

DC/DC Converter

1000 Watt

1000 LWB 110 M24 W00

$V_{I\text{ nom}} = 110\text{ V}$ $V_{O\text{ nom}} = 24\text{ V}$ $I_o = 42\text{ A}$

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS	
INPUT							
V_I	Input voltage range	Continuously	77		137.5	V_{DC}	
	Input voltage range: dynamic	@EN50155	66		154	V_{DC}	
$V_{I\text{ min}}$	Converter On	Switch On			75	V_{DC}	
	Converter Off	Switch Off	60		65	V_{DC}	
$V_{I\text{ max}}$	Converter shutdown	Switch Off	155			V_{DC}	
V_{Enable}	Option: Enable Function	Converter On: Enable = Low	0		0.8	V_{DC}	
	Reference: - V_I	Converter Off: Enable = High / Open	3.0		20	V_{DC}	
	Stand by current	$77\text{ V} \leq V_I \leq 137.5\text{ V}$, Enable = High			5	mA	
I_I	Input current	No load	$V_I = 110\text{ V}$, $I_o = 0\text{ A}$			50	mA
		Nominal load	$V_I = 110\text{ V}$, $I_o = 42\text{ A}$	9.6			A
		Nominal load	$V_I = 77\text{ V}$, $I_o = 42\text{ A}$	13.7			A
		Nominal load	$V_I = 137.5\text{ V}$, $I_o = 42\text{ A}$	7.7			A
	Input current integral	$V_I = 154\text{ V}$			30	A ² s	
$I_{I\text{ max}}$	Max. input switch on current $V_I \geq V_{I\text{ min}}$, ($V_{\text{Enable}} \rightarrow \leq 0.8\text{ V}$)	$I_o = 42\text{ A}$ $\Delta t \leq 100\text{ ms}$		On request			
	Input fuse	bel 0ADEC9300		30A, fast			
C_I	Converter input capacity				79	μF	
	External line inductance				50	μH	
	Reverse input protection	Parallel diode + fuse		1.5 KE160 A			

OUTPUT: Power unit $66\text{ V} \leq V_I \leq 154\text{ V}$

$P_{O\text{ nom}}$	Output power		1000			W
$V_{O\text{ nom}}$	Output voltage adjustment, factory set	$I_o = 20\text{ A}$	23.8	24.0	24.2	V_{DC}
ΔV_o	Regulation	$0\text{ A} \leq I_o \leq 42\text{ A}$ $T_A = -40^\circ\text{C} \dots +70^\circ\text{C}$	$\leq 2\% V_{O\text{ nom}}$			V
$\Delta V_{O\text{ dyn}}$	Load regulation dynamic	Pulsed load: 20 - 80 - 20 % x $I_{O\text{ nom}}$			500	mV
t_{dyn}	Response time	Pulsed load: 20 - 80 - 20 % x $I_{O\text{ nom}}$		1	5	ms
$V_{O\text{ rms}}$	Ripple	Nom. load BW 300 kHz		50	150	mV
$V_{O\text{ pp}}$	Noise	Nom. load BW 20 MHz			350	mV
t_{on}	Turn on time V_o	$0\text{ A} \leq I_o \leq 42\text{ A}$ Resistive load			100	ms
	Overvoltage shutdown V_o	$0\text{ A} \leq I_o \leq 42\text{ A}$	Converter off: $V_o \geq 28\text{ VDC}$			
I_o	Output current		42			A
	Output current limitation of I_o			45		A
	Output short circuit current	Short circuit between + V_o and - V_o $77\text{ V} \leq V_I \leq 137.5\text{ V}$			65	A
C_o	Output capacity			3.8		mF

OUTPUT: Signals

PF	Power Fail	NC: closed for $V_o \leq 22.5\text{ V}_{DC}$	$\pm 3\%$	
	Relais	NO: closed for $V_o \geq 22.5\text{ V}_{DC}$	$\pm 3\%$	
	Signals	LED green ON for $V_o \geq 22.5\text{ V}_{DC}$	$\pm 3\%$	

