



## 250W Modular power supply.



Features	Benefits
• Modular Construction	High flexibility
• Industry Standard Footprint	Simpler installation
• Various cooling options	Easier to design into system
• Fast-on termination	Simpler and quicker connection
• 3 Year Warranty	Low cost of ownership

Input			
Input Voltage	85-264Vac	Input Frequency	47 - 63Hz (440Hz with reduced PFC - consult factory)
Input Harmonics	EN61000-3-2 compliant	Power Factor	>0.93 typical (reduced pfc above 254Vac or >65Hz)
Input Fuse	6.3A HBC Fast acting (not user accessible)	Inrush Current	<40A at 25°C and 230Vac (cold start)
Earth Leakage	0.8mA at 264Vac / 50Hz		

### How To Create A Product Description

With our Sirius range of power supplies, it is possible to achieve many combinations of volts and amps. For the optimum configuration, please contact our sales office. However, you can also create your own configuration from this datasheet by using the guide below.

- Select main outputs 1 and 2 from table then select required Cooling and input connection from the following table:-
 

<b>Converter</b>	<b>CS250</b> 250W	→	<b>CSF250</b> <b>E</b> <b>I</b> [ ] [ ]	←	<b>Other Options (including lower earth leakage). Contact sales office for details. Leave empty for no options</b>
	<b>CSF250</b> 250W				

<b>Cooling</b>	<b>L</b>	No cover, no fan
	<b>N</b>	Covered, no fan
	<b>S</b>	Single end fan (CSF250 only)
	<b>E</b>	Dual end fans (all models)
	<b>T</b>	Single top fan (all models)

<b>Input Connection</b>	<b>I</b>	Switched IEC ('S' or 'E' cooling only)
	<b>M</b>	Molex
- Select Output Modules and Options from the Output Voltages tables.  
 Example - if you require 5.2V / 10A on a CSF250 : -  
 a) select A as closest match for voltage and current and prefix with voltage (eg 5.2A)  
 b) repeat for other outputs  
 Ensure that the no more than 2 modules are selected. For example:-  
**CSF250EI5/12 3.3L 5/12E** which represents a five output 250W Sirius with End fan, IEC inlet with:-  
 Output 1 = 5V / 25A  
 Output 2 = 12V / 10A  
 Output 3 = 3.3V / 14A  
 Output 4 = 5V / 5A (7.5A peak)  
 Output 5 = 12V / 4A (6A peak)
- Contact TDK-Lambda to validate configuration and issue a part number.**

Safety Approvals	Please check with technical sales for status of approvals
IEC/EN 60950-1, UL60950-1 / CSA 22.2 No 60950-1	File E135494 - CB certificate and Report available on request
CE Mark (EN60950-1)	LV Directive 2006/95/EC

Isolation			
Input to Output	4.3kVdc	Output to Earth	100Vdc
Input to Earth	2.3kVdc	Output to output	100Vdc

## Output Voltages (main board outputs 1 and 2)

Module		Output 1		Output 2	
Unit Type	Outputs 1 / 2	Voltage Range	Current	Voltage Range	Current
CS250	5/3.3 <sub>4</sub>	5-5.5 <sub>1</sub>	35	2.7-3.5 <sub>2</sub>	16 <sub>3</sub>
	5/12 <sub>4</sub>	5-5.5 <sub>1</sub>	35	9-15	8
	24	24-28	10	no output 2	
CSF250	3.3/5 <sub>4</sub>	1.8-3.8	30	4.5-5.5 <sub>1</sub>	20
	5/12	4.5-8.0	25	9-13	10
	5/24	4.5-8.0	25	18-25	6

## Outputs 3-6 (single output modules)

Module	CSF250		CS250	
	Voltage Range	Current	Voltage Range	Current
L	1.8 - 3.8 <sub>5</sub>	14	1.8 - 3.9 <sub>5</sub>	10 (15)
A	4.5 - 6 <sub>5</sub>	10 (15)	4.5 - 5.5 <sub>5</sub>	10 (15)
B	9 - 16 <sub>5</sub>	8 (12)	11 - 15 <sub>5</sub>	8 (12)
C	17 - 30	4 (6)	16 - 28	4 (6)

Notes: All voltages include sense voltage where appropriate (total line drop) unless otherwise stated.

