

## DATASHEET

# CP3500AC52TE-FB2 Global Platform High Efficiency Rectifier

**Input: 100-120/200-240 V<sub>ac</sub>; 3500W capable; Default set: ±52 V<sub>dc</sub> @; 5 V<sub>dc</sub> @ 10W**

RoHS Compliant



## Description

The CP3500AC52TE-FB Rectifier has an extremely wide programmable output voltage capability and fold-back current limiting features. High-density front-to-back airflow is designed for minimal space utilization and is highly expandable for future growth. This custom rectifier incorporates both RS485 and dual-redundant I<sup>2</sup>C communications busses that allow it to be used in a broad range of applications. Feature set flexibility makes this rectifier an excellent choice for a set of applications requiring operation over a wide output voltage range.

## Applications

- Wide band power amplifiers

## Features

- Efficiency exceeding 96%<sup>1</sup> (meets 80+ Titanium)
- Compact 1RU form factor with 40 W/in<sup>3</sup> density
- 3500W from nominal 200-240V<sub>AC</sub>
- 1500W from nominal 100 – 120V<sub>AC</sub> for V<sub>O</sub> > 52V<sub>DC</sub>
- Output voltage programmable from 18V – 58V<sub>DC</sub>
- ON/OFF control of the main output
- Comprehensive input, output and overtemp. protection
- PMBus compliant dual I<sup>2</sup>C serial bus and RS485
- Precision measurement reporting such as input power consumption, input/output voltage & current
- Remote firmware upgrade capable
- Power factor correction (meets EN/IEC 61000-3-2 and EN 60555-2 requirements)
- Redundant, parallel operation with active load sharing
- Redundant +5V @ 2A Aux power
- Internally controlled Variable-speed fan
- Hot insertion/removal (hot plug)
- Four front panel LED indicators
- UL and cUL approved to UL/CSA<sup>†</sup>62368-1, TUV (EN62368- 1), CE<sup>§</sup> Mark (for LVD) and CB Report available
- Special Foldback Curve
- Black faceplate
- Conformal coating
- RoHS Directive 2011/65/EU and amended Directive (EU) 2015/863
- Compliant to REACH Directive (EC) No 1907/2006

<sup>\*</sup> UL is a registered trademark of Underwriters Laboratories, Inc.

<sup>†</sup> CSA is a registered trademark of Canadian Standards Association.

<sup>‡</sup> VDE is a trademark of Verband Deutscher Elektrotechniker e.V.

<sup>§</sup> This product is intended for integration into end-user equipment. All CE marking procedures of end-user equipment should be followed.

<sup>\*\*</sup> ISO is a registered trademark of the International Organization of Standards

<sup>\*</sup> The PMBus name and logo are registered trademarks of the System Management Interface Forum (SMIF)

<sup>1</sup> At output voltages exceeding 52V<sub>DC</sub>

## Technical Specifications

### Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only, functional operation of the device is not implied at these or any other conditions in excess of those given in the operations sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect the device reliability.

Parameter	Symbol	Min	Max	Unit
Input Voltage : Continuous	$V_{IN}$	0	264	$V_{AC}$
Operating Ambient Temperature <sup>2</sup>	$T_A$	-10	75	°C
Storage Temperature	$T_{stg}$	-40	85	°C
I/O Isolation voltage to Frame (100% factory Hi-pot tested)			1500	$V_{AC}$

### Electrical Specifications

Unless otherwise indicated, specifications apply over all operating input voltage  $V_o = 52V_{DC}$ , resistive load, and temperature conditions.

INPUT					
Parameter	Symbol	Min	Typ	Max	Unit
Startup Voltage	$V_{IN}$	80	85	90	$V_{AC}$
Low-line Operation					
High-line Operation		90 185			
Operating Voltage Range					
Low-line Configuration					
High-line Configuration	275				
Voltage Swell (no damage)		75	80	85	
Turn OFF Voltage		5			
Hysteresis					
Frequency	$F_{IN}$	47		66	Hz
Source Impedance (NEC allows 2.5% of source voltage drop inside a building)			0.2		$\Omega$
Operating Current; at 110 $V_{AC}$ at 240 $V_{AC}$	$I_{IN}$		15.5 16		$A_{AC}$
Inrush Transient (220 $V_{RMS}$ , 25°C, excluding X-Capacitor charging)	$I_{IN}$		25	40	$A_{PK}$
Idle Power (at 240 $V_{AC}$ , 25°C) 52V OFF 52V ON @ $I_o=0$	$P_{IN}$		9 18		W
Leakage Current (300 $V_{AC}$ , 60Hz)	$I_{IN}$		2.5	3.5	mA
Power Factor (50 – 100% load)	PF	0.97	0.995		
Efficiency <sup>3</sup> , 240 $V_{AC}$ , 52 $V_{DC}$ , @ 25°C 10% of FL 20% of FL 50% of FL FL	$\eta$	90 94 96 91			%
Holdup time (output allowed to decay down to 40 $V_{DC}$ ) For loads below 1500W	T		10 15		ms
Ride through (at 240 $V_{AC}$ , 25°C)	T	1/2	1		cycle
Power Good Warning <sup>4</sup> (main output allowed to decay to 40 $V_{DC}$ )	PG	3	5		ms
Isolation (per EN62368) (consult factory for testing to this requirement) Input to Chassis & Signals Input to Output	V	1500 3000			$V_{AC}$ $V_{AC}$

