

Battery Charger NiCd, Pb

18 kW

18 LGB 400 M24 W20

$V_{In\ nom} = 3 \times 380\ V_{AC}, 3 \times 440\ V_{AC}$

$V_o = 24V$

$I_o = 625A$

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
INPUT:						
V_{IN}	Main input: voltage range (3Ø input line)	continuously	342	440	484	V_{AC}
f	Input frequency range	50Hz, 60Hz	47	50	63	Hz
PF	Power Factor Correction	8 B input bridge rectifier	0.8			
$V_{IN\ Min}$	Converter shutdown		335			V_{AC}
$V_{IN\ Max}$	Converter shutdown		490		520	V_{AC}
I_{IN}	Input current no load	$V_{IN} = 440\ V, I_{OUT} = 0\ A$			t.b.d.	mA
	Nominal load	$V_{IN} = 440\ V, I_{OUT} = 625\ A, 3\Phi\ input$		o.r.		A
	Nominal load	$V_{IN} = 342\ V, I_{OUT} = 625\ A, 3\Phi\ input$		o.r.		A
	Input current integral	$V_{IN} = 380\ V_{AC}$			10	A ² s
$I_{IN\ Max}$	Switch on current at	$I_{OUT} = 625\ A$			o.r.	A
	Input Fuse	external 3 phase circuit breaker				
C_{IN}	Converter input capacitance			60		μF
	Reverse input protection	Bridge rectifier + external circuit breaker				

OUTPUT: Power Unit $342\ V_{AC} \leq V_{IN} \leq 484\ V_{AC}$

$P_{OUT\ Nom}$	Output power 3 phase input			15	18	kW
V_{OUT}	Output battery charge characteristic	I U 0 U DIN 41772 NiCd 1,58V/1,48V/Z	+ 29.83 - 10°C	+ 28.12 + 20°C	+ 26.41 + 50°C	V_{DC}
$V_{OUT\ Max}$	Overvoltage Monitor	$0\ A \leq I_{OUT} \leq 625\ A$ $T_A = -40^\circ C \dots +45^\circ C$		31		V_{DC}
$\Delta V_{O\ ripple}$	Output voltage ripple	$0\ A \leq I_{OUT} \leq 620\ A$			1.0	% eff.
$V_{OUT\ reg}$	Regulation accuracy	$0\ A \leq I_{OUT} \leq 625\ A$		1.0	2.0	%
$V_{O\ sense}$	Output voltage Sense lines	Separate 2 lines directly connected to the battery poles, lines twisted				
$V_{O\ Temp}$	Temperature sensor lines	2 separate NTC resistors 10 kΩ				
I_{OUT}	Output current	- 40°C ... + 45°C	625			A
	Forced cooling 4 fans	+ 45°C ... + 60°C	500			A
		+ 70°C ... + 75°C	300			A
$I_{OUT\ lim}$	Output current limitation threshold	- 40°C ... + 75°C	630			A
$I_{OUT\ sc}$	Output current short circuit current				750	A
I_{OUT}	Battery current measurement LEM amplifier LA 205-S/SP6	battery charge current	0		150	A
I_{OUT}	Two outputs for battery and bord net					
V_{CC}	Supply voltage LEM			± 15V internal		

SIGNALS

V_{out_ok}	Relay contact closed when o.k., contact open when charger Fail	Relais switching capacity	24V, 500mA
Ch_Fail	Relay contact closed when o.k., contact open when charger Fail		24V, 500mA
RS 232	Interface charger to ext. Laptop	Sub D9, panel $V_{out}, I_{out}, I_{Batt}, \vartheta_{Batt}$	pinning see document "RS 232 pin assignment" See table D-Diagnose

GENERAL SPECIFICATIONS

f	Switching frequency	$V_{IN} = 380V_{-}, 0 \leq I_{OUT} \leq 625\ A$		50		kHz
η	Efficiency	$P_{OUT} \geq 0.7 \times P_{OUT\ Nom}$	90	91		%
T_A	Operating Temperature Range	Derating : + 60°C 500A, + 70°C 300A	- 40		+ 50	°C
	MTBF (SN 29500)	$V_{IN} = 380\ V_{-}, I_{OUT} = 500\ A, T_A = +40^\circ C$		400 000		h
	No load, short circuit proof			Continuously		

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
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SAFETY / DIMENSIONS

	Creepage, Clearance PD3, OV 2 PCB: FR4, V0, T _G = + 140°C	Input – output Input – case Output – case	6.0 4.0 2.0			mm mm mm
	Converter dielectric strength test every unit for 1 minute	Input – output Input – case Output – case			3'000 2'250 750	V _{DC} V _{DC} V _{DC}
	Power Connectors M	Screwing bolts +L, +L, +B, - B, - L, - L	see drawing 12 LGB 400 M24			
	Pin assignment		see drawing 12 LGB 400 M24			
	Protection class, protection system		I, IP 20			
	Dimensions w x h x d <i>see figure</i>	incl. front panel holding grips	556 x 600 x 309			mm mm
	Weight			67		kg

ENVIRONMENTAL CONDITIONS

T _A	Operating Range	Continuously EN 50155 class T2	- 40		+ 45	°C
T _{Sto}	Storage Range		- 40		+ 50	°C
	Cooling		convection			
	Humidity	EN 50155, IEC 60571	75% averaged year, 95% 30 days			
	Vibration / Shock	IEC 61373, IEC 68-2-27, EN 50155 Cat. I 3 shocks each Axis	50 m / s ² , 30 ms			

EMV

	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 _i = 42 Ω performance criteria - B -			
		HF – Current Injection EN 61000 - 4 - 6	10 V _{eff} , R _i = 150 Ω performance criteria - A -			

*) 1400 MHz – 2100 MHz 10V/m 2100 MHz – 2500 MHz 5V/m

STANDARDS

Applied Standards:	EN 50155: 2007	BN 411 002	EN 50124 - 1: 2006	EN 50121 - 3 - 2: 2006	IEC 60571 : 12 2006
	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	EN 60529

Technical specifications valid for: - 40° C ≤ T_A ≤ + 45° C, 3 Φ 342 V_{AC} ≤ V_{IN} ≤ 484 V_{AC}, unless otherwise noted.

RS 232 Interface

Pin	Function
2	RxD
3	TxD