

- Temperature regulated charging of low voltage batteries 24V - 110V
- From Battery or DC-intermediate circuit
- 4 mm air and creepage distances
- Shock/Vibration EN 61373
- Limitation of charging current
- Parallel operation (network - battery)
- Functional monitoring with Controller

- for
- Rolling stock
  - Vehicle applications
  - Special technology



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## Series BLG.H5

### Battery charger from low voltage

#### Main points:

##### Input:

- 24 / 36 / 72 / 110V-Battery
- EMC / Disturbances EN50121-3-2
- Defined turn-on point with amplitude / time hysteresis
- Fuse customer sided
- No cross plugging protection (cross connection cause damage)
- Integral power run-up
- No-load power approx. 20W
- Power sleep mode <math>\Sigma</math>-Inhibit floating / polarity independent / surge proof 10 - 154V / 2mA = ON (open = OFF)
- Temperature sensor PT1000<sup>2)</sup>
- Current Sensor for current splitting<sup>4)</sup>
- Connection:
  - Power IN: Würth screw clamps M8
  - $\Sigma$ -Inhibit X1: Phoenix MC 1,5/5-STF-3,81
  - Current sensor X4: Phoenix MC 1,5/4-STF-3,81
  - Temp.Sensor X5: Phoenix MC 1,5/3-STF-3,81

##### Outputs:

- $U_o = f(T_{Bat})$ <sup>2)</sup>
- Option:  $U_o =$  fixed voltage level<sup>2)</sup>
- Option: Parallel connection<sup>3)</sup>
- Auxiliary output 24V / 0,4A floating for external loads (X2)
- EMC / disturbances EN50121-3-2
- Tolerance  $\pm 1,5\% = f(U_i/I_o/T_a)$
- $U_o - 7\%$  at  $U_i = <0,7 \times U_{nom}</math><sup>1)</sup>$
- Regulation offset  $\Delta I = 40-90\% <500mV / <3ms</math>$
- Basic load 1A (otherwise ripple approx. 1%  $U_o$ )
- No load / short circuit proof
- Error signal (Relay X3)
- Actual value current feedback: 4-20mA=0-I<sub>omax</sub>
- Connections:
  - Power OUT: Würth screw claps M8
  - Aux. output X2: Phoenix MC 1,5/3-STF-3,81
  - Error signal X3: Phoenix MC 1,5/3-STF-3,81
  - Current feedback X6: Phoenix MC 1,5/3-STF-3,81

##### In general:

- LEDs:  $U_i = OK / UCC$  (interm. circuit) = OK
- RS232 interface D-Sub<sup>2)3)</sup> (X7)
- Efficiency 94%
- Air/creepage distances / isolation test voltage:
  - Input - output: 4mm / 1,5 kV<sub>AC</sub> 1 min
  - Input - ground: 3mm / 1,5 kV<sub>AC</sub> 1 min
  - output - ground: 3mm / 1,5 kV<sub>AC</sub> 1 min
  - Inp./outp. - Interface: 3mm / 1,5 kV<sub>AC</sub> 1 min
- Ambient temperature  $T_a$ : -25/+65°C
- Option: -40/+70°C
- Derating >55°C: 2%/°C
- Fan regulation  $f(T_a)$
- MTBF on request
- CE-conformity acc. EN50121-3-2
- Shock/Vibration acc. EN61373, Kat. 1, Kl. B 50m/s<sup>2</sup>-30ms / 7,9m/s<sup>2</sup><sub>rms</sub> for all directions
- Weight: approx. 11 kg
- Dimension: (373 x 470 x 100)mm
- Ground connector: M5 thread bolt

Input		Output			Model number
$U_i$ range	$U_i$ nom	$U_o$ nom	$U_o$ range	$I_o$ cont./dyn.	
V DC	V DC	V DC	V DC	A	
18 - 32	24	24	24 - 30	80/90	BLG.H5.24.24.80/90
		36	36 - 45	54/60	BLG.H5.24.36.54/60
		72	72 - 90	27/30	BLG.H5.24.72.27/30
		110	110 - 137	16/18	BLG.H5.24.110.16/18
25 - 47	36	24	24 - 30	80/90	BLG.H5.36.24.80/90
		36	36 - 45	54/60	BLG.H5.36.36.54/60
		72	72 - 90	27/30	BLG.H5.36.72.27/30
		110	110 - 137	16/18	BLG.H5.36.110.16/18
50 - 94	72	24	24 - 30	80/90	BLG.H5.72.24.80/90
		36	36 - 45	54/60	BLG.H5.72.36.54/60
		72	72 - 90	27/30	BLG.H5.72.72.27/30
		110	110 - 137	16/18	BLG.H5.72.110.16/18
77 - 143	110	24	24 - 30	80/90	BLG.H5.10.24.80/90
		36	36 - 45	54/60	BLG.H5.10.36.54/60
		72	72 - 90	27/30	BLG.H5.10.72.27/30
		110	110 - 137	16/18	BLG.H5.10.110.16/18

1)  $U_o$  drops to 0,93 x  $U_{nom}$  by reaching the dyn. minimum input voltage

Mechanical changes: on request

Single projecting costs: on request

Modification costs of possible changes above values: on request

#### 2) Temperature regulated charging

The charging end-voltage characteristic curve [ $U_A=f(T_{Bat})$ ] can be adapted as „three point curve“ in steepness by RS232 interface with an optional Software (temperature sensor is not part of delivery). Optionally the output can be modified to a fixed or analogue changeable level. Over temperature or broken wires at the temperature sensor sets the output level to the nominal value.

