

Switchmode power supply

INDUSTRIAL / ITE

with interchangeable adapter system.
All products conform to IEC 60950.

FRIWO[®]

FOX12-X



12 W INDUSTRIAL / ITE POWER SUPPLY



UL US
LISTED 6P85



Characteristics

- High efficiency: up to 85.5%
- Low no load power consumption <90mW
- Meets DoE efficiency level VI
- CoC version 5 ready
- Ultra-low leakage current $\leq 10\mu\text{A}$
- IEC 60950-1
- Wide operating temperature range 0 - 45°C
- Double housing safety: snapped & welded
- IP42 approved interchangeable plug system as additional accessories
- Also available as version with fixed plugs: FOX12-F

FOX12-X

12 W INDUSTRIAL / ITE POWER SUPPLY

FOX power supply units are smaller, more powerful and more efficient than their predecessors. FRIWO's new technical concept has again increased energy density. Thanks to a patented interchangeable adapter system, its devices are suitable for use under the toughest conditions and in the harshest environments. New: the optional IP42 adapter from FRIWO is an interchangeable adapter system that offers additional protection for use in damp environments.

Minimal leakage current means that FRIWO's power supply units are also ideally suited for use with measurement technologies, because they prevent unwanted influences that distort measured values. The FOX product family already meets the U.S. Department of Energy's stringent 2016 DOE energy-efficiency standards, which include stricter requirements regarding the efficiency and standby loss of power supply units. As a result, FRIWO already offers devices that exceed future statutory requirements, ensuring the worldwide use of your application. Choosing FOX today is an investment in the future, offering security tomorrow and beyond.

Model Selection: Output Specifications

Article no.	FW Type	Voltage	Current	Power	Ripple voltage*	Efficiency (typ)	No-Load Power
1898115	FW8000/5	5 V	2200 mA	11,0 W	150 mV pp	79,5%	<50mW
1898116	FW8000/6	5.9 V	2000 mA	11,8 W	150 mV pp	80,5%	<80mW
1898117	FW8000/8	7.5 V	1600 mA	12,0 W	150 mV pp	83,0%	<80mW
1898118	FW8000/9	9 V	1300 mA	11,7 W	150 mV pp	83,2%	<60mW
1897510	FW8000/12	12 V	1000 mA	12,0 W	150 mV pp	84,5%	<80mW
1898120	FW8000/15	15 V	800 mA	12,0 W	150 mV pp	85,3%	<80mW
1898121	FW8000/18	18 V	670 mA	12,1 W	180 mV pp	85,5%	<90mW
1898122	FW8000/24	24 V	500 mA	12,0 W	240 mV pp	85,0%	<95mW
1898123	FW8000/48	48 V	250 mA	12,0 W	480 mV pp	85,5%	<90mW

* Ripple measured with 20MHz Bandwidth Oscilloscope and 0.1uF/50V ceramic capacitor and 10uF/50V aluminum electrolytic capacitor across the output terminal.



Input Specifications

Input voltage	100-240 V ±10%
Frequency	50-60 Hz
Input current	300-150 mA
Inrush current (@240V)	< 35 A

General Specifications

Operating temperature	0..+45°C
Operating humidity	10..95 %
Operating altitude	3000 m
Storage temperature	-40°C..+70°C
Storage humidity	10..95 %
Non-operating altitude	3000 m
Atmospheric pressure	70-106kPa
Output voltage tolerance	±5 %
Line regulation	±1 %
Load regulation	±4 %
Turn-on delay	≤2 s
Hold-up time	>5 ms (120 V) >50 ms (230 V)
MTBF calculation	200.000 h acc. Mil217F (based on calculations at 120Vac/60Hz & 230Vac/50Hz, ambient 25°C and 100% load)
Housing material	PC-ABS
Dimensions	77,5x31,5x41 mm
Weight	127 g
AC input	FRIWO interchangeable mains plug system: see Primary Adapters
DC output	FRIWO Universal output plug system: see Secondary Adapters

Safety

Safety standards	IEC/EN/UL60950-1
Approbations	Europe, USA, Australia, Japan
Protection class	II
Isolation	Input - Output 2xMOPP, Input - Ground 1xMOPP
Leakage Current	≤ 10 µA
Flame class	UL 94 V0
IP code	IP40 (IP42 adapters optionally available)
Overload protection	Yes
Overvoltage protection	Yes
Short circuit protection	Yes

