

100 SBB 110 M24 E12

Art. No. 1200 – 03 - 12

 $V_{I\text{ nom}} = 72\text{ V}$   
 $V_{I\text{ nom}} = 110\text{ V}$ 
 $V_{O\text{ nom}} = 24\text{ V}$ 
 $I_{O\text{ nom}} = 4.25\text{ A}$ 

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
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**INPUT**

$V_I$	Input voltage range	Continuously	50.4		137.5	$V_{DC}$
$V_{I\text{ min}}$	Input voltage range dynamic	$V_I = 43.2\text{ V} \dots 50.4\text{ V}$ for $t \leq 0.1\text{ s}$ $V_I = 137.5\text{ V} \dots 154\text{ V}$ for $t \leq 1\text{ s}$	43.2		154	$V_{DC}$
$V_{I\text{ max}}$	Converter shutdown				43	$V_{DC}$
$V_{I\text{ max}}$	Converter shutdown		156		158	$V_{DC}$
$V_{\text{Enable}}$	Enable Function, PIN d22 Reference potential: $-V_I$	Converter On: Enable = Low $V_{\text{Enable}} \leq 0.8\text{ V}$ , $I \leq 1.5\text{ mA}$ Converter Off: Enable = High $V_{\text{Enable}} \geq 3.0\text{ V}$ , $I \leq -50\text{ }\mu\text{A}^*$	0		0.8	$V_{DC}$
	Stand by current	$43.2\text{ V} \leq V_I \leq 154\text{ V}$ , Enable = high			18	mA
$I_I$	Input current	No load $V_I = 154\text{ V}$ , $I_O = 0\text{ A}$ Nominal load $V_I = 72\text{ V}$ , $I_O = 4.25\text{ A}$ Nominal load $V_I = 110\text{ V}$ , $I_O = 4.25\text{ A}$ Nominal load $V_I = 43.2\text{ V}$ , $I_O = 4.25\text{ A}$		1.6 1.1	70	mA A A A
	Input current integral	$V_I = 154\text{ V}$			5	$\text{A}^2\text{s}$
$I_{I\text{ max}}$	Max. input switch on current $V_I \geq V_{I\text{ min}}$ , $V_{\text{Enable}} \rightarrow \leq 0.8\text{ V}$	$I_O = 4.25\text{ A}$ $\Delta t \leq 100\text{ ms}$			6	A
	Input fuse		10 A Pico Fuse			
$C_I$	Converter input capacitance				25	$\mu\text{F}$
	External line inductance				50	$\mu\text{H}$
	Reverse input protection	Parallel diode + internal fuse	BZW50-150B			

