

## 12 LGB 440 M24 W20

$V_{IN\ nom} = 3\ \phi\ 380\ V_{AC} \dots 3\ \phi\ 440\ V_{AC}$   
 $V_{IN\ nom} = 1\ \phi\ 230\ V_{AC}\ or\ 1\ \phi\ 379\ V_{AC}$

$V_{OUT} = 24V$   
 $V_{OUT} = 24V$

$I_{OUT} = 500A$   
 $I_{OUT} = 90A / 200A$

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>INPUT:</b>						
$V_{IN}$	3 $\phi$ input supply 380V~, 400V~, 440V~	continuously	342	440	484	$V_{AC}$
$V_{IN}$	1 $\phi$ transformer auxiliary winding 50Hz, 60Hz	continuously 0.2 s $\leq t \leq$ 2.0 s	296	379	417 588	$V_{AC}$ $V_{AC}$
$V_{IN}$	1 $\phi$ Aux. yard supply 230V~, 50Hz		198	230	253	$V_{AC}$
f	Input frequency range	50Hz, 60Hz nominal	47	50	63	Hz
PF	Power Factor Correction	No, 6 phase input bridge rectifier				
$I_{IN}$	Input current per phase Nominal load	$V_{IN} = 400\ V\sim, I_{OUT} = 500\ A, 3\ \phi$ input $V_{IN} = 379\ V\sim, I_{OUT} = 200\ A, 1\ \phi$ input $V_{IN} = 230\ V\sim, I_{OUT} = 90\ A, 1\ \phi$ input		3 x 25	18.5 15	$A_{rms}$ $A_{rms}$ $A_{rms}$
OVP	Input overvoltage protection	Varistor				
	Input Fuse	No, external circuit breaker				
$C_{IN}$	Converter input capacitance			30		$\mu F$

### OUTPUT: Power Unit

$P_{OUT\ Nom}$	3 $\phi$ operation	$342\ V_{AC} \leq V_{IN} \leq 484\ V_{AC}$ (50Hz, 60 Hz)		12	15	kW
$P_{OUT\ Nom}$	1 $\phi$ operation $V_{IN} = 230V\sim$	L1 - N, L2 - N, or L3 - N		2.7		kW
$P_{OUT\ Nom}$	1 $\phi$ operation $V_{IN} = 379V\sim$	L1 - L2, L1 - L3 or L2 - L3		6		kW
$V_{OUT}$	Output battery charge characteristic	IU0U DIN 41772 NiCd 1,45V/cell Float charge	29.5 - 10°C	29.0 + 20°C	27.2 + 50°C	$V_{DC}$
$V_{OUT}$	Output battery charge characteristic See SIEMENS / Hoppecke BU Vectron FI	IU0U DIN 41772 NiCd 1,58V/cell Boost charge			29.5	$V_{DC}$
$V_{OUT\ Max}$	Overvoltage Monitor and Switch OFF	$0\ A \leq I_{OUT} \leq 500\ A$ $T_A = -40^\circ C \dots +70^\circ C$	30.0	30.5	31	$V_{DC}$
$\Delta V_{O\ ripple}$	Output voltage ripple	$0\ A \leq I_{OUT} \leq 500\ A$			1.0	% eff.
$V_{OUT\ req}$	Regulation accuracy	$0\ A \leq I_{OUT} \leq 500\ A$		1.0	2.0	%
$R_{Temp}$	Temperature sensor lines Sense lines should be twisted	NTC resistor Option: 2 <sup>nd</sup> sense line		10 k $\Omega$		
$I_{OUT\ lim}$	Output current limitation threshold	- 40°C ... + 70°C	501	510		A
$I_{OUT\ sc}$	Output current short circuit current				600	A
$I_{OUT\ der}$	Output current derating	+ 71°C ... + 75°C > 75°C	300 200			A A
$I_{OUT\ 1ph}$	Input connected to 1ph supply 230V~ 379V~	- 40°C ... + 70°C			90 210	A A
$I_{Batt}$	Battery current measurement LEM amplifier LAC 300 - S	battery charge current (default value) adjust range 0 – 200A, step width	82	84 1	86	A A
$I_{BATT}$	Accuracy adjusted value				$\pm 2.5$	%
	Battery charger with redundancy mode	3 equal power stages à 170A				
$V_{cc}$	Supply voltage LEM				$\pm 15V$ internal	

### SIGNALS

CI	X20 pin 1,2 and 3: Relay 1	Pin 1 Root Pin 1 – 2 closed → BLG FAIL Pin 1 - 3 closed → BLG o.k.	24V, 500mA
CF	X20 pin 4,5 and 6: Relay 2	Pin 4 Root Pin 4 – 5 closed → reduced output power Pin 4 - 6 closed → output power o.k.	24V, 500mA
RS 232	Interface to external Laptop Option: Digital Diagnosis signals 3 Bit	Sub D9, panel $V_{out}, I_{out}, I_{Batt}, \vartheta_{Batt}$	Pinning see Manual: Table "Service Port (RS232)", "Digital Diagnosis Port"

### GENERAL SPECIFICATIONS

f	Switching frequencies	$V_{IN} = 400V\sim, 0 \leq I_{OUT} \leq 500\ A$	27 kHz and 66 kHz
$\eta$	Efficiency	$P_{OUT} \geq 0.7 \times P_{OUT\ Nom}$	89   90   %
$T_A$	Operating Temperature Range	I - Derating for $T_A > +70^\circ C$ $I_{out} : 300A @ +71^\circ C, 200A @ > +75^\circ C$	- 40   + 75   °C
	MTBF (SN 29500)	$V_{IN} = 440\ V\sim, I_{OUT} = 500\ A, T_A = +40^\circ C$	400 000   h
	No load, short circuit proof		continuously
	Battery charger with forced cooling	continuously	3 fans @ 24V

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

	Creepage, Clearance PD3, OV 2 PCB: FR4, V0, T <sub>G</sub> = + 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 <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub>
	Power Connectors	Screwing bolts +L, +L, +B, - B, - L, - L	see drawing 12 LGB 440 M24			
	Pin assignment		see drawing 12 LGB 440 M24			
	Protection class, protection system		I, IP 20			
	Dimensions w x h x d <i>see figure</i>	incl. front panel holding grips	613 x 483 x 309			mm mm
	Weight			52		kg

### ENVIRONMENTAL CONDITIONS

T <sub>A</sub>	Operating Range	Current Derating T <sub>A</sub> > + 70°C	- 40		+ 75	°C
T <sub>Sto</sub>	Storage Range		- 40		+ 85	°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 <sup>2</sup> , 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 <sub>i</sub> = 42 Ω performance criteria - B -		
		HF – Current Injection EN 61000 - 4 - 6	10 V <sub>rms</sub> , R <sub>i</sub> = 150 Ω performance criteria - A -		

### 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<sub>A</sub> ≤ + 75° C, 3 Φ 342 V<sub>AC</sub> ≤ V<sub>IN</sub> ≤ 484 V<sub>AC</sub>, unless otherwise noted. Derating must be observed.

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

### DIMENSIONS (in mm)

