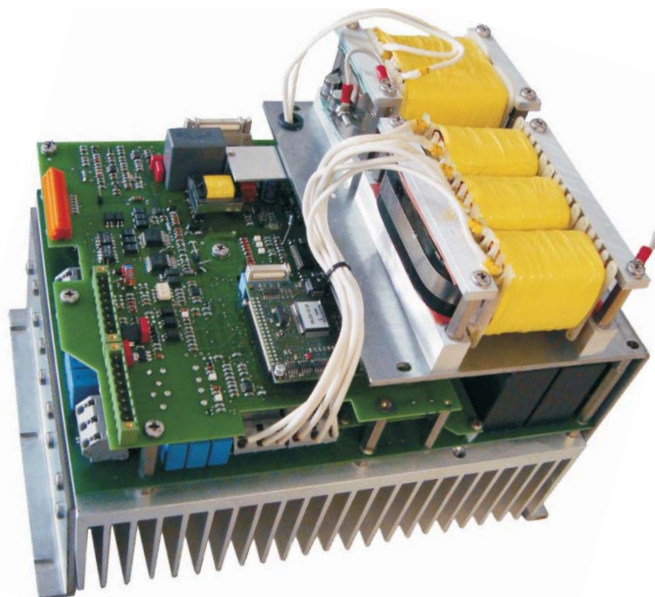


3-Ph Sinus Output  
4400 VA up to 7700 VA

3-phase frequency inverter  
on 3ph-network



- Use on mobile 3Ph-networks
- Synthetic 3-Ph sine wave output
- With f/U-control and I<sup>2</sup>t-monitoring
- Input and Output radio interf. adapted
- Low rated air ventilation from T<sub>U</sub> >50°C
- Efficiency typ. 94%
- No peak-value rectifying
- RS 232 / 485 Interface for changes of parameters and data check (Option)



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## Series FUR 03

without isolation

### Main points:

#### Input:

- 3Ph-sine/rectangular/trapeze-voltage
- External fuse (auto circuit breaker)
- Input filter and disturbance protection acc. EN50121-3-2
- Soft start/internal pre-charging (semiconductor)
- Controlled bridge input
- Inrush current limiting to UZK
- Integral power run-up (df/dt)
- Defined switch-on/switch-off point
- Run-up with input/no aux.-supply necessary
- No-load power approx. 15 W (with Inhibit)
- Plug: Wago Cage Clamp 4mm<sup>2</sup>
- Power factor >0,8
- \* on request

#### Output

- synthetic 3Ph-sine voltage
- low distortion factor
- Internal output EMC-filter
- f/U-characteristic curve (zero up to max)
- I<sup>2</sup>t-over load protection of dynamical loads
- No-load proof, short circuit proof dynamically and statically
- Tolerance ± 5% = f(U<sub>in</sub>/I<sub>out</sub>/T<sub>U</sub>)
- Response time Δt=50% < 2 ms
- Fan supply 24V (Σ max. 10W)
- Wago GDS-connector 0,5mm<sup>2</sup>
- Fans recommended by SYKO
- Plug power: Wago Cage Clamp 4mm<sup>2</sup>

#### In general:

- Signal connector: Phoenix MSTBV 2,5/8-GF
- On/Off remote (Inhibit)
- Status signaling:
  - Fan error                   LED6 + Relay
  - Inverter error            LED5 + Relay
  - U<sub>i</sub> = Okay                 LED1
  - UZK = Okay                LED2
  - FG (Enable/Inhibit)     LED3
  - Failure Code              LED4
- Temperature turn-off heat sink 120°C
- Boost-UZK-inverter
- Clock frequency >20 kHz
- Isolation test voltage: Input/Output - ground: 2,5 KV<sub>AC</sub> 1 min
- Ambient temperature: with three fans (Option) 80x80 (120m<sup>3</sup>/h) -25°C / +70°C Derating 2%/°C >60°C
- MTBF on request
- Shock/vibration in acc. to EN61373
- PE-Connector M4 screw

#### Input

U<sub>i</sub> / 3Ph  
Vrms  
  
**340 - 485 V AC**  
**50/60Hz**  
**400/440V-3Ph**

**82 - 160 V AC**  
**400Hz<sup>1)</sup>**  
**115V-3Ph**

**160 - 240 V AC**  
**60Hz**  
**200V-3Ph**

#### Output

U <sub>o</sub> / 3Ph Vrms	P <sub>o</sub> stat./dyn. VA	Model number
230	3800/6600	FUR03.U400.230.380/660
400	4400/7700	FUR03.U400.400.440/770

