Industrial Test Broadcast Comms Renewable

# 1000W single output, conduction/ baseplate cooled power supply

| Features | Benefits |
|---|---|
| • Fanless | Longer field life and no fan noise |
| • Baseplate cooled | Conducts heat outside of the system |
| • Wide range ac input | Supports global use |
| • I²C interface | Allows remote monitoring |
| • 2 Year Warranty | Low cost of ownership |



## Input

| | | | |
|---|---|---|---|
| Input Voltage | 90-265Vac | Input Frequency | 47 - 63Hz<br>(440Hz with reduced PFC - consult factory) |
| Input Harmonics | EN61000-3-2 compliant | Power Factor | 0.95 typical (meets EN61000-3-2) |
| Input Fuse | Fast acting (not user accessible) | Inrush Current | <40A at 25°C and 230Vac (cold start)<br>(meets EN61000-3-3) |
| Earth Leakage Current | 1.5mA at 23Vac (50Hz) | | |

## QUICK SELECTOR - example configurations

| Output Voltage | Adjstment Range | Maximum Output Current | Description |
|---|---|---|---|
| 12V | 9.6 - 14.4V | 60A | CPFE1000F-12 |
| 28V | 22.4 - 33.6V | 36A | CPFE1000F-28 |
| 48V | 38.4 - 57.6V | 21A | CPFE1000F-48 |

## Global Signals

| | |
|---|---|
| Remote on/off | Opto isolated, 2.5mA (10-14V) to enable power supply, less than 0.15mA (0.5V) to disable |
| Standby supply | 12V±2V / 20mA isolated supply, not affected by remote on/off. |
| Output good (ENA) | Open collector (10mA sink current). Low (on) when output is in regulation |
| IOG Signal | Normal or abnormal operation of the power module can be monitored by using the IOG terminal. This signal monitor output is located at secondary side (output side) and is an open collector output. This signal is LOW when inverter is normally operating and HIGH when inverter stops or when inverter is operating abnormally. (maximum sink current is 5mA, maximum applied voltage is 35V). See handbook for details. |
| Current Share (PC) | By connecting the PC terminal of each CPFE1000Fxx, output current can be equally drawn from each unit. A maximum of 6 units of the same model can be connected. See handbook for details. |
| I²C | Provides manufacturing location, date, serial number, part number, unit revision, output voltage & current read back, base plate temperature, remote on/off, IOG, DC good and over temperature warning |

## Isolation

| | | | |
|---|---|---|---|
| Input to Output | 4.24kVdc | | |
| Input to Earth | 2.12kVdc | Output to Earth | 500Vdc |

## Output Specification

| | | |
|---|---|---|
| Total Output Power | 1008W | Continuous. (12V versions = 720W) |
| Turn on time | 1.5s max | at 90Vac and 100% rated output power |
| Efficiency | 79-86% | typical (model dependent) |
| Hold up | 25ms | typcial at 230Vac, 100% load |
| Ripple and Noise | <1% | pk-pk, using EIAJ test method & 20MHz bandwidth (2% below 0°C) |
| Voltage Setting Accuracy | ±2% | at 50% load |
| Remote Sense | Yes | Max 0.5V total line drop |
| Minimum Load | No | |
| Total Regulation | <4% | Including Line (for 90-264Vac input change), Load (for 0-100% load change) and Temperature (0-50°C). |
| Transient Response | <10% | of set voltage for 50% load change (in 50µs within the range 25-100% load) |
| Recovery | 500µs | for recovery to 2% of set voltage |
| Over Voltage Protection | Yes | Auto recovery |
| Short Circuit Protection | Yes | Auto recovery after removal of short circuit |
| Over Temperature Protection | Yes | Auto recovery |

## Environment

| | |
|---|---|
| Baseplate Temperature | -40°C to 85°C operational (CPFE1000F-28 and CPFE1000F-48, -40°C to 70°C below 170Vac input) -40°C to 100°C storage (max 12 months). |
| Ambient Temperature | See 'Ambient Temperature Operating Limits' |
| Low Temp Startup | -40°C |
| Humidity | 20 - 95% RH non condensing (non operating 10-95% RH) (PCB assembly protective coated) |
| Shock | Conforms to MIL-STD-810E/F, Method 516.5, Pro I, IV, VI |
| Vibration | Conforms to MIL-STD-810E, Method 514.4, Pro I, Cat 1,9 |
| Altitude | -200 to 2000 metres operational (-200 to 5000m storage/transportation) |
| Pollution | Degree 2, Material group IIIb |

