

# cPCI DC/DC Converter

# 100 Watt

## 100 PCB 110 Q05 E10

$V_{In Nom} = 110 V_{DC}$

$V_{O1 Nom} = 5.0 V, I_{O1 Nom} = 7 A$      $V_{O2 Nom} = 3.3V, I_{O2 Nom} = 10A$

$V_{O3 Nom} = 12 V, I_{O3 Nom} = 2 A$      $V_{O4 Nom} = - 12V, I_{O4 Nom} = - 0.5A$

SYMBOL    PARAMETER    TEST CONDITIONS    MIN    TYP    MAX    UNIT

### INPUT

$V_{In}$	Input Voltage Range	Continuously $t \leq 0.1 \text{ sec}$ $t \leq 1.0 \text{ sec}$	50.4 43.2 137.5		137.5 50.4 154	$V_{DC}$ $V_{DC}$ $V_{DC}$
$V_{In low}$	Switch ON Switch OFF		49 40		50 43	$V_{DC}$ $V_{DC}$
$V_{In high}$	Switch OFF Switch ON		155 154	156	160	$V_{DC}$ $V_{DC}$
$I_{In}$	Input Current	no load Nominal Loads Nominal Loads	$V_{In} = 154 V_{DC}, \sum P_O = 0 W$ $V_{In} = 110 V_{DC}, \sum P_O = 100 W$ $V_{In} = 43.2 V_{DC}, \sum P_O = 100 W$		1.1 100 3.0	mA A A
	Switch ON Input Current Integral	$V_{In} = 154 V_{DC}$			10	$A^2s$
	Input Fuse	Pico Fuse			10 A	
$C_{In}$	Input Capacity Converter				20	$\mu F$
	Maximum External Line Inductivity				50	$\mu H$
	Input Reversal Protection				yes	

### OUTPUT POWER

at  $43.2 V_{DC} \leq V_{In} \leq 154 V_{DC}$

$P_{O Nom}$	Continuously	$\sum P_O$		100		W
$V_{O1}$	Voltage Factory Adjust		4.95	5.00	5.05	$V_{DC}$
$\Delta V_{O1}$	Regulation Accuracy $V_{O1}$ static ( $V_{in} I_o T_A t$ )	$0 W \leq P_{O1} \leq 35 W$	$\leq 2 \% V_{O1 Nom}$			
$V_{O2}$	Voltage Factory Adjust		3.25	3.3	3.35	$V_{DC}$
$\Delta V_{O2}$	Regulation Accuracy $V_{O2}$ static ( $V_{in} I_o T_A t$ )	$0 W \leq P_{O2} \leq 33 W$	$\leq 2 \% V_{O2 Nom}$			
$V_{O3}$	Voltage Factory Adjust		11.9	12.0	12.1	$V_{DC}$
$\Delta V_{O3}$	Regulation Accuracy $V_{O3}$ static ( $V_{in} I_o T_A t$ )	$0 W \leq P_{O3} \leq 24 W$	$\leq 2.5 \% V_{O3 Nom}$			
$V_{O4}$	Voltage Factory Adjust		- 11.9	- 12.0	- 12.1	$V_{DC}$
$\Delta V_{O4}$	Regulation Accuracy $V_{O4}$ static ( $V_{in} I_o T_A t$ )	$0 W \leq P_{O4} \leq 12 W$	$\leq 3.0 \% V_{O4 Nom}$			
$V_{O pp}$	Ripple & Noise in acc. to $V_{o, nom}$	$V_{O1-O4}$ : Nominal Loads BW 20 MHz			1.5	%
$t_{On}$	Set Up Time $V_{O1-O4}$	$0 W \leq P_O \leq 105 W$		50	250	ms
$t_H$	Hold Up Time (Input Voltage Interruption)	Class S2 EN 50155	10			ms
$I_{O1}$	Output Current	$V_{O1} : 5.1 V$		7		A
$I_{O2}$	Output Current	$V_{O2} : 3.3 V$		10		A
$I_{O3}$	Output Current	$V_{O3} : + 12 V$		2		A
$I_{O4}$	Output Current	$V_{O4} : - 12 V$		- 0.5		A
	Threshold Output Current Limit $I_{O1/O2/O3/O4}$		$110 \% \times I_{O1/O2/O3/O4 Nom}$			
$I_{Osc}$	Output Short Circuit Current		$120 \% \times I_{O1/O2/O3/O4 Nom}$			

