

cPCI DC/DC Converter

80 Watt

80 PCB 220 Q05 E10

$V_{In\ Nom} = 220\ V_{AC}$

$V_{O1\ Nom} = 5.0\ V, I_{O1\ Nom} = 10\ A$ $V_{O2\ Nom} = 3.3\ V, I_{O2\ Nom} = 5\ A$

$V_{O3\ Nom} = 12\ V, I_{O3\ Nom} = 0.5\ A$ $V_{O4\ Nom} = -12\ V, I_{O4\ Nom} = -0.5\ A$

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
INPUT						
V_{In}	Input Voltage Range	Continuously	176	220	253	V_{AC}
$V_{In\ low}$	Switch ON		160		175	V_{AC}
	Switch OFF		150		160	V_{AC}
$V_{In\ high}$	Switch OFF		260	265	270	V_{AC}
λ	Power Factor	$V_{In} = 220\ V_{AC}, \sum P_O = 80\ W$	0.95	0.97		
f	Input line frequency		47	50	63	Hz
I_l	Leakage current			1	3	mA
I_{In}	Input Current no load	$V_{In} = 253\ V_{AC}, \sum P_O = 0\ W$		60	125	mA
	Nominal Loads	$V_{In} = 220\ V_{AC}, \sum P_O = 80\ W$		0.5		A
	Nominal Loads	$V_{In} = 176\ V_{AC}, \sum P_O = 80\ W$			0.8	A
	Switch ON Input Current Integral	$V_{In} = 253\ V_{AC}$			10	A ² s
	Input Fuse	Fuse	6 A			
C_{In}	Input Capacity Converter				100	μF
	Maximum External Line Inductivity				50	μH
	Input Reversal Protection		yes			

OUTPUT POWER

$176\ V_{AC} \leq V_{In} \leq 253\ V_{DC}$

$P_{O\ Nom}$	Continuously	$\sum P_O$		80		W
$P_{O\ peak}$	Short time overload capability	$t < 30\ sec$		120		W
V_{O1}	Voltage Factory Adjust		5.0	5.05	5.1	V_{DC}
ΔV_{O1}	Regulation Accuracy V_{O1} static (V_{In}, I_o, T_A, t)	$0\ W \leq P_{O1} \leq 50\ W$	$\leq 2\ \% V_{O1\ Nom}$			
V_{O2}	Voltage Factory Adjust		3.25	3.33	3.40	V_{DC}
ΔV_{O2}	Regulation Accuracy V_{O2} static (V_{In}, I_o, T_A, t)	$0\ W \leq P_{O2} \leq 17\ W$	$\leq 2\ \% V_{O2\ Nom}$			
V_{O3}	Voltage Factory Adjust		11.9	12.0	12.1	V_{DC}
ΔV_{O3}	Regulation Accuracy V_{O3} static (V_{In}, I_o, T_A, t)	$0\ W \leq P_{O3} \leq 6\ W$	$\leq 2.5\ \% V_{O3\ Nom}$			
V_{O4}	Voltage Factory Adjust		-11.9	-12.0	-12.1	V_{DC}
ΔV_{O4}	Regulation Accuracy V_{O4} static (V_{In}, I_o, T_A, t)	$0\ W \leq P_{O4} \leq 6\ W$	$\leq 3.0\ \% V_{O4\ Nom}$			
$V_{O\ pp}$	Ripple & Noise in acc. to $V_{o, nom}$	V_{O1-O4} : Nominal Loads BW 20 MHz			1.5	%
t_{on}	Set Up Time V_{O1-O4}	$0\ W \leq P_O \leq 80\ W$		50	250	ms
t_H	Hold Up Time (Input Voltage Interruption)		20			ms
I_{O1}	Output Current	V_{O1} : 5.1 V		10.0		A
I_{O2}	Output Current	V_{O2} : 3.33 V		5.0		A
I_{O3}	Output Current	V_{O3} : +12 V		0.5		A
I_{O4}	Output Current	V_{O4} : -12 V		-0.5		A
	Threshold Output Current Limit $I_{O1/O2/O3/O4}$		110 % x $I_{O1/O2/O3/O4\ Nom}$			
I_{osc}	Output Short Circuit Current		120 % x $I_{O1/O2/O3/O4\ Nom}$			

Signaling

LED	V_{in}, V_{O1-4} (V_{oi} = summary signalling)	LED green at front plate LED red at front plate	ON, when V_{in} o.k. ON, when V_{oi} o.k.
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CONTROL

Enable	Converter ON: EN connected to Gnd Converter OFF: EN open	Potential ref. to output Gnd				
Inhibit	Modular Power Operation		INH# = Low EN# = Low Power status = "OFF"	Low Open "OFF"	Open Low "ON"	Open Open "OFF"

COMMON DATAS

f1	Switching Frequency	PFC converter		65		kHz
f2		DC/DC converter		130		kHz
η	Efficiency	$P_O \geq 0.7 \times P_{O\ Nom}$	80	82		%
	MTBF (SN 29500)	$V_{In} = 220\ V_{AC}, P_O = 80\ W, T_A = +40^\circ C$		400 000		h
	No load & Short Circuit Approved		continuously			

