maxpowerPRO

AC/DC Converter compactPCI

13100 – 141 250 W

13100 – 145 500 W

- Fully compliant with PICMG 2.11 compactPCI specification
- High density design in industry standard
  3 U x 8 HP x 160 mm cassette 250 W
  6 U x 8 HP x 160 mm cassette 500 W
- Input voltage range 90…264V_{AC} with PFC
- 4 high current outputs with flexible load distribution
- Highly efficient topology with synchronous rectifiers
- Included Or-ing FETs / Diode for true redundant operation
- Remote sense, active current share for 3 outputs
- compactPCI compatible signalling
- Safety according IEC/EN 60950-1 and UL 60950-1: cRUus / CE / TÜV

Selection Chart

Output 1		Output 2		Output 3		Output 4		Input Voltage	Rated Power	Type	Schroff part number
$U_{o\,nom}$ [V_{DC}]	$I_{o\,max}$ [A]	$U_{o\,nom}$ [V_{DC}]	$I_{o\,max}$ [A]	$U_{o\,nom}$ [V_{DC}]	$I_{o\,max}$ [A]	$U_{o\,nom}$ [V_{DC}]	$I_{o\,max}$ [A]	U_i [V_{AC}]	$P_{o\,nom}$ [W]		
5.0	40	3.3	40	12	5.5	-12	2	90 - 264	250	CPA250	13100-141
5.0	50	3.3	60	12	12	-12	4	90 - 264	500	CPA500	13100-145

Purpose / Description

The *maxpowerPRO* Series are highly reliable power supplies for CompactPCI® systems, which are increasingly used in communications, industrial, military, aerospace, and other applications. These power supplies offer high power density in plug-in modules that meet the requirements of the PICMG® power interface specification for CompactPCI® systems.

The converters use the patented EDGE™ technology and provide important advantages such as flexible output power, extremely high efficiency, excellent reliability, full input-to-output isolation, negligible inrush current, hot-swap capability, soft start, and overtemperature protection.

The inputs are protected against surges and transients occurring on the source lines and cover an operating input voltage range from 90 to 264 V_{AC}.

Important Note

Please read this operation instruction carefully before applying power. The warranty is subject to correct input voltages being applied. Repairs or modifications made by anyone other than SCHROFF will invalidate the warranty. This documentation has been complied with the utmost care. We cannot however guarantee its correctness in every respect.

Electrical Input Data

General Conditions: *T*A = 25 °C, unless *T*C is specified.

Input			CPA250			CPA500			Unit
Characteristics		Conditions	min	typ	max	min	typ	max	
V_i	Rated input voltage range	I_o = 0 – $I_{o\,max}$	100		240	100		240	V_{AC} [1]
$V_{i\,op}$	Operating input voltage	$T_{C\,min}$ – $T_{C\,max}$	90		264	90		264	
$V_{i\,nom}$	Nom. input voltage	50 – 60 Hz [1]		230			230		
$V_{i\,abs}$	Input voltage limits	without damage			280	0		280	
I_i	Typical input current	$V_{i\,nom}$, $I_{o\,nom}$		1.4			2.8		A
$I_{i\,max}$	Max. input current	$V_{i\,min}$, $I_{o\,nom}$		3.6	4.0		7.1		
$I_{inr\,p}$	Peak inrush current	$V_{i\,max}$, $I_{o\,nom}$			15			20	
P_{i0}	No-load input power	$V_{i\,min}$ – $V_{i\,max}$ I_o = 0		23	30		26	32	W
$P_{i\,inh}$	Input power, when inhibited	$V_{i\,min}$ – $V_{i\,max}$			3.2			3.2	
C_i	Input capacitance			1			4		µF
f_{switch}	Switching frequency	$V_{i\,nom}$, $I_{o\,nom}$		135			135		kHz
t_h	Hold-up time	$V_{i\,min}$→ 0 V, $I_{o\,nom}$							ms
t_{bo}	Brown-out time	$V_{i\,nom}$, $I_{o\,nom}$	20			20			
t_{su}	Start-up time	$V_{i\,nom}$, $I_{o\,nom}$		150			150		
	Power factor	$V_{i\,nom}$, $I_{o\,nom}$	0.95			0.95			W/VA

[1] Rated input frequency: 50 – 60 Hz, operating input frequency range: 47 – 63 Hz
Short interruption of V_i without affecting the outputs

Input Transient Protection

A metal oxide VDR (Voltage Dependent Resistor) together with the input fuse form an effective protection against high input voltage transients, which typically occur in most installations.

Input Fuse

An incorporated miniature slow-blow fuse protects the converter against further damage in the case of a failure. Reverse polarity applied to the input of CPD models will cause the fuse to blow but without other damage.

Model	Fuse rating	Reference
CPA250	250 VAC, 5 A T	Schurter 0001.2511
CPA500	250 VAC, 10 A T	Schurter 0034.6925

Note: The fuse is not customer-accessible.

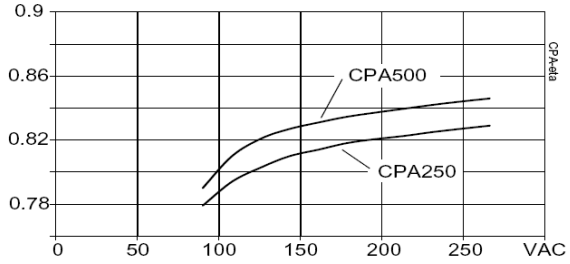
Inrush Current Limitation

The converters incorporate an active inrush current limiter in the input circuitry, which reduces the peak inrush current value by a factor of 10 – 15 to protect connectors and switching devices from damage.

