

20 SQB 024 M12 P00

$V_{IN\ Nom} = 24\ V$ Control Signals 4 Bit Digital Input $\rightarrow I_{Out} = 0 \dots 1.43\ A$

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
INPUT:						
V_{IN}	Input voltage range	continuously	16.8		30.0	V_{DC}
$V_{IN\ dyn}$	Input voltage range dynamic	$V_{IN} = 14.4\ V \dots 16.8\ V$ for $t \leq 0.1\ s$ $V_{IN} = 30.0\ V \dots 33.6\ V$ for $t \leq 1\ s$	14.4 30.0		16.8 33.6	V_{DC} V_{DC}
$V_{IN\ min}$	Switch OFF		13,9		14,3	V_{DC}
$V_{IN\ max}$	Switch OFF		34		38	V_{DC}
I_{IN}	Input current no load	$V_{IN} = 33.6\ V, I_{Out} = 0\ A$		1.5	25	mA
	Nominal load	$V_{IN} = 24.0\ V, I_{Out} = 1.43\ A$			A	
	Nominal load	$V_{IN} = 14.4\ V, I_{Out} = 1.43\ A$			2.5	A
	Input current integral	$V_{IN} = 33.6\ V$			5	A^2s
$I_{E\ max}$	Switch current	$I_{Out} = 1.5\ A$			5	A
	$V_{IN} \geq V_{IN\ min}$	$\Delta t \leq 200\ ms$				
	Input fuse		4 A Pico Fuse			
C_E	Converter input capacitance			20	30	μF
	Max. allowed external line inductivity				50	μH
	Reversal protection	Serial diode				
	Input voltage surge protection	Transil diode	BZW 50 - 56B			
Control Input (Binary Signals)						
PWM Output	4 Bit Digital 0000 ... 1111 Low: 0V – 5,0V High: 14V – 24V	$V_{IN} = 16.8\ V \dots 30.0\ V$	0		30	V_{DC}
	Accuracy: 2.5% referenced to current final value: 1.43A					

OUTPUT:		$14.4\ V \leq V_{IN} \leq 33.6\ V$				
	R - L Load pulsating dc current		0	800	1430	mA
I_{Out}	Output current		0	800	1430	mA
V_{Out}	Output voltage at $R = 2.5\ \Omega$, $L \leq 25mH$ Spec. Rexrodt	$0\ A \leq I_{Out} \leq 1.43\ A$ $T_A = -40^\circ C \dots +70^\circ C$	0	6	12.5	V_{DC}
I_{Out}	Linearity $I_{Out} = f(T_U)$ s. output characteristic	$16.8\ V \leq V_{IN} \leq 30.0\ V$ 0000 - 1111	0		1500	mA
I_{Out}	Linearity $I_{Out} = f(T_U)$ s. output characteristic					V/mA
$I_{Out,t}$	Time duration control to output	Current step 0mA \rightarrow 10mA, 20mA	10		100	ms
	Overload protection - Switch OFF after $t = 10s$ converter Switch ON again		1550	1600	1650	mA
t_H	Hold up time class: S1	$0\ A \leq I_{Out} \leq 1,43\ A$	0			ms
$V_{out-max}$	Überspannungsschutz elektronisch überwacht	$0\ A \leq I_{Out} \leq 1.43\ A$	$V_{Out,max} < 15V$			
I_{Out}	Output current		0		1.5	A
I_{sc}	Short circuit output current	Short circuit between + V_O and - V_O $14.4\ V \leq V_{IN} \leq 33.6\ V$	1.6		2.2	A
	Sense lines	none				

SIGNALING

	Display converter function i.O. Converter overload condition at output; Over temperature	Input $14.4\ V \leq V_{IN} \leq 33.6\ V$ Output $I_{Out} > 1550\ mA; T_{amb} > +85^\circ C$ Interruption Load circuit	LED Green "RUN" LED Red "OVL" LED Red "ERR" (flashing)
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GENERELL DATA

f	Switching frequency converter	$V_{IN} = 24\ V, I_{out} = 1.43\ A$	220		260	Hz
η	Efficiency η	$P_{Out} \geq 0,7 \times P_{A\ Nenn}$	82	85		%
	MTBF (SN 29500)	$V_{IN} = 24\ V, I_A = 1.43\ A, T_A = +40^\circ C$		500 000		h
	No load -, short circuit proofed		continuously			

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
SAFETY / DIMENSIONS						
	Clearance, Creepage PD2 and OV2 PCB FR4, V0, TG = 140°C	Input+Output → Bin. Control Signals Binary C. S. → Chassis Input+Output → Chassis	2.0 1.0 1.0			mm mm mm
	Isolation Test unit tests: Rampe function: 2 s – 3 s – 2 s Type Test: 1 Minute	Input+Output → Bin. Control Signals Binary C. S. → Chassis Input+Output → Chassis			2'500 1'000 1'000	V _{DC} V _{DC} V _{DC}
	Connecting	Bin. Contr. Signals: PHOENIX Input, Output, SE: PHOENIX	STP 2,5 / 5 – H – 5,0 STP 2,5 / 6 – H – 5,0			
	Pin assignment		see drawing			
	Protection class, - degree		I, IP 20			
	Dimensions	B x H x T	31.6 x 101 x 92.6			mm
	Mounting	TS 35 Rail mounting ELPAC HSK 35 - 2				
	Weight			350		g

AMBIENT CONDITIONS						
T _A	Operating temperature range	continuously EN 50155 Klasse Tx für 10 min.	- 40 - 40		+ 70 + 85	°C °C
T _{St}	Storage temperature range		- 40		+ 85	°C
	Cooling		Free convection			
	Humidity	EN 50155, IEC 60571	75% averaged per year, 95% 30 days			
	Vibration / Shock	IEC 61373, IEC 68-2-27, EN 50155 Kat. I 3 Shocks each axis	50 m / s ² , 30 ms			

EMC			
	Radiation	Line and radiated	EN 50121 - 3 - 2: 2006
	Immunity	ESD EN 61000 - 4 - 2	6 kV / 8 kV Performance criteria - B -
		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 = 42 Ω Performance criteria - B -
		HF – current injection EN 61000 - 4 - 6	10 V _{eff} , R _i = 150 Ω Performance criteria - A -

STANDARDS						
Applied Standards:	EN 50155: 2006	EN 60529	EN 50124 - 1: 2006	EN 50121 - 3 - 2: 2006	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	EN 60721 - 3 - 5	EN 61373		

Technical Data referenced at: - 40° C ≤ T_A ≤ + 70° C, 16.8 V ≤ V_{IN} ≤ 30.0 V, if not otherwise specified.

*) HF Feld: 80MHz – 1GHz 20V/m, 1400 MHz – 2100MHz
10V/m 2100MHz – 2500MHz 5V/m

Pin Assignment

		Line AWG
Binary INPUT X1		
Pin 1	B3	0.5 mm ²
Pin 2	B2	0.5 mm ²
Pin 3	B1	0.5 mm ²
Pin 4	B0	0.5 mm ²
Pin 5	Gnd	0.5 mm ²
Input, Output, SE		
Pin 1	+ V _{IN}	0.5 mm ²
Pin 2	- V _{IN}	0.5 mm ²
Pin 3	PE	1.0 mm ²
Pin 4	N.C.	
Pin 5	+ V _{Out}	0.5 mm ²
Pin 6	- V _{Out}	0.5 mm ²