

DC/DC Emergency Starter Converter NSB 300 | 600 Watt

400 NSB 1500 M110 W00

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

$V_{out\ Nom} = 110\ V$ $I_{Out} = 2.75\ A$ (5.5A for $t \leq 2\ sec.$)

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
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INPUT

V_{In}	Input voltage range	Continuous operation Dynamic operation @ EN 50163 $t \leq 5\ sec$	1'000 1'800		1'800 2'050	V_{DC} V_{DC}
	Input voltage range (short time range)	V_{In} for $t \leq 20\ ms$ @ EN 50163	2'050		2'538	V_{DC}
	Surge	V_{In} for $t \leq 1\ ms$	12			kV
$V_{In\ min}$	Switch OFF minimum input voltage		900		975	V_{DC}
$V_{In\ max}$	Switch OFF maximum input voltage		2'400	2'450	2'600	V_{DC}
	Input current integral (fuse loading)				1.5	A^2s
$I_{In\ max}$	Input current maximum at $V_{In\ min}$	$V_{In}, T_A, I_{Out} = 5.5\ A$			0.75	A
Fuse	Input fuse on PCB (+ V_{In})	Dimensions: 10mm x 85mm	2A / 4kV			
	Input reversal protection		None			

OUTPUT

$P_{Out\ Nom}$	continuously	$1000\ V_{DC} \leq V_{In} \leq 1800\ V_{DC}$		300		W
P_{Out}	Max. repetition rate $P_{peak} P_{nom}$ $P_{peak} = 600W(\leq 2s) P_{nom} = 300W (>12\ min)$	$1000\ V_{DC} \leq V_{In} \leq 1800\ V_{DC}$ Repetition rate	12			Minute
$V_{out\ Nom}$	Factory adjust output voltage	$V_{In} = 1500V$ and $I_{Out} = 5.5\ A$	105	110	115	V_{DC}
ΔV_{Out}	Regulation accuracy	$0\ A \leq I_{Out} \leq 5.5\ A$ $T_A = -40^\circ C$ to $+70^\circ C$ Temp. class T3	< 20 % $V_{Out\ Nom}$			V_{DC}
$V_{Out\ rms}$	Ripple voltage	No load to nominal load BW 300 kHz			3.0	V_{pp}
$V_{Out\ pp}$	Spikes	No load to nominal load BW 20 MHz			2.5	V_{rms}
t_{on}	Switch On time output voltage V_{out} See diagram Converter starts only when Push Button is closed. V_{in} must be inside specified range	$1000\ V_{DC} \leq V_{In} \leq 1800\ V_{DC}$ $0\ A \leq I_{Out} \leq 2.75\ A$		2	3	s
I_{Out}	Output current		2.75		5.5	A
	Threshold value of I_{Out} static dynamic		2.75 3.9		5.8	A A
I_{Outsc}	Short circuit current static	Output short circuited ($R < 1\ \Omega$) between $+V_{Out}$ and $-V_{Out}$			15	A
C_{Out}	Max, allowed external capacitance load	For switching DC/DC loads consider max. input currents of DC/DC converter at $V_{in, min} 66V / 77V$			470	μF
K1	Starting V_{Out}	Push Button must be closed to switch ON the output voltage	pins closed betw. Pin 11 / 12			

COMMON DATA

f	Switching frequency			15		kHz
η	Efficiency	$V_{In} = 1500\ V_{DC}, P_{Out} = 300\ W$	70	78		%
	Usage time		20			years
	MTBF @ SN 29500 $T_A = +40^\circ C$	$V_{In} = 1500\ V_{DC}, P_{Out} = 300\ W$		400'000		h
	No load-, short circuit protection	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 PCB FR4, V0, TG = +140°C		2'650 V, 10 pC			
	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 Green/yellow	Input: + V_{In} and - V_{In} Output: + V_{Out} and - V_{Out} Protection earth (class I)	Ettinger 13.44.656 Stifleiste 721 - 442/001-000 Mounting plate connected with chassis			WAGO
	Protection class, protection degree		I, IP 00			
	Abmessungen inkl. Montageplatte	B x H x T	430 x 300 x 75			mm
	Mounting: consider mounting direction	Wall mounting with screws	6 x M6			
	Wight			6.3		kg
	Temperature reference meas. point for T_A	10cm 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 Kat. I 3 Shocks each Axis	50 m / s ² , 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

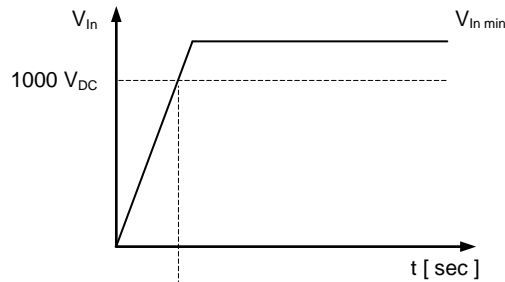
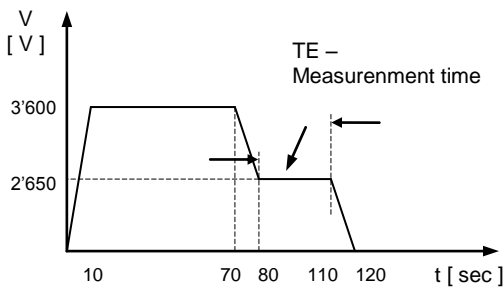
STANDARDS / NORMS

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				

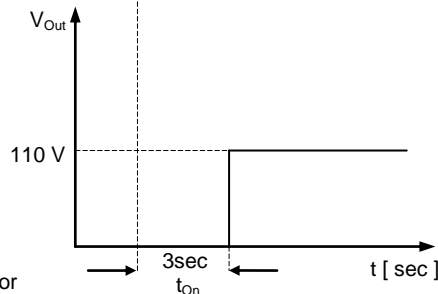
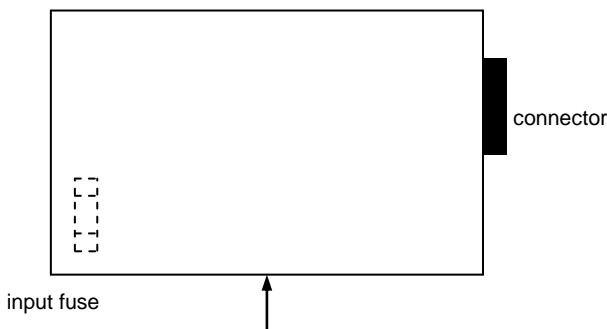
Technical Datas referenced at: $-40^\circ\text{C} \leq T_A \leq +70^\circ\text{C}$, $1000\text{V}_{\text{DC}} \leq V_{\text{In}} \leq 1800\text{V}_{\text{DC}}$ if not explizide otherwise stated.

Transformer 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