Note: The inrush current limitation is achieved using electronic circuitry. For effective limitation the converter should not be switched on and off more frequently than every 8 seconds.

Efficiency

The efficiency graph in the following figure shows the dependence on input voltage (CPA models).



Electrical Output Data

General Conditions:
– T_A = 25 °C, unless T_C is specified.

CPA250: 400 LFM (2 m/s)
– Sense lines connected directly at the connector

Output data of CPA250

Output				Vo1 (5.0 V)			Vo2 (3.3 V)			Unit
Characteristics			Conditions	min	typ	max	min	typ	max	
V_o	Output voltage		$V_{i\,nom}$, 50% $I_{o\,nom}$	4.95	5.0	5.05	3.267	3.3	3.333	V_{DC}
$I_{o\,nom}$	Nominal output current				25			20		A
$I_{o\,max}$	Max. output current		$V_{i\,min}$ – $V_{i\,max}$		40			40		
I_{oL}	Output current limit		$T_{C\,min}$ – $T_{C\,max}$			50			50	
$I_{o\,min}$	Minimum load			no min. load required			no min. load required			
v_o	Output voltage noise	Switch. frequ.	$V_{i\,nom}$, $I_{o\,nom}$ BW = 20 MHz		25			20		mV_{pp}
		Total	C_{ext} = 22 µF + 100 nF			60			60	
ΔV_{oV}	Static line regulation		$V_{i\,min}$ – $V_{i\,max}$, $I_{o\,nom}$			±10			±10	mV
ΔV_{oL}	Static load regulation		$V_{i\,nom}$, 50 – 100% $I_{o\,max}$			±10			±10	
ΔV_{oS}	Overshoot at switch on/off				0			0		
$v_{o\,d}$	Dynamic load regulation	Voltage deviation	Vo1: ΔI_{o1} = 10 A, dI_{o1}/dt = 2 A/µs Vo2: ΔI_{o2} = 10 A, dI_{o2}/dt = 2 A/µs			± 120			± 120	mV
t_d		Recovery time			100		100			µs
αV_o	Temperature coefficient of output voltage		$T_{C\,min}$ – $T_{C\,max}$ 0 – $I_{o\,nom}$, $V_{i\,min}$ – $V_{i\,max}$		±0.3		±0.2			mV/K

Output				Vo3 (+12 V)			Vo4 (–12 V)			Unit
Characteristics			Conditions	min	typ	max	min	typ	max	
V_o	Output voltage		$V_{i\,nom}$, 50% $I_{o\,nom}$	11.88	12.0	12.12	–11.52	–12.0	–12.48	V_{DC}
$I_{o\,nom}$	Nominal output current				4			1		A
$I_{o\,max}$	Max. output current		$V_{i\,min}$ – $V_{i\,max}$		5.5			2		
I_{oL}	Output current limit		$T_{C\,min}$ – $T_{C\,max}$			7			3.5	
$I_{o\,min}$	Minimum load			Io3 > 75% Io4 [1]						
v_o	Output voltage noise	Switch. frequ.	$V_{i\,nom}$, $I_{o\,nom}$ BW = 20 MHz							mV_{pp}
		Total	C_{ext} = 22 µF + 100 nF			120			120	
ΔV_{oV}	Static line regulation		$V_{i\,min}$ – $V_{i\,max}$, $I_{o\,nom}$			±10			±10	mV
ΔV_{oL}	Static load regulation		$V_{i\,nom}$, I_o = 1 – 2 A			±30		– 380 [2]		
ΔV_{oS}	Overshoot at switch on/off			0				0		
$v_{o\,d}$	Dynamic load regulation	Voltage deviation	Vo3: ΔI_{o3} = 2 A, dI_{o3}/dt = 2 A/µs Vo4: ΔI_{o4} = 0.5 A, dI_{o4}/dt = 2 A/µs			± 200			± 200	
t_d		Recovery time			500			500		µs
αV_o	Temperature coefficient of output voltage		$T_{C\,min}$ – $T_{C\,max}$ 0 – $I_{o\,nom}$, $V_{i\,min}$ – $V_{i\,max}$		±0.3			±0.5		mV/K

[1] Minimum load is only required to maintain regulation of Vo4
[2] Droop characteristic for passive current sharing

General Conditions:

- T_A = 25 °C, unless T_C is specified.
- CPA500: 300 LFM (1.5 m/s)
- Sense lines connected directly at the connector

Output data of CPA500

Output				Vo1 (5.0 V)			Vo2 (3.3 V)			Unit
Characteristics			Conditions	min	typ	max	min	typ	max	
V_o	Output voltage		$V_{i\,nom}$, 50% $I_{o\,nom}$	4.95	5.0	5.05	3.267	3.3	3.333	V_{DC}
$I_{o\,nom}$	Nominal output current				40			50		A
$I_{o\,max}$	Max. output current		$V_{i\,min}$ – $V_{i\,max}$		50			60		
I_{oL}	Output current limit		$T_{C\,min}$ – $T_{C\,max}$	52,2		62	63		74	
$I_{o\,min}$	Minimum load			no min. load required			no min. load required			
v_o	Output voltage noise	Switch. frequ.	$V_{i\,nom}$, $I_{o\,nom}$ BW = 20 MHz		20			15		mV_{pp}
		Total	C_{ext} = 22 µF + 100 nF		20			15		
ΔV_{oV}	Static line regulation		$V_{i\,min}$ – $V_{i\,max}$, $I_{o\,nom}$			±10			±10	mV
ΔV_{oL}	Static load regulation		$V_{i\,nom}$, 50 – 100% $I_{o\,max}$			±10			±10	
ΔV_{oS}	Overshoot at switch on/off				0			0		
$v_{o\,d}$	Dynamic load regulation	Voltage deviation	Vo1: ΔI_{o1} = 10 A, dI_{o1}/dt = 2 A/µs Vo2: ΔI_{o2} = 10 A, dI_{o2}/dt = 2 A/µs			± 150			± 150	mV
t_d		Recovery time			300			300		µs
αV_o	Temperature coefficient of output voltage		$T_{C\,min}$ – $T_{C\,max}$ 0 – $I_{o\,nom}$, $V_{i\,min}$ – $V_{i\,max}$		±0.3		±0.2			mV/K