All outputs isolated from each other unless otherwise stated

All current ratings in brackets are peak ratings.

1. Maximum voltage at terminals = 5.7V

2. Maximum voltage at terminals = 3.8V

3. Max current from output 2 must not exceed 2 x current from output 1

4. These outputs have common 0V

5. Allows 0.5V remote sense (total line drop), but will not adjust above specified range

## Outputs 3-6 (twin output modules)

Module	CS250				CSF250			
	Output 1		Output 2		Output 1		Output 2	
	Voltage Range	Current	Voltage Range	Current	Voltage Range	Current	Voltage Range	Current
D <sub>5</sub>	4.5-5.5	5 (7.5)	2.7-3.9	5 (7.5)	4.5-6	5 (7.5)	2.7-4	5 (7.5)
M	4.5-5.5	5 (7.5)	4.5-5.5	5 (7.5)	4.5-6	5 (7.5)	4.5-6	5 (7.5)
E	4.5-5.5	5 (7.5)	9-15	4 (6)	4.5-6	5 (7.5)	9-16	4 (6)
F	4.5-5.5	5 (7.5)	16-28	2 (3)	4.5-6	5 (7.5)	17-30	2 (3)
G	9-15	4 (6)	9-15	4 (6)	9-16	4 (6)	9-16	4 (6)
H	9-15	4 (6)	16-28	2 (3)	9-16	4 (6)	17-30	2 (3)
J	16-28	2 (3)	16-28	2 (3)	17-30	2 (3)	17-30	2 (3)

## Output Specification

Voltage / Current	See module tables	
Switching Frequency	110kHz - PFC converter, 190kHz - Output converter	
Turn on time	1.5s max	at 90Vac and 100% rated output power
Efficiency	>70%	typical, configuration dependent
Ripple	1%	(50mV on 3V outputs)
Noise	<1%	pk-pk, using EIAJ test method & 20MHz bandwidth (for 3V and 5V main output, 2% pk-pk or 50mV)
Voltage Accuracy	<1%	of set voltage
Remote Sense	Yes	0.5V on all main board outputs and L and A modules
Minimum Load	No	on any output for CSF250 (10% on output 1 for full spec on CS250)
Temperature Coefficient	<0.02%	of rated voltage per °C
Total Regulation	3% or 50mV	whichever is greater
Peak Current	See module table for details	
Over Voltage Protection	Yes	Shuts down converter, auto restarts
Over Current Protection	Yes	all outputs short circuit protected (with auto-recovery)
Short Circuit Protection	<150%	of rated current, when output voltage <1%
Over Temperature Protection	Yes	on converter and output regulators (with auto recovery) Shutdown temperature varies according to ambient, output power and input voltage.

## Environment

Temperature	0°C to 50°C operational, -40°C to 85°C storage (max 12 months). IEC input connector max rating 65°C (EI and SI models)
Derating	50°C <sub>a</sub> to 70°C derate total output power and each output current by 2.5% per °C
Humidity	5 - 95% RH non condensing
Shock	3000 shocks, each of 10g (16ms) half sine
Vibration	10 - 200 Hz at 1.5g
Altitude	2000 metres operational
Pollution	Degree 2, Material group IIIb
IP Rating	IP 10
Weight	1.27kg

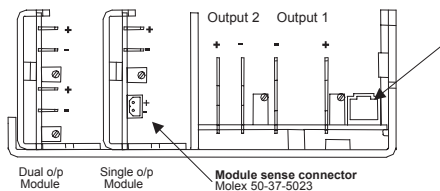
## Immunity EN61000-6-2:2005, EN60601-1-2:2001

				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	ac input tested to 4kV dc output tested to 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	Pass	Criteria B for 5 sec interruption	A
Voltage Fluctuations	EN61000-4-14	Class 3	For 100 - 240V Nominal	A

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

Radiated Electric Field	EN55011, EN55022	(as per CISPR.11/22) Class B see application note for details. Additional filtering required for IEC inlet version.
Conducted Emissions	EN55011, EN55022	(as per CISPR.11/22) Class B
Conducted Harmonics	EN61000-3-2	Class A
Flicker	EN61000-3-3	Compliant - $d_{max}$ only

### Typical Terminal Layout



**Output Connections** 2 x terminals 08-70-1039  
All types 6.35mm 'fast on' connectors

#### Input Connection (case type dependant)

- 6.35mm Faston. Input connectors also available
- IEC320 connector
- Molex 3069 series with locking ramp
  - 1 x 5 way housing ref 09-91-0500
  - 3 x 2478 series terminals ref 08-52-0071 or 08-52-0072

All dimensions in mm unless otherwise stated. General tolerance  $\pm 0.5$ .

