

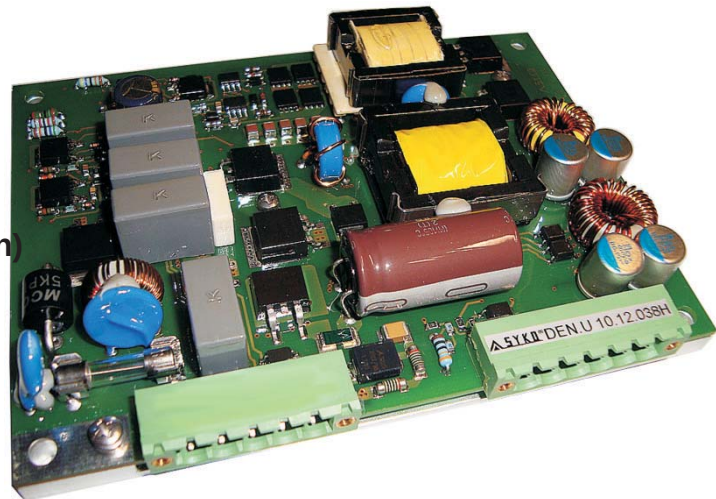
single output
up to 45 / 60 Watt

DC/DC converters
with isolation



- Input voltage range up to > 1:10
- Open build-up / chassis mounting
- heat sink adaptable on request
- Over voltage protection (Logic)
- Dyn. and stat. power limited
- EN 50155 / EN 50121/ EN 55011.B
- Hold-up time > 10 ms (EN 50155, S2)
from U_{inmin} external extendable (option)
- Shock/vibration EN 61373

for traffic systems and special applications



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Series DEN-U (preliminary)

Main points:

Output:

- Tolerance $\pm 1\%$
- Regulation factor $\Sigma(U_{in} + I_{out} + T_U) < \pm 2,5\%$
- Ripple < 10mV_{pp}(const. over T_U)
- Spikes < 100 mV_{pp} (T 1:1/50MHz)
- Current limiting approx. 1,2 I_{outmax}
- No-load-, over-load-, short circuit proof
- No basic load necessary
- Inhibit function: ON / OFF (surge proof)
not connected = ON / (>10V) U_i = OFF
- Power fail signal (low active)
- Connector: MSTBA2,5/6-GF-5,08 (90°)

Input:

- sleep mode current <4 mA (with inhibit)
- No-load power approx. 1 W (active)
- Reverse pol. protection (active) / surge proof
- Input filter in accordance to EN 55011.A
- Under voltage-switch off with amplitude- and time-hysteresis
- Power fail signal and 10 ms hold-up time from $<U_{in min} = f(T_U/\Delta C/aging)$
Option: external extendable
- Connector: MSTBA2,5/5-GF-5,08 (90°)

In General:

- Isolation test voltage 2,5 KV_{AC} 1 Min,
- Air-/creepage distances:
Input - output: 3mm
input. - PE: 2mm / outp. - PE: 1,5mm
- Ambient temperature -25...+70°C
-25/+70°C (-40/+85°C short term)
Option H: -40...+85°C without derating
- Heat conduction by flange heat-sink
- Flange temperature max. 95°C at $\star$ -Point
- MTBF On request
- Shock/vibration acc. to 61373 Kat.1, cl.B
- Techn. fire protection EN 5510 / EN45545
- Dimensions / Weight (approx.):
with heat sink: 100x135x24 mm³ / 300g
without heat sink: 100x135x20 mm³ / 200g
- Mounting 4 x 4,5mm Ø (M4)

<u>U_{in}</u> V	<u>U_{out}</u> V	<u>I_{out}</u> A	dyn·dyn A	Model number
14,4 - 154 on request	5,1	7,0	9,0	DEN-U 03-05-70
	12	3,3	4,0	DEN-U 03-12-33
	24	1,6	2,4	DEN-U 03-24-16
9 - 34 50V / 50ms 70V / 2ms Load dump	5,1	7,0	9,0	on request
	12	3,3	4,0	on request
	24	1,6	2,0	on request
14,4 - 52	5,1	9,0	10,0	DEN-U 30-05-90
	12	3,8	5,0	DEN-U 30-12-38
	24	1,9	2,5	DEN-U 30-24-19
43 - 154	5,1	9,0	10,0	DEN-U 80-05-90
	12	3,8	5,5	DEN-U 80-12-38
	24	1,9	2,5	DEN-U 80-24-19

