FRIWO

PERFORMANCE

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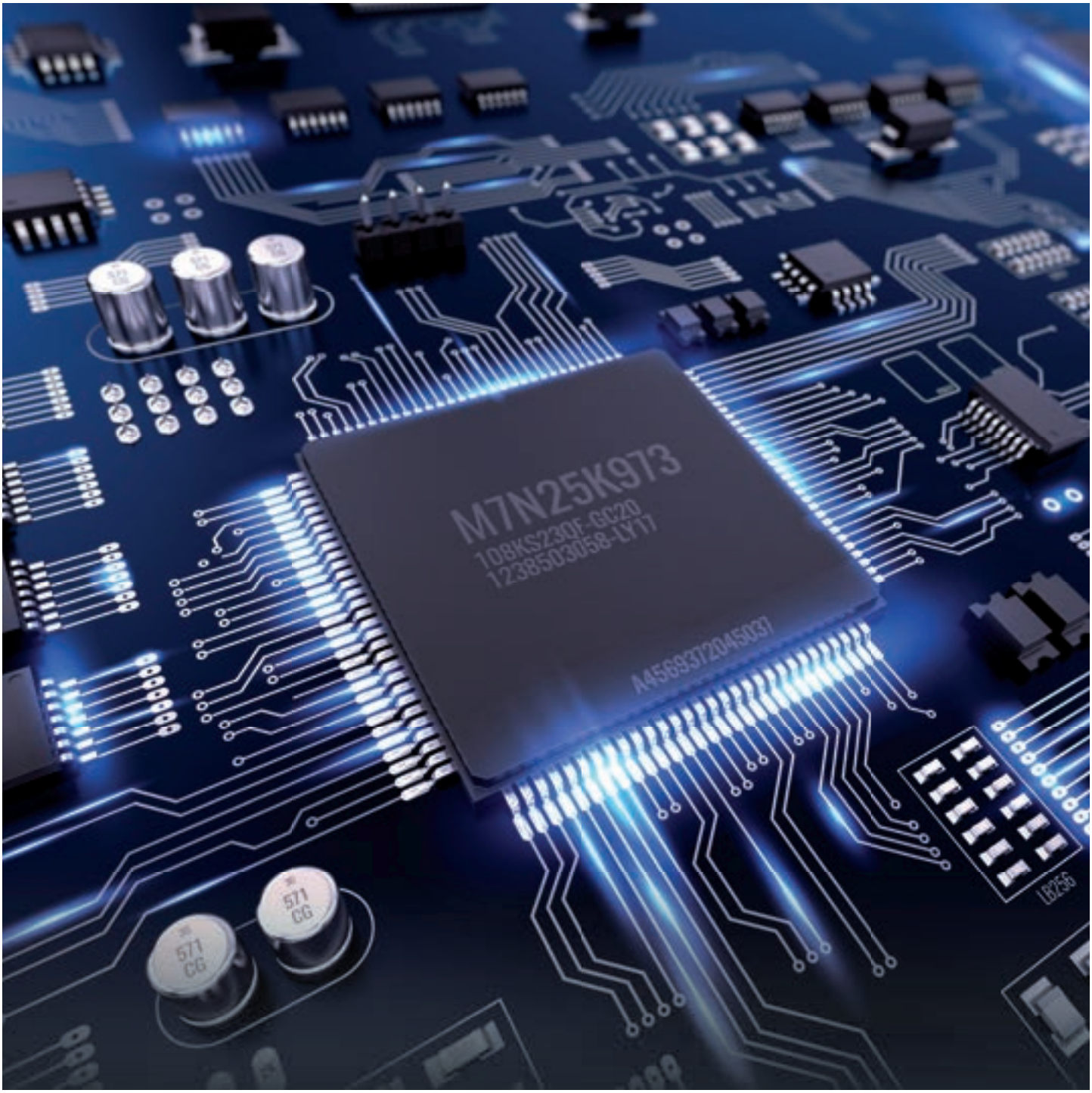

