



Medical



Industrial



Test



Broadcast



Comms



Renewable

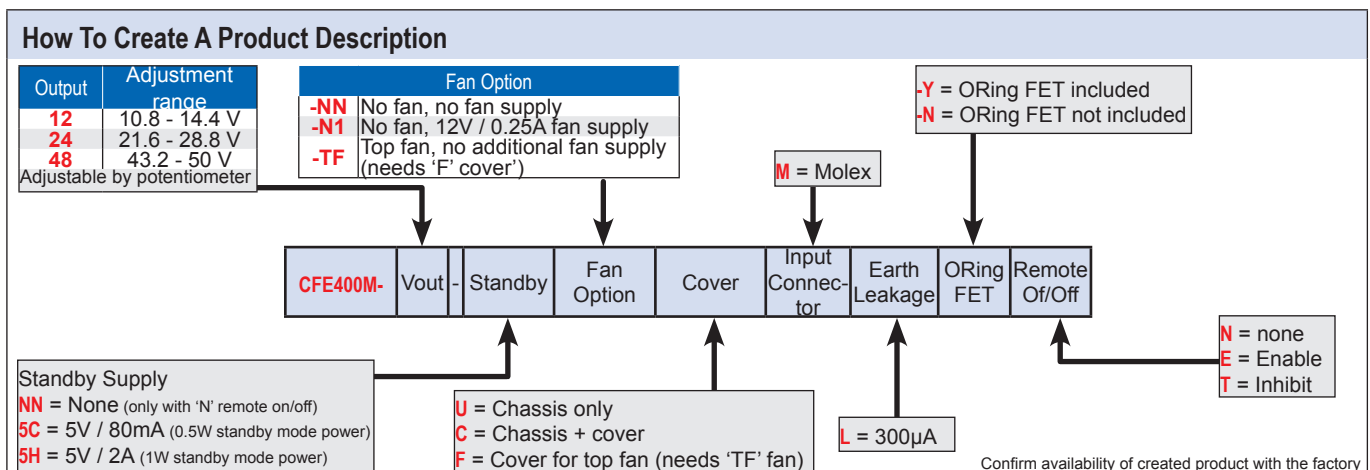
300W convection / 400W fan cooled, AC-DC power supply

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
• Low Profile	Fits 1U applications



Input			
Input Voltage	85-264Vac (100-240Vac nominal)	Input Frequency	47 - 63Hz (440Hz with reduced PFC - consult factory)
Input Harmonics	EN61000-3-2 compliant	Power Factor	0.9 typical
Input Fuse	Dual fuses (Live + Neutral) Fast acting (not user accessible)	Inrush Current	<20A at 25°C and 230Vac (cold start) (meets EN61000-3-3). <50A for EFE400M
Earth Leakage Current	140µA 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)		

Quick Selector (Standard models). Additional variants available - see below							
Output		Convection cooled units / units without fan				Units with top fan	
Voltage	Current (fan/conv)	U-Chassis		Cover + Chassis		Cover + Chassis	
		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	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

Output Specification

Fan cooled Convection

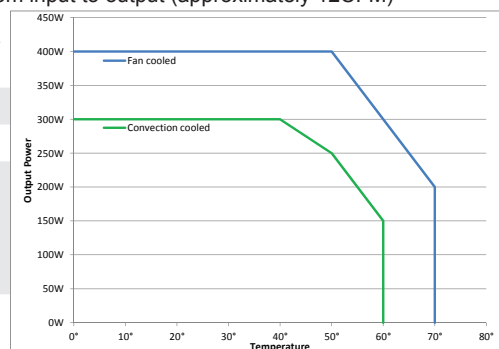
Output Power	400W	300W	Continuous (including fan supply) or RMS (including Peak power) See handbook for details.
Peak Power	450W	450W	for 10 seconds. RMS power not to exceed Output Power stated above
Total Regulation	better than 2.25%		Including Line regulation of 0.25% (for 90-264Vac input change), Load regulation of 1% (for 0-100% load change) and thermal regulation of 0.02%/°C (0-50°C)
Ripple & Noise	1%		pk-pk, using EIAJ test method & 20MHz bandwidth
Voltage Setting Accuracy	±1%		at 50% load
Turn on Time	1.5s max		at 90 Vac & 100% rated output power
Efficiency	94%		typical for 48V and 24V (91% for 12V). At 230Vac, 80% load
Hold up	15ms		typical at 100% of 400W load
Min Load	None		
Transient Response	<5%		of set voltage for 50% of 400W load change (in 50µs within the range 25 - 100% load)
Recovery	2ms typical		for recovery to 2% of set voltage
Short circuit protection	Yes		Auto recovery after removal of short circuit
Over Temperature protection	Yes		Primary - auto recovers, secondary - cycle power to restart
Over Voltage Protection	Yes		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