EMC Compliance

Conducted and radiated Emmissions	EN55032, FCC15, Class B, EN60601-1-2,			
Immunity	EN55024,			
Harmonics	EN61000-3-2	Class A		
Flicker noise	EN61000-3-3	Yes		
ESD (contact / air)	EN61000-4-2	4kV / 8kV	Criteria B 100V	Criteria B 240V
Immunity against radiated field	EN61000-4-3	10V/m	Criteria A 100V	Criteria A 240V
ETF / Burst	EN61000-4-4	2kV	Criteria B 100V	Criteria B 240V
Surge	EN61000-4-5	2kV / 2kV	Criteria B 100V	Criteria B 240V
Immunity against conducted disturbances	EN61000-4-6	10V	Criteria A 100V	Criteria A 240V
Voltage dips	EN61000-4-11	0% 0,5 Cycle	Criteria B 100V	Criteria A 240V
		40% 5 Cycle	Criteria B 100V	Criteria B 240V
		70% 25 Cycle	Criteria B 100V	Criteria B 240V
		0% 5s	Criteria B 100V	Criteria B 240V
Immunity against magnetic field	EN61000-4-8	30A/m	Criteria A 100V	Criteria A 240V

Drop Test

Standard
Surface
Drop height
Numbers of Drops (total)

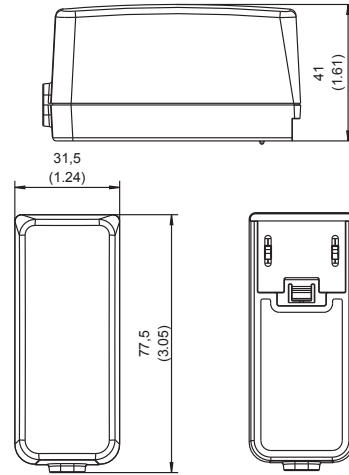
IEC 60068-2-32
 Steel
 1 m
 3

Vibration

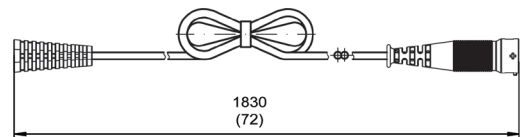
Standard
Frequency range
Cross-over-frequency
Displacement amplitude
Peak acceleration
Number of cycles

