Steuer- und Regeltechnik / Sachsenheim

DC-DC CONVERTER HFBC-3W/O

RAILWAY CONVERTER

FOR CHASSIS MOUNTING

HIGHLIGHTS

- Output Power up to 43 Watts*
- Efficiency up to 83%
- Ultra Wide Input Range
- Wide Temperature Range
- Hold-up-time > 20ms
- RoHS compliance
- RIA12 waveform A to G compliance

INPUT

Input Voltage Nominal	24, 36, 48, 72, 96 and 110 VDC
Input Voltage Operating	16,8..137,5 VDC
Input Voltage Range	14,4..154 VDC (t < 100ms)
No load Input Current	See table
Internal Fusing	5 AT

OUTPUT

Output Voltage	+5,1 VDC, ±12 VDC
Initial Set Accuracy	< 0,5 % (0 % load)
Minimum Load	No minimum load
Line Regulation	< 0,5 %
Load Regulation	< 0,7 %
Ripple & Noise	< 1 % pk-pk, 20 MHz bandwidth
Start Time	< 0,2 s
Transient Response	< 1 % (20% / 90% load step) Recovery Time < 1 ms
Max. Output Capacitance	500 uF x $I_{out\ nom}$
Temperature Coefficient	< 0,01 %/°C

FEATURES

Active Reverse Polarity Protection	Max. 160 V
Inrush Current Limitation	Max. 5 A, 25 ms (V_{in} = 110 V)
Power Fail Signal	Active level: Low. TTL compatible. Delay time > 12 ms
Hold Up Time	> 20 ms

PROTECTION

Output Over Voltage Protection (OVP)	110..120 % $V_{out\ nom}$, latched (reset through power off)
Over Current Protection (OCP)	The output voltage drops at I_{out} > 110 % and the output power is limited
Short Circuit Current	See table
Over Temperature Protection (OTP)	Shutdown at 102..107°C baseplate with 5K hysteresis and auto recovery

GENERAL

Product Standard	EN 50155:2007
Isolation	2000 VAC Input to output
	1000 VAC Input to earth (PE)
	1000 VAC Output to earth (PE)
Switching Frequency	130 kHz typ.
Dimensions [mm]	202 x 98 x 38
Weight	approx. 470g
MTBF	300.000 h at 40°C

ENVIRONMENTAL

Operating Ambient Temp.	-25°C to +85°C*
Operating Baseplate Temp.	-25°C to +100°C
Storage Temperature	-40°C to +100°C
Vibration / Shock / Bump	To be tested in the end application

EMC

EMC Standard	EN 50121-3-2:2006
Conducted Emissions	EN 55011:2007+A2:2007, Class A**
ESD Immunity	EN 61000-4-2:1995+A1:1998+A2:2001, level 3 (6 kV / 8 kV), Criteria B
Burst	EN 61000-4-4:2004, level 3 (2 kV), Criteria B
Surge	EN 50121-3-2:2006, line to line ±1 kV, 42R, and line to case ±2 kV, 42R, Criteria B
Conducted Immunity	EN 61000-4-6:1996+A1:2001, level 3 (10 V), Criteria A

* Derating without additional cooling > +70°C: 3,5 %/°C
Derating with heatsink 1 K/W > +70°C: 0 %/°C
Also with heatsink, ensure that baseplate not exceed 100°C
** In built-in condition our devices may show different EMC properties

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Specifications subject to change without notice · 01 44 01 3002 3 a00 · 06.2008