About FRIWO

FRIWO

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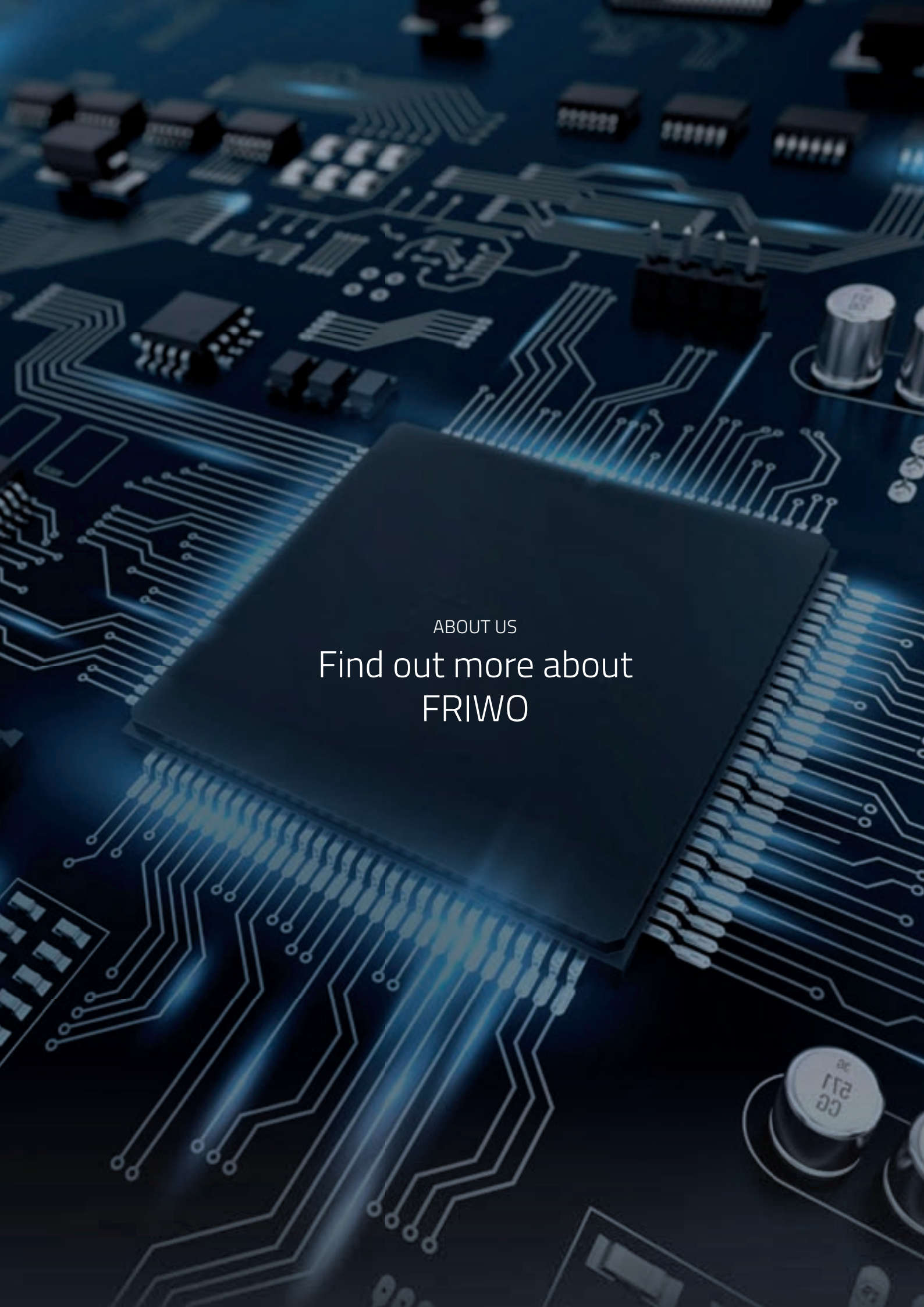
About FRIWO



ABOUT US

Find out more about FRIWO

Get to know us!

Innovative system supplier of smart power supply units and drive solutions

As an international systems supplier, FRIWO develops and produces digitally controllable power supply units and drive solutions from a single source. The product portfolio includes smart components for electric drives as well as premium technological chargers, battery packs, power packs, and LED drivers. All components of a modern electric drive are also provided: from the display, motor control unit and drive unit to the control software.

Ambitious solutions for industries focusing on the future

Our company's products cover a whole host of applications. FRIWO's knowledge in the field of charging technology is particularly appreciated by those in the demanding markets of electric mobility, mobile tools, and robot lawnmowers. In the case of power supply units, the focus is mainly on applications in the medical technology and healthcare sectors, industrial automation and mechanical engineering as well as high-quality consumer electronics. FRIWO LED drivers can be found both in professional interior lighting and in weatherproof exterior lighting. The components for electric drives are mainly used in the field of electric mobility, for example in battery-powered scooters.

We have an efficient mix of in-house manufacturing and subcontractors. The majority of production takes place in three state-of-the-art manufacturing facilities in an industrial park near Ho Chi Minh City (Vietnam). In addition, FRIWO runs a production facility for smaller series at its headquarters in Ostbevern, Germany, which cooperates closely with Polish suppliers. FRIWO procures a small part of its products from two selected contract manufacturers with production sites in China and Vietnam.

With modern development centers, manufacturing facilities and sales locations in Europe, Asia and the US, FRIWO is present in all of the world's key markets. The FRIWO brand stands for innovative strength, security, safety, quality, and efficiency around the world. As proof of this, we are certified according to DIN ISO 9001 (Quality Management), DIN ISO 14001 (Environmental Management), and DIN ISO 13485 (Quality management for medical devices).

FRIWO History

FRIWO

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About FRIWO

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FRIWO History

Explore our history

From a simple plug-in power supply unit made in Ostbevern, Germany to a software-oriented high-tech provider with a global footprint.