Output				Vo3 (+12 V)			Vo4 (–12 V)			Unit
Characteristics			Conditions	min	typ	max	min	typ	max	
V_o	Output voltage		$V_{i\,nom}$, 50% $I_{o\,nom}$	11.88	12.0	12.12	–11.52	–12.0	–12.48	V_{DC}
$I_{o\,nom}$	Nominal output current				8			3		A
$I_{o\,max}$	Max. output current		$V_{i\,min}$ – $V_{i\,max}$		12			4		
I_{oL}	Output current limit		$T_{C\,min}$ – $T_{C\,max}$		13,5			4,3		
$I_{o\,min}$	Minimum load			I_{o3} > 75% I_{o4}[1]						
v_o	Output voltage noise	Switch. frequ.	$V_{i\,nom}$, $I_{o\,nom}$ BW = 20 MHz							mV_{pp}
		Total	C_{ext} = 22 µF + 100 nF		15			10		
ΔV_{oV}	Static line regulation		$V_{i\,min}$ – $V_{i\,max}$, $I_{o\,nom}$			±10			±10	mV
ΔV_{oL}	Static load regulation		$V_{i\,nom}$, I_o = 1 – 2 A			±50		– 220 [2]		
ΔV_{oS}	Overshoot at switch on/off				0			0		
$v_{o\,d}$	Dynamic load regulation	Voltage deviation	Vo3: ΔI_{o3} = 2 A, dI_{o3}/dt = 2 A/µs Vo4: ΔI_{o4} = 0.5 A, dI_{o4}/dt = 2 A/µs			± 200			± 150	
t_d		Recovery time			300			300		µs
αV_o	Temperature coefficient of output voltage		$T_{C\,min}$ – $T_{C\,max}$ 0 – $I_{o\,nom}$, $V_{i\,min}$ – $V_{i\,max}$		±0.3			±0.5		mV/K

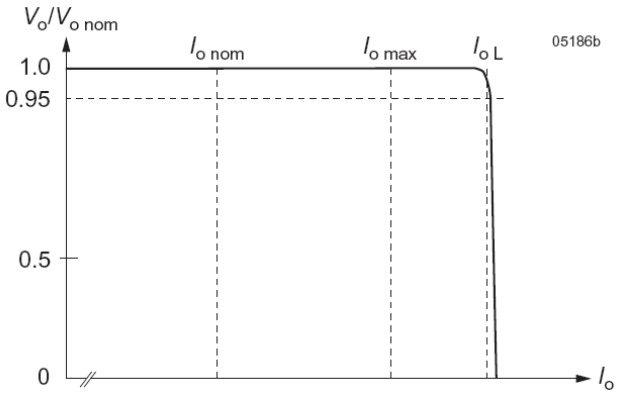
[1] Minimum load is only required to maintain regulation of Vo4
[2] Droop characteristic for passive current sharing

Hot Swap

Hot swap is possible. The output voltages may deviate dynamically by ≤5% during the plug-in / plug-out operation.

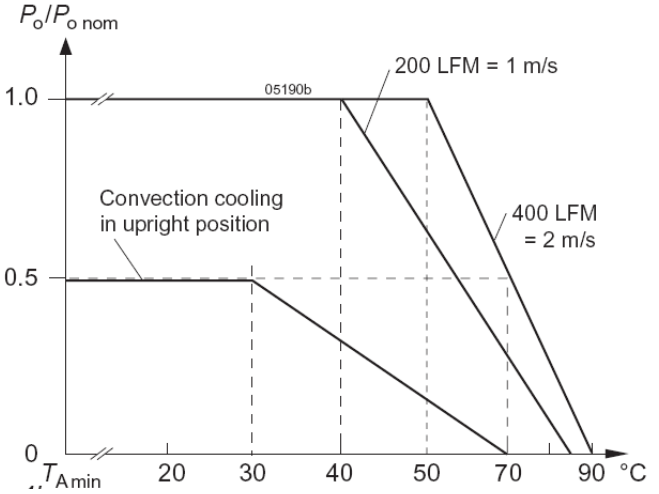
Output Characteristic and Protection

All outputs are fully protected against continuous opencircuit (no load) and continuous short-circuit conditions.
All outputs of CPA250 models have a constant current limitation with a rectangular characteristic. In addition, the total power from outputs Vo1, Vo2, and Vo3 is limited to $P_{o\ max}$, resulting in a free choice of load distribution between these outputs. Output Vo4 is disabled in the case of overtemperature generated by overcurrent.
In CPA500 model, the total power of all four outputs is limited to $P_{o\ max}$.
In all models, all outputs are monitored for overvoltage condition. If an overvoltage of 120 – 130% is dedected, the converter is permanently disabled. To reset, the input voltage must be removed for 60 seconds.