IEC 60068-2-6
 10 – 500 Hz
 58 – 62 Hz
 0.2 mm
 3 g
 10 per axis

Mechanical Drawings

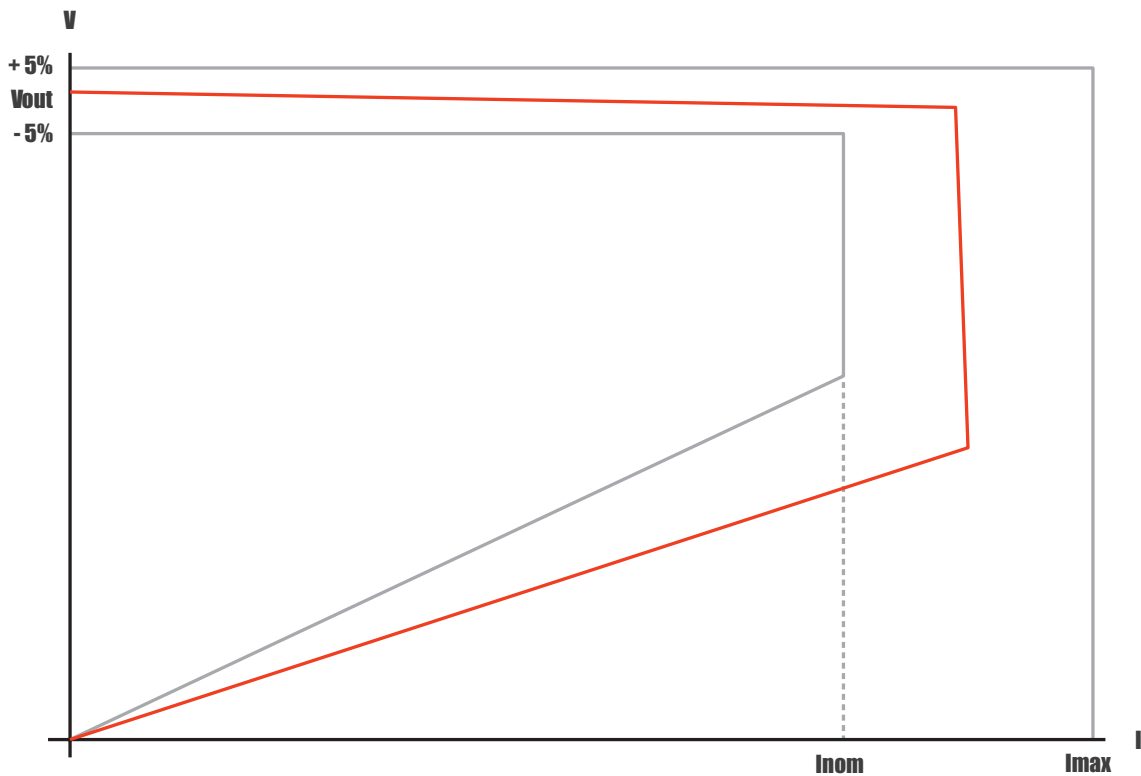


Alle Abmessungen in Millimeter (Inch), Abweichung ± 0,5 (0.02)
 All Dimensions in Millimeter (Inch), Deviation ± 0,5 (0.02)



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Output Characteristics





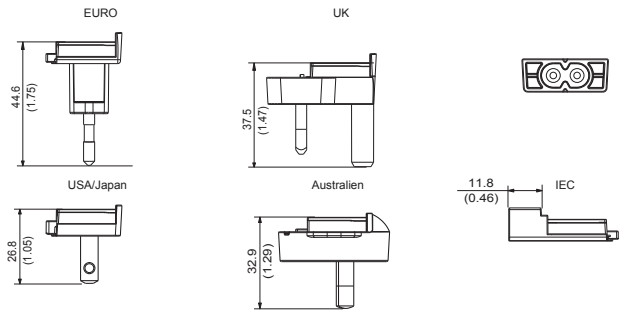
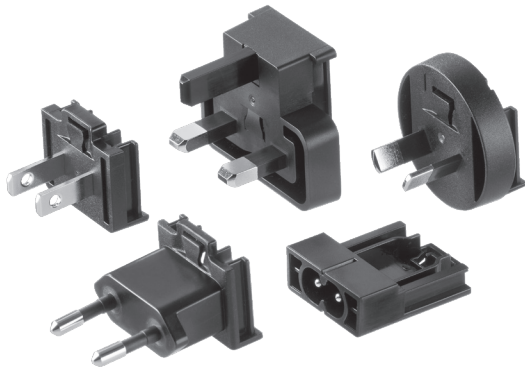
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Primary Adapters

Mechanical Drawings



Alle Abmessungen in Millimeter (Inch), Abweichung ± 0,5 (0.02)
 All Dimensions in Millimeter (Inch), Deviation ± 0.5 (0.02)

FOX	IPx0	IPx2	FOX	IPx0	IPx2	FOX	IPx0	IPx2
Country	Article no.	Article no.	Country	Article no.	Article no.	Country	Article no.	Article no.
EURO	1847556	1847618	IEC	1847552	–	IND 2-polig	1847547	–
UK	1847544	1847606	ARG	1847548	–	IND 3-polig	1847546	–
USA / JPN	1847554	1847604	BRA	1847551	–	KOR	1847545	–
AUS	1847553	1847624	CHN	1847550	–	ZAF	1847549	–

Secondary Adapters

Straight coaxial connectors				Angled coaxial connectors				Straight jack connectors			Connectors / Sockets	
Ø out.	Ø in.	Length mm	Article no.	Ø out.	Ø in.	Length mm	Article no.	Ø out.	Length mm	Article no.	Model	Article no.
3.5	1.3	9.5	1807699	3.5	1.3	9.5	1822478	2.5	13	1807704	Texas connector	
4.0	1.7	9.5	1822557	4.0	1.7	9.5	1822558	3.5	14	1807705	Straight texas connector	1807706
4.0	1.7	11.0	1811994	4.0	1.7	11.0	1822482				Angled texas connector	1822486
4.8	1.7	9.5	1822559	4.8	1.7	9.5	1822560					
5.5	2.1	9.5	1807700	5.5	2.1	9.5	1822479				Texas sockets 2-pin	
5.5	2.1	11.5	1807701	5.5	2.1	11.5	1822480				Snap-in type	1323938
5.5	2.1	14.0	1807697	5.5	2.1	14.0	1822476				PCB type	1321609
5.5	2.5	9.5	1807698	5.5	2.5	9.5	1822477					
5.5	2.5	11.5	1807702	5.5	2.5	11.5	1822481				Texas sockets 3-pin	
5.5	3.3	9.5	1822561	5.5	3.3	9.5	1822562	2.5	13	1822484	Snap-in type	1327259
			DIN 45323	1807703			DIN 45323	3.5	14	1822485	PCB type	1363506