Start time travel

1971
Invention of the world's first plug-in power supply unit

Used for cassette recorders - production output: 1,000 units per day

1982
Europe's largest manufacturer of small power supplies and chargers

Manufacturing of 25,000 units per day

1983
Acquisition by CEAG AG

Turnover: DM 73 million
Employees: 640

1992
Certification according to DIN ISO 9001

As the first company in the industry

2002
FRIWO is divided into two divisions

FRIWO Mobile Power (FMP) and FRIWO Power Solutions (FPS)

2005
The „golden power supply"

Production of 1.000.000.000 power supplies

2008
New corporate structures

FMP business unit sold to Flextronics CEAG AG is taken over by VTC and renamed FRIWO AG

2013
Breaking through the sales barrier

FRIWO generates sales of over 100 million euros for the first time

2014
A first step towards a system concept

The company starts manufacturing battery packs

2016
Grand Opening Vietnam

Opening of a state-of-the-art production facility in Vietnam

2018
Takeover of Emerge-Engineering GmbH

Developer and manufacturer of components for electric drives

2018
Certification according to DIN ISO 13485

An additional quality promise for medical technology

2019
FRIWO has changed - now our logo does, too!

FRIWO

2021
50 years of FRIWO

Half a century of innovative strength coupled with German engineering expertise

What's next?

FRIWO Network –
At home around the world

FRIWO

AT HOME AROUND THE WORLD

Discover our international network of expertise

FRIWO stands for a pioneering spirit, innovative strength, German engineering prowess, quick decision-making, and an international network of expertise. With modern development centers, manufacturing facilities and sales locations in Europe, Asia and the US, FRIWO is present in all of the world's key markets. We employ more than 2,600 people at our locations around the world.

GERMANY

Modern research & development center and manufacturing "made in Germany"

Our headquarters have been located in the region of Münster, Germany, since 1971. In addition to administration, management and sales, the company headquarters in Ostbevern focuses primarily on research and development.

As one of the few companies in the industry, FRIWO also has a local manufacturing site in Germany, which means the products it manufactures there are made in Germany. The state-of-the-art facilities with the highest degree of automation ensures production is flexible.

Last-minute assembly

A key advantage of manufacturing in Germany is also the last-minute assembly of standard products, which offers our European customers the fastest possible delivery times.
In addition to the specialized production of battery packs, our European logistics center is also located in Ostbevern, Germany. The German FRIWO location is certified according to ISO 9001, ISO 13485, and ISO 14001.

FRIWO VIETNAM

The best of both worlds: German manufacturing expertise and attractive manufacturing conditions

As one of its most recent growth milestones, FRIWO set up manufacturing facilities in 2015 in Dong Nai, an international industrial park 30km outside of Ho Chi Minh City, Vietnam.

The focus of this center of competence for the production of complex chargers and power supply units is on the production of a higher volume. The new location in Vietnam brings together manufacturing expertise for flexible production processes and attractive manufacturing conditions in Asia, therefore combining the best of both worlds.

In addition to the two production facilities for end devices, FRIWO's production base in Vietnam also includes its own transformer and choke production as well as a production facility for cables, plastic- and metal stampings. Important product components for FRIWO's end devices are produced there.

State-of-the-art manufacturing according to European standards

In line with FRIWO's vision as a quality leader, manufacturing is also carried out in Vietnam according to European standards under German management. This is where we clearly differ from other Asian manufacturing operations: In the state-of-the-art manufacture of ESD flooring, we have invested in nitrogen soldering equipment and automatic testing and inspection systems. Temperature and humidity are fully controlled in the storage and production facilities to the benefit of both the components and our employees.
In our in-house training center, we provide the workforce with education, training, and further development, therefore ensuring the quality of production is consistently high. FRIWO also sets standards in Vietnam with regard to the wellbeing of its employees.

Vertical Integration

FRIWO is always growing with the aim of ensuring maximum security of supply and the highest quality control. Today, it no longer only manufactures end devices in-house, but also the key necessary components. As part of its vertical integration, the Vietnam site no longer comprises only the main plant for the production of power supply units and chargers, but also two supplier plants. The following expansions were made there:

- In-house manufacture of winding components (2017)
- In-house cable assembly (2018)
- In-house injection molding facilities (2019)

FRIWO Vietnam is certified according to ISO 8000, ISO 9001, and ISO 14001.

Plant I	**Plant II**	**Plant III**
Production of power supplies and chargers THT & SMD Competence center for wave soldering	Production of transformers, chokes and coils	Production of DC cables and wires Production of housings and plastic bobbins Warehouse for raw materials and finished products
Total area 10,827 m² Production 3,000 m² Warehouse 1,000 m² Office 1,025 m²	Total area 7,500 m² Production 5,000 m² Warehouse 1,000 m² Office 400 m²	Total area 11,000 m² Production 3,200 m² Warehouse 4,000 m² Office 400 m²
Available production hours per month:* Single shift system: 140,000 h Two shift system: 270,000 h *with all production lines installed	Available production hours per month:* Single shift system: 180,000 h Two shift system: 320,000 h *with all production lines installed	Available production hours per month:* Single shift system: 100,000 h Two shift system: 170,000 h *with all production lines installed

FRIWO INDIA

In tune with the times

India is one of the fastest growing markets for electromobility around the world. It was therefore obvious that FRIWO, as an innovative system supplier of power supply units and drive technology, would become represented there with its own sales location. We offer on-site production opportunities to flexibly serve the demanding market.

Founded in 2020, our branch there is located in Bengaluru (formerly Bangalore), the heart of India's high-tech industry. Bengaluru is the capital city of the state of Karnataka. The megacity has over 10 million inhabitants and is also referred to as India's Silicon Valley.

FRIWO CHINA

Local team for closest proximity to customers

Staying close to our customers – FRIWO also lives up to this guiding principle in China. Some time ago, we established a location in the electronics center in Shenzhen to serve one of the world's largest markets with our own local team.

