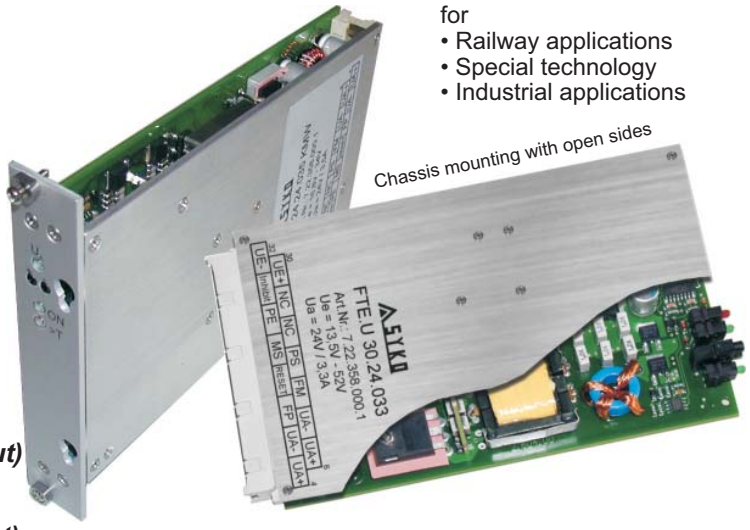
- **Euro card 3U / for 5TE front panel**
- **Over voltage protection (thyristor)**
- **Sense lines (single output)**
- **U_{out} switch over (option)**
- **Input noise suppression EN 55022.B**
- **Output spike filter C-L²-C**
- **Wide input voltage range**
- **Shock/vibration acc. to EN 50155**
- **CE-conformity (on request)**
- **Temperature monitoring**

for
- Railway applications
- Special technology
- Industrial applications



Series FTE.U (single output)
FTE.B (double output)

Main points:

Output:

- Regulation Σ (U_{in}+I_{out}+T_U)<±1,5%
- Accuracy absolute ± 1%
- No-load, over load, short circuit proof
- Const. current limitation <1,2 $I_{o\,max}$ up to 0V
- Ripple constant over Tu
  I_{out}>100mA <20 mV_{pp}
  I_{out}<100mA <100 mV_{pp}
- Output spike filter (C - L^2 - C)
- Spikes <100 mV_{pp} (T 1:1/50MHz)
- Response time ΔI=50% ≤ 1 ms
- Reset at 0,9 U_{out} (open collector)
- Option: changeable Uout
- Tracking by double output ±3% U_{nom}
  Regulation over ±U_{out} ±1,5%
- LED for Uout = OK
- Uout-switch over PS / MS (option)

Input:

- Stand-by power approx. 2,5 Watt
- On-Off-application (inhibit)
- On-Off-hysteresis at under voltage and delayed re-start
- Low input capacity
- Input filter acc. to EN 55022.B
- Disturbances railway standard
  Burst EN 61000-4-4 level 3
  Surge EN 61000-4-5 level 3 / 1,8kV / 5Ω
- Rev. polarity protection (fuse-square diode)
- Input fuse customer sided
- LED for Uin = OK

General:

- LED for over temp./converter inactive
- Connector DIN 41612, H15 style
- Regenerator + push-pull concept
- Parallel operation (application)
- Clock frequency approx. 80 kHz
- Isolation test voltage 1,5 KV_{AC} 1 min
- Ambient temperature -25°C / +70°C
- Derating 1,2%/°C >60°C
  Option: -40°C / +85°C Derating
- MTBF on request
- Shock/vibration acc. to EN 50155
- Weight approx. 500g
- CE-conformity certificate on request
- Limit temperature on KK-✱ 95°

