- **Chassis mounting**
- **Heat sink with cooling fins**
- **Wide input voltage range**
- **Input noise suppression EN 55022.B**
- **On- / Output spike filter**
- **Shock/vibration EN 50155**
- **Temparature monitoring / switch off**
- **Separated fan supply 12V (internal)**

for
- Railway
- Vehicles
- Instrumentation

Series HC 50.U

Main points:

Output:

- Regulation Σ (U_{in}+I_{out}+T_U)<±2%
- Accuracy absolute ± 1%
- option: unregulated/parallel operation 1)
- Ripple <20 mV_{pp} (over T_U)
- Spikes <200 mV_{pp} (T 1:1/50MHz)
- Response time ΔI=50% < 2 ms
- Constant current limitation < 1,2 $I_{o\,max}$
- Output spike filter (C - L^2 - C)
- No-load, over load, short circuit proof
- Switch off by exceeding of limit temperature
- LED for Uout = OK
- Change-over contact relay Uout = OK

Input:

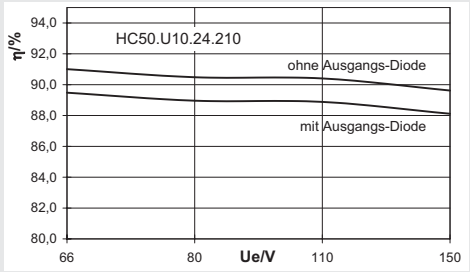
- Burst/Surge EN61000-4-4/5 level 3 2Ω
- Stand-by power < 5 Watt
- ON-OFF-application (inhibit)
- On-Off switch hysteresis at under voltage and delayed restart
- Input filter acc. to EN 55022.B
- Low input capacity
- Dyn. rev. polarity protection (square diode)
- Emergency fuse on PCB
- LED for Uin = OK

In general:

- Plug: Wago 721-001/058-000
  Mating plug: Wago 721-112/037-000
- Buck regulator + push-pull topology
- Isolation test voltage 1,5 KV_{AC} 1 min
- Ambient temperature -25°C/+60°C (F-KK)
- Limit temperature on KK- 95°
- Option: short term -40°C/+85°C EN50155
- With ribbed-heat sink (R-KK) and fan >50°C Derating > 70°C and R-KK
- Derating 1,2%/°C >50°C without fan with F-KK
- MTBF on request
- Shock/vibration acc. to EN50155
- Weight approx. 2,6 kg (F-KK)
- CE-conformity on request
- Chassis mounting to very good heat connecting surface
- Auxiliary voltage for fan 12V (option)
- LED for over temperature
- Fan regulation at high temperatures

Uin	Pout	Uout	Iout	Eff.	Model
V	W	V	A	%	number
14,4 - 34	**200**	12	16,5	88	HC50·U24·12·165
surge proof		15	13,3	88	HC50·U24·15·133
1kV / 2Ω		24	8,3	89	HC50·U24·24·083
1,8kV / 5Ω		110[1)]	1,8	89	on request
16,8 - 34	**200**	12	16,6	87	HC50·U24·12·166
50V 50ms		15	13,3	87	HC50·U24·15·150
70V 2ms		24	8,3	88	HC50·U24·24·083
25 - 72	**300**	24	12,5	89	HC50·U36·24·125
43 - 101	**400**	24	16,6	89	HC50·U72·24·166
1kV / 2Ω					
1,8kV / 5Ω					
66 - 154	**300**	12	25,0	88	HC50·U10·12·250
surge proof	**375**	15	25,0	90	HC50·U10·15·250
1kV / 2Ω	**500**	24	21,0	91	HC50·U10·24·210
1,8kV / 5Ω	**500**	110[1)]	4,5	90	on request
Version H			-40°C up to +85°C		additional charge
Heat sink with cooling fins incl. fan					additional charge
Option: output voltage 36/60V					on request
Modification costs of possible changes above values					on request