However, China is not only of great importance for the industry in terms of sales, but also as a procurement market for components. This is why we have specialists in procurement and quality assurance in procurement at our location there.

FRIWO China is certified according to ISO 9001.

TIME-markets:
Power supply units and charging technology to the highest standard

FRIWO

TOOLS

Shortest possible charging times for constant availability

We know our trade – and those of your customers: Efficient, rapid chargers with high charging currents ensure short charge times and increase the availability of battery-operated power tools and garden devices. Whether for professional users or experienced DIY enthusiasts, charging technology from FRIWO means that when a project takes a little longer, it won't be because of an empty battery.

Always ready for the next project

Smart, rapid charging technology

Our power supply units should make the end-user's work as easy as possible. Multiple charging solutions from FRIWO detect different battery pack configurations and can charge cells with different chemistries.

The use of modern communication interfaces not only allows consistent monitoring and control of the charging process, but also smart communication with the end user. Read-outs of residual battery capacity, the number of charging cycles, or the remaining running time are simple examples of the huge range of possibilities offered by modern charging systems made by FRIWO.

Our technology also gives tool manufacturers huge advantages. For example, sensors in the battery allow us to take detailed error analysis, and the detection of the causes for device malfunction, to a whole new level. We also offer state-of-the-art authentication processes between the battery and charger to combat product piracy.

Robust solutions for the toughest conditions

Heavily used tools have to withstand a lot: Hammer drills get very hot. Battery-operated hand-held circular saws run in their own dust. Hedge trimmers are left in light rain, while robot lawnmowers are outside in every weather. It is easy to forget that the battery and charger, not just the device itself, has to offer optimum performance under those conditions.

We use potting to protect the electronic elements of our power supply units from dust and moisture in the most challenging environments. Thanks to our patented component potting technology, that doesn't come at the cost of a disproportionate effect on the weight of the product – which is sure to please the user.

Our considerable experience in the field of convection cooling is particularly useful when designing solutions for environments that are anything but sterile. Eliminating the cooling fan removes a malfunction-prone component from the device, extending its life.

The demands placed on a charger and battery are as diverse as the tools they power. Tell us about the specific challenges you face, so that we can develop innovative solutions together – there's a reason why numerous well-known companies in the industry rely on our expertise.

Cordless garden tools

Low weight and minimum installation space for maximum convenience

Robot vaccum cleaners

Long battery life for increased living comfort

INDUSTRIAL
Outstanding performance in the most challenging environments

Extraordinary requirements call for extraordinary power supply solutions. Whether the area of application creates special requirements in terms of shock, damp or temperature resistance, or the possibility of production outages has to be prevented using smart monitoring and communication of the device's status – our innovative solutions ensure reliable security of supply, even under extreme conditions.

Challenging environments are what we live for!

Peak performance for industrial applications

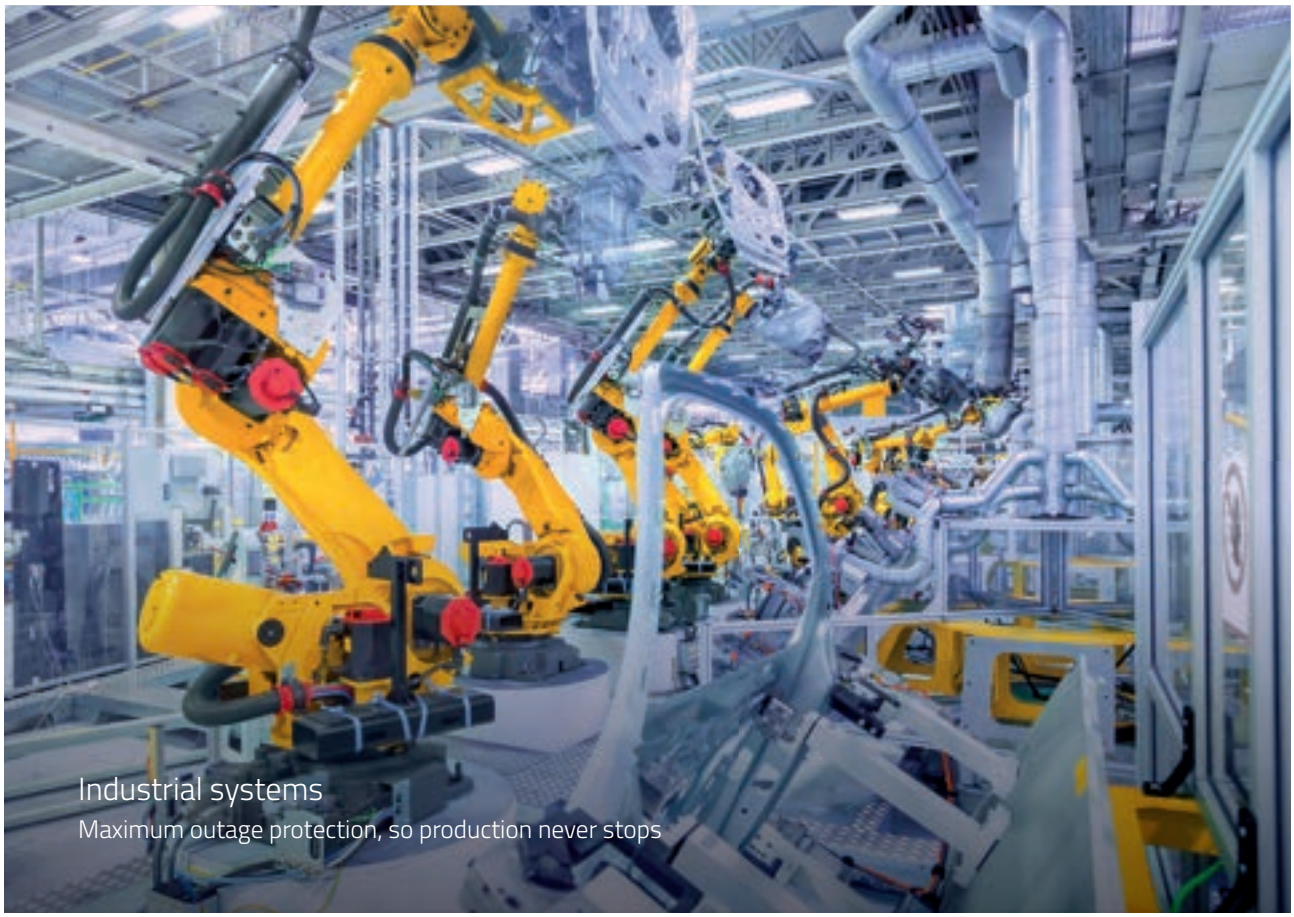
Peak performance often calls for peak current. Standard power supply units cannot deal with short peaks in current and fluctuating load profiles. Brief spikes in energy demand can put an excessive burden on many power supply units, and have a negative effect on their performance and operating life. As an expert in the development of customer and application-specific power supply units, FRIWO offers technical solutions that can handle those situations. That means your application always receives the power it needs.