### Ambient Temperature Operating Limits

| Model No | Input Voltage | Output Power 50°C | 60°C | 70°C | 85°C | Derating Factor |
|---|---|---|---|---|---|---|
| CPFE1000F-12 | 85-170Vac | 720W | 720W | 576W | 360W | 14.4W/°C |
| | 170-265Vac | 720W | 720W | 670W | 595W | 5W/°C |
| CPFE1000F-28 | 85-170Vac | 1008W | 864W | 720W | | 14.4W/°C |
| | 170-265Vac | 1008W | 1008W | 958W | 883W | 5W/°C |
| CPFE1000F-48 | 85-170Vac | 1008W | 864W | 720W | | 14.4W/°C |
| | 170-265Vac | 1008W | 1008W | 958W | 883W | 5W/°C |

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

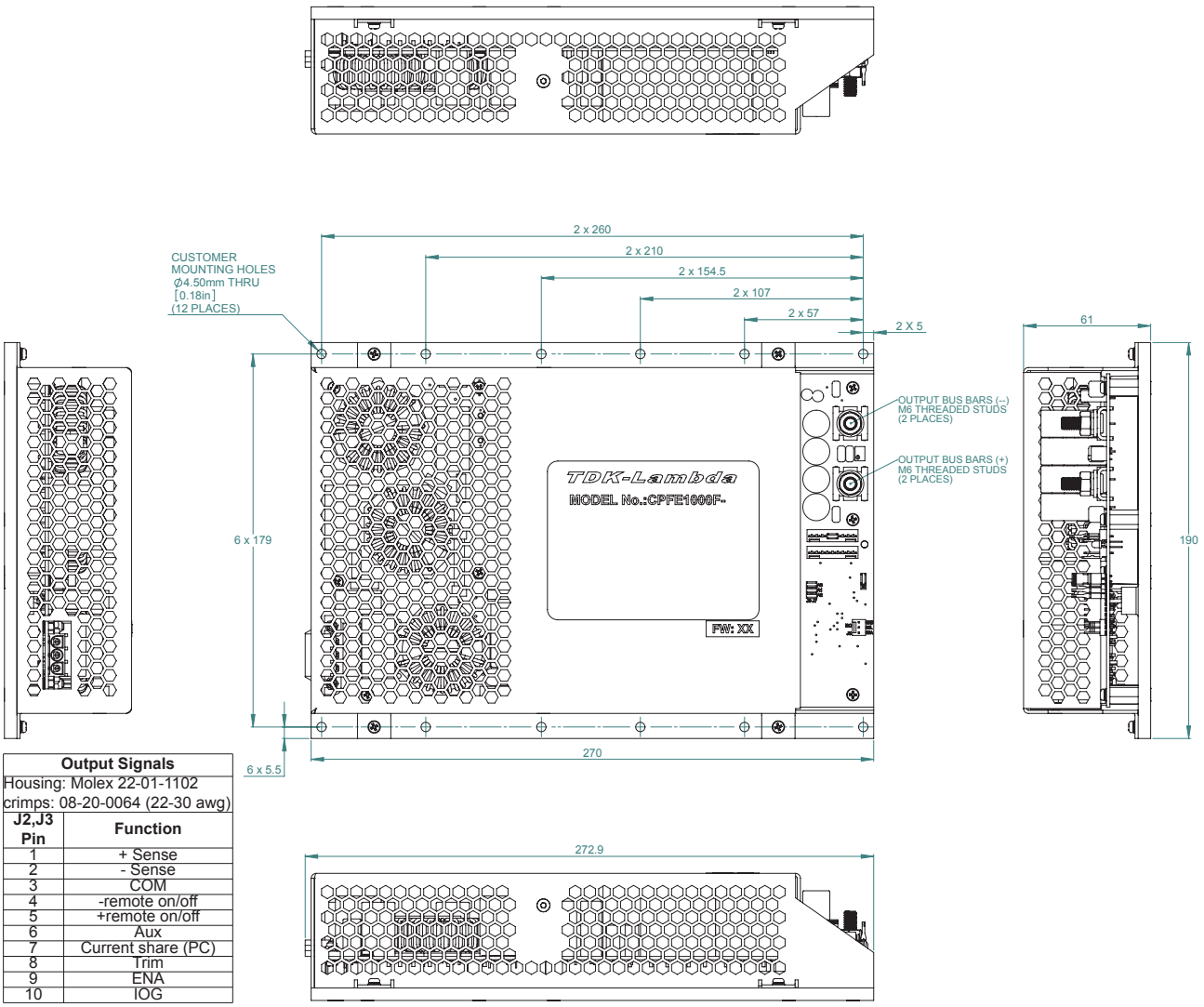
| | | | | Criteria |
|---|---|---|---|---|
| Electrostatic Discharge | EN61000-4-2 | Level 2 | Air discharge level 3, Contact discharge level 2 | A |
| Electromagnetic Field | EN61000-4-3 | Level 3 | 12V/m | A |
| Fast / Burst Transient | EN61000-4-4 | Level 3 | | A |
| Surge Immunity | EN61000-4-5 | Level X (better than level 4) | Common mode - 6kVac, Differential - 3kVac | B |
| 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 | A |
| Ring Wave | EN61000-4-12 | Level 3 | Common mode - 2.2kV, Differential - 1.1kV | A |
| Voltage Fluctuations | EN61000-4-14 | Class 3 | | A |

