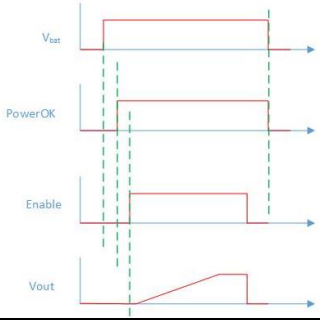
DC/DC Converter 1 kW

1 KLB 110 M600 W00

$V_{In,nom}$ = 110 V $V_{O,nom}$ = 600 V $I_{O,nom}$ = 2.5 A

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
INPUT						
V_{In}	Operating input voltage range	continuously	77		137.5	V_{DC}
V_{In}	Acc. EN 50155	Dynamic t ≤ 0.1s t ≤ 1.0s	66 137.5		77 154	V_{DC} V_{DC}
$V_{In\ min}$	Converter ON	0 A ≤ I_O ≤ 2.5 A	55	60	65	V_{DC}
$V_{In\ min}$	Converter OFF	0 A ≤ I_O ≤ 2.5 A	50	55	60	V_{DC}
$V_{In\ max}$	Converter OFF	0 A ≤ I_O ≤ 2.5 A	155		160	V_{DC}
	Stand by current	77 V ≤ V_{In} ≤ 154 V, Enable = OFF			3.0	mA
I_{In}	Input current: no load at the output charging load charging load	V_{In} = 154 V, I_O = 0 A V_{In} = 137.5 V, I_O = 2.5 A V_{In} = 110 V, I_O = 2.5 A V_{In} = 77 V, I_O = 2.5 A		50 12 15 16	100	mA A A A
	Inrush current Integral	V_{In} = 154 V			10	A^2s
$I_{In\ max}$	Max. input current	V_{In} = 77V … 154 V, I_O = 2.5 A Δ t ≤ 250 ms			19	A
	Input fuse	yes		20 AT		
C_{In}	Input capacity			20	30	µF
	Max. allowed external line inductance				50	µH
	Input reverse protection	yes		- 154.0		V_{DC}
	Input transient protection	bidirectional transil diode		1.5KE150CA		
OUTPUT: Power Stage		50.4 V ≤ V_{In} ≤ 137.5 V				
P_O	Output power	T_A = - 40°C … + 70°C		1.000		W
$V_{O\ nom}$	Output voltage: factory adjust		575	600	610	V_{DC}
Δ V_O	Output voltage regulation TL 431 @ ΔT, t (aging)	0 A ≤ I_O ≤ 2.5 A T_A = - 40°C … + 70°C		≤ 2.5 % von $V_{A\ nenn}$		
		T_A = + 70°C … + 85°C		≤ 3.0 % von $V_{A\ nenn}$		
Δ $V_{O\ dyn.}$	Load regulation	Load: 20 - 80 - 20 % x $I_{O\ nom}$		1	2.5	V
t_{dyn}	Response time	Load: 20 - 80 - 20 % x $I_{O\ nom}$		1	3	ms
$V_{O\ rms}$	Ripple voltage	Nominal load BW 300 kHz		100	500	mV_{rms}
$V_{O\ ss}$	Spikes	Nominal load BW 20 MHz			250	mV_{pp}
t_{On}	Switch ON time V_O	0 A ≤ I_O ≤ 2.5 A capacitive load 0mF < C < 7.5 mF (Opt. 10 - 22mF)	1.8	2.0	2.75	s
	Overvoltage switch OFF $V_{Out,max}$	0 A ≤ I_O ≤ 2.5 A		converter OFF: V_O ≤ 690		V_{DC}
I_O	Output current	T_{Amb} = - 40°C … + 85°C class Tx	2.25	2.5	4.0	A
	Treshold value current limitation	T_{Amb} = - 40°C … + 70°C	2.6			A
C_{out}	Internal capacity			10		µF
ϑ Tr.	**Tr**ansformer over-temperature switch OFF		100	105	110	°C

ENABLE&SIGNALING



COMMON DATA

f	Switching frequency	V_{In} = 110 V, I_O = 2.5 A	40	75	140	kHz
η	Efficiency	P_{out} ≥ 0,7 x $P_{out\ nom}$	85	88		%
	MTBF (SN 29500)	V_{In} = 110 V, I_O = 2.5 A, T_A = + 40°C		400 000		h
	No load- & short circuit proofed	continuously		yes		

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SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
SAFETY / DIMENSIONS						
	Clearance - and creepage distances for PD2, OV2 *) PCB FR4, V0, T_G = + 140°C (+150°C on request), IPC 6012E class 3	input | output input | housing output | housing	40 20 20			mm mm mm
	Isolation voltage Unit test: ramp function 2s - 3s - 2s Type test: 1 minute	input | output input | housing output | housing			6'000 4'500 1'500	V_{DC} V_{DC} V_{DC}
	Isolation resistance	input | output	30			MΩ
	Connector	input Harting H15 male DIN 41612 necessary mating connector female	H15			
	Protection degree, - class	SE M6 Al – Metal housing	I, IP 30			
	Dimensions B x H x T	DC/DC converter	241 x 184 x 84.5			mm
	Mounting	Wall mounting with screws	6 x M6			
	Weight	Converter		1.8		kg
AMBIENT CONDITIONS						
T_A	Operating temperature range	EN 50155 class Tx 10 min.	- 40 + 70		+ 70 + 85	°C °C
T_{Store}	Storage temperature range		- 40		+ 85	°C
	Cooling		Free convection			
	Huminidy	EN 50155, IEC 60571	75% averaged per year, 95% 30 days			
	Vibration / Shock	IEC 61373, IEC 68-2-27 category I: 3 shocks each axis	50 m / s² , 30 ms			
EMC						
	Emission	Line referenced and radiated	EN 50121 - 3 - 2: 2016			
	Immunity	ESD EN 61000 - 4 – 2	6 kV / 8 kV Performance criteria - B -			
		High frequency HF-Field **) EN 61000 - 4 – 3	20 V / m 80 MHz ... 1 GHz Performance criteria - A -			
		Burst EN 61000 - 4 – 4	Level 3 asym., sym. Performance criteria - A -			
		Surge EN 61000 - 4 – 5	2 kV asym. / 1 kV sym. R_i = 42Ω, Performance crit.- A-			
		HF – current injection EN 61000 - 4 - 6	10 V_{eff} , R_i = 150 Ω Performance criteria - A -			

referenced standards:	EN 50155: 2016	EN 60529	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 45545-2
**) 20 V/m 80 MHz - 1000 MHz 1400MHz – 2000MHz 10V/m 2000MHz – 2700 MHz 5V/m 5100MHZ – 6000MHz 3V/m					

Pinning X3 H15

Pin		recommended wiring size
z24	+ V_{In}	2.5 mm²
d22	+ V_{In}	2.5 mm²
z32	- V_{In}	2.5 mm²
d30	- V_{In}	2.5 mm²
z12	ENABLE	1.0 mm²
d10	DI Supply	1.0 mm²
z8	DO Supply	1.0 mm²
d6	Power OK	1.0mm²
Output X2 Screwing 2 bolts		
	+ Vout	M6
	- Vout	M6
Earth M4 screwing 1 bolt		

Order Key:
1 KLB 110 M600 W0**0**