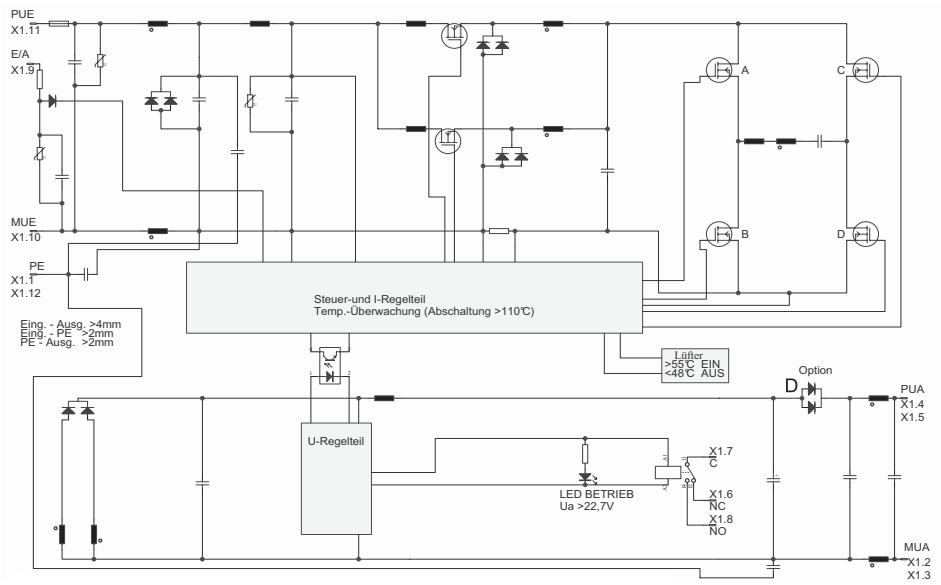
Efficiency



1)
The voltage regulation is primary sided. The output stability = f(Uin/Iout/TU) +-3% > no-load. With this solution any quantity of converters can work parallel.

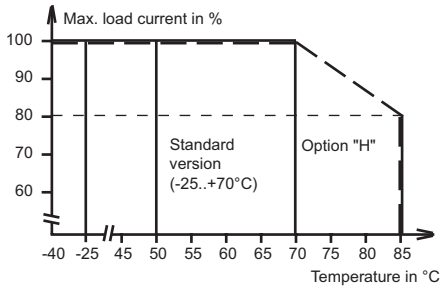
The chassis mountable ***HC50.U*** series with an output power up to 300W and high isolation is developed for mobile applications and high operational reliability.

The converter is build up with a ribbed heat sink and integrated, temperature sensor-regulated fan, which is supplied from the converter. An integrated emergency fuse and square diode protect without power loss against the converter's reverse polarity connection and defect. Current cascaded power stage and current resonant push-pull stage allow high and constant efficiencies. The converter is equipped with an under voltage monitoring function with amplitude- and time hysteresis. The integral switch on current limitation is done with an internal power limitation. The functionality is secured in the whole operational range up to limit values based on the chosen components, filters, security circuits, dynamical and statically current limitation, over voltage protection and separated auxiliary voltage processing.



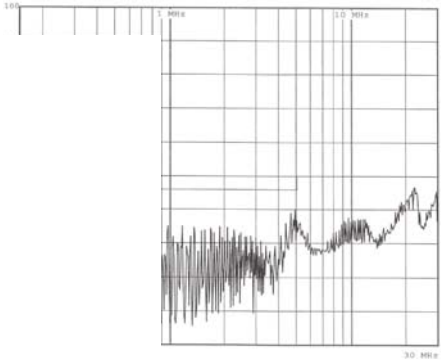
Derating curve

acc. to the LES-DB definition Tu ≤ $_{85}$ °C in the converter's direct ambient (forced ventilation)