**OUTPUT: Power Unit** $43.2\text{ V} \leq V_I \leq 154\text{ V}$ 

$P_{O\text{ nom}}$	Output power			100		W
$V_{O\text{ nom}}$	Output voltage adjustment, factory set	$I_O = 2.1\text{ A}$	+ 23.9	+ 24.0	+ 24.2	$V_{DC}$
$\Delta V_O$	Load regulation	$0\text{ A} \leq I_O \leq 4.25\text{ A}$ $T_A = -40^\circ\text{C} \dots +85^\circ\text{C}$	$\pm 2.5\% V_{O\text{ nom}}$			$V_{DC}$
$\Delta V_{O\text{ dyn}}$	Load regulation dynamic	Pulse load: 20 - 80 - 20 % x $I_{O\text{ nom}}$			$\pm 250$	mV
$t_{\text{dyn}}$	Response time	Pulse load: 20 - 80 - 20 % x $I_{O\text{ nom}}$		1	2	ms
$V_{O\text{ rms}}$	Ripple	Nominal load BW 300 kHz		100	250	$\text{mV}_{\text{rms}}$
$V_{O\text{ pp}}$	Noise	Nominal load BW 20 MHz			350	$\text{mV}_{\text{pp}}$
$t_{\text{on}}$	Turn on time $V_O$	$50.4\text{ V} \leq V_I \leq 154\text{ V}$ , $0\text{ A} \leq I_O \leq 4.25\text{ A}$ Resistive load 1.) $V_I \geq V_{I\text{ min}}$ , $V_{\text{Enable}} \rightarrow \leq 0.8\text{ V}$ 2.) $V_{\text{Enable}} \leq 0.8\text{ V}$ , $V_I \rightarrow \geq V_{I\text{ min}}$	25		200	ms
$t_h$	Option: Hold up time Standard 0ms class S1 EN 50155	$50.4\text{ V} \leq V_I \leq 154\text{ V}$ $0\text{ A} \leq I_O \leq 4.25\text{ A}$ Option: Class S2 @ EN 50155	0			ms
	Overvoltage shutdown $V_O$	$0\text{ A} \leq I_O \leq 4.25\text{ A}$	Converter switch off: $V_O \leq 32\text{ V}$			
$I_O$	Output current			4.25		A
	Output current limitation		4.3			A
	Output short circuit current	Short circuit between + $V_O$ and - $V_O$			5.0	A
	Sense lines	Max. voltage drop compensation			0.25	V
$C_O$	Output capacity converter	Output stage		10		mF

**OUTPUT: Signals**

PF	Power Fail, PIN z20 Open Collector Transistor $V_{CE\text{ max}} \leq 70\text{ V}$ , $I_{CE\text{ max}} \leq -20\text{ mA}^*$ Reference potential: - Sense	Transistor on: PF= low, $V_O < V_{O\text{ min}}$ Transistor off: PF= high, $V_O \geq V_{O\text{ min}}$	$V_O < 0.95 \times V_{O\text{ nom}} \pm 2\%$ $V_O \geq 0.95 \times V_{O\text{ nom}} \pm 2\%$		V
	Signals	Signal defined for $V_O \geq 0.6 \times V_{O\text{ nom}}$ $V_O > 22.80\text{ V} \pm 2\%$	LED yellow on		

**GENERAL SPECIFICATIONS**

f	Switching frequency	$V_I = 110\text{ V}$ , $I_O = 4.25\text{ A}$		75		kHz
$\eta$	Efficiency	$P_O \geq 0.7 \times P_{O\text{ nom}}$	86	88		%
	MTBF (SN 29500)	$V_I = 110\text{ V}$ , $I_O = 4.25\text{ A}$ , $T_A = +40^\circ\text{C}$		500 000		h
	No load, short circuit proof		Continuously			

\* - Sign: sink current

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
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**SAFETY / DIMENSIONS**

	Creepage, Clearance PD2, OV 2 PCB: FR4, V0, TG = +140°C	Input – output Input – case Output – case	2.0 2.0 1.0			mm mm mm
	Converter dielectric strength test Type test: every unit Unit test: ramp function 2 s – 3 s – 2 s	Input – output Input – case Output – case			2100 2100 750	V <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub>
	Connectors DIN 41612	H15, Pin 24 leading				
	Pin assignment			see table		
	Dimensions w x h x d see figure	Plug - in unit incl. handle PCB	50.3 x 128.4 x 204.3 (3U/10HP)			mm mm
	Weight	Plug - in unit		0.95		kg

**ENVIROMENTAL CONDITIONS**

T <sub>A</sub>	Operating temperature range	Continuously EN 50155 Class Tx for 10 min. + 85°C	- 40 - 40		+ 70 + 85	°C °C
T <sub>Storage</sub>	Storage temperature range		- 50		+ 85	°C
	Start Up capability at T <sub>A</sub> = - 40°C	Storage @ - 50°C for 16 hours, EUT in switched OFF condition	- 40			°C
	Cooling				Free air convection	
	Humidity	EN 50155, IEC 60571			75% av. year, 95% 30 days	
	Vibration / shock	IEC 61373, IEC 68-2-27, BN 411002 Cat. I 3 shocks per axes			50 m / s <sup>2</sup> , 30 ms	