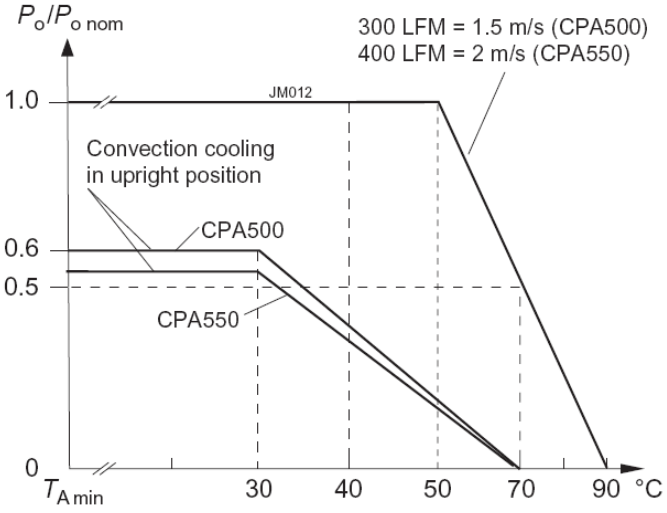


Thermal Considerations

If a converter is mounted in the upright position with airflow as specified in the general conditions allowing unrestricted forced-air cooling, and is operated at its nominal input voltage and power at maximum ambient temperature TA max (see Temperatures), the temperature measured at the measurement point of the case temperature TC (see Mechanical Data) will approach after an initial warm-up phase the indicated maximum value of TC max (105 °C). However, the relationship between TA and TC depends heavily on the operating conditions and system integration. The thermal conditions are significantly influenced by the input voltage, the output current, the airflow, and the temperature of the adjacent elements and surfaces. TA max is therefore only an indicative value (contrary to TC max).
Caution: The installer must ensure that under all operating conditions T_C remains within the limits shown in the diagrams of fig. 4.
Note: Forced-air cooling or an additional heat sink can improve the reliability or allow T_A to be increased above $T_{A\ max}$, provided that $T_{C\ max}$ is not exceeded.



Output power versus temperature T_A at $V_{i\ nom}$ (CPD/CPA250)



Output power versus temperature T_A at $V_{i\ nom}$ (CPA500/550)

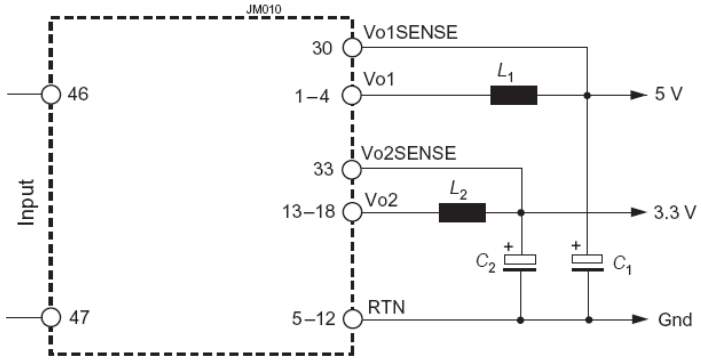
Thermal Protection

A temperature sensor fitted on the main PCB provides an overtemperature warning (degrade) signal 15 °C below the temperature $T_{c\ max}$, at which the thermal derating begins to reduce the output power. The output power returns to the normal value, when the temperature drops back below this limit; see *Temperature Warning and Shutdown.*

Output Filter

The output ripple voltage can be reduced by an external filter to less then 5 mV_{pp}. Recommended values:

- C1, C2: Low ESR capacitor, e.g., OS-CON 100 – 470 µF
- L1, L2: Choke 1 – 2.2 µH with appropriate rated current, e.g., Coiltronics® HC2LP 1 µH /33 A or 2.2 µH /24 A.

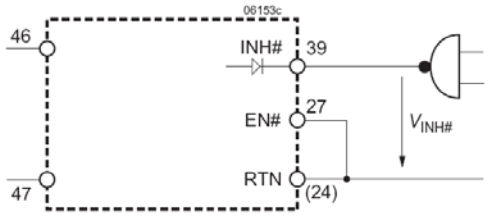


Output filter reducing the output ripple of Vo1 and Vo2

Auxiliary Functions Inhibit and Enable

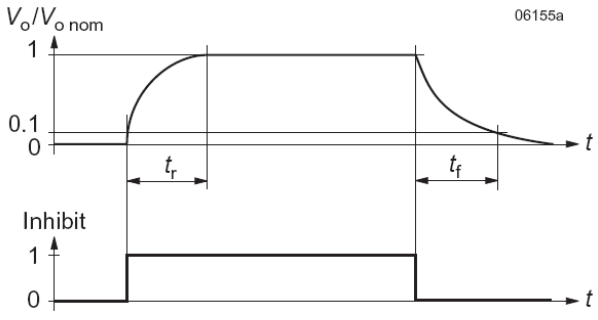
The inhibit input enables (logic high) or disables (logic low, pull down) all outputs, if a logic signal (TTL, CMOS) is applied. In systems consisting of several converters this feature may be used to control the activation sequence of the converters by means of logic signals, or to enable the source to start-up, before full load is applied.

Note: If this function is not used, the inhibit pin 39 can be left open-circuit (not connected). If pin 39 is connected to a return pin (e.g., pin 22), the internal logic will disable all outputs. The inhibit input is protected by a decoupling diode.