GENERAL SPECIFICATIONS

f	Switching frequency	$V_I = 110\text{ V}$, $I_o = 42\text{ A}$		82		kHz
η	Efficiency	$P_o \geq 0.7 \times P_{O\text{ nom}}$	94	95		%
	MTBF (SN 29500)	$V_I = 110\text{ V}$, $I_o = 42\text{ A}$, $T_A = +40^\circ\text{C}$		400 000		h
	No load, short circuit proof			Continuously		

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SAFETY / DIMENSIONS

	Creepage / clearance distances PD2 PCB FR4, V0	Input – output Input – case Output – case	4.0 2.0 2.0			mm mm mm
	Converter dielectric strength test: Type test for one minute Unit ramp test for 2s – 3s – 2s	Input – output Input – case Output – case			2100 1500 1500	VDC VDC VDC
	Connectors	Input: + V _I and – V _I Output: + V _O and – V _O PE:	Each a clamp terminal max. 10 mm ² Screw bolts M4			
	Protection class, protection system		I, IP 20			
	Dimensions with mounting plate	w x h x d	241 x 290 x 60			mm
	Assembling	Wall mounting with screws	4 x M6			
	Weight			2.6		kg

ENVIRONMENTAL CONDITIONS

T _A	Operating temperature range	for 10 min. T _A = + 70 °C ... + 85 °C	- 40		+ 70	°C
T _{Storage}	Storage Temperature		- 40		+ 85	°C
	Cooling		free air convection			
	Humidity	EN 50155, IEC 60571	75% averaged year, 95% 30 days			
	Vibration / shock	IEC 61373, IEC 68-2-27, BN 411002 Cat. I 3 Shocks per axis	50 m / s ² , 30 ms			

EMC

	Emission	Line conducted and radiated	EN 50121 - 3 - 2: 2016			
	Immunity	ESD EN 61000 - 4 - 2	6 kV / 8 kV Performance criteria - B -			
		High frequency field EN 61000 - 4 - 3	20 V / m 80 MHz ... 6 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 = 42 Ω Performance criteria - A -			
		HF – Current injection EN 61000 - 4 - 6	10 V _{rms} , R _i = 150 Ω Performance criteria - A -			

STANDARDS

Applied standards:	EN 50155: 2018	BN 411 002	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

*) 1400 MHz – 2000MHz 10V/m, 200MHz – 2500MHz 5V/m, 5100MHz – 6000MHz 3V/m
 Technical specifications valid for: - 40° C ≤ T_A ≤ + 70° C, 77 V ≤ V_I ≤ 137.5 V, unless otherwise noted.

PINOUT

	Connector X1	Function	Pin	Recommended Cross Section	
X1:1	WAGO 2636-1102	Input Voltage +VE	1	4.0 to 6.0	mm ²
X1:2		Input Voltage -VE	2	4.0 to 6.0	mm ²
	Connector X2	Function	Pin	Recommended Cross Section	
X2:1	WAGO 231-834	Signal „Enable“	1	0.5 to 1.0	mm ²
X2:2		Signal „Power Good“ (NO)	2	0.5 to 1.0	mm ²
X2:3		Signal „Power Good“ (COM)	3	0.5 to 1.0	mm ²
X2:4		Signal „Power Good“ (NC)	4	0.5 to 1.0	mm ²
	Connector X3	Function	Pin	Recommended Cross Section	
X3:1	WAGO 2636-1104	Output Voltage +UA(1)	1	8.0 to 12.0	mm ²
X3:2		Output Voltage +UA(2)	2	8.0 to 12.0	mm ²
X3:3		Output Voltage -UA(1)	3	8.0 to 12.0	mm ²
X3:4		Output Voltage -UA(2)	4	8.0 to 12.0	mm ²