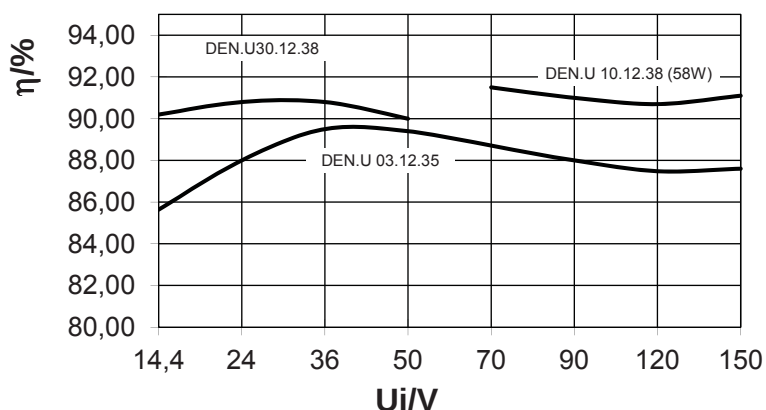
Modification costs for possible changes above values:

on request

Notice:

reduced input voltage ranges will improve efficiency
and improve functional characteristic (stress factors are reduced)

Efficiency



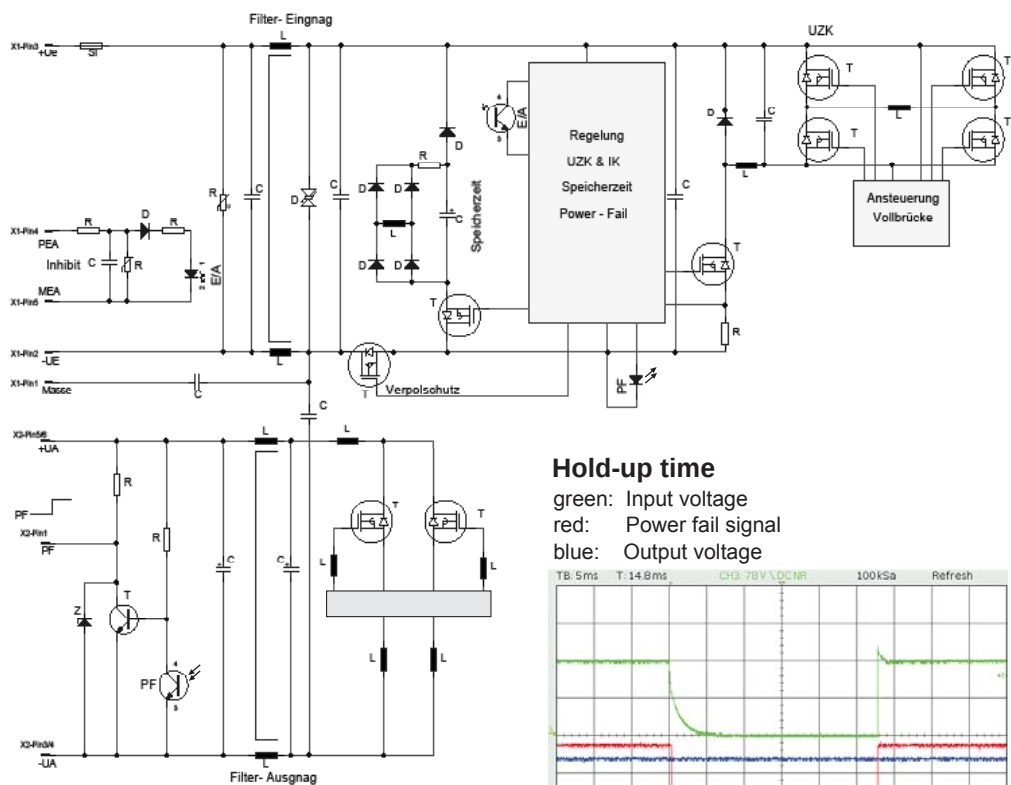
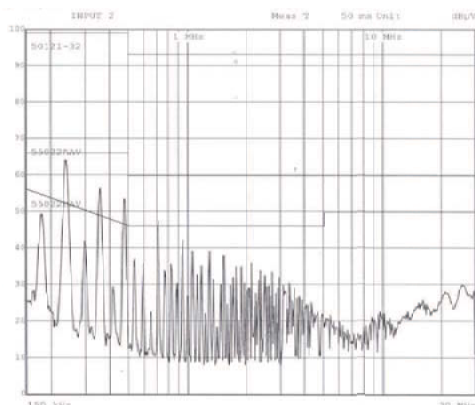
DC/DC-converter of the **DEN.U** series is especially designed for mobile applications with high requirements on functionality, temperature, shock/vibration, input voltage range, disturbances and EMC. The converter's power semiconductors are directly connected to the customer's heat sink in this way for ambient temperatures up to 70 (85)°C without derating. Optionally this heat sink can fall away when the thermal connection points are directly integrated in a customer sided housing or heat sink construction (we apply the mechanical drawing on request).