### 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# = EN# = Power status =	Low Low "OFF"	Low Open "OFF"	Open Low "ON"
						Open Open "OFF"

### COMMON DATAS

f	Switching Frequency			130		kHz
$\eta$	Efficiency	$P_O \geq 0.7 \times P_{O Nom}$	87	90		%
	MTBF (SN 29500)	$V_{in} = 110 V_{DC}, P_O = 105 W, T_A = + 40^\circ C$		450 000		h
	No load & Short Circuit Approved			continuously		

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>SAFETY / DIMENSIONS</b>						
	Creepage, Clearance OV2 Port 10 Pollution Degree PD2 PCB FR4, V <sub>0</sub> , T <sub>G</sub> = + 140°C	Primary   Secondary Primary   Chassis Secondary   Chassis	2.0 1.0 1.0			mm mm mm
	Isolation Piece Test: Ramp Function: 2s – 3s – 2s Type Test: 1Min.	Primary   Secondary Primary   Chassis Secondary   Chassis			2'100 1'500 500	V <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub>
	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 / 8HP, 19" rack)	40.3 x 128.4 x 166.5			mm
	Weight		550			g

<b>AMBIENT CONDITIONS</b>						
T <sub>A</sub>	Operating Temperature Range	Continuously 10 Minutes @ EN 50155	- 40 + 70		+ 70 + 85	°C °C
T <sub>St</sub>	Storage Temperature Range		- 40		+ 85	°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 <sup>2</sup> , 30 ms			

<b>EMC</b>			
	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 <sub>eff</sub> , R <sub>i</sub> = 150 Ω Performance Criteria - A -

<b>STANDARDS</b>						
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	

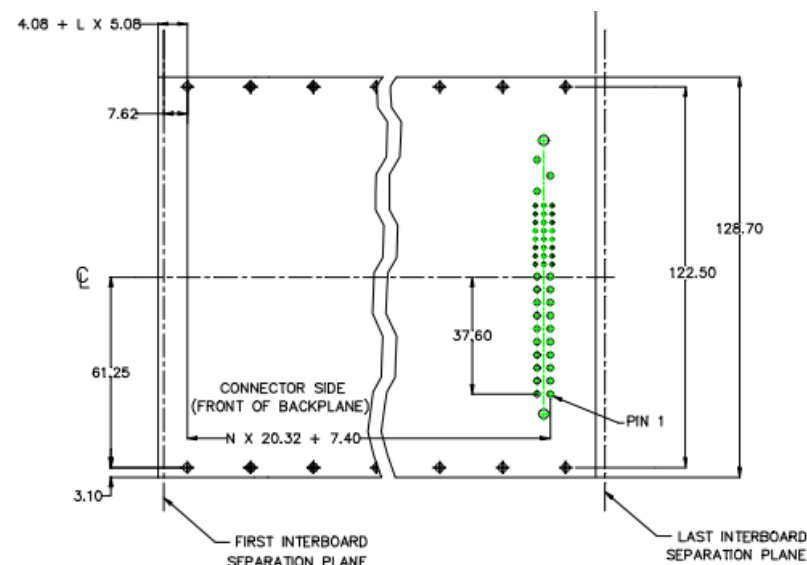
Technical data referenced at: - 40° C ≤ T<sub>A</sub> ≤ + 70° C, 43.2.0 V<sub>DC</sub> ≤ V<sub>in</sub> ≤ 154.0 V<sub>DC</sub>, if not otherwise specified.  
 Temperature reference point: 10 cm below dc/dc converter unit. Please, consider free air convection is possible  
 \*) In closed housing, emission: 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 <sub>01</sub> (+ 5V)
5-12	V <sub>01</sub> and V <sub>02</sub> Return
13-18	V <sub>02</sub> (+ 3,3V)
19	V <sub>03</sub> Return
20	V <sub>03</sub> (+ 12V)
21	V <sub>04</sub> (- 12V)
22	Signal Return
23	reserved
24	V <sub>04</sub> Return
26	reserved
27	EN (Enable)
29	V <sub>01</sub> Adjust
30	V <sub>01</sub> Sense
32	V <sub>02</sub> Adjust
33	V <sub>02</sub> Sense
34	Sense Return
36	V <sub>03</sub> Sense
39	INH (Inhibit)
42	FAL (Fail Signal)
<b>Signals Input and PE</b>	
45	PE (chassis ground)
46	+ DC Input
47	- DC Input

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

**Mechanical drawing backplane**



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.