**EMC**

	Emission	Line conducted and radiated	EN 50121 - 3 - 2: 2006
	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	2 kV asym. / 1 kV sym. R <sub>f</sub> = 42 Ω Performance criteria - B -
		HF – Current injection EN 61000 - 4 - 6	10 V <sub>eff</sub> , R <sub>f</sub> = 150 Ω Performance criteria - A -

**STANDARDS**

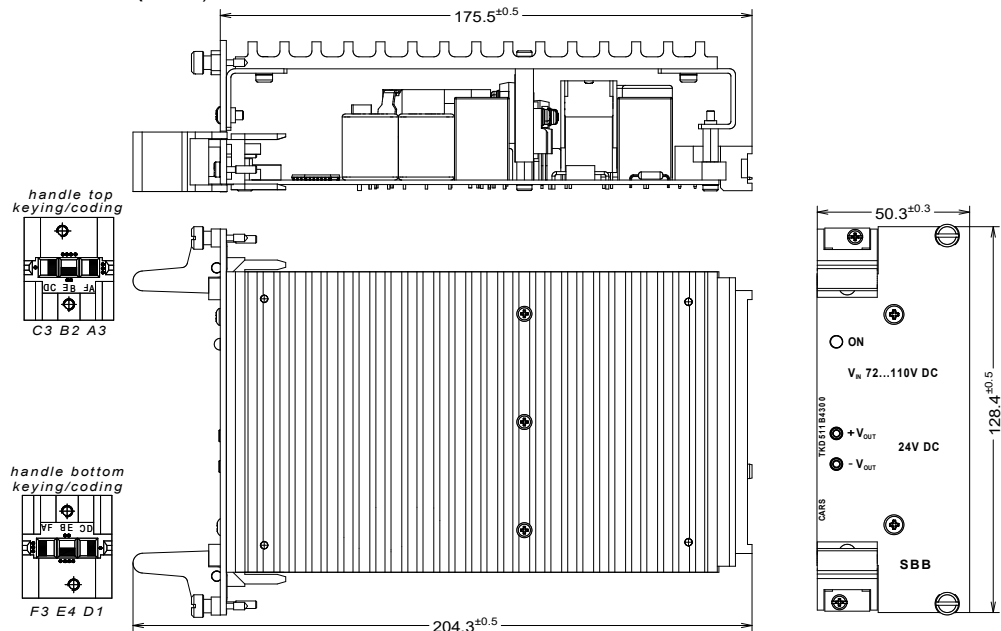
Applied Standards:	EN 50155: 2016	BN 411 002	EN 50124 - 1: 2006	EN 50121 - 3 - 2: 2016	IEC 60571
	SN 29 500	EN 50 121 - 1	EN 50125 - 1	EN 60068 - 2 - 6, 2...27	EN 61000 - 4 - 2...6
	IEC 571	IEC 61373 :1999	EN 60721 - 3 - 5	EN 60529	

Technical specifications valid for: - 40° C ≤ T<sub>A</sub> ≤ + 85° C, 43.2 V ≤ V<sub>I</sub> ≤ 154 V, unless otherwise noted.

**H15 – Pin Assignment**

Pin	
z 4	+ V <sub>o</sub>
d 6	+ V <sub>o</sub>
z 8	- V <sub>o</sub>
d 10	- V <sub>o</sub>
z 12	n. c.
d 14	n. c.
z 16	+ Sense
d 18	- Sense
z 20	Power Fail
d 22	Enable
z 24	⊥
d 26	+ V <sub>I</sub>
z 28	+ V <sub>I</sub>
d 30	- V <sub>I</sub>
z 32	- V <sub>I</sub>

**Dimensions (in mm)**



DETAIL coding pin:  
black area is long pin.

Convection cooling:  
Keep free space over and under the unit: 100 mm