<sup>2</sup> See the derating guidelines under the Environmental Specifications section

<sup>3</sup> Fan disable, 5V output at 0 load.

<sup>4</sup> Internal protection circuits may override the PG signal and may trigger an immediate shutdown. PG should not indicate normal (HI) until the main output is within regulation. PG should be asserted if the main output is about to shut down for any detectable reason.

## Technical Specifications (continued)

### Electrical Specifications (continued)

52V <sub>DC</sub> MAIN OUTPUT					
Parameter	Symbol	Min	Typ	Max	Unit
Output Power <sup>5</sup> @ low line input 100 – 120V <sub>AC</sub> , V <sub>O</sub> > 52V <sub>DC</sub> @ high line input 200 – 240V <sub>AC</sub> <sup>6</sup> , V <sub>O</sub> > 52V <sub>DC</sub>	W	1500 3500			W <sub>DC</sub>
Factory set default set point			52		V <sub>DC</sub>
Overall regulation (load, temperature, aging) 0 - 45°C LOAD >2.5A > 45°C	V <sub>OUT</sub>	-1 -2		+1 +2	%
Output Voltage Set Range		18		58	V <sub>DC</sub>
Response to a $\Delta \leq 10V$ V <sub>prog</sub> change command	T		250	350	ms
Response to a $\Delta \leq 10V$ i <sup>2</sup> c instruction			50	70	ms
Output Current - @ 1500W (100 – 120V <sub>ac</sub> ), 52 - 58V @ 3500W (200 – 240V <sub>AC</sub> ), 52 - 58V	I <sub>OUT</sub>	1		28.3/28.9	A <sub>DC</sub>
Current Share ( > 50% FL) V <sub>O</sub> > 42V <sub>DC</sub> V <sub>O</sub> < 42V <sub>DC</sub>		-5 -10		5 10	%FL
Output Ripple ( 20MHz bandwidth, load > 1A) RMS (5Hz to 20MHz) Peak-to-Peak (5Hz to 20MHz)	V <sub>OUT</sub>			100 500	mV <sub>rms</sub> mV <sub>p-p</sub>
External Bulk Load Capacitance	C <sub>OUT</sub>	0uF to at least 36000uF			µF
Turn-On (monotonic turn-ON from 30 – 100% of V <sub>nom</sub> above 5°C) Delay Rise Time – PMBus mode Rise Time - RS-485 mode <sup>7</sup> Output Overshoot	T  V <sub>OUT</sub>		5 100		s ms s %
Load Step Response ( I <sub>O,START</sub> > 2.5A ) ΔI <sup>8</sup> ΔV, Response Time	I <sub>OUT</sub> V <sub>OUT</sub> T		2.0 2	50	%FL V <sub>DC</sub> ms
Permissible Load Boundary	Power limit , high line (down to 51V <sub>DC</sub> )	P <sub>OUT</sub>	3500		W
	Low line	P <sub>OUT</sub>	1500		W
The overload current limit threshold is set □ 0.6% above the load envelope shown here <sup>9</sup>					

<sup>5</sup> Output power capability is proportional to output voltage setting, see the permissible load boundary

<sup>6</sup> Input line range: 90 – 264 V<sub>RMS</sub> (±10%)

<sup>7</sup> Below -5°C, the rise time is approximately 5 minutes to protect the bulk capacitors. RS485 mode walk - in case be disabled.

<sup>8</sup> di/dt (output current slew rate) 1A/µs

<sup>9</sup> Overload shutdown is delayed for 3 seconds to allow the equipment to reduce utilized power. Increase fan speed is also delayed 500ms

**Per visualizzare il catalogo completo siete invitati ad [effettuare il login sul sito](#) oppure ad [effettuare la registrazione gratuita](#).**