DC/DC Emergency Starter Converter 400W | 1500W

15 NSB 1500 M110 W02

$V_{In\ Nom}$ = 1500 V_{DC} $V_{out\ Nom}$ = 110 V I_{Out} = 3.5 A | 14A_2sec

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
INPUT						
V_{In}	Input voltage range	Continuous operation Dyn. operation @ EN 50163 U_{Max2}	1'000 1'800		1'800 1'950	V_{DC} V_{DC}
	Input voltage range (short time range)	V_{In} for t ≤ 20 ms @ EN 50163 U_{Max3} Converter switching OFF	2'050		2'538	V_{DC}
	Surge	V_{In} for t ≤ 1 ms	12			kV
$V_{In\ min}$	Switch ON input voltage		950		1'000	V_{DC}
$V_{In\ min}$	Switch OFF minimum input voltage		900		975	V_{DC}
$V_{In\ max}$	Switch OFF maximum input voltage		2'050	2'200	2'500	V_{DC}
	Input current integral (fuse loading)				5	A^2s
$I_{In\ max}$	Input current maximum at $V_{in,min}$	V_{In}, T_A, I_{Out} = 3.5 A			0.7	A
Fuse	Input fuse on PCB	1 fuse 4A 4kV Dim.:10mm x 85mm				
	Input reversal protection			None		
OUTPUT		1000 V_{DC} ≤ V_{In} ≤ 1800 V_{DC}				
$P_{Out\ Nom}$	continuously			400		W
$P_{Out\ peak}$	Max. 2sec	time interval P_{Peak} | P_{Peak} ≥12min	1'500			W
$V_{out\ Nom}$	Factory adjust output voltage	V_{In} = 1500V and I_{Out} = 3.5 A	105	110	115	V_{DC}
Δ V_{Out}	Regulation accuracy	0 A ≤ I_{Out} ≤ 3.5 A || 14A T_A = - 40°C to + 70°C Temp. class T3	< 20 % $V_{Out\ Nom}$			V_{DC}
$V_{Out\ rms}$	Ripple voltage	No load to nominal load BW 300 kHz		0.5	2.0	V_{rms}
$V_{Out\ pp}$	Spikes	No load to nominal load BW 20 MHz			2.5	V_{pp}
t_{On}	Switch On time V_{out}	*Push Button is closed. V_{in} must be inside specified range*		3	5	s
I_{Out}	Output current	Continuous peak	3.5 13.5	3.6 14.0	4.0	A A
	Current limit function: two point regulation	Switch ON/OFF interval on request				A A
I_{Outsc}	Short circuit current two point regulation	Output short circuited (R < 1Ω) between + V_{Out} and – V_{Out}			5	A
C_{Out}	Max. allowed external capacitance load	For DC/DC loads consider max. input currents DC/DC converter at $V_{in,min}$ 77.0V Switch ON / 66.0V Switch OFF			470	µF
Loads	External loads must be specified	See line above				
K1	Starting V_{Out}	Push Button must be closed to switch ON the output voltage	pins closed 11 / 12			
COMMON DATA						
f	Switching frequency			20		kHz
η	Efficiency	V_{In} = 1500 V_{DC} , P_{Out} = 400 W	70	78		%
	Usage time		20			years
	MTBF @ SN 29500 T_A = + 40°C	V_{In} = 1500 V_{DC} P_{Out} = 400 W		400'000		h
	No load- , short circuit protection	Output with 2 step regulation	continuously			
SAFETY / DIMENSIONS						
	Switch OFF transformer overtemperature		105°C - 5 K,+ 10 K			
	Transformer Partial discharge tested Type test only, piece test on request		2'650 V, 10 pC			
	PCB FR4, V0, TG = + 140°C					
	Creepage / Clearance @ PD2, OV3 acc. EN 50124 - 1 0V 3	Input | Output Input | Case (Gnd) Output | Case (Gnd)	36 / 36 18 / 18 2 / 2			mm mm mm
	Isolation test voltage Piece test ramp function: 5s – 10s – 5s	Input | Output Input | Case (Gnd) Output | Case (Gnd)			5.2 3.0 0.5	kV_{AC} kV_{AC} kV_{DC}
	Connecting	Input: + V_{In} and - V_{In}	Ettinger 13.44.656			
		Output: + V_{Out} and - V_{Out}	Pin strip 721 - 442/001-000			WAGO
	Green/Yellow	Protection earth (class 1)	Mounting plate connected with chassis			
	Protection class, protection degree		I, IP 00			
	Dimensions incl. Mounting plate	B x H x T	485 x 335 x 80			mm
	Mounting, consider mounting direction	Wall mounting with screws	8 x M6			
	Weight			6.9		kg
	Temperature ref. measurement point for T_A	10 cm below converter	10			cm