The given fastening points allow highest constructive requirements at any mounting position. The standard input voltage range of 1:4 can optionally be extended to > 1:11, which gives the logistic advance to apply all relevant railway battery networks. Over voltages, load dump, transients are absorbed system capable.

The converter is protected by a very fast active reverse polarity protection against wrong polarity and fast dropping input voltages (like short circuit) at engine starts. At the same time the internal energy for the hold-up time is conserved.

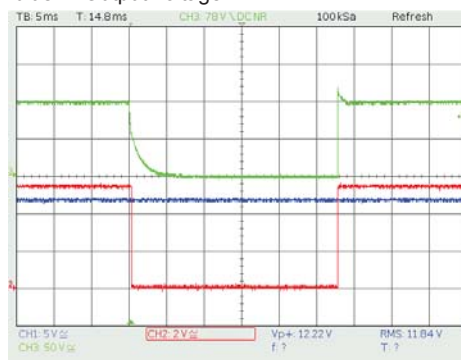
The active hold-up time is only activated at the minimum input voltage level (against the requirement) and is >10ms over T_a , aging and tolerance. This time can be extended by external capacitors and the hold-up time is constant over the whole input voltage range.

Measurement of radio interference

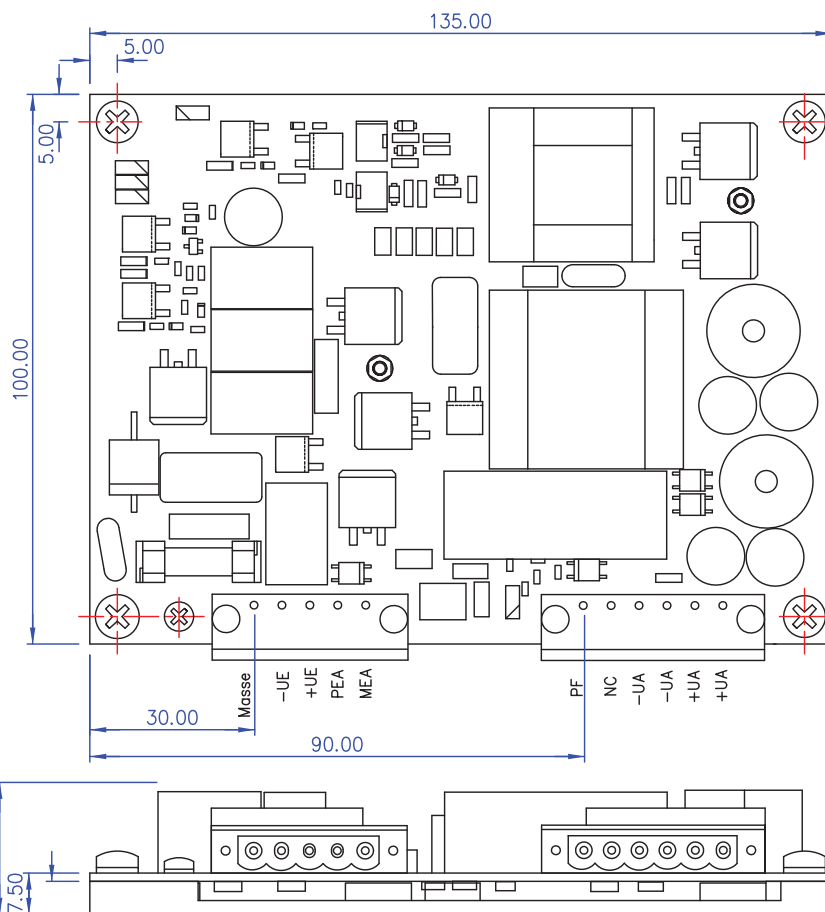


Hold-up time

green: Input voltage
red: Power fail signal
blue: Output voltage



Mechanics



Plug optional standing version
On request: plugs for higher requirements in gold plated version