We also achieve outstanding performance in other areas – including power density and installation space, dust and damp resistant potting of electronics, or with regard to electrical safety measures for possible malfunctions. That means you can safely operate your device in the intended area of application – regardless whether it is an environment with an explosive atmosphere (ATEX), at a maximum operating altitude, or in damp or wet rooms.

Smart system monitoring

Is the power supply unit overheating due to overloading? Is it approaching the end of its operating life? How many working hours has the power supply unit been in use? Should you replace it now, because it is at the end of its operating life and it could cause a costly system outage?

In the past there were no definitive answers to those questions. But these issues can be solved using FRIWO technology. Constant monitoring of the device's status, and the use of state-of-the-art communication interfaces, mean the user is always kept up to date.



Industrial systems

Maximum outage protection, so production never stops

Gate and garage door drives

Short peaks in current? We offer a long-term solution

MEDICAL
Complete security of supply for critical applications

Heart failure – one of the most feared medical incidents. If the heart fails, then so does everything else. The same is true of your application's power supply. If it fails, then the entire system is affected – with catastrophic consequences for medical technology.

That is why a reliable power supply partner is essential. We want to live up to that expectation. Since the invention of the first plug-in power supply unit in 1971, our customers have relied on our expertise – and we have manufactured far over a billion power supply units. Almost half a century's experience, and our German engineering skill, guarantee your application's power supply – and with it the patient's safety.

Medical power supply: The heart of the application

Innovative solutions for the highest requirements

FRIWO's medical power supply solutions are designed for the most challenging conditions. Whether the aim is to survive falls during tumultuous emergency treatment thanks to patented potting technology, to protect the patient with minimum leakage current of ≤10µA, or to secure the power supply with redundant systems and battery-operated backup solutions: FRIWO develops and manufactures reliable power supply units.