#### 3) Parallel operation

Parallel operation is only possible with an external LMB (charging management unit). For parallel operation the internal battery management is replaced by the external unit with n strings. Both units are equipped with an isolated RS 232 interface. The LMB-unit communicates with CAN-bus to the customer system. With an optional software the charging characteristic can be changed in defined areas.

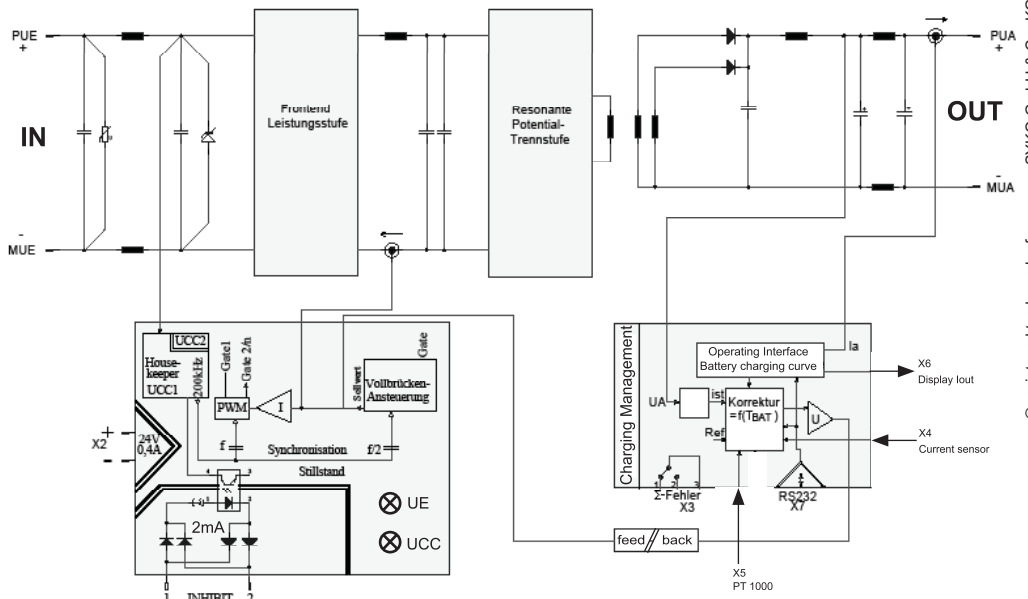
#### 4) Current splitting / Parallel operation

This option allows to limit the charging current to the battery while supplying parallel loads or on-board network with remaining power. With optional available software the battery charging current can be changed. (current sensor is not part of delivery)  
Dynamical (short term) power can repeated be taken over I<sub>Pt</sub> function.

The **BLG.H5** series is designed for intelligent, temperature regulated charging of low voltage batteries from low voltage sources such as batteries or DC intermediate circuits in railway, ship and vehicle applications. The chosen switching concept results very high and constant efficiencies over the input voltage range.

This charger's system capability is shown by the facts of an isolated, regulated, short circuit proof, regulated 24V auxiliary output (inactive when sleep mode) as well as the capability of current splitting with programmable charging current of approx. 10-25% of the battery capacity to extend battery's life time and the optional parallel operation of battery and network without de-coupling diode. Errors are signalled with relay contact and the customer system can read out the output current as actual value of 4 – 20 mA.

When sleep mode is activated the input current (IN) is reduced to max. 1 mA and a signal of 10-154V/2 mA wakes up the converter. This signal input is polarity independent and surge proof. Two LEDs signal applied input voltage in the allowed range and internal UCC auxiliary level. Optionally fan operation is available from >55°C up to 65°C without derating to improve the MTBF figure. By loss of fan operation at <80% of nominal speed an error signal is given at X1. Fan operation is tested with a test button. An optional isolated RS232-interface allows the read out of actual parameters and the programming of parameters with SYKO's software application. An internal house keeper supplies all functional areas before the main power is activated. The battery can be charged even from a discharged state of 33%. Over current capability of additional 12,5% for 20s is possible. The mechanical build up and thermal management as well as use of foil and ceramic capacitors make this converter series ideal for the use in mobile areas with high requirements.



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**Mechanik**