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
SAFETY / DIMENSIONS						
	Creepage, Clearance OV2 Port 10 Pollution Degree PD2 PCB FR4, V ₀ , T _G = + 140°C	Primary Secondary Primary Chassis Secondary Chassis	4.0 2.0 2.0			mm mm mm
	Isolation Piece Test: Ramp Function: 2s – 3s – 2s Type Test: 1Min.	Primary Secondary Primary Chassis Secondary Chassis			3000 2100 1000	V _{DC} V _{DC} V _{DC}
	Connector	Positronic Required femal plug:	PCIH47M400A1/11 PCIH47F300A1/AA			
	Protection Class, Protection Degree		I, IP 20			
	Dimensions incl. Front Plate	w x h x d (3RU / 6HP, 19" rack)	30.2 x 128.4 x 166.5			mm
	Weight		550			g

AMBIENT CONDITIONS						
T _A	Operating Temperature Range	Continuously 10 Minutes	- 40 + 00		+ 60 + 70	°C °C
T _{St}	Storage Temperature Range		- 40		+ 70	°C
	Cooling		Free Convection			
	Humidity		75% averaged per year, 95% 30 days			
	Vibration / Shock	IEC 61373, IEC 68-2-27, BN 411002 Kat. I 3 Shocks each Axis	50 m / s ² , 30 ms			

EMC			
	Radiation *)	Line & Radiated	EN 61000 – 6 – 4 A
	Immunity *)	ESD EN 61000 - 4 - 2	6 kV / 8 kV Performance Criteria - A -
		High Frequency Field EN 61000 - 4 - 3	20 V / m 80 MHz ... 2,5 GHz - Performance Criteria - A - *)
		Burst EN 61000 - 4 - 4	Level 4 asym., sym. Performance Criteria - A -
		Surge EN 61000 - 4 – 5	2 kV asym. / 1 kV sym. Performance Criteria - A -
		HF – Injection EN 61000 - 4 - 6	10 V _{eff} , R _i = 150 Ω Performance Criteria - A -

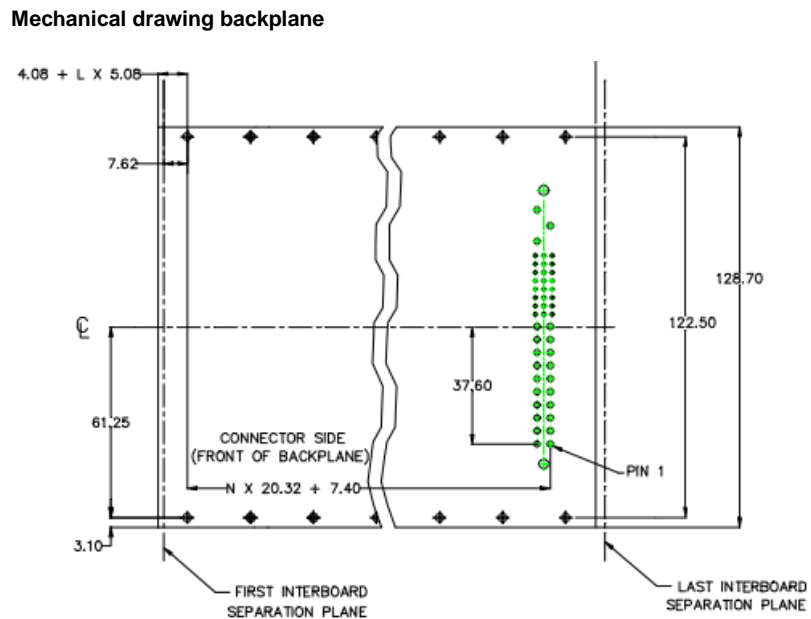
STANDARDS						
Applied Standards:	SN 29500	VDE 0106-1	EN 50124 - 1: 1996	EN 61000 - 4 - 2...6	EN 50529	
	IEC/EN 60255-5	IEC/EN 60255-6	EN 50125 - 1	EN 60068 - 2 - 6, 2...32	IEC/EN60707	
	IEC 60255-11	IEC 61373: 1999	EN 60721 - 3 - 5	IEC 60068-2-1 / 2 / 14	IEC 61373	

Technical data referenced at: - 40° C ≤ T_A ≤ + 70° C, 176 V_{AC} ≤ V_{In} ≤ 253 V_{AC}, if not otherwise specified.
 Temperature reference point: 10 cm below dc/dc converter unit. Please, consider free air convection is possible
 *) In closed housing, emission: radiated @ EN 50121-3-2, conducted @ EN 50121-3-2
 **) 1400 MHz – 2100MHz 10V/m 2100MHz – 2500MHz 5V/m 2000MHz – 2700MHz 1V/m

Pin assignment

Pin	Signals Output
1-4	V ₀₁ (+ 5V)
5-12	V ₀₁ and V ₀₂ Return
13-18	V ₀₂ (+ 3,3V)
19	V ₀₃ Return
20	V ₀₃ (+ 12V)
21	V ₀₄ (- 12V)
22	Signal Return
23	reserved
24	V ₀₄ Return
26	reserved
27	EN (Enable)
29	V ₀₁ Adjust
30	V ₀₁ Sense
32	V ₀₂ Adjust
33	V ₀₂ Sense
34	Sense Return
36	V ₀₃ Sense
39	INH (Inhibit)
42	FAL (Fail Signal)
Signals Input and PE	
45	PE (chassis ground)
46	+ AC Input (L)
47	- AC Input (N)

Pin 25,28,31,35,37,38,40,41 n.c.



Note, that the slot in the card guide and injector/ejector PCB mounting surface are shifted 2,54 mm to the right respect to the front panel keying and alignment pin.