Uin	Pout	Uout	Iout	Model
V	W	V	A	number
9 - 34	**70**	5,1	11,0	FTE.U 20·05·110
12/24V on-board network		12	5,8	FTE.U 20·12·058
		15	4,7	FTE.U 20·15·047
		24	2,9	FTE.U 20·24·029
		±12	±2,9	FTE.B 20.12.029
		±15	±2,3	FTE.B 20.15.025
		±24	±1,4	FTE.B 20·24·014
14 - 34	**60**	5,1	12,0	FTE.U 24·05·110 VG
9V / 500ms		12	5,0	FTE.U 24·12·050 VG
50V / 50ms		15	4,0	FTE.U 24·15·040 VG
70V / 2ms		24	2,5	FTE.U 24·24·025 VG
VG on-board network		±12	±2,5	FTE.B 24·12·025 VG
		±15	±2,0	FTE.B 24·15·020 VG
		±24	±1,25	FTE.B 24·24·012 VG
16 - 34	**85**	5,1	14,0	FTE.U 24·05·140
Industrial network		12	7,0	FTE.U 24·12·070
		15	5,7	FTE.U 24·15·057
		24	3,5	FTE.U 24·24·035
		±12	±3,5	FTE.B 24·12·035
		±15	±2,8	FTE.B 24·15·028
		±24	±1,7	FTE.B 24·24·017
13,5 - 52	**80**	5,1	12,0	FTE.U 30·05·120
surge proof		12	6,6	FTE.U 30·12·066
1kV / 2Ω		15	5,3	FTE.U 30·15·053
1,8kV / 5Ω		24	3,3	FTE.U 30·24·033
Railway network		±12	±3,3	FTE.B 30·12·033
		±15	±2,6	FTE.B 30·15·026
		±24	±1,5	FTE.B 30·24·015
42 - 154	**80**	5,1	12,0	FTE.U 80·05·120
surge proof		12	6,6	FTE.U 80·12·066
1kV / 2Ω		15	5,3	FTE.U 80·15·053
1,8kV / 5Ω		24	3,3	FTE.U 80·24·033
Railway network		±12	±3,3	FTE.B 80·12·033
		±15	±2,6	FTE.B 80·15·026
		±24	±1,5	FTE.B 80·24·015
Front panel				additional charge
Version (H)		-40°C up to +85°C		additional charge
Optionally voltages: 40V / 60V / ±30V:				on request
Triple output 5,1V(±1%) / 6A ±12V(±3%) / ±1A:				in preparation
Modification costs for possible changes above values:				on request

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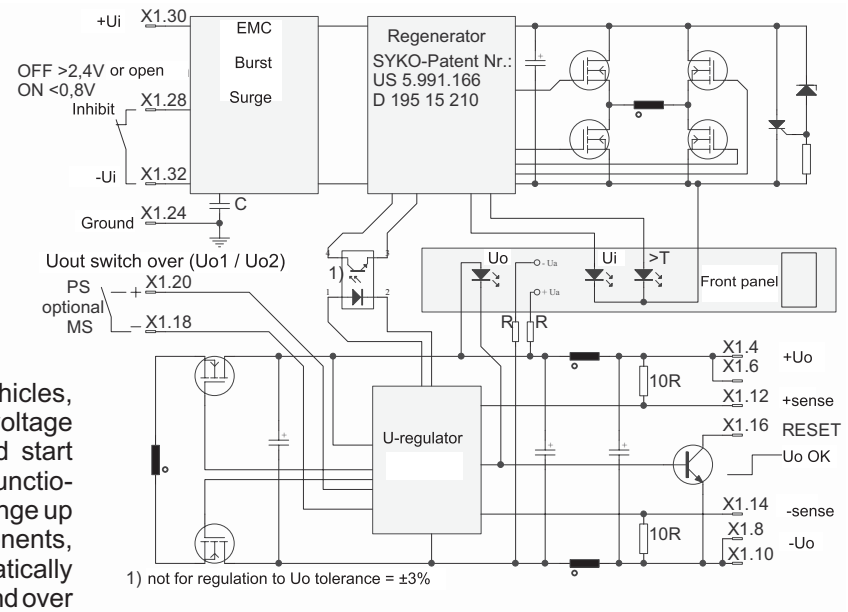
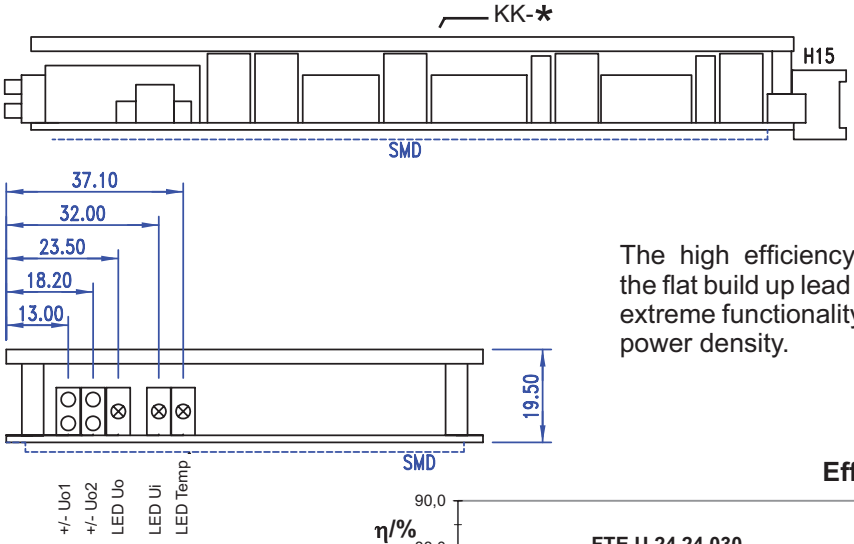
The ***FTE.U/B*** series with an output power up to 85 W is developed as a small 5TE rack style converter for mobile applications and high operational reliability. The converter's stand-by mode (inhibit-function) requires a current consumption of just typically 3 mA, which is ideal for the use in battery networks.