Inhibit and enable inputs

Characteristics			Conditions	min typ max	Unit
V_{inh}	inhibit voltage	V_o = off	$V_{i\,min} – V_{i\,max}$	–2 0.8	V
		V_o = on	I_o = 0 – $I_{o\,max}$	2.4 50	
t_r	Rise time			120	ms
t_f	Fall time			depending on I_o	

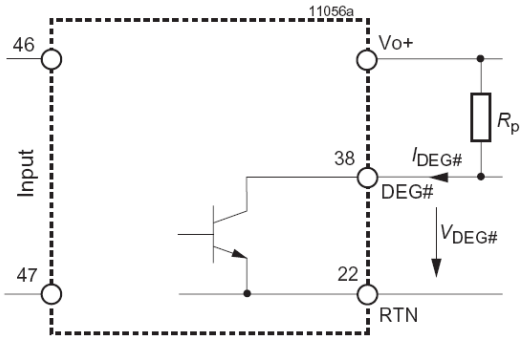


Typical output response as a function of inhibit voltage

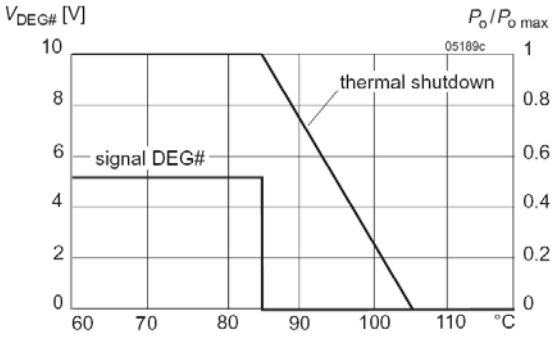
The enable pin 27 (EN#) must be connected to a return pin (e.g., pin 22) enable the converter. Pin 27 is shorter than the others ensuring startup only, when all other pins are already connected to the system providing true hot-swap capability.

Temperature Warning and Shutdown

A temperature warning circuitry monitors the case temperature T_C. Its output signal $V_{DEG\#}$ changes from high to low impedance, when the T_C exceeds the upper threshold level, and changes back to high impedance, when T_C falls below the lower threshold level, which is 85 °C ± 5 °C.
Pin 38 (degrade signal DEG#) is internally connected via the collector-emitter path of an NPN transistor to the signal return pin 22. The current $I_{DEG\#}$ through pin 38 should not exceed 40 mA, and $V_{DEG\#}$ should not exceed 40 V.
If T_C exceeds 105 °C, the converter will be disabled. It resumes operation automatically, once T_C falls below 105 °C.



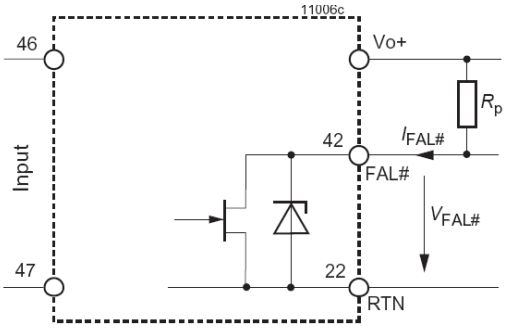
Degrade signal: NPN output $V_{DEG\#}$ ≤40 V, $I_{DEG\#}$ ≤20 mA



Degrade signal $V_{DEG\#}$ versus case temperature T_C

Power Fail Signal

The power fail circuitry monitors the input voltage and all output voltages. Its output signal $V_{FAL\#}$ changes from high to low impedance (<0.5 V), when one of the monitored voltages falls below the threshold level; $V_{FAL\#}$ changes back to high impedance, when all monitored voltages exceed their threshold level.
The threshold levels correspond to approx. 85% of $V_{o\ nom}$. $V_{i\ min}$ CPA250 up to Version V115 is not monitored. $V_{i\ min}$ of CPA models is considered as insufficient, when v_i remains for typ. 30 ms below $\sqrt{2} \cdot V_{i\ min}$.
Connector pin 42 (signal $V_{FAL\#}$) is internally connected via the drain-source path of a JFET (self-conducting type) to the signal return pin 22. The current $I_{FAL\#}$ should not exceed 10 mA. $V_{FAL\#}$ should not exceed 40 V, as the JFET is not protected against overvoltage.



Power Fail: JFET output, $I_{FAL\#}$ ≤ 10 mA

Sense Lines

(Only for Vo1, Vo2, and Vo3.)
This feature allows the compensation of voltage drops across the connector contacts and if necessary, across the load lines. To ensure correct operation, all sense lines S+ (Vo1SENSE Vo2SENSE, and Vo3SENSE) should be connected to the respective power outputs. The common sense return S– (SRTN) should be connected to RTN (pin 5 – 12).
Note: Open sense lines are admissible, but the output voltage regulation will be poor.

The voltage difference between any sense line at its respective power output pin (as measured on the connector) should not exceed the following values.

Output [V]	Total voltage difference between sense lines and their respective outputs
3.3	0.8 V
5	1 V
12	1 V

Sense line data

Note: If the sense lines S+ and S– compensate for a considerable voltage drop, the output loads shall be reduced in order to respect the maximum output power.

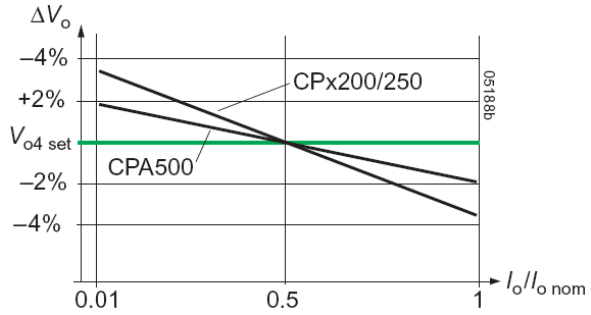
Active Current Sharing for Vo1, Vo2, Vo3

The current sharing facility, consisting of a single-wire link, should be used, where several converters are operated in parallel connection, for example, high reliability n+1 redundant systems or systems providing higher output power.
Note: Not more than six converters should be connected in parallel.

