DC/DC Converter 500 Watt

500 DDB 110 M24 □ □ □

$V_{In\ nom}$ = 72 V, 110 V $V_{Out\ nom}$ = 24 V $I_{O\ nom}$ = 21 A

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
INPUT						
V_{IN}	Input voltage range	Continuously	50.4		137.5	V
	Input voltage range dynamic	V_{IN} = 43.2 V … 50.4 V for t ≤ 0.1 s V_{IN} = 137.5 V … 154 V for t ≤ 1 s	43.2		 154	V V
$V_{IN\ min}$	Switch Off				43	V
$V_{IN\ max}$	Switch Off		156		160	V
I_{IN}	Input current no load nominal load nominal load	V_{IN} = 154 V, I_{Out} = 0 A V_{IN} = 110 V, I_{Out} = 21 A V_{IN} = 43.2 V, I_{Out} = 21 A		5.2	100 14.0	mA A A
	Switch On input current integral	V_{IN} = 154 V			15	A²s
$I_{IN\ max}$	Switch on current at $V_{IN} \geq V_{IN\ min}$	I_{Out} = 21 A Δ t ≤ 100 ms			15	A
	Input fusing	Option: external circuit breaker	6,3 x 32mm 20A MT			
C_{IN}	Input capacity converter			60		µF
	External connection inductance				50	µH
	Voltage transient protection	Bi - directional Transildiode	1.5KE 150 CA			
	Reversal protection	Serial diode function : MOSFET				

OUTPUT: Power Unit						
$P_{Out\ Nom}$	Output power	43.2 ≤ V_{IN} ≤ 154 V	500	505		W
$V_{Out\ Nom}$	Output voltage adjustment, factory set	50.4 V ≤ V_{IN} ≤ 137.5 V	23.9	24.0	24.2	V
Δ V_{Out}	Load regulation static	43.2 V ≤ V_{IN} ≤ 154 V 0 A ≤ I_{Out} ≤ 21 A T_A = - 40°C … + 70°C	≤ 2.5 % $V_{Out\ Nom}$			V
		T_A = - 40°C … + 85°C	≤ 3 % $V_{Out\ Nom}$			V
Δ $V_{Out\ dyn.}$	Load regulation dynamic	43.2 V ≤ V_{IN} ≤ 154 V Puls load: 20 - 80 - 20 % x $I_{Out\ Nom}$			500	mV
t_{dyn}	Response time	43.2 V ≤ V_{IN} ≤ 154 V Pulse load: 20 - 80 - 20 % x $I_{Out\ Nom}$		1	3	ms
$V_{out\ rms}$	Ripple	43.2 V ≤ V_{IN} ≤ 154 V Nominal load BW 300 kHz		150	300	mV
$V_{out\ pp}$	Spikes	43.2 V ≤ V_{IN} ≤ 154 V Nominal load BW 20 MHz			350	mV
t_{on}	Turn on time: V_{Out}	50.4 V ≤ V_{IN} ≤ 154 V, 0A ≤ I_{Out} ≤ 21 A resistive load			200	ms
$t_{holdup\ time}$	Reload time storage caps: t ≤ 5s @ I_{Out} ≥ 2A	50.4 V ≤ V_{IN} ≤ 137.5 V 0 A ≤ I_{Out} ≤ 21 A Class S2 @ EN 50155	10			ms
	Overvoltage Protection	43.2 V ≤ V_{IN} ≤ 154 V 0 A ≤ I_{Out} ≤ 21 A	converter off: V_{Out} ≤ 32.4 V			V
I_{Out}	Output current	43.2 V ≤ V_{IN} ≤ 154 V		21		A
	Output current limit treshold of I_{Out}	43.2 V ≤ V_{IN} ≤ 154 V	21.5			A
I_{osc}	Output short circuit current	Short circuit between + V_{Out} and – V_{Out} 43.2 V ≤ V_{IN} ≤ 154 V			27	A
C_{Out}	Output capacity converter			11		mF
C_{Out}	Max. ext. output capacity				6	mF