#### Sense + signals (CSF250 Versions)

Molex 8 way 90142-0008 + 8 x terminals 90119-2109  
1 signal return 2 inhibit 3 ac fail/Reset 4 o/p 2-sense  
5 ac good/Reset 6 o/p 2 +sense 7 o/p 1-sense 8 o/p 1 +sense



#### Inhibit

TTL Low or contact closure to 'signal return'

#### AC Fail (high on fail)

5V TTL compatible output referenced to 'signal return'. 20mA max source current.

#### AC Good (low on fail)

5V TTL compatible output referenced to 'signal return'. 20mA max sink current.

#### Standard Sirius (CS250) versions:-

Molex 6 way 90142-0006 + 6 x terminals 90119-2109  
1 inhibit 2 ac fail 3 o/p 2-sense  
4 o/p 2 +sense 5 o/p 1-sense 6 o/p 1 +sense



#### Inhibit

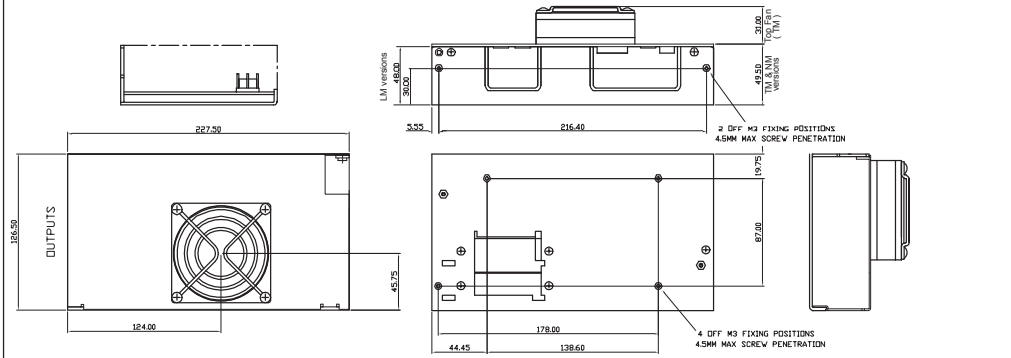
TTL Low or contact closure to 'o/p 1-ve'

#### AC Fail (high on fail)

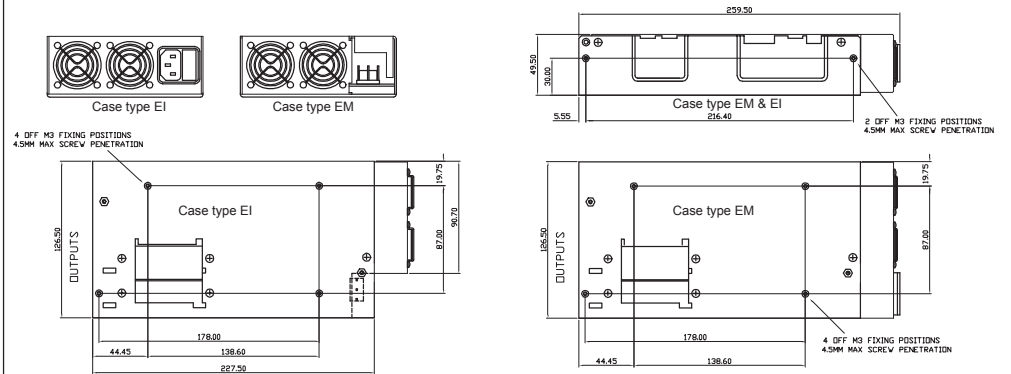
Open collector ref to 'o/p 1-ve', turns off on fail, max 40V 50mA