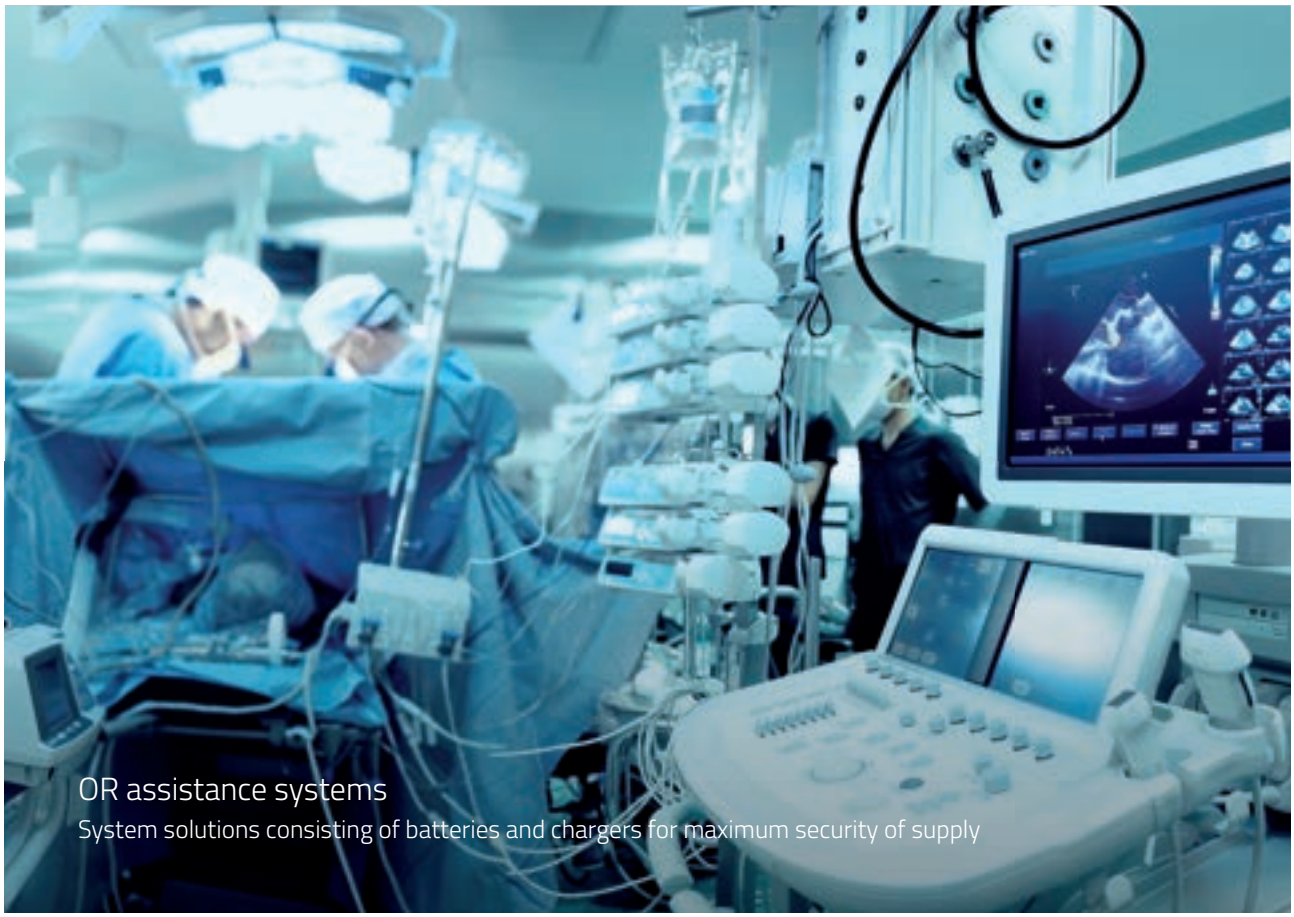
We thereby keep our focus on user safety and develop innovative concepts that make day-to-day medical life easier. For example, in the area of inductive charging technology – we already offer contactless energy solutions with power transmission of up to 150 W and simultaneous transmission of data. The use of inductive charging technology allows the development of medical devices with completely sealed housings – a huge advantage in sterile working environments!

FRIWO takes possible future changes to norms and increasing efficiency requirements into account in development and manufacturing, to ensure the seamless long-term marketing of your products. And FRIWO is a reliable partner for advice about legal requirements, such as the Medical Device Regulation (MDR). On request, we can use materials that ensure a high level of biocompatibility in our medical power supply units.

Certification according to ISO 13485 as an additional quality commitment

Certification according to ISO 13485, in particular, represents an additional quality commitment for medical technology, because the standard defines the regulatory requirements for comprehensive management systems at medical product manufacturers. As an internationally recognized norm, the standard includes guidelines for construction and development, production, installation, maintenance, and operation.

This certification sets tough standards for exact compliance in every process step. There is a particular focus on risk management, as well as complete and consistent documentation; not only to minimize risk, but also to ensure optimum traceability of products and components.