Using this feature reduces the stress of the individual converters and improves the reliablity of the system. Interconnection of the current sharing terminals causes the converters to share the output current evenly. In n+1 redundant systems a failure of a single converter will not lead to a system failure, since the outputs are already decoupled by FETs and diodes internally.

Passive Current Sharing for Vo4

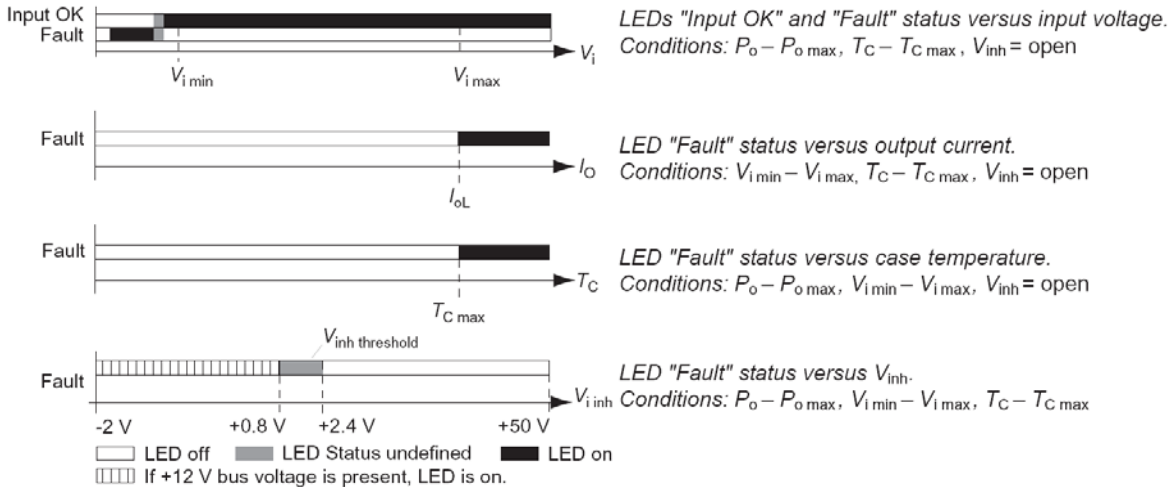
The output voltage changes slightly with the output current (droop characteristic) ensuring automatic current sharing without further precautions, when several converters are connected in parallel. An increase in output current decreases the output voltage according to the following graph. ΔV_o –4% +2%



Output voltage V_{o4} versus output current I_{o4}.

LEDs

A green LED "Input OK" and a red LED "Fault" are incorporated in the front panel.



Electromagnetic Compatibility (EMC)

A metal oxide VDR together with an input fuse and filter form an effective protection against high input voltage transients, which typically occur in most installations. The converters have been successfully tested to the following specifications

Electromagnetic Immunity

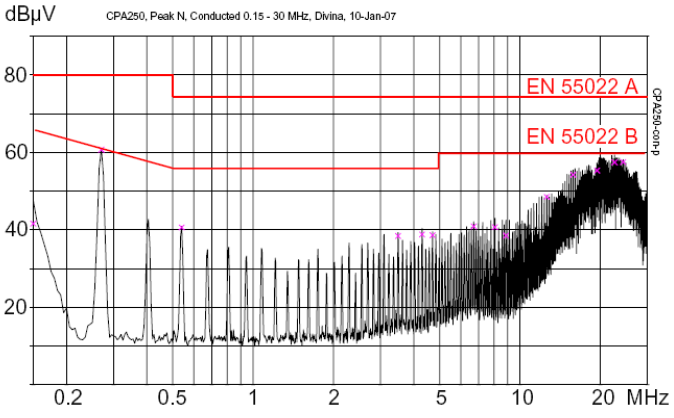
Immunity type tests

Phenomenon	Standard	Level	Coupling mode [1]	Value applied	Waveform	Source imped.	Test procedure	In oper.	Per-form. [2]
Electrostatic discharge (to case)	IEC/EN 61000-4-2	4	contact discharge	8000 V_p	1/50 ns	330 Ω	10 positive and 10 negative discharges	yes	A
			air discharge	15000 V_p					
Electromagnetic field	IEC/EN 61000-4-3	3	antenna	10 V/m	AM 80% 1 kHz	n.a.	80 – 1000 MHz	yes	A
				10 V/m	50% duty cycle 200 Hz repetition frequency		900 ±5 MHz		
Electrical fast transients/burst	IEC/EN 61000-4-4	3	capacitive, o/c	1000 V_p	bursts of 5/50 ns 2.5/5 kHz over 15 ms; burst period: 300 ms	50 Ω	60 s positive 60 s negative transients per coupling mode	yes	A
			direct, i/c, +i/–i	2000 V_p					
Surges	IEC/EN 61000-4-5	3	i/c	2000 V_p	1.2/50 µs	12 Ω	5 pos. and 5 neg. surges per coupling mode	yes	B
		2	+i/–i	1000 V_p		2 Ω			
Conducted disturbances	IEC/EN 61000-4-6	3	i, o, signal wires	10 VAC (140 dBµV)	AM 80% 1 kHz	150 Ω	0.15 – 80 MHz	yes	A