Air direction on all types is from outside of fan into power supply

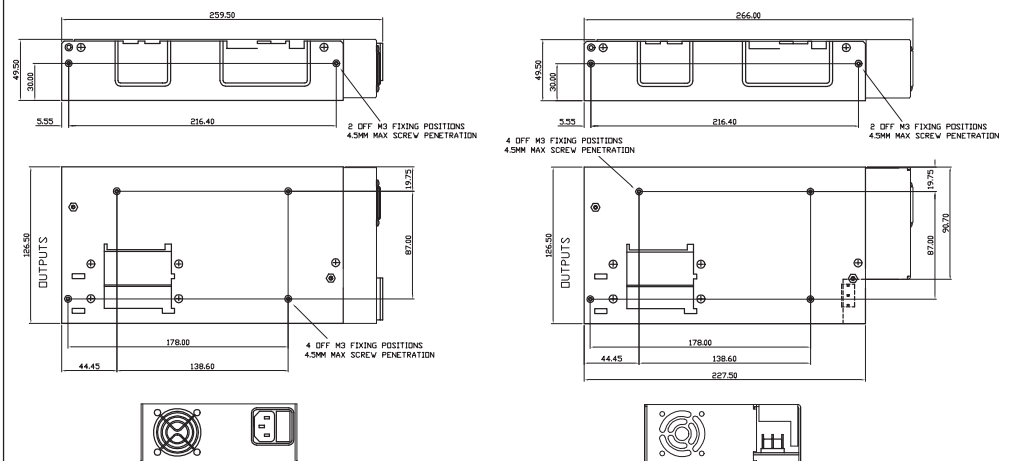
### Molex inlet, case types TM (Top fan), NM (No fan, with cover), LM (No fan, no cover) (CS250 and CSF250 Versions)



### End Fan, case types EI (Switched IEC inlet) and EM (Molex inlet) (CS250 and CSF250 Versions)



### Single End Fan, case types SI (Switched IEC inlet) and SM (Molex inlet) (CSF250 Versions)



## TDK-LAMBDA EMEA

[www.emea.tdk-lambda.com](http://www.emea.tdk-lambda.com)



### TDK-Lambda France SAS

ZAC des Delaches  
CS 41077  
9 rue Thuillere  
91978 Villebon Courtaboef  
France  
Tel: +33 1 60 12 71 65  
Fax: +33 1 60 12 71 66  
[france@fr.tdk-lambda.com](mailto:france@fr.tdk-lambda.com)  
[www.fr.tdk-lambda.com](http://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](mailto:info.italia@it.tdk-lambda.com)  
[www.it.tdk-lambda.com](http://www.it.tdk-lambda.com)



### Netherlands

[info@tdk-lambda.nl](mailto:info@tdk-lambda.nl)  
[www.tdk-lambda.nl](http://www.tdk-lambda.nl)



### 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](mailto:info.germany@de.tdk-lambda.com)  
[www.de.tdk-lambda.com](http://www.de.tdk-lambda.com)



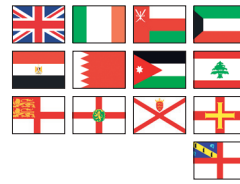
### Austria Sales Office

Aredstrasse 22  
2544 Leobersdorf  
Austria  
Tel: +43 2256 655 84  
Fax: +43 2256 645 12  
[info.germany@de.tdk-lambda.com](mailto:info.germany@de.tdk-lambda.com)  
[www.de.tdk-lambda.com](http://www.de.tdk-lambda.com)



### Scandinavia Sales Office

Valdemarsgade 7  
4100 Ringsted  
Denmark  
Tel: +45 58 10 35 56  
Fax: +45 69 80 44 99  
[info@de.tdk-lambda.com](mailto:info@de.tdk-lambda.com)  
[www.emea.tdk-lambda.com](http://www.emea.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](mailto:powersolutions@uk.tdk-lambda.com)  
[www.uk.tdk-lambda.com](http://www.uk.tdk-lambda.com)



### TDK-Lambda Ltd.

Kibbutz  
Givat Hashlosha 48800  
Israel  
Tel: +9 723 902 4333  
Fax: +9 723 902 4777  
[info@tdk-lambda.co.il](mailto:info@tdk-lambda.co.il)  
[www.tdk-lambda.co.il](http://www.tdk-lambda.co.il)



### Russia

**Technical Support:**  
St Petersburg  
Tel: +7 (812) 6580463  
**Sales:**  
Moscow  
[info@tdk-lambda.ru](mailto:info@tdk-lambda.ru)  
[www.tdk-lambda.ru](http://www.tdk-lambda.ru)

## Local Distribution