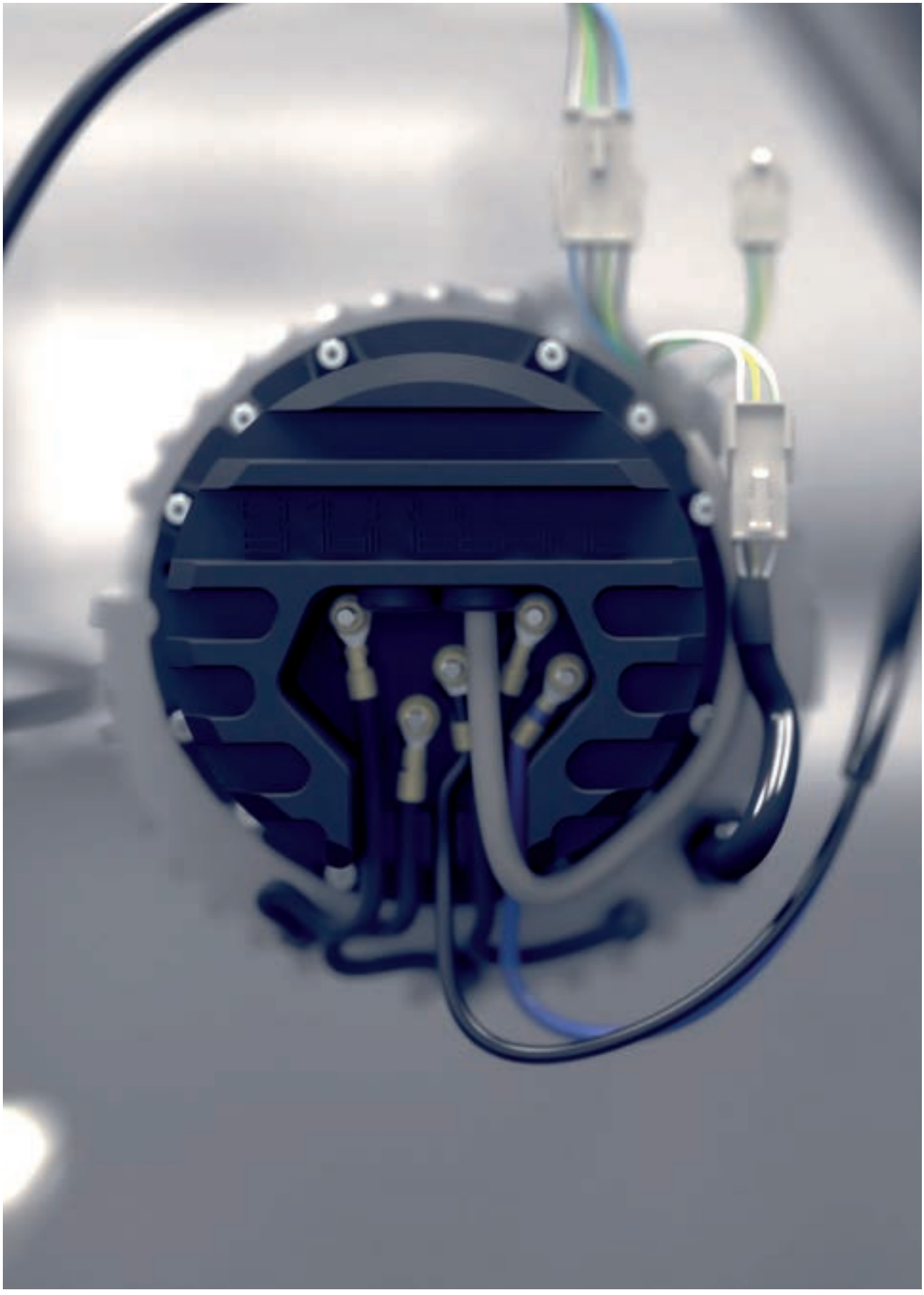


OR assistance systems

System solutions consisting of batteries and chargers for maximum security of supply

Feeding pumps

Effective protection of electronics from peak loads



E-Mobility

Innovative power supply units and drive systems for limitless mobility

The key to a perfectly functioning overall system is the precise selection and detailed matching of individual components. To make sure that the process is a success we offer you a complete package: As a provider of drive technology systems we can deliver all the components required for a modern electric drive train from a single source – including the required control and service software.

Unparalleled driving pleasure: Next-level electromobility

Digitally controlled drive systems

Our portfolio includes a modular system consisting of the display, motor control unit, drive unit, battery pack, and charger, with the option of digital control and monitoring. Our in-house software allows the behavior of individual components to be amended – whether by the vehicle manufacturer on the production line or by the driver with an app in everyday use.

The software can be used to configure the behavior of individual components completely independently, giving your vehicle its own character that sets it apart from standard solutions. You can offer the user different driving profiles and fully brand the vehicle's digital displays in line with your corporate design, to create a unique customer experience and strengthen brand recognition. And, last but not least, you can intelligently network your vehicles to gather more knowledge about your product with each additional kilometer driven, and allow wireless updates.

You call it a unique driving experience. We call it system solutions made by FRIWO.