TECHNICAL DATA

For T_{amb}=25°C

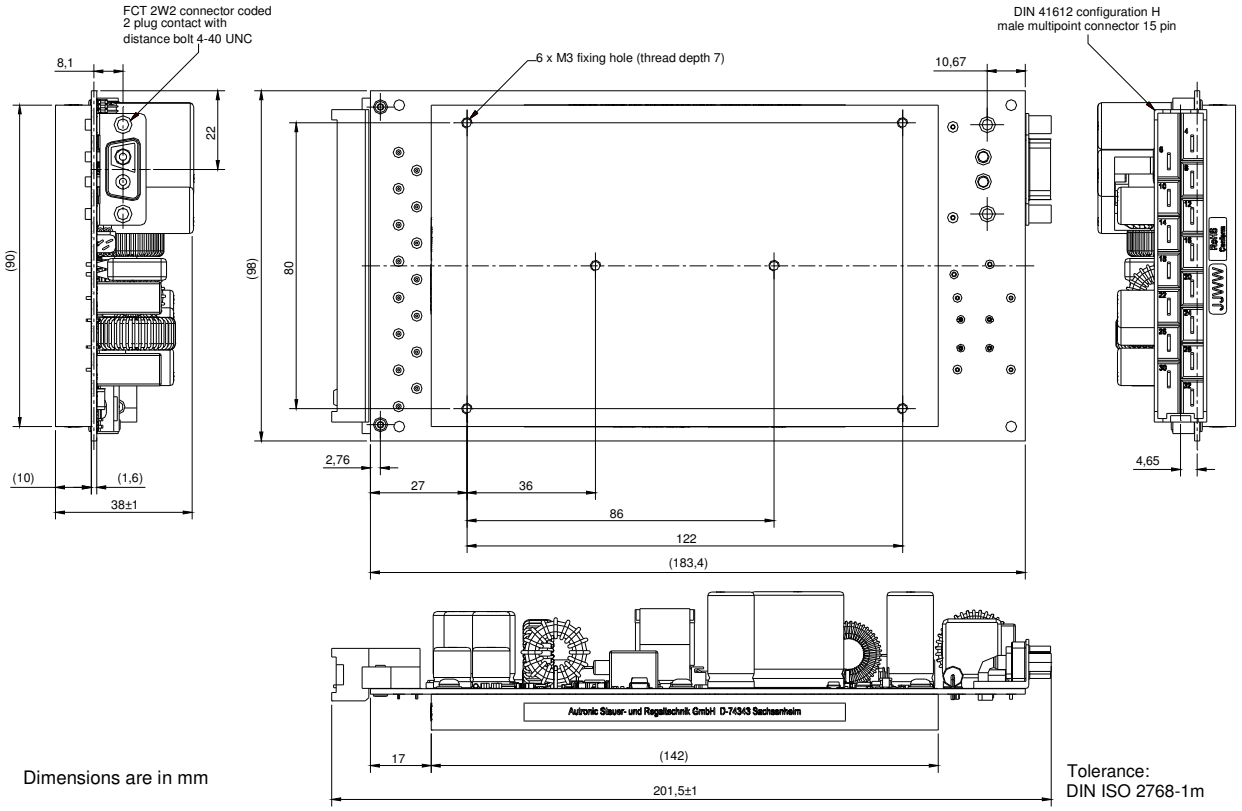
SPECIFICATION

	TYPE		HFBC-3W/O					
	ORDER NUMBER		01 44 01 0001 5					
	CHARACTERISTIC	Unit						
INPUT	**Input Voltage Nominal**	V	24	36	48	72	96	110
	Input Voltage Range	V	14,4..36	21,6..51	28,8..67,2	43,2..101	57,6..134,4	66..154
	Input Current @ Full Load	A	2,3	1,5	1,1	0,74	0,55	0,48
	Input Current @ No Load	A	0,17	0,12	0,08	0,06	0,05	0,04
	Efficiency @ Full Load (typical)	%	79	80	81	81,5	82	83
	Under Voltage Turn-on	V	16,8					
	Under Voltage Turn-off	V	14,4					
OUTPUT			Output 1		Output 2		Output 3	
	Output Voltage Nominal	V	5,1		12		-12	
	Output Current Nominal	A	5		1		0,5	
	Short Circuit Current (typical)	A	6		2,4		1,3	

TECHNICAL DATA

For T_{amb}=25°C

MECHANICAL DETAILS



Dimensions are in mm

Tolerance:
DIN ISO 2768-1m

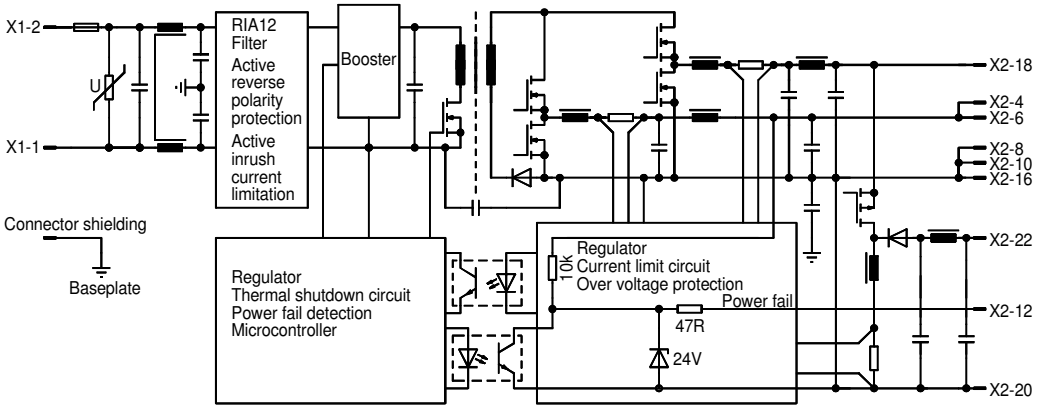
PINNING

Pin	Function	Pin	Function
X1-1	V_{in}-	X2-4	V_{out1} (+5 V)
X1-2	V_{in}+	X2-6	V_{out1} (+5 V)
		X2-8	GND (0 V)
		X2-10	GND (0 V)
		X2-12	Power fail
		X2-14	Not connected
		X2-16	GND (0 V)
		X2-18	V_{out2} (+12 V)
		X2-20	GND (0 V)
		X2-22	V_{out3} (-12 V)
		X2-24	Not connected
		X2-26	Not connected
		X2-28	Not connected
		X2-30	Not connected
		X2-32	Not connected

NOTES

Installation Instructions:
The converters have to be installed according to the guidelines currently in force, like other open electronic component assemblies. Attention must be paid to sufficient ventilation, carry off heat, fastening and protection against accidential contact. The mounting surface must be flat and able to remove the thermal energy of the baseplate (baseplate temperature must not exceed +100°C).
The baseplate has to be properly connected in order to assure operation.

BLOCK DIAGRAM



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