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

| | | |
|---|---|---|
| Radiated Electric Field | EN55011, EN55022 | Class B see application note for details. |
| Conducted Emissions | EN55011, EN55022 MIL STD 461E/462D CE102 | Class B |
| Conducted Harmonics | EN61000-3-2 | |
| Flicker | EN61000-3-3 | Compliant - $d_{max}$ <4% only |

| Safety Approvals | Notes |
|---|---|
| IEC/EN 60950-1, UL60950-1 / CSA 22.2 No 60950-1 | File E135494 |
| 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* |

## Outline & Connection Drawings




| Output Signals | |
|---|---|
| Housing: Molex 22-01-1102 crimps: 08-20-0064 (22-30 awg) | |
| **J2,J3 Pin** | **Function** |
| 1 | + Sense |
| 2 | - Sense |
| 3 | COM |
| 4 | -remote on/off |
| 5 | +remote on/off |
| 6 | Aux |
| 7 | Current share (PC) |
| 8 | Trim |
| 9 | ENA |
| 10 | IOG |

**ac input connector**
Housing Tyco 350766-1
Crimp 3 off
926895-1 (24-18 awg)
926893-1 (*20-14 awg)
or equivalent




**dc output**
M6 x 18 stud for +ve output
M6 x 18 stud for -ve output
M6 nut, spring washer and flat washer supplied for each terminal
Maximum tightening torque 10Nm

**I2C**
Molex 22-01-2037
Pins: Molex 2759 series

### Notes
1. Customer fixings 12 x M4 clearance holes
2. All tolerances +/-0.5mm

## TDK-LAMBDA EMEA

www.emea.tdk-lambda.com



**TDK-Lambda France SAS**
ZAC des Delaches
CS 41077
9 rue Thuillere
91978 Villebon Courtaboeuf
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



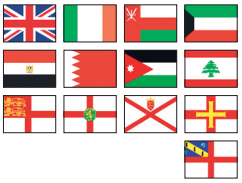
Italy Sales Office
Via dei Lavoratori 128/130
20092 Cinisello Balsamo (MI)
Italy
Tel: +39 02 61 29 38 63
Fax: +39 02 61 29 09 00
info.italia@it.tdk-lambda.com
www.it.tdk-lambda.com



**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 Ltd.**
Kibbutz
Givat Hashlosha 48800
Israel
Tel: +9 723 902 4333
Fax: +9 723 902 4777
info@tdk-lambda.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

CPFE1000F 71639 - Rev 2-August 2012