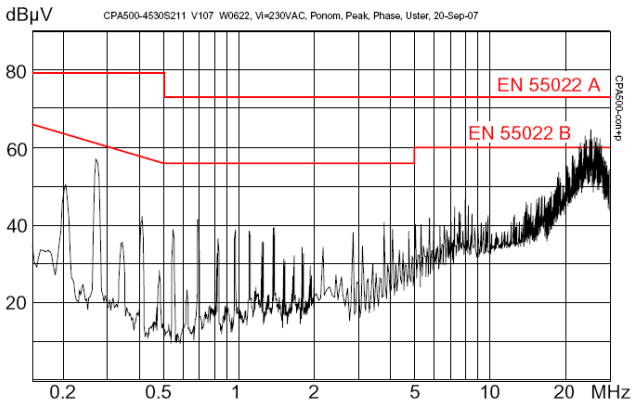
[1] i = input, o = output, c = case connected to PE ⏚
[2] A = normal operation, no deviation from specifications, B = temporary deviation from specs possible.

Electromagnetic Emission

Radiated and conducted emissions comply with EN 55011/ 55022, class A. In addition, CPA500/550 meet conducted emissions class B.



Typical disturbance voltage (peak) at the line input according to EN 55022, measured at $V_{i\,nom}$ and $I_{o\,nom}$
CPA250



Typical disturbance voltage (peak) at the line input according to EN 55022, measured at $V_{i\,nom}$ and $I_{o\,nom}$
CPA500

Immunity to Environmental Conditions

Mechanical and climatic stress

Test method		Standard	Test conditions		Status
Cab	Damp heat steady state	IEC/EN 60068-2-78	Temperature: Relative humidity: Duration:	40 $^{\pm 2}$ °C 93 $^{+2/-3}$ % 56 days	Converter not operating
Ea	Shock (half-sinusoidal)	IEC/EN 60068-2-27	Acceleration amplitude: Bump duration: Number of bumps:	20 g_n 11 ms 18 (3 in each direction)	Converter operating
Eb	Bump (half-sinusoidal)	IEC/EN 60068-2-29	Acceleration amplitude: Bump duration: Number of bumps:	15 g_n 6 ms 6000 (1000 in each direction)	Converter operating
Fda	Random vibration wide band, reproducibility high	IEC/EN 60068-2-35 CPD200/250, CPA200/250	Acceleration spectral density: Frequency band: Acceleration magnitude: Test duration:	0.05 g_n^2/Hz 20 – 500 Hz 4.9 $g_{n\ rms}$ 3 h (1 h in each axis)	Converter operating
		IEC/EN 60068-2-35 CPA500/550	Acceleration spectral density: Frequency band: Acceleration magnitude: Test duration:	0.01 g_n^2/Hz 20 – 500 Hz 2.2 $g_{n\ rms}$ 1.5 h (0.5 h in each axis)	Converter operating
	Drop test	Converter in proper packing CPD[1] only	0.75 m	3 directions	Not operating

[1] Version V106 or higher

Temperatures

Temperature specifications, valid for an air pressure of 800 – 1200 hPa (800 – 1200 mbar)

			Relative humidity[3] [%]			Temperature [°C]		
Characteristics		Conditions	min	typ	max	min	typ	max
T_A	Ambient temperature	Operational[1]	5		95	–25[4]		50
T_C	Case temperature[2]		5		95	–25		105[2]
T_S	Storage temperature	Non operational	10		95	–40		85
$R_{th\ C\text{-}A}$	Thermal resistance case to ambient in still air			2 K/W				

[1] See *Thermal Considerations*
[2] Overtemperature shutdown at $T_C \geq 105$ °C
[3] Non condensing humidity
[4] Start-up and operation at –40 °C possible with increased output ripple

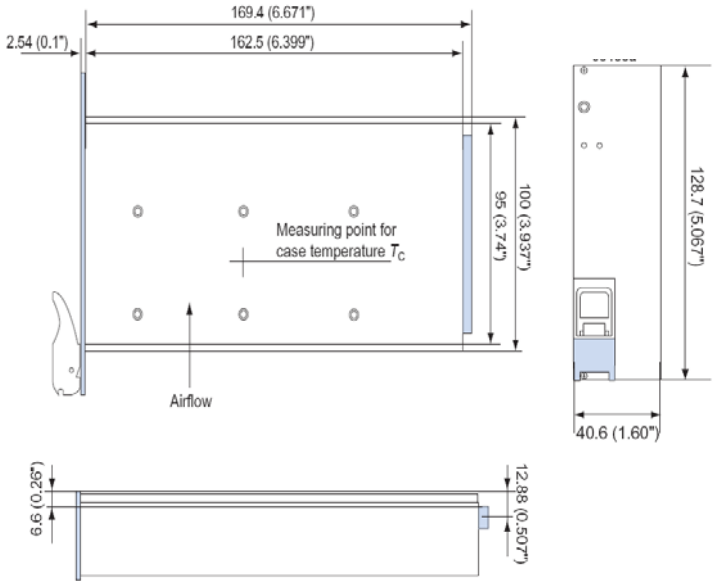
Reliability

MTBF

Ratings at specified case temperature	Model	Ground benign 40 °C	Ground fixed 40 °C	70 °C	Ground mobile 50 °C	Unit
MTBF acc. to	CPA250	279 000	57 000	31 000	33 000	h
MIL-HDBK-217F, notice 2	CPA500	195 000	35 000	17 000	16 000	h

Mechanical Data

Dimensions in mm.



