5.7kVdc type tested to 4kVac (equivalent to 5.7kVdc), production tested to 4.3kVdc.		
Input to Earth	Basic	1.5kVac, 2.3kVdc	Output to Earth	1.5kVac

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Output Specification

output opcomouton			
	Fan cooled	Convection	
Output Power	400W	300W	Continuous (including fan supply) or RMS (including Peak power) See handbook for details.
Peak Power	450W	450W	for 10 seconds. RMS power not to exceed Output Power stated above
Total Regulation	better tha	n 2.25%	Including Line regulation of 0.25% (for 90-264Vac input change), Load regulation of 1% (for 0-100% load change) and thermal regulation of 0.02%/°C (0-50°C)
Ripple & Noise	1%	6	pk-pk, using EIAJ test method & 20MHz bandwidth
Voltage Setting Accuracy	±19	%	at 50% load
Turn on Time	1.5s i	max	at 90 Vac & 100% rated output power
Efficiency	up to	94%	for 48V and 24V (up to 91% for 12V). At 230Vac, 75% load
Hold up	13n	ns	minimum at 100% of 400W load
Min Load	Nor	ne	
Transient Response	<50	%	of set voltage for 50% of 300W load change (in 500 μ s within the range 25 - 100% load)
Recovery	2ms r	max	for recovery to 2% of set voltage
Short circuit protection	Ye	S	Auto recovery after removal of short circuit
Over Temperature protection	Ye	s	Primary - auto recovers, secondary - cycle power to restart
Over Voltage Protection	Ye	S	Latching, need to cycle ac to restart unit.
Fan supply	12V / 0).25A	Depending on 'Fan Option' selected. See 'how to create a product description' for details
Parallel connection	Poss	ible	For N+1 redundancy with ORing FET option. To increase output power requires optional droop share (contact sales office for details)

Global Signals	
Remote on/off	Enable - TTL logic level low (relative to Standby 0V) enables channel 1 and fan supply Inhibit - TTL logic level low (relative to Standby 0V) inhibits channel 1 and fan supply
Standby Supply	5V / 80mA or 5V / 2A, isolated supply, not affected by remote on/off.
Power Good	Logic high indicates ac supply is good and Ch1 is within regulation. Not available on units with no standby supply.
ORing FET	Allows redundant connection of power supplies with no additional/external diodes required.

Environment		
Temperature	See derating chart. Fan cooled is with 1.5m/s air blown fro -40°C to 70°C storage (max 12 months). Fan cooling required if the unit is mounted with no free air circulation above (see handbook for mounting details)	m input to output (approximately 12CFM)
Low Temp Startup	-20°C	300W
Humidity	5 - 95% RH non condensing	Convection cooled
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	150W 100W 50W
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	0W 0* 10* 20* 30* 40* 50* 60* 70* 80* Temperature
Altitude	Medical approval = -200 to 5000 metres operational (-200 Non medical approval = -200 to 5000 metres operational -200 to 5000m storage/transportation	to 3000m for 2nd edition 60601)
Pollution	Degree 2, Material group IIIb	

Emissions EN61000-6-3:2007, EN60601-1-2:2007				
Radiated Electric Field	EN55011, EN55022	(as per CISPR.11/22) Class B, FCC47 part 15 subpart B see application note for details		
Conducted Emissions	EN55011, EN55022	(as per CISPR.11/22) Class B, FCC47 part 15 subpart B		
Conducted Harmonics	EN61000-3-2	Class A		
Flicker	EN61000-3-3	Compliant - d _{max} only		

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Immunity EN61000-6-2:2005				Criteria
Electrostatic Discharge	EN61000-4-2	Level 4	Level 3 for Fan supply Not applicable to open frame units	А
Electromagnetic Field	EN61000-4-3	Level 3		А
Fast / Burst Transient	EN61000-4-4	Level 4		А
Surge Immunity	EN61000-4-5	Level 3		А
Conducted RF Immunity	EN61000-4-6	Level 3		А
Power Frequency Magnetic Field	EN61000-4-8	Level 3		А
Voltage Dips, Variations, Interruptions	EN61000-4-11	Class 3	Criteria B for 5 sec interruption Criteria B for 1 cycle interruption Criteria B for dip to 40% for 5 cycles below 154Vac (300W convection) or 176Vac (400W forced air cooled)	A
Ring Wave	EN61000-4-12	Level 3		А
Voltage Fluctuations	EN61000-4-14	Class 3		А

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			
IEC/EN 61010-1 (designed to meet)				
CE Mark (EN60950-1)	LV Directive 2006/95/EC			
CB certificate and Report available on request	Please check with technical sales for status of approvals			
Designed and manufactured under the control of ISO9001 and ISO13485 (including risk management).				



All specifications at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

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