Charging and battery technology

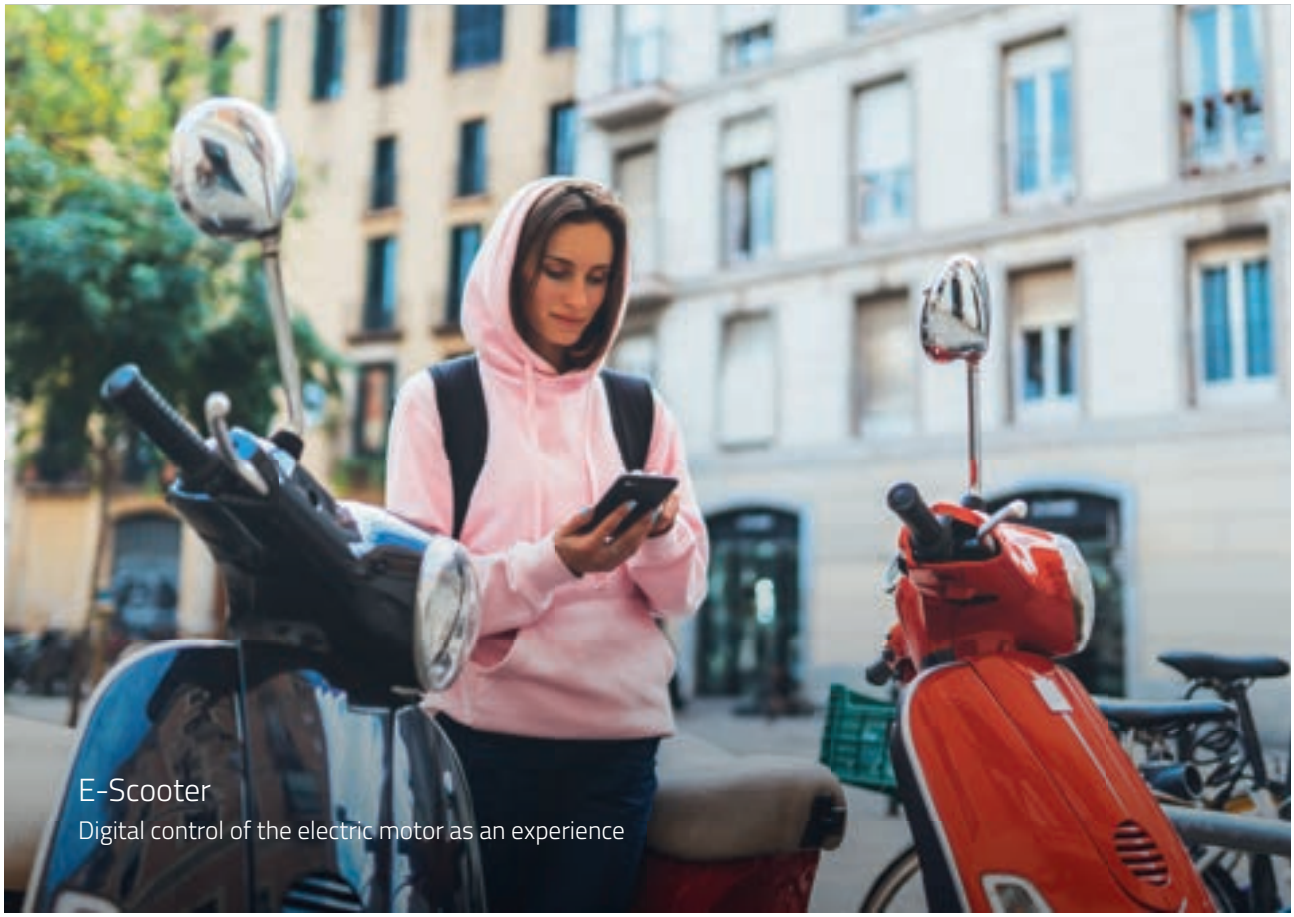
The future of mobility is green, just like FRIWO's charging technology. Maximum efficiency and minimum standby loss ensure environmentally conscious transportation. Our devices comply with diverse safety concepts, while offering high charging currents and a full battery in the shortest possible time – so that you don't spend your valuable time stuck at the power outlet.

Our market-leading position in the field of e-bike charging technology means we are intimately familiar with the requirements of optimum power supply systems for light electric vehicles (LEVs). Along with short charging periods, user-friendly operation thanks to state-of-the-art communication interfaces and the exceptional robustness of our devices are key to the experience of limitless electromobility.

From the user's perspective, we see our chargers and battery solutions as constant companions that should not stand in the way of the next trip because of their size or weight. Our solutions are custom made for green transportation, and our development goal is, of course, zero standby power.

E-bikes

Rapid charging with minimum installation space



E-Scooter

Digital control of the electric motor as an experience

Customized solutions – FRIWO as OEM partner

FRIWO

CUSTOMIZED SOLUTIONS

May it be a little more?

Customized solutions

One of the main reasons why companies outsource their production is to reduce costs. This allows them to focus more on their own skills and core competencies - they look for solution providers that offer expertise in their specific area or market sector.

Many special requirements can hardly be handled by standard power supplies. Be it solutions for short-term current peaks and fluctuating load profiles in drive technology, the encapsulation of electronics for use in damp rooms or the strictest measures for patient protection in medical technology - industrial applications use many technologies in a wide range of sectors.

From scope and specification, to prototyping and testing, to custom manufacturing of your product (Customizing) - with our years of experience as an OEM service provider in a wide range of industries and our leading know-how, we are reliably at your side as an expert for customized power supplies!

As one of the few OEM providers in the industry, FRIWO also has an on-site manufacturing location in Germany and can produce „Made in Germany". The highly flexible manufacturing facility has state-of-the-art production equipment with the highest level of automation.

We are looking forward to your inquiry.

Electronic Manufacturing Services

FRIWO

ELECTRONIC MANUFACTURING SERVICES

Electronic assembly and equipment manufacturing

Electronic Manufacturing Services

Full service from a single source

As an experienced EMS service provider, we offer end-to-end contract manufacturing of electronic assemblies and equipment. You provide technical documentation, such as component lists and drawings, and we do the rest – supplying everything you need from a single source. We work closely with you throughout: Our experienced EMS team offers competent support, from the initial enquiry through to the finished device.

Thanks to our EMS services, you too benefit from a significant synergy effect: You can concentrate on your core competencies and gain access to additional capacities, avoiding capacity bottlenecks or surpluses. FRIWO is certified according to DIN EN ISO 9001:2008, DIN EN ISO 14001:2009, and DIN EN ISO 13485:2016. The company is equipped with state-of-the-art technology and meets the latest manufacturing standards, thereby reducing commercial risk on your part while avoiding the need to invest in new technologies.

How can we help you?

FRIWO's support services include everything from the production of entire devices or systems, through to testing and packing and, finally, delivery to your customers. Our procurement professionals handle the worldwide sourcing of the required electronic and mechanical components. Automatic inspection systems ensure process safety. Special laser equipment sets the required voltages and currents (active laser adjustment). And our quality department is closely involved in the manufacturing process, and monitors each individual stage of production.

