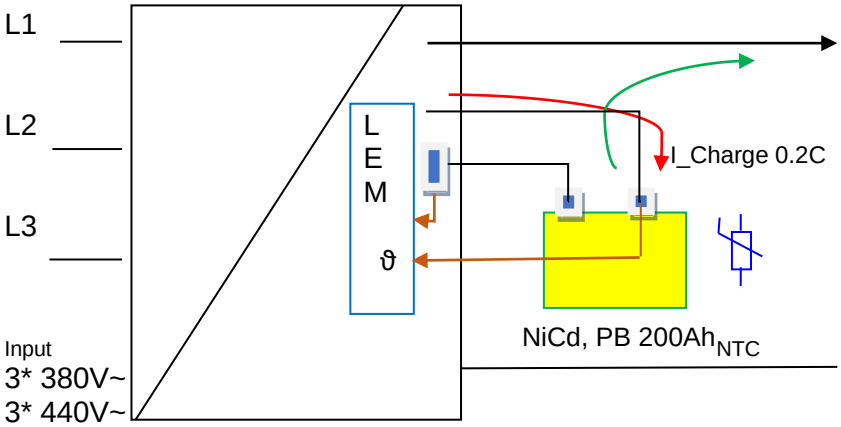
Battery Charger

2500 LGB 400 M 24 W00



V_{out} = 24 V I_{out} = 125 A

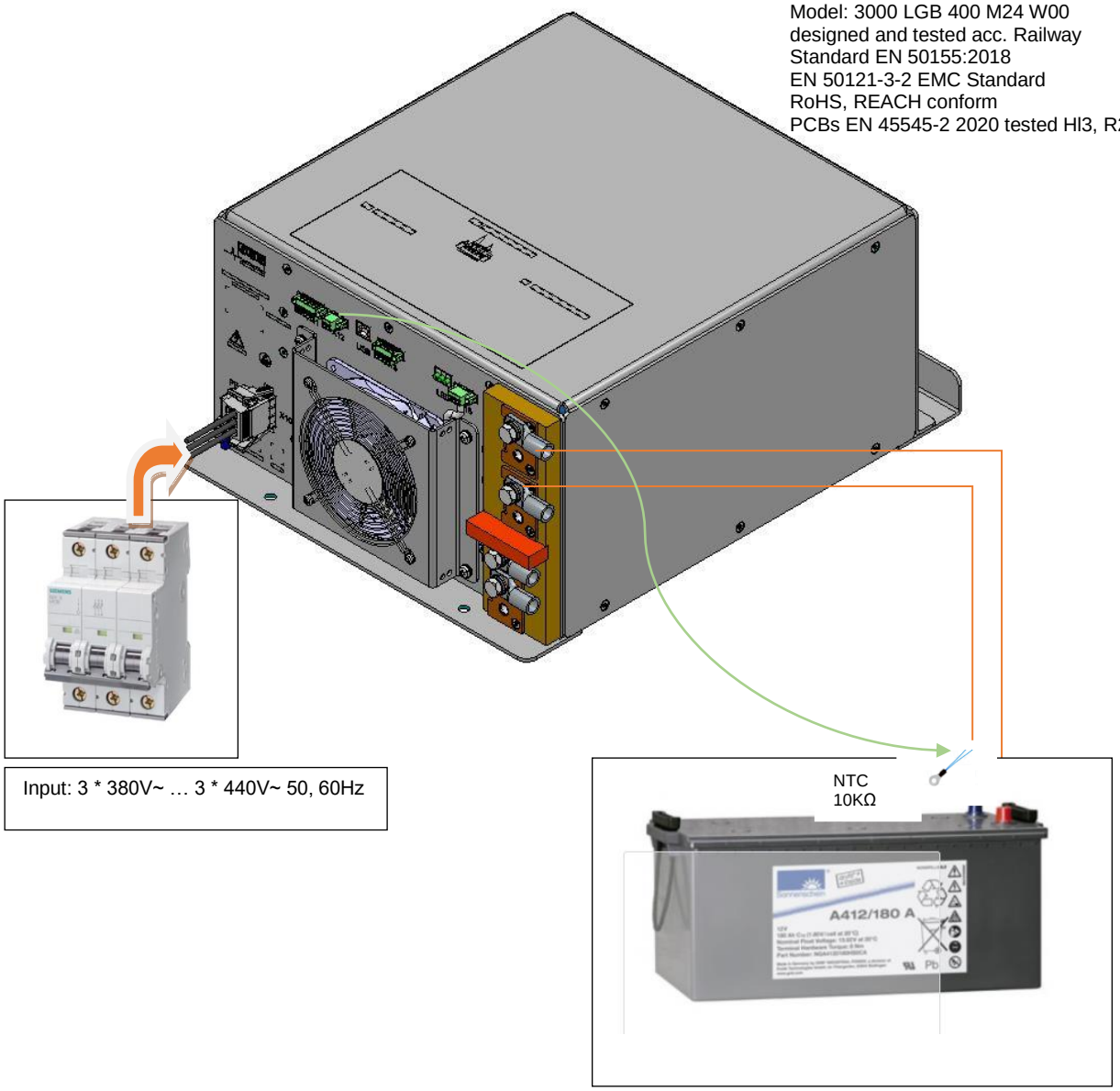
to the loads

factory adjust:

0 .. 85A load current range
0 … 40A battery current range

The NTC resistor should be mounted at the minus battery pol with tight thermal coupling to the battery. The battery charging current is controlled by a internal LEM amplifier.