The wide input voltage range allows the use on weak and transient flawed networks. The mechanically stable and ordered build up can be used in mobile applications with high shock/vibration requirements (special vehicles, short distance traffic, railway). The input voltage range down to 9V allows the diesel cold start bridging in 24V on-board networks. 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, temperature monitoring and over voltage protection. There are no wet-electrolytic capacitors used in chopping circuits.

Pin assignment

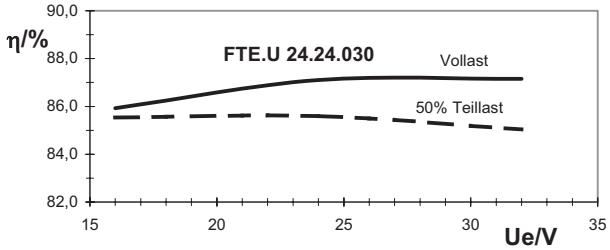
Pin (H15)	FTE.U *single*	FTE.B *double*
4	+Uo1	+Uo1
6	+Uo1	+Uo2
8	-Uo1	-Uo1
10	-Uo1	-Uo2
12	+sense	NC
14	-sense	NC
16	Reset	Reset
18	PS	NC
20	MS	NC
22	NC	NC
24	Ground	Ground
26	NC	NC
28	inhibit	inhibit
30	+Ui	+Ui
32	-Ui	-Ui



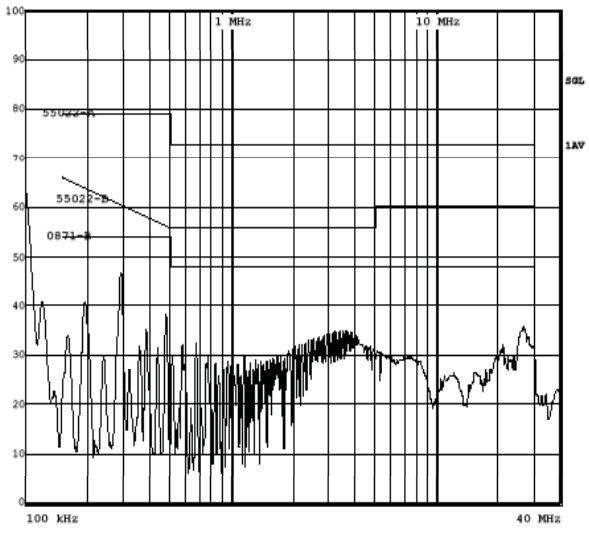
The open style (open sides) allows circulating air through the rack

The high efficiency and the flat build up lead to an extreme functionality and power density.

Efficiency



Measurement of radio interference



Derating curve