115	2200/3000	FUR03.U115.115.220/300
230	2200/3000	FUR03.U115.230.220/300

115	3000/4500	FUR03.U200.115.300/450
230	3000/4500	FUR03.U200.230.300/450

The output voltage can drop up to 10% by U<sub>in</sub> min

Mechanical adaptation:

On request

One time projecting costs:

On request

Modification costs for possible changes above values:

On request

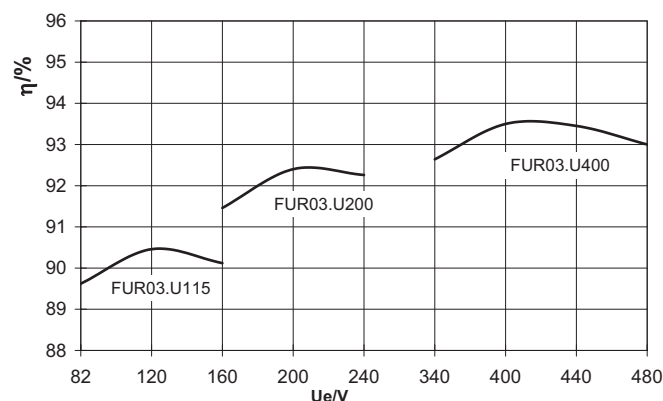
An isolation is possible with an external transformer:

On request

1) output frequency >65Hz:

On request

### Efficiency curve

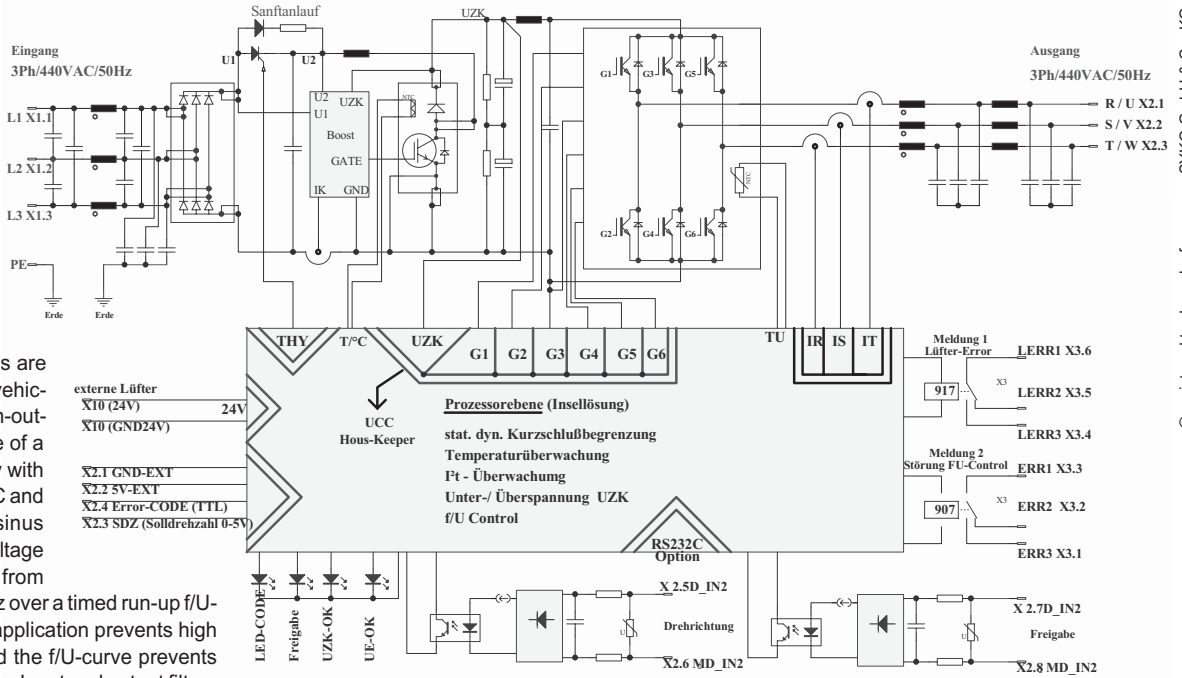


# 3-Ph Sinus Output 4400 VA up to 7700 VA

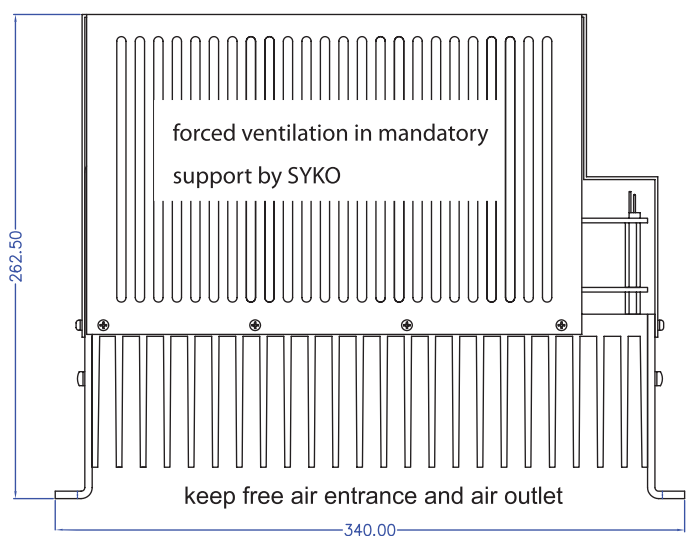
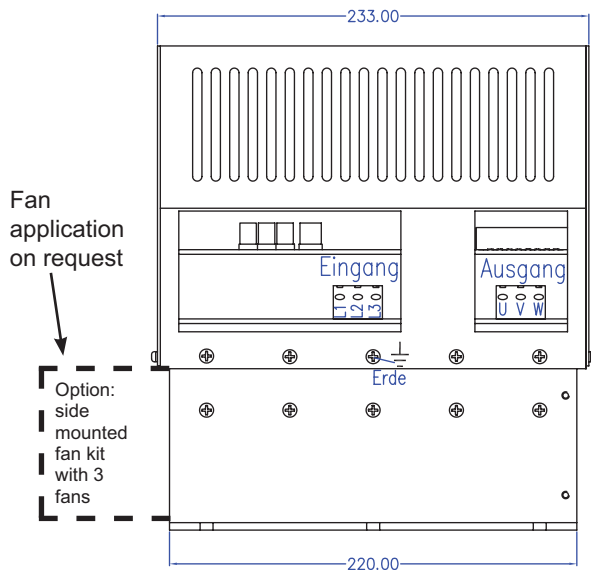
# 3-phase frequency inverter on 3ph-network



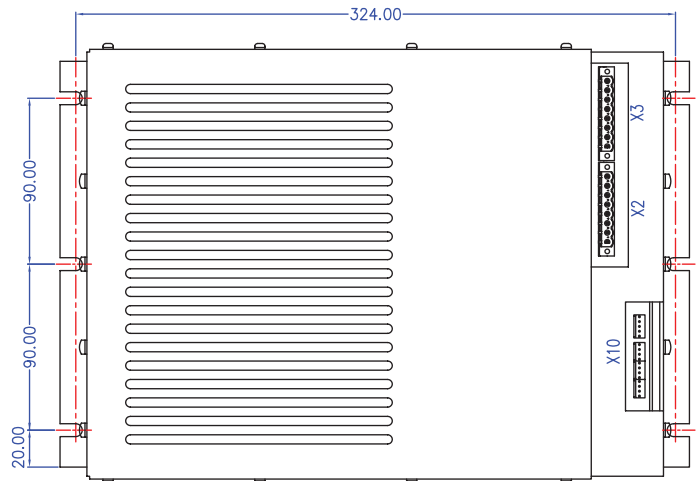
3ph-frequency inverters of the **FUR 03** series have been designed for the use in rolling stock/ railway applications to generate 400/440V  $\pm 10\%$  50/60Hz 3ph-network.



Further applications are the use on Hybrid vehicles to regulate a 3ph-output voltage. By use of a multi-step topology with Booster to 650V DC and 3ph-bridge with sinus choke the output voltage can be adjusted from 0-400V / 50 or 60Hz over a timed run-up f/U-curve. A soft start application prevents high inrush currents and the f/U-curve prevents high run-up currents. Input and output filters reduce the EMC according EN50121-3-2. The output voltage is a synthetic sinus curve with low distortion factor. The features of the Booster's regulated run-up und delayed run-up of the 3Ph-bridge as well as the intermediate circuit's under and over voltage monitoring prevents stress for semiconductors and the re-feeding of the 3ph-bridge.



The stable Booster step works with Average-Current-Mode and must not be synchronised with the 3ph-bridge. The Boost choke is designed as low frequent choke ( $\gg L$ ) that the form of the single phase current is a 120° rectangular phase current. Peak current by rectification to the intermediate capacitors with high crest factor is prevented and idle power is significant reduced. Short circuit proof and floating 24V is available for the optional fan kit. Floating 5V can be returned by potentiometer as 0-5V to generate 0-max f/U. Optionally a RS232-interface is available for intelligent communication. The floating processor level (isolated application) is supplied by an internal intermediate voltage UZK by a house keeper solution. The isolated application prevents disturbances by high frequent potential offset. All functional connections are floating to external applications .



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