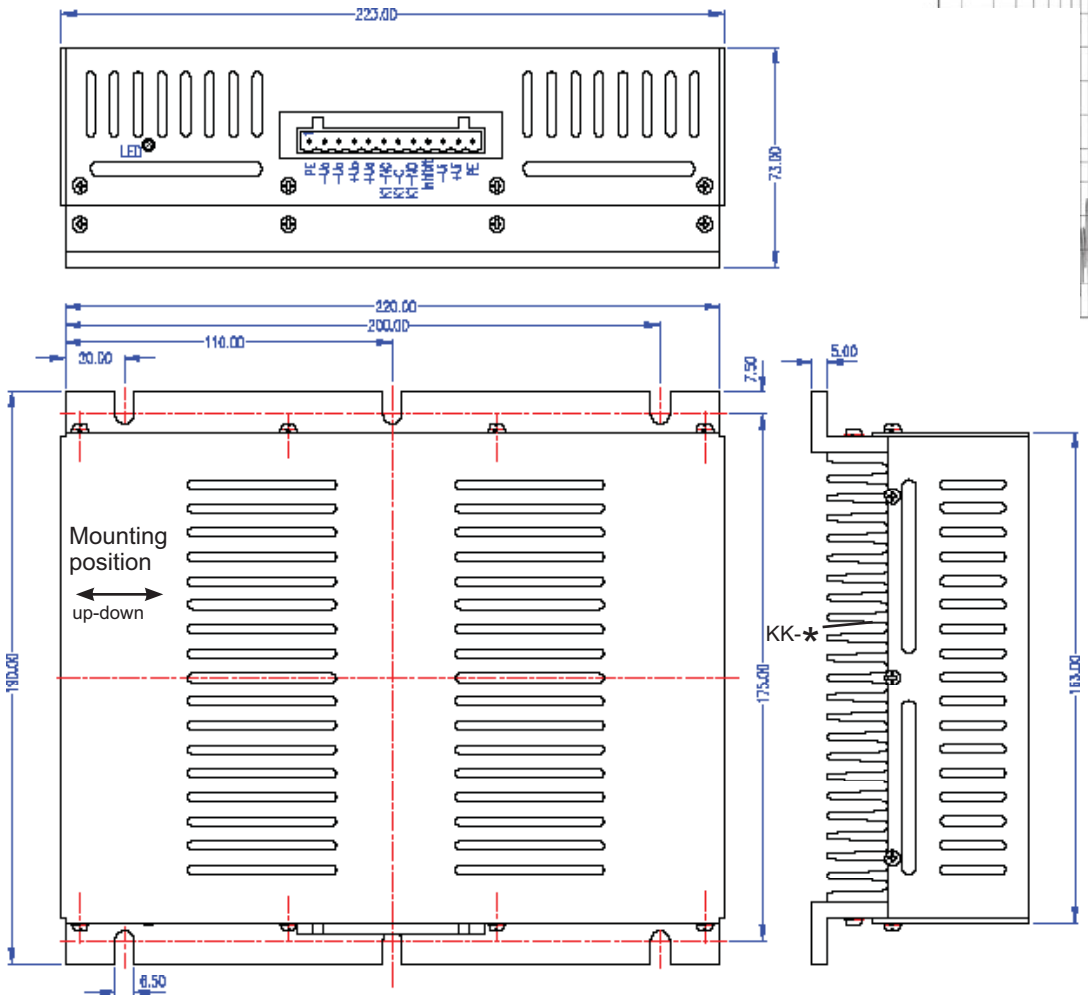


No wet electrolytic capacitors are used in chopping circuits. For a security redundant operation the output diode D can optionally be integrated. Also optionally to reduce the power loss approx. 25% the push-pull stage can be hard switched, the output diode can be replaced by synchronuous switches and the diode D can be replaced by a switchable FET. The control loop's re-feeding is optionally not necessary. Failures of U_{out}/temperature are signalled with the integrated floating relay.

Measurement of radio interference



Mechanics



Fan is integrated in the heat sink