OUTPUT: Signaling				
PF Power Fail X3	Option: Open Collector Transistor V_{CEmax} ≤ 70 V, I_{CEmax} ≤ - 20mA Ref. - V_O or Relay V_{max} ≤ 200 V, I_{max} ≤ 50mA	Transistor On: PF = Low, V_{Out} < $V_{out\ min}$ Transistor Off: PF = High, V_{Out} ≥ $V_{out\ min}$ $V_O \geq V_{O,min}$: Pin1–2 closed ($V_O \geq$ 22.4V ± 3%) $V_O < V_{O,min}$: Pin1–2 open (V_O < 22.4V ± 3%)	V_{Out} < 0.95 x $V_{Out\ Nom}$ ± 3 % V_{Out} ≥ 0.95 x $V_{out\ Nom}$ ± 3 % Signals are defined for V_{out} ≥ 0.6 x $V_{Out\ Nom}$	V V
	Visual Signals	Input voltage = o.k. Output voltage = o.k.	LED Green: ON LED Green: ON	

COMMON DATAS						
f	Switching frequency	V_{IN} = 110 V, I_{Out} = 21 A		105		kHz
η	Efficiency	$P_{Out} \geq$ 0,7 x $P_{Out\ nom}$	87	91		%
	MTBF (SN 29500)	V_{IN} = 110 V, I_{Out} = 21 A, T_A = + 40°C		500 000		h
	No load-, short circuit proofed		Continuously			

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SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
SAFETY / DIMENSIONS						
	Creepage / Clearance for PD2 PCB FR4, V0, TG = 150°C	Input | Output Input | Chassis Output | Chassis	4.0 3.0 1.0			mm mm mm
	Converter Dielectric Strength Test each unit Ramp function 2 s - 3 s - 2 s	Input | Output Input | Chassis Output | Chassis			2100 1500 750	V_{DC} V_{DC} V_{DC}
	Connectors	Input: WAGO Cage Clamp Output : WAGO Cage Clamp Signal : WAGO Cage Clamp	745 – 152 745 – 304 236 – 402			
		Earth Stud	M5 screw			
	Protection class, protection degree		I, IP 40			
	Dimensions incl. mounting plate *see drawing 500 LWB 110 M24 W.drw*	w x h x d Chassis mounting	325 x 155 x 81.5			mm
	Assembling	Chassis mounting with screws	4 x M6			
	Weight			3.4		kg
ENVIRONMENTAL CONDITIONS						
T_A	Operating temperature range T_A	Continuously EN 50155 Class Tx for 10 min.	- 40 - 40		+ 70 + 85	°C °C
T_{Sto}	Storage temperature range		- 40		+ 85	°C
	Cooling		Free air convection			
	Humidity	EN 50155, IEC 60571	75% averaged year, 95% 30 days			
	Vibration / Shock valid only for chassis mounting	IEC 61373, IEC 68-2-27 Cat. I 3 Schocks each Axis	50 m / s² , 30 ms			
EMV						
	Emission	Line conducted and radiated	EN 50121 - 3 - 2: 2007			
	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 ... 1 GHz performance criteria - A -			*)
		Burst EN 61000 - 4 - 4	Level 3 asym., sym. performance criteria - A -			
		Surge EN 61000 - 4 - 5	1 kV sym. / 2 kV asym. R_i = 42/12 Ω, perf. criteria - A -			
		HF – Current Injection EN 61000 - 4 - 6	10 V_{eff} , R_i = 150 Ω performance criteria - A -			

STANDARDS

	Applied standards:	EN 50155: 2007	EN 60529	EN 50124 - 1: 2006	EN 50121 - 3 - 2: 2007	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	

Technical specifications vaild for: - 40° C ≤ T_A ≤ + 70° C, 50.4 V ≤ V_{IN} ≤ 137.5 V, unless otherwise noted. *) 1400 MHz – 2100MHz 10V/m 2100MHz – 2500MHz 5V/m

Pin Assignment		Average Gauge
INPUT X1		
Pin 1	+ Vin	4.0 mm²
Pin 2	- V_{IN}	4.0 mm²
OUTPUT X2		
Pin 1	+ V_{OUT}	6.0 mm²
Pin 2	+ V_{OUT}	6.0 mm²
Pin 3	- V_{OUT}	6.0 mm²
Pin 4	- V_{OUT}	6.0 mm²
SIGNAL X3		
Pin 1-2 closed	o.k.	1.0 mm²
Pin 1-2 open	Fail	1.0 mm²

Keep free space above and below the unit: ≥ 100 mm.

Attention: Take care to a close thermal connection between mounting plate and mounting wall.

Order Code:
500 DDB 110 M24 □ □ □ without Power Fail

Order Code:
500 DDB 110 M24 □ □ □ □ ***select***

- **R** PF with relay **T** PF with o.c. transistor
- **0** = WAGO Cage Clamp
  1 = t.b.d
- **0** = without Hold up time
  1 = with Hold up time 10 ms
- **H** = Din rail mounting TS35
  W = Chassis mounting