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 from input to output (approximately 12CFM) -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)
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	Medical approval = -200 to 3000 metres operational (-200 to 5000m storage/transportation) Non medical approval = -200 to 5000 metres operational (-200 to 5000m storage/transportation)
Pollution	Degree 2, Material group IIIb



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

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 Class C - EFE300M at 100W and above
Flicker	EN61000-3-3	Compliant - d _{max} only

Immunity EN61000-6-2:2005					Criteria
Electrostatic Discharge	EN61000-4-2	Level 4	Air discharge 15kV, Contact discharge 8kV Level 3 for Fan supply Not applicable to open frame units		A
Electromagnetic Field	EN61000-4-3	Level 3	12V/m		A
Fast / Burst Transient	EN61000-4-4	Level 4	ac input tested to 4.4kV dc output tested to 2.2kV		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 3	10A/m		A
Voltage Dips, Variations, Interruptions	EN61000-4-11	Class 3	Criteria B for 5 sec interruption Criteria B for 1 cycle interruption		A
Ring Wave	EN61000-4-12	Level 3	Common mode - 2.2kV Differential - 1.1kV		A
Voltage Fluctuations	EN61000-4-14	Class 3			A

Safety Approvals			
	Amendments/notes		Amendments/notes
IEC/EN 60950-1*	Edition 2	UL60950-1 / CSA 22.2 No 60950-1	Edition 2 (File E135494)
		UL/CSA 60601-1	2006 (File E349607)
IEC/EN60601-1*	Editions 2 and 3	ANSI/AAMI ES60601-1	2005
		CAN/CSA-C22.2 No 60601-1-08	
IEC/EN 61010-1	EFE300M approved EFE400M designed to meet	CE Mark (EN60950-1)	LV Directive 2006/95/EC
* CB certificate and Report available on request		Check with factory for status of approvals	

Outline & Connection Drawings

PIN	CONNECTION
1	EARTH
2	NOT CONNECTED
3	LIVE
4	NOT CONNECTED
5	NEUTRAL

PIN	CONNECTION
1	FAN SUPPLY
2	REMOTE ON/OFF
3	PWR GOOD
4	FAN SUPPLY RTN
5	STANDBY RTN
6	STANDBY
7	- SENSE
8	+ SENSE

MATING PARTS			
CONNECTOR	HOUSING	CRIMP PIN	MANUFACTURER
J1	09-50-8051	08-52-0113	MOLEX
J2	22-01-2085	0850-0032	MOLEX
J5 & J6	N/A	TAG 19073-0165	MOLEX

Connectors are not included with the product but they are available from TDK-Lambda
1 off input connector and 3 crimps are available as part number is 94910.
1 off feature connector and 8 crimps are available as part number 95109.

NOTE:
A 6 OFF FIXING HOLES FOR M3, MAXIMUM PENETRATION 3.3mm,
MAXIMUM TORQUE 0.9Nm.
ALL TOLERANCES +/-0.5mm.

CHASSIS WITH COVER

CHASSIS WITH TOP MOUNTED FAN

TDK-LAMBDA EMEA

www.emea.tdk-lambda.com



TDK-Lambda France SAS

Route de Grivery
ZAC des Delaches
CS 41077
91978 Courtaboeuf Cedex
France
Tel: +33 1 60 12 71 65
Fax: +33 1 60 12 71 66
france@fr.tdk-lambda.com
www.fr.tdk-lambda.com



Italy Sales Office
Via dei Lavoratori 128/130
20092 Cinisello Balsamo (MI)
Italy
Tel: +39 02 61 29 38 63
Fax: +39 02 61 29 09 00
info.italia@it.tdk-lambda.com
www.it.tdk-lambda.com



TDK-Lambda Germany GmbH

Karl-Bold-Strasse 40
77855 Achern
Germany
Tel: +49 7841 666 0
Fax: +49 7841 5000
info.germany@de.tdk-lambda.com
www.de.tdk-lambda.com



Austria Sales Office
Aredstrasse 22
2544 Leobersdorf
Austria
Tel: +43 2256 655 84
Fax: +43 2256 645 12
info.germany@de.tdk-lambda.com
www.de.tdk-lambda.com



TDK-Lambda UK Ltd.

Kingsley Avenue
Ilfracombe
Devon EX34 8ES
United Kingdom
Tel: +44 (0) 12 71 85 66 66
Fax: +44 (0) 12 71 86 48 94
powersolutions@uk.tdk-lambda.com
www.uk.tdk-lambda.com



TDK-Lambda Israel

Kibbutz
Givat Hashlosha 48800
Israel
Tel: +9 723 902 4333
Fax: +9 723 902 4777
info@nemic.co.il
www.tdk-lambda.co.il



Russia

Technical Support:
St Petersburg
Tel: +7 (812) 6580463
Sales:
Moscow
Tel: +7 (499) 7557732
info@tdk-lambda.ru
www.tdk-lambda.ru

Local Distribution