Model: 3000 LGB 400 M24 W00
designed and tested acc. Railway Standard EN 50155:2018
EN 50121-3-2 EMC Standard
RoHS, REACH conform
PCBs EN 45545-2 2020 tested Hl3, R24



Battery Charger

2500 LGB 400 M 24 W00

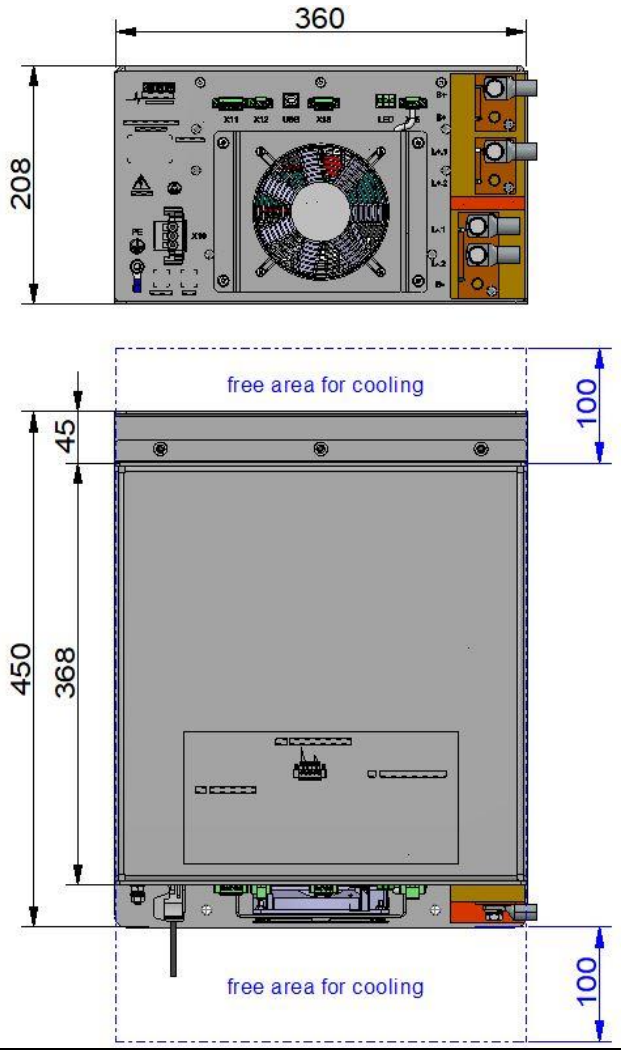
Technical Data

Input

Input Voltage:			
3 * 380V~ 3 * 440V~	-10% … + 10% $V_{in,nom}$	Sinus voltage waveform	THD < 10%
50Hz, 60Hz	Input line frequency: 47Hz … + 63Hz	Fixed line frequency during operation	
Input fuse	External circuit breaker	e.g. Power Protection Switch 5SY4310-7	3 poles, 10A 400V, 10kA

Output

Output Voltage			
26,8V=	2.24V/cell referenced at T = + 25°C for lead acid battery type	Others on request	
	Factory adjust		
	NTC Temperature Sensor Resistor T_{25} = 10.0 kΩ		
	Output voltage range: 19.2V … 30.0V acc. Battery condition		
	V_{outmax} monitor: switch OFF threshold < 32.0V_{DC}	Battery overload protection	
	Battery charge acc. IUoU mode characteristic DIN 41773	Boost- and float charge mode	
$V_{out-reg}$	Output voltage regulation accuracy: ± 1.5%		
$V_{out-ripple}$	Output voltage ripple: ≤ 1.5% rms		
Output Current			
125A	Nominal output current		
0 … 40A	I_Battery charge current range	Adjustable, factory adj. 40A	
$I_{Bat\ max}$	Max. Battery current: 40A measured and controlled by internal LEM		
	Battery charge current programmable in discrete steps	10A, 20A, 30A, 40A	
I_{reg}	Regulation accuracy current limit: ± 2% $I_{out,nom}$		
I_{sc}	Short circuit current: ≤ 150A		
Control, Signals			
	V_{IN} LED o.k.		
	V_{OUT} LED o.k.	19.2V ≤ V_{out} ≤ 30.0V	
Interface		RS 485, CAN-Bus, MOD-Bus	
		USB port	
Connecting, Pin Assignment			
Connector	Input L1, L2, L3: WAGO 831-3103/037-000 Output: M8 bolts for + and – battery connection (B +, B -) 2 * M8 bolts for other loads (L+1,L+2 and L-1, L-2)	Power Bolts M8 recommended wire diameter 50mm²	
Connector	Signaling Power Fail		
RS - 485	Phoenix contact MC 1,5/ 4 G-GF-3,81		
Safety			
$V_{i\ pr\ se}$	Input | Output 3'000V_{eff} 1 min	Dielectric Strength	
$V_{i\_pr\ ch}$	Input | Chassis 2'500V_{eff} 1 min		
$V_{i\ se\ ch}$	Output | Chassis 500V_{eff} 1 min		
Isolation	PD 2, Isolation class I		
Clearance, creepage	Input to output: 6.0mm Input to earth: 4.0mm Output to earth: 2.0mm	OV3, PD2, FR 4 V-0,	clearance acc. EN 50124 - 1
Earth capacitance	Y caps class Y1 C < 30nF		
PE	Isolation class 1		M6 bolt
IP degree	IP 20		

Environmental Conditions			
Storage Temperature	- 40°C … + 85°C		
Operating Temperature	- 40°C … + 50°C	Class ST1, H1	
Relative Humidity	@ EN 50125 - 1 75% averaged per year, 95% 30 days		
Cooling	Forced cooling with 1 internal fan	Keep free distance in front and back side d >100mm	
Altitude	≤ 2000m a.s.l. @ Table A	Others on request	
Vibration&Shock	@ EN 61373 2010, category 1 class B		
Mechanical Data			
Dimensions	L x B x D 		
Weight		17 kg	
Characteristics			
Efficiency η	@ 50 … 100% $P_{out,nom}$	92%	
Switching Frequency f		65 kHz	
Over- temperature Shutdown	internally temperature trigger value for transformer & PCB	+ 90°C	
RAMS EN 50126	Operating usage time: 20y., PD 2, OV 3, included fan to check in regularly time distances if polluted by dust	Recommended 6 months depending on the environment	

Reliability Characteristics			
MTBF	Ref. nominal load $T_{amb.}$ = + 40°C SN 29500 IEC 61709:2017	400'000h	
EMC Characteristics			
Conducted and radiated emission	EN 50121-3-2 150kHz – 500kHz: 99dBµV q.p. 500kHz – 30MHz: 93dBµV q.p. 30 MHz – 230 MHz: 40dBµV in 10m 230 MHz – 1 GHz: 47dBµV in 10m		Report No.:
		Performance Crit.	
Immunity	EN61000 – 4 – 2 ESD n.d. EN61000 – 4 – 3 High Freq. Field 80MHz–1000MHz 20V/m 80%AM, 1kHz 1400MHz – 2000MHz 10V/m 2000MHz – 2700MHz 5/m 5100MHz – 6000MHz 3V/m EN61000 – 4 – 4 Transients, Burst ± 2kV 5/50ns 5 kHz EN61000 – 4 – 5 Surge 1.2/50µs ± 2kV 42Ω 0.5µF ± 1kV 42Ω 0.5µF EN61000 – 4 – 6 line immunity 0.15MHz – 80MHz 10Veff 80%AM, 1kHz EN61000 – 4 – 8 Magnetic Fields	- -A- -A- -A- -A- Not relevant	Report No.:

Remark: Surge, Burst referenced and tested input and output lines! Crit. –B- demanded

STANDARDS

	Applied Standards:	EN 50155: 2018	EN 60529	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	EN 60721 - 3 - 5	EN 50123-1 :2003	EN 45545-2: 2020	

Technical values specified for: - 40° C ≤ T_A ≤ + 50° C, if not otherwise explicitly agreed.

Annex			
Performance Tests	a) Type Test b) Piece Test		
Type Test acc. EN 50155 Table 12	1 Visual Test 2 Function Test 3 Power Supply Test, Vmin, Vnom, Vmax, interrupts 4 Isolation Test 5 Storage deep temperature 6 Start converter / charger at deep temperature 7 Test Dry Heat 8 Test cyclic damp heat 9 Salt Test 10 Verification IP Code 11 EMC @ EN 50121-3-2 12 Vibration&Shock 13 14	13.4.1 4.1 13.4.2 4.1 13.4.3 13.4.9 13.4.6 13.4.4 13.4.5 13.4.7 13.4.10 13.4.12 13.4.8 13.4.11	

IU0U Charge Mode

There are different charging modes possible. The choice of the correct and best suited charging mode for used battery type (Pb, NiCd, Li-I) is responsible for a long service time. All charging modes do have the target to completely fill up the battery within its operating limits. Beside this their exists, depending on battery type, different possibilities for the maintenance of a charged battery. Therefore the charging mode and ist transformation do have significant effect on the performance as well as the possible service life time of an acccumulator.