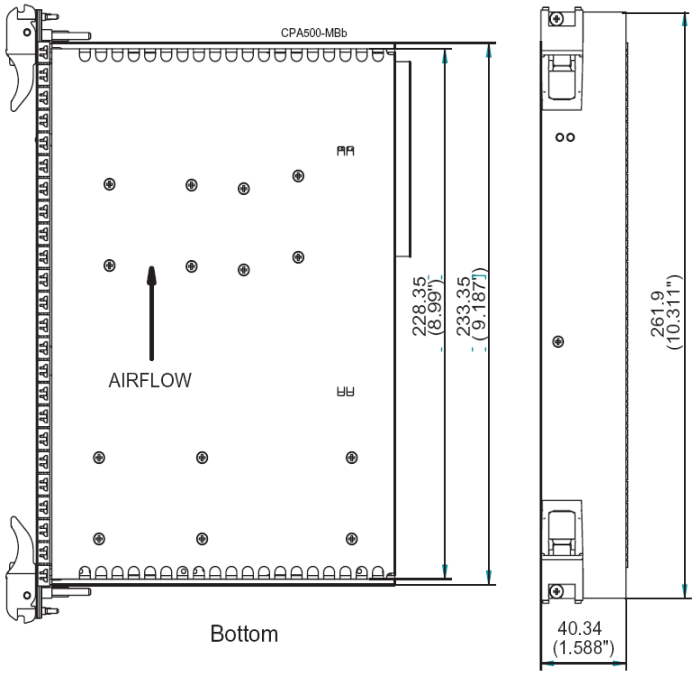
Overall size: 162.5 mm x 128.7 mm x 40.6 mm Weight: 0.8 kg

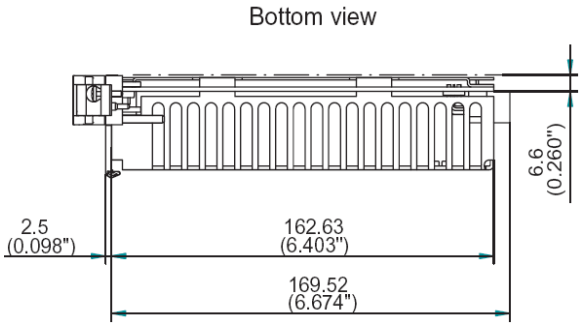
Pin allocation

Connector: Positronic (PCIH47M400A1)

Pin[1]	[2]	Signal Name	Description
1-4	M	V1	V1 Output
5-12	M	RTN	V1 and V2 Return
13-18	M	V2	V2 Output
19	M	RTN	V3 Return
20	M	V3	V3 Output
21	M	V4	V4 Output
22	M	RTN	Signal Return
23	M	Reserved	Reserved
24	M	RTN	V4 Return
25	M	Reserved [3]	
26	M	Reserved	Reserved
27	S	EN#	Enable
28	M	Reserved [3]	
29	M	nc	Not connected
30	M	V1SENSE	V1 Remote Sense
31	M	Reserved [3]	
32	M	nc	Not connected
33	M	V2SENSE	V2 Remote Sense
34	M	S RTN	Sense Return
35	M	V1SHARE	V1 Current Share
36	M	V3SENSE	V3 Remote Sense
37	M	Reserved [3]	
38	M	DEG#	Degrade Signal
39	M	INH#	Inhibit
40	M	Reserved [3]	
41	M	V2SHARE	V2 Current Share
42	M	FAL#	Fail Signal
43	M	Reserved [3]	
44	M	V3SHARE	V3 Current Share
45	L	CGND	Chassis Ground
46	M	ACN	AC Input Neutral
47	M	ACL	AC Input Line

[1] Pin number illustrated are of the female backplane connector
[2] L=first mate, M=second mate, S=last mate
[3] For future options





Overall size: 223.4 mm x 162.5 mm x 40.6 mm Weight: 1.65 kg

Accessories (optional)

Mating connector / intermediate plate 3 U for one PSU	**Order No.: 23098 – 105**
Mating connector / intermediate plate 3 U for two PSUs horizontally	**Order No.: 23098 – 115**
Mating connector / intermediate plate 6 U for one PSU	**Order No.: 23098 – 116**
Mating connector / intermediate plate 6 U for two PSUs vertical	**Order No.: 23098 – 117**

Caution & Notes

CAUTION

These component level power supplies are intended exclusively for installation within other equipment by an industrial assembly operation or by professional installers. These are Class I power supplies; the ground pin of input connector J1 must be properly connected to earth ground in end use. Component power supplies are to be installed in end-use equipment according to the requirements of the safety standard used for that equipment. These power supplies are not designed to be operated outside of an enclosure which provides a means of mechanical, electrical, and fire protection. To maintain SELV requirements, the outputs should not be connected together in any manner which causes the total output voltage to exceed 60 VDC.

PROTECTIVE EARTHING

The Power Supply must be properly grounded to mains protective earthing termination at end use.

FUSING

In case of failure, the Power Supply must be returned to a Schroff Authorized Service Center. There are no user-serviceable parts in the Power Supply.

LIMITED WARRANTY

Schroff warrants each power supply of its manufacture for a period of two (2) years from the date of original shipment. This warranty applies to defects in materials and workmanship that result in non-performance to published specifications.

Schroff assumes no liabilities for consequential damages of any kind through the use or misuse of its products by any user. No other obligations are expressed or implied.

Please note that the specifications, terms, and conditions stated are subject to change without notice.

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