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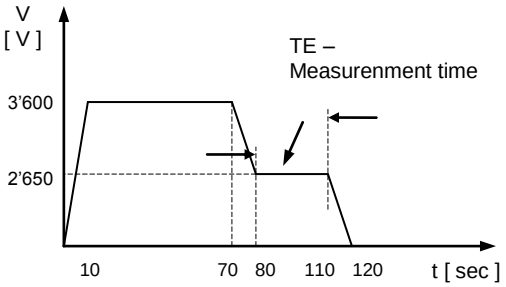
SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
AMBIENT CONDITIONS						
T_A	Operating temperature range	EN 50155 class T3	- 40		+ 70	°C
T_{Sto}	Storage temperature range		- 40		+ 85	°C
	Cooling		free air convection			
	Humidity	EN 50155, IEC 60571	75% averaged per year, 95% 30 days			
	Vibration / Shock	IEC 61373, IEC 68-2-27, BN 411002 cat. I 3 shocks each axis	50 m / s² , 30 ms			
	Max. operating / storage altitude		< 1200 m above NN / 40°C < 1800 m above NN / 30°C			
EMC						
	Emission	Line and radiated (converter inside Ext. closed housing)	EN 50121 - 3 - 2: 2006			
	Voltage transient withstand	acc. UIC 550	12 kV t ≤ 1 ms			

STANDARDS / NORMS

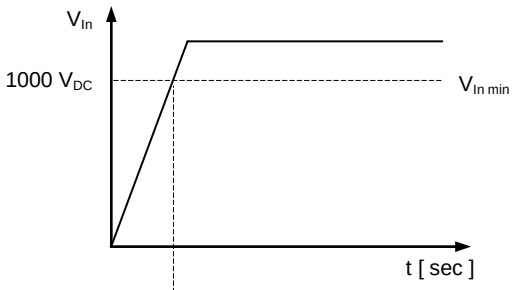
	Referenced Standards:	EN 50155: 2007	EN 50163: 1996	EN 50124 - 1: 2006	EN 50121 - 3 - 2: 2006	EN 60529
		EN 50207: 2000	EN 50 121 - 1	EN 50125 - 1	EN 60068 - 2 - 6, 2…27	EN 61000 - 4 - 2…6
		UIC 550 04/2005	IEC 61373: 1999	EN 60721 - 3 - 5	EN 61373: 1999	VDE 115 / T. 106
		UIC 626				

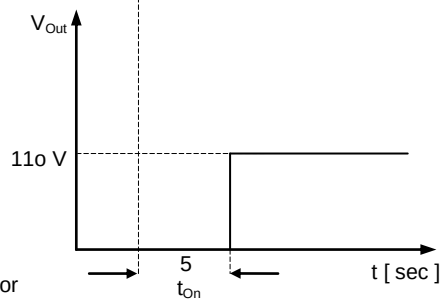
Technical Datas referenced at: - 40° C ≤ T_A ≤ + 70° C, 1000 V_{DC} ≤ V_{In} ≤ 1800 V_{DC} if not otherwise stated.

Transformator partial discharge test
EN 50207: 2000

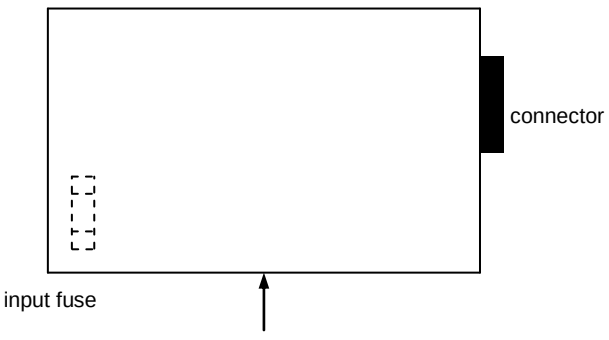


Switch ON time t_{ON}





Mounting direction – vertical!



necessary distance to bottom
for free air convection > 10 cm, this is also
ref. temperature measurement point