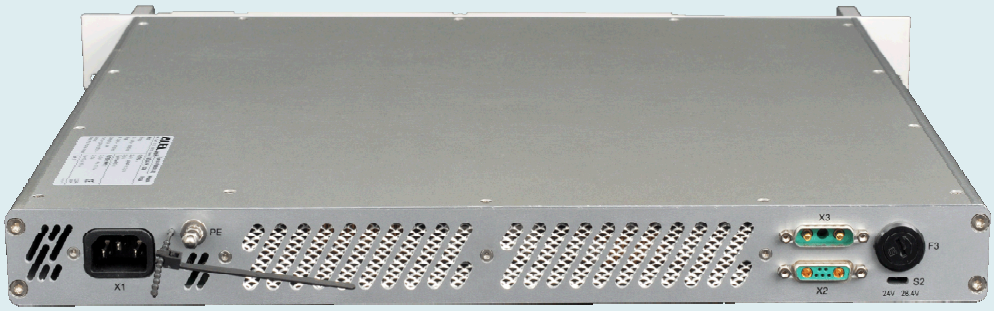
- **Rugged design**
- **Top efficiency > 92%**
- **24 V Stanag- und MIL-certificated**
- **MIL-STD 1399 Sec. 300A (shipboard)**
- **24 V synchronous rectifier**
- **Resonant technology**



Description

This extremely rugged series was designed for rough shipbooard use or also in dirty industrial environments and meets **MIL Std 461 from** 30 Hz / 10 kHz regarding EMC characteristics and STANAG 1008 in terms of mains conditions. The internal fans are super-silent and temperature controlled. The power supply unit is optionally offered as appliance class IP32 for the front side. The shock and vibration stability is proofed according to **MIL-Std 810F** for shipboard eletrical power systems.

Applications

Besides the allowed 24 V-output with battery emergency-current-coupling for radio equipment it is also realisable with many other or additional outputs within the range of permissible total power. Analogue or digital interfaces are optionally possible due to the flexible design.

Target markets

- Mobile MIL-applications
- Communication-technology
- Galvanic (adjustable) current source
- Traffic engineering
- Power station control technology

Variation	Input	Output	Comment	Design
505	90 to 265 V_{AC}	24 / 28.4 V / 27.5 A	Switchable	1 HE / 84 TE
506	195 to 265 V_{AC}	24-28.4 V / 35 A	1000 W	1 HE / 84 TE
507	90 to 265 V_{AC}	48-56.8 V / 15 A	800 W	1 HE / 84 TE
508	195 to 265 V_{AC}	48-56.8 V / 20 A	1000 W	1 HE / 84 TE
509	90 to 265 V_{AC}	60-71.0 V / 12 A	800 W	1 HE / 84 TE
518	195 to 265 V_{AC}	60-71.0 V / 15 A	1000 W	1 HE / 84 TE

** I_{emax}=10 A, i. e. at U_e=90 V_{AC} max. 800 W output power*

Input

input voltage	90....265 V_{AC} and 115 to 375 V_{DC}
Input current	<10 A
Input power	<1100 W
Input frequency	47-63 Hz
Powe factor	>0.98
Inrush current	<16 A_{pk} (limited by NTC)
Input protection	2 x F 10 A, 250 V_{AC}, 5 x 20 mm, internal
Mains' downtime	>10 ms
RFI, isolation, leakage current, voltage- and transient response	See norms

Output

Output power	1000 W max., at U_e=90 V_{AC} 800 W
Output voltage	24 V to 71 V (see table)
Output current	12 A to 35 A (see table)
Output rippel rms/pp	<0.03% V_{RMS} <0.3% Vpp f > 50 kHz
Dyn. Regulation	< 4% / < 1 ms at 30% - 70% to 30% Load Step
Line regulation / load regulation / temperature drift	< 3% overall
Efficiency	typ. 92.5%

Battery input (example for variation V505)

Input voltage	27.5 V_{max}
Input current	max. 27.5 A
Input protection	30 A fast, 6.3x32 mm, accessible from the outside
Polarity protection	Diode and fuse
Changeover	Uninterruptable (by FETs)

Protection

Power limiting	800 W to 1000 W, depends on variation
Current limiting	Constant current >100%
Over-voltage protection	<26.5 V (at 24 V) / <31.2 V (at 28.4 V), depends on variation
Over-temperature protection	Switch-off / automatic restart

Standards

Low-voltage directive	2006/95/EG
Safety	EN 60950-1
High-voltage test	EN 60950-1
Test-voltage	Prim. / Sec. + PE 3 kV_{DC} Sec. / PE / Signals each 100 V_{DC}
Clearance and creeping distances	8 mm Primary – secondary 4 mm Primary - PE 2 mm Secondary – PE
Leakage current	< 3.5 mA
Main shaft	EN 61000-3-2 STANAG 1008 MIL.-STD 1399
RFI	EN 55011 class B
EMC	MIL-STD 461E EN 60945 9.2 and 9.3 ETSI 300373-1 BImSchV 26
ESD	EN 61000-4-2
Burst	EN 61000-4-4
Surge	EN 61000-4-5
Appliance class	I
Ingress protection rate	IP32 (Front) or IP20 according to EN 60529
Mains conditions	STANAG 1008 Ed.9 MIL-STD 1399 Sec. 300A (shipboard electrical power systems)
MTBF	100,000 h Ground Benign (GB) 21°C

Ambient conditions

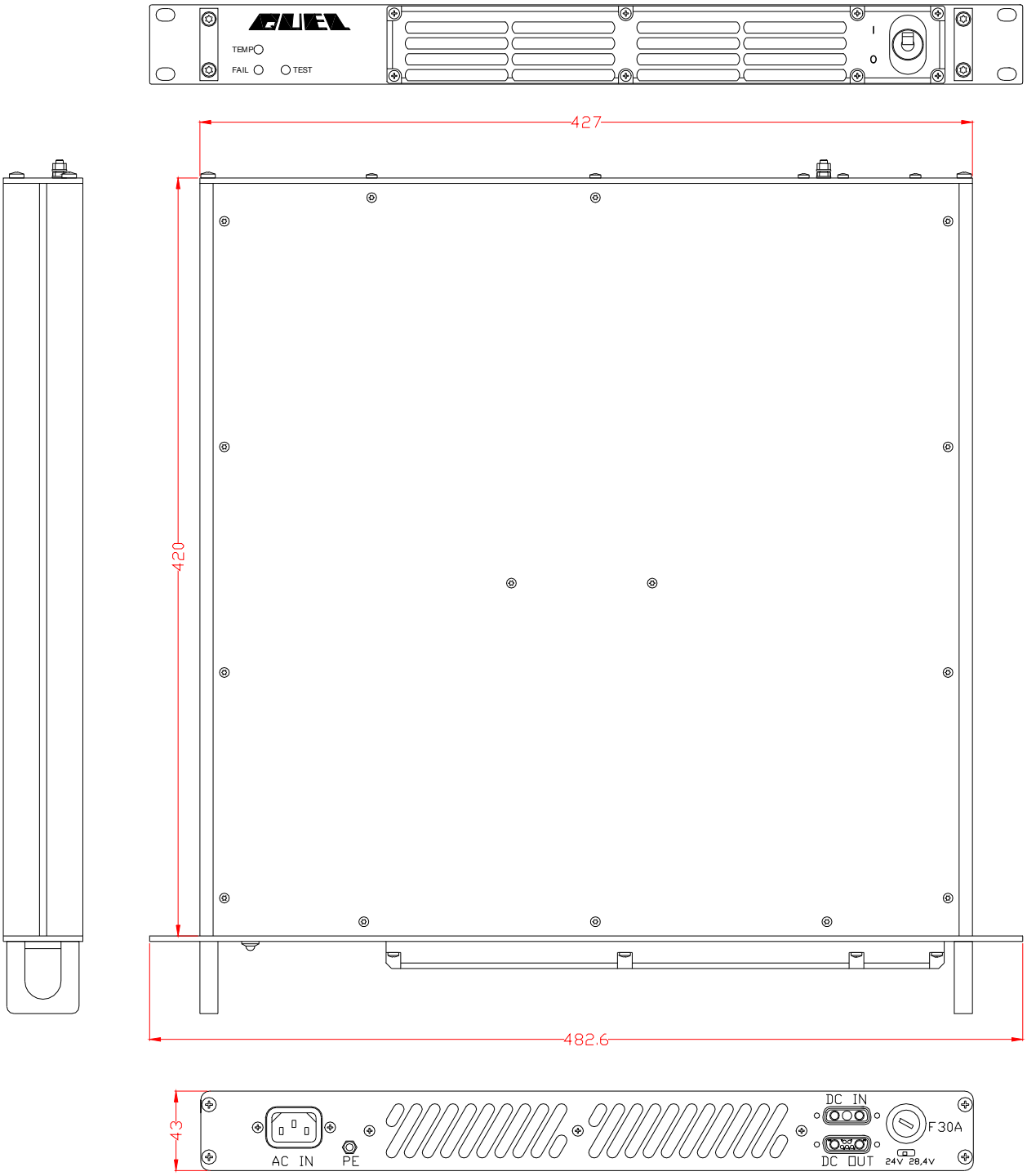
Ambient-temperature range	-20°C to +55°C without power reducing By MIL-STD 810F, EN 60068-2-1+2, ETSI 300373-1
Storage temperature range	-40°C to + 85°C
Humidity	0-95% by MIL-STD 810F method 507.4
Height about NN	5,000 m 10,000 m (transport)
Vibration	MIL-STD 810F, Method 514.5 (Shipboard random vibration exposure) EN 60068-2-64 ETSI EN 373-1 chapter 7.4
Shock	MIL-STD 810F, Method 516.5 50 Hz – 2000 Hz, 40 g EN60068-2-27
Fungus resistance	MIL-STD 810F
Transport (packed)	Falling test: 800 mm Shock: 1000 x 25g / 11 ms, 6 directions

Interfaces

Input connector	Rubber connector (IEC 60320-C14)
Battery input	D-Sub-High current (male 3W2) A1 +Vin A3 -Vin
Output connector	D-Sub-high current (female 7W2) A1 +Vout A2 -Vout 1 Go/No-Go (open collector) 2 Overtemp (open collector) 3 Optocoupler-Emitter

Mechanic / mounting

Measurements	H = 43 mm, B = 427 mm (Front = 482,6 mm), T = 420 mm
Dimensions	1 U / 84 HP / 420 mm (see drawing)
Weight	7.5 kg
Cooling	Integrated fan, temperature controlled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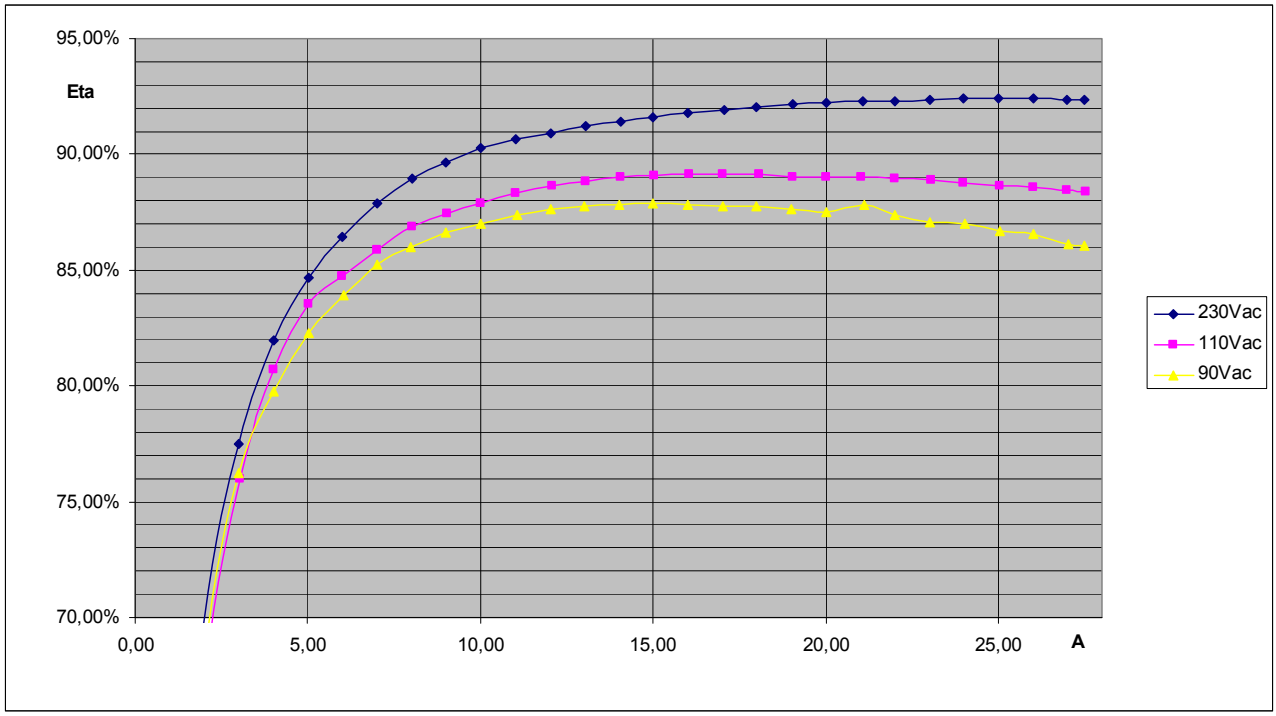
FAIL
TEST
427
420
482.6
43
AC IN
PE
DC IN
DC OUT
F30A
24V 28,4V

Efficiency 24 V-version



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