

$V_{In\ nom} = 1500\ V_{DC}$

$V_{Out\ nom} = 110\ V$

$I_{Out} = 3.0A, I_{OutPeak}: 10A\ t \leq 200ms$

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
INPUT						
V_I	Input operating voltage range	Continuously	1'000		1'800	V_{DC}
$V_{Insw\ LV}$	Converter Switch ON	@ $V_{BATT} < 85V$ (see output start conditions)	950		1'000	V_{DC}
$V_{Insw\ HV}$	Converter Switch OFF ON		1'950	2'150	2'540	V_{DC}
I_I	Input current No load	$V_{In} = 1'500V, I_{Out} = 0\ A$			25	mA
	Nominal load	$V_{In} = 1'500V, I_{Out} = 3\ A$		0.25		A
	Nominal load	$V_{In} = 1'000V, I_{Out} = 10\ A$		1.0	1.5	A
	Input current integral	$V_{In} = 1'500V, 0\ A \leq I_O \leq 3.0\ A$		5	10	A ² s
	Input fuse 4 kVDC	Nominal current		4		A

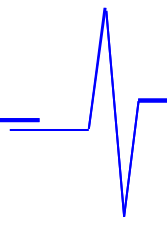
OUTPUT: Power unit1'000 $V_{DC} \leq V_{In} \leq 1'800\ V_{DC}$ $T_A = -40^\circ C \dots +70^\circ C$ @ OT4

$P_{Out\ nom}$	Output power	continuous	285	300		W
		peak power $I_{out} = 10A\ t \leq 200ms$		1100		W
$P_{Out\ nom}$	Output power	Repetition rate for output peak power	3			minutes
$V_{Out\ nom}$	Output voltage availability	Monitor Pin X3.30/32: $V_{Bat} < 85V$	82	85	88	V_{DC}
$V_{Out\ nom}$	Output voltage adjustment, factory set	$I_O = 1.5\ A \approx 50\%$ of nominal load	105	110	115	V_{DC}
ΔV_{Out}	Regulation	$0\ A \leq I_O \leq 3\ A$ (10A)	$\leq 3\% V_{O\ nom}$			V
$\Delta V_{O\ dyn.}$	Load regulation dynamic	Load: 20 - 80 - 20 % x $I_{O\ nom}$			1.5	V
t_{dyn}	Response time	Load: 20 - 80 - 20 % x $I_{O\ nom}$		2	5	ms
$V_{Out\ rms}$	Ripple	Nom. load BW 300 kHz		0.5	3.0	V_{rms}
$V_{Out\ p}$	Noise	Nom. load BW 20 MHz		0.5	3.5	V_p
t_{on}	Turn on time V_{Out}	$0\ A \leq I_O \leq 3\ A$ resistive load		150	500	ms
	Overvoltage shutdown V_{Out} when output failure occurs	$0\ A \leq I_O \leq 3\ A$ Restart again only after $V_{in\ OFF/ON}$	converter switch Off: $V_O \leq 137.5\ V$			V_{DC}
I_O	Output current	continuous	0		3.1	A
I_O	Output current	Peak for $t \leq 200ms$	10		10.5	A
I_O	Output current limitation threshold of I_{Out}		2.9	3.0	3.2	A
I_{Out-sc}	Output short circuit current	Short circuit between + V_{Out} and - V_{Out}		5	6	A
*) there is no dynamic protection against output capacitor sudden short circuit discharge!						
START / STOP CONDITION						
		Converter switches ON	$1'000\ V_{DC} \leq V_{In} \leq 1'950\ V_{DC}$ AND $V_{out} \leq 85\ V_{DC} \pm 3.5\%$			
		Converter switch OFF	$1'000\ V_{DC} \leq V_{In} \leq 1'950\ V_{DC}$ AND $V_{out} \geq 100\ V_{DC} \pm 2.5\%$			
SIGNALS						
LED	LED 1 RED LED 2 Green LED 3 Yellow	Converter in failure mode (no output) V_{in} o.k. converter normally On V_{in} o.k. converter Idle mode $V_{Batt} > 100V$		ON ON ON		
PG	Power Good Optocoupler relay at Pin X3.6 and X3.4	Relay normally closed if converter o.k. Relay open contacts failure mode $V_{out} \leq 85\ V_{DC} \pm 3.5\%$ AND failure mode condition inside converter	Contacts between X3.6 X3.4 Closed: $R \leq 35\ \Omega$ Contacts between X3.6 X3.4 open: high impedance state			
		Max. switching capacity:	$V < 154V, I \leq 25mA$			

COMMON DATA

f	Switching frequency	$V_I = 1'500\ V, I_O = 3\ A$		35		kHz
η	Efficiency	$P_O \geq 0.7 \times P_{O\ nom}$	85	88		%
	MTBFEN 61709	$V_I = 1'500\ V, I_O = 3\ A, T_A = +45^\circ C$		425 000		h
	Life time acc. EN 50155 class L4	$V_I = 1'500\ V, I_O = 3\ A, T_A = +40^\circ C$	20			y
	No load, short circuit proof		continuously			

Applications: stationary and mobile. Operation with direct contact to catenary voltage. High input surge capability. Creepage & clearance, choice of Al caps for max. altitude 2'000m over sea level.



SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
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SAFETY / DIMENSIONS

	Creepage / clearance distances Basis isolation, OV3, PD2 PCB FR4 V-0 acc. to EN 50124 - 1	Input – output Input – chassis Output – chassis	14.0 12.0 2.0			mm mm mm
	Dielectric strength test Piece test every unit for ramp function 5 s – 10 s – 5 s	Input – output Input – chassis Output – chassis			6'788 3'500 1'500	V _{DC} V _{DC} V _{DC}
	Connectors	Input: X1 + V _{in} X2 – V _{in} Output: X3 + V _{Out} and – V _{Out} V _{Batt} , PG	Screw bolts M5 H15			
	Protection class, protection system		I, IP 20			
	Dimensions w x h x d	Wall mounting See mechanic drawing	328.5 x 162 x 90			mm
	Assembling	Wall mounting with screws Earth stud	8 x M5 M6 x 16			
	Weight			4.2	4.5	kg

ENVIROMENTAL CONDITIONS

T _A	Operating temperature range No power derating, free convection	Continuously P _{out} = 300W EN 50155 class OT4 + 10 min	- 40		+ 70 + 85	°C °C
T _{Storage}	Storage Temperature		- 40		+ 85	°C
	Cooling		free air convection			
	Huminidy	EN 50155, IEC 60571	75% averaged year, 95% 30 days			
	Vibration / shock tested for wall mounting	IEC 61373, IEC 68-2-27, Cat. I 3 shocks per axis	50 m / s ² , 30 ms			

EMC *) accredited measurements by CRRC Times Zhushou

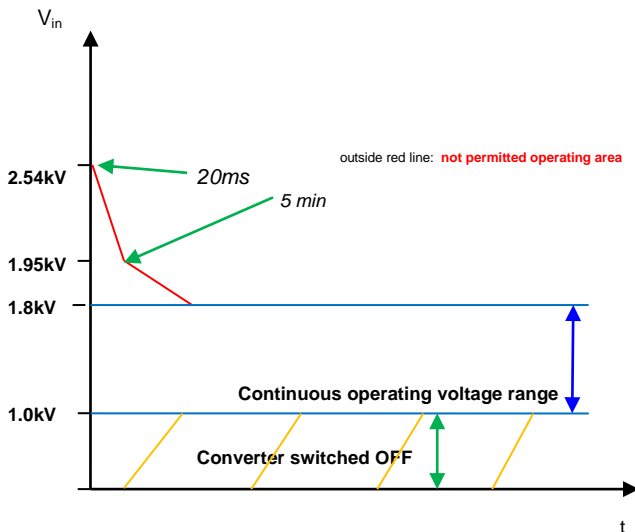
	Emission	Line conducted and radiated	EN 50121 - 3 - 2: 2016
	Immunity	Input, output	

STANDARDS

Applied standards:	EN 50155: 2018	EN 50163	EN 50124 - 1: 2006	EN 50121 - 3 - 2: 2016	IEC 60571
	SN 29500	EN 50121 - 1	EN 50125 - 1	EN 60068 - 2 - 6, 2...27	EN 61000 - 4 - 2...6
	IEC 571	IEC 61373: 1999	EN 60721 - 3 - 5	EN 61373 : 1999	EN 60529
	IEC 1287-1	EN 50207: 2000			

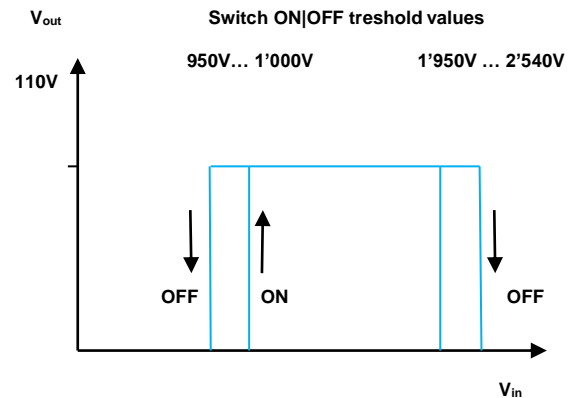
Technical specifications valid for: - 40° C ≤ T_A ≤ + 70° C, 1.000 V_{DC} ≤ V_{in} ≤ 1.800V_{DC}, unless otherwise noted.
Recommended altitude range: ≤ 2'000m o.s.l., temperature reference point : 10cm below EUT @ free space for convection

Wall mounting, metal housing: 300 NSB 1500 M110 W10



Converter Output ON:

- 1'000V ≤ V_{IN} ≤ 1'950V
AND
- V_{Bat} ≤ 85V



Attention: Discharge time after converter switch OFF no load condition: t < 10sec