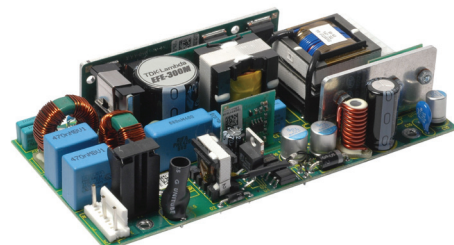




300W and 400W, High Density AC-DC, digital power solution

Features	Benefits
• Reinforced isolation	Simplifies equipment design
• Full Digital Control	Improves Product Performance
• High Efficiency	Minimises heat in system
• Low Profile	Fits 1U applications
• Temperature controlled fan option	Quieter operation



Input			
Input Voltage	90-264Vac / 120-350Vdc	Input Frequency	45 - 63Hz (440Hz with reduced PFC - consult factory)
Input Harmonics	EN61000-3-2 compliant	Power Factor	0.97 typical
Input Fuse	Dual fuses (Live + Neutral) Fast acting (not user accessible)	Inrush Current	<40A at 25°C and 230Vac (cold start) (meets EN61000-3-3). <50A for EFE400M
Earth Leakage Current	123µA at 120Vac (60Hz), 257µA max at 240Vac (60Hz) Worst case leakage current is less than 300µA at 264Vac, 63Hz (normal condition, 0.5mA Single Fault Condition)		

Quick Selector (Standard models). Additional variants available - see below							
Output Voltage	Current	Units without fan				Units with end fan	
		Open Frame		Cover + Chassis		Cover + Chassis	
		Description	Order Code	Description	Order Code	Description	Order Code
12V	25A	EFE300M-12-5-HNMDL-YT	U5Y0020	EFE300M-12-5-HCMDL-YT	U5Y001Z	EFE300M-12-5-ECMDL-YT	U5Y0031
	33.3A	EFE400M-12-5-HNMDL-YT	U6Y001H	EFE400M-12-5-HCMDL-YT	U6Y004L	EFE400M-12-5-ECMDL-YT	U6Y007P
24V	12.5A	EFE300M-24-5-HNMDL-YT	U5Y0053	EFE300M-24-5-HCMDL-YT	U5Y0042	EFE300M-24-5-ECMDL-YT	U5Y0064
	16.7A	EFE400M-24-5-HNMDL-YT	U6Y002J	EFE400M-24-5-HCMDL-YT	U6Y005M	EFE400M-24-5-ECMDL-YT	U6Y008q
48V	6.25A	EFE300M-48-5-HNMDL-YT	U5Y0201	EFE300M-48-5-HCMDL-YT	U5Y0223	EFE300M-48-5-ECMDL-YT	U5Y0166
	8.3A	EFE400M-48-5-HNMDL-YT	U6Y003K	EFE400M-48-5-HCMDL-YT	U6Y006N	EFE400M-48-5-ECMDL-YT	U6Y009R

How To Create A Product Description

Output	Factory Setting Range	
	EFE300M	EFE400M
12	11.4 - 13.2V	11.4 - 13.2V
24	22.8 - 26.4V	22.8 - 26.4V
28	27 - 32V	
48	47-50V	47-50V
50	50-54V	

Required output voltage must be specified at time of ordering

Standby Voltage
5 = 5V / 2A
12 = 12V / 1A

Case / Fan Option	
-HN	Open frame, no fan, with 12V / 1A fan supply
-HU	U chassis, no fan, with 12V / 1A fan supply
-HC	Cover+chassis, no fan, with 12V / 1A fan supply
-EC	Cover+chassis, end fan (temp controlled)
-NN	Open frame, no fan, no fan supply
-NU	U chassis, no fan, no fan supply
-NC	Cover+chassis, no fan, no fan supply

-Y = ORing FET included

blank = right angled
-V = vertical

M = Molex (see connection drawings for details)

L = 300µA

E = Enable
T = Inhibit

Product Description Format: **EFE300M- or EFE400M-** Vout - Standby Case/Fan Option Input Connector D - Dual Fused Earth Leakage ORing FET Remote Of/Off Output Connector

Confirm availability of created product with the factory

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			
	EFE300M	EFE400M	
Output Power	300W	400W	Continuous (including fan supply) or RMS (including Peak power) EFE400M derates below 100Vac input. See handbook for details.
Peak Power	400W	530W	EFE300M - for 10 seconds. Outputs above 36V, 350W. EFE400M - for 10 seconds. No peak power for outputs 47V and above.
Total Regulation	better than 4% Including Line (for 90-264Vac input change), Load (for 0-100% load change) and temperature (0-50°C)		
Ripple & Noise	1.5%	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	90%	typical. 87% typical if Standby Supply is fully loaded	
Hold up	16ms	typical at 90 Vac, 75% load	
Min Load	None		
Transient Response	<5%	of set voltage for 50% load change (in 50µs within the range 25 - 100% load)	
Recovery	<1ms	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 / 1A	Depending on 'Case/Fan Option' selected. See previous page 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 / 2A or 12V / 1A, isolated supply, not affected by remote on/off.
Power Good	Logic high indicates ac supply is good and Ch1 is within regulation
ORing FET	Allows redundant connection of power supplies with no additional diodes required.

Environment	
Temperature	0°C to 50°C operational, -40°C to 70°C storage (max 12 months). Full load, with 2m/s air blown from input to output (approximately 10CFM)
Derating	50°C to 70°C derate each output 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	Medical approval = -200 to 3000 metres operational (-200 to 5000m storage/transportation) Non medical approval = -200 to 5000 _a metres operational (-200 to 5000m storage/transportation) a - non open frame EFE400M units = -200 to 4000 metres
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 (-HN, -HU & -HC units only) 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 4	30A/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	
		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

EFE300M (not -V version)

NOTE: *1 (A) MODEL PIN N/C

MATING PARTS (MOLEX OR EQUIVALENT)

CONNECTOR HOUSING CRIMP PIN

J1 09-50-8051 08-52-0113

J2 39-01-2200 44476-3112

NOTE: A 4 OFF HOLES Ø3.5mm CLEARANCE FOR M3 FIXINGS.
B 8 OFF FIXING HOLES FOR M3, MAXIMUM PENETRATION 4.5mm,
MAXIMUM TORQUE 0.9Nm.
ALL TOLERANCES +/-0.5mm.

Note, connection details and outline drawings for -v (vertical) connector are different See handbook for details

EFE400M (not -V version)

MATING PARTS (MOLEX OR EQUIVALENT)

CONNECTOR HOUSING CRIMP PIN

J1 09-50-8051 08-52-0113

J2 39-01-2200 44476-3112

NOTE: A 5 OFF HOLES Ø3.5mm CLEARANCE FOR M3 FIXINGS.
B 9 OFF M3 CUSTOMER FIXINGS, MAXIMUM PENETRATION 4.5MM

Connectors are not included with the product. They are available from TDK-Lambda

1 off input connector and 3 crimps are available as part number is 94910.
1 off output connector and 18 crimps are available as part number 94752. (EFE300M)
1 off output connector and 20 crimps are available as part number 94912 (EFE400M)

- Notes
1. All customer fixings M3
 2. Maximum Penetration 4.5mm
 3. Maximum torque 0.9Nm
 4. All tolerances +/-0.5mm

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