

4500 LGB 400 M24 W01 Bidirectional Converter

$$V_{In\ nom} = 3 \times 380\ Vac, 3 \times 400Vac \quad V_{O\ nom} = 24\ V \quad I_{O\ nom} = 150\ A$$

| SYMBOL | PARAMETER | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--------|-----------|-----------------|-----|-----|-----|------|
|--------|-----------|-----------------|-----|-----|-----|------|

INPUT:

| | | | | | | |
|---------------|-------------------------------------|---|-----|-----|--------|------------------|
| V_{IN} | Input voltage range (3Ø input line) | Continuously | 342 | 380 | 440 | Vac |
| f | Input frequency range | | 47 | 50 | 53 | Hz |
| PF | Power Factor Correction | No, 6 phase input bridge rectifier | | | | |
| $V_{IN\ Min}$ | Converter shutdown | | 335 | | | Vac |
| $V_{IN\ Max}$ | Converter shutdown | | 450 | | 480 | Vac |
| I_{IN} | Input current no load | $V_{IN} = 380\ V, I_{OUT} = 0\ A$ | | | t.b.d. | mA |
| | Nominal load | $V_{IN} = 380\ V, I_{OUT} = 150\ A$ | | | | A |
| | Nominal load | $V_{IN} = 342\ V, I_{OUT} = 150\ A$ | | | | A |
| | Input current integral | $V_{IN} = 380\ Vac$ | | | t.b.d. | A ² s |
| $I_{IN\ Max}$ | Switch on current at | $I_{OUT} = 150\ A$ | | | t.b.d. | A |
| | Input Fuse | External | | | | |
| C_{IN} | Converter input capacitance | | | 50 | | µF |
| | Reverse input protection | Bridge rectifier + external circuit breaker | | | | |

OUTPUT: Power Unit

| | | | | | | |
|----------------------|--|--|---------|----------------|---------|--------|
| $P_{OUT\ Nom}$ | Output power | $342\ V \leq V_{IN} \leq 440\ V$ | 4,5 | | | kW |
| V_{OUT} | Output battery charge characteristic | I U 0 U DIN 41772 | + 25.65 | + 28.0 | + 29.85 | V |
| $V_{OUT,Max}$ | Overvoltage Monitor | $342\ V \leq V_{IN} \leq 440\ V$ $0\ A \leq I_{OUT} \leq 150\ A$ $T_A = -40^\circ C \dots +60^\circ C$ | | 32.0 | | V |
| $\Delta V_O\ ripple$ | Output voltage ripple | $342\ V \leq V_{IN} \leq 440\ V$ $0\ A \leq I_{OUT} \leq 150\ A$ | | | 1.0 | % eff. |
| $V_{OUT,reg}$ | Regulation accuracy | $342\ V \leq V_{IN} \leq 440\ V$ $0\ A \leq I_{OUT} \leq 150\ A$ | | 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 | NTC resistor 10 kΩ | | | | |
| I_{OUT} | Output current | $342\ V \leq V_{IN} \leq 440\ V$ - 30°C ... 60°C | 150 | | | A |
| | | - 30°C ... 70°C | 100 | | | A |
| $I_{OUT,lim}$ | Output current limitation threshold | $342\ V \leq V_{IN} \leq 440\ V$ | 155 | | | A |
| $I_{OUT,sc}$ | Output current short circuit current | | | | 180 | A |
| I_{OUT} | Battery current measurement LEM amplifier LA 205-S/SP6 | $342\ V \leq V_{IN} \leq 440\ V$ battery charge current | 78 | | 80 | A |
| V_{CC} | Supply voltage LEM | | | ± 15V internal | | |
| | Test socket, short circuit proofed | Battery current 1:10 [A/V] Output voltage direct 1:1 Rectified input voltage 1:1 | 150A | → | 1.5V | V |
| | V_{out} R = 10kΩ V_{ZKS} R = 160kΩ | | | | | V |
| V_{supply} | Control BLG Unit | Internal | | | | |

SIGNALS

| | | | | | | |
|--------|---|---|--|--|--|--|
| PF | Addition failure message | Relais switching capacity | 24V, 500mA | | | |
| RS 232 | Interface Memory for diagnosis signals | Sub D9, panel Internal & external failures | pinning see document "pin assignment" | | | |

GENERAL SPECIFICATIONS

| | | | | | | |
|--------|--|--|------|--------------|------|-----|
| f | Switching frequency | $V_{IN} = 380Vac, 0 \leq I_{OUT} \leq 150\ A$ | | 50 | | kHz |
| η | Efficiency | $P_{OUT} \geq 0.7 \times P_{OUT\ Nom}$ | 90 | 91 | | % |
| T_a | Operating Temperature Range $P_{OUT\ Nom}$ | Derating : -3%/K +60°C ≤ T_A ≤ +70°C | - 30 | | + 60 | °C |
| | MTBF (SN 29500) | $V_{IN} = 380\ V, I_{OUT} = 150\ A, T_A = +40^\circ C$ | | 400 000 | | h |
| | No load, short circuit proof | | | Continuously | | |

AC/DC Battery Charger & DC/AC Inverter

4,5 kW | 1kW

4500 LGB 400 M24 W01

Inverter: $V_{in,nom} = 24V$ $V_{out} = 3 \times 320Vac$ $P_{out} = 1kW$

| SYMBOL | PARAMETER | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--------|-----------|-----------------|-----|-----|-----|------|
|--------|-----------|-----------------|-----|-----|-----|------|

INPUT:

| | | | | | | |
|--------------|------------------------------|--------------|------|------|------|-----|
| V_{IN} | Input voltage range | Continuously | 19.0 | 24.0 | 30.0 | Vdc |
| $V_{IN Min}$ | Input voltage switch off | | 18.0 | | 18.9 | Vdc |
| $V_{IN Max}$ | Input overvoltage switch off | | 30.5 | | 32.0 | Vdc |
| $I_{IN Max}$ | Input current | | 60 | | 70 | A |

OUTPUT:

| | | | | | | |
|-----------|--------------------------------------|---------------------------------------|-------|-----|-----|-----|
| V_{Out} | Output voltage range (3Ø line) | Continuously | 288 | 320 | 352 | Vac |
| f | Output frequency range | | 37 | 40 | 43 | Hz |
| | Switch On characteristic: soft start | | | | | |
| O_{Out} | Converter output power | | 1'000 | | | W |
| η | Efficiency | $P_{OUT} \geq 0.7 \times P_{OUT Nom}$ | 90 | 91 | | % |

SAFETY / DIMENSIONS

| | | | | | | |
|--|--|---|------------------------------|--|---------------------|-------------------|
| | Creepage, Clearance (PD3) PCB: FR4, V0 | Input – Output Input – Case Output – Case | 6.0 4.0 2.0 | | | mm mm mm |
| | Converter Dielectric Strength Test each unit ramp function 2 s – 3 s – 2 s | Input – Output Input – Case Output – Case | | | 3000 2250 750 | VDC VDC VDC |
| | Connector | Input, Output Signaling PE | See drawing „Pin assignment“ | | | |
| | Pin Assignment | | See drawing „Pin assignment“ | | | |
| | Protection Class, Protection degree | | I, IP 20 | | | |
| | Dimensions <i>see drawing</i> | w x h x d | 420 x 450 x 247.5 | | | mm |
| | Assembling <i>see drawing</i> “Masszeichnung” | Wall mounting with screws | 6 x M8 | | | |
| | Weight | | 34 | | | kg |

ENVIRONMENTAL CONDITIONS

| | | | | | | |
|-----------|-------------------|---|-----------------------------------|--|------|----|
| T_A | Operating Range | Continuously EN 50155 class T3 | - 30 | | + 70 | °C |
| T_{Sto} | 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 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. $R_i = 42 \Omega$ performance criteria - B - | | | |
| | | HF – Current Injection EN 61000 - 4 - 6 | 10 V _{eff} , $R_i = 150 \Omega$ 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 | prEN 50 121 - 1 | prEN 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: $-30^\circ C \leq T_A \leq +70^\circ C$, $342 Vac \leq V_{IN} \leq 484 Vac$, unless otherwise noted.

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

AC/DC Battery Charger & DC/AC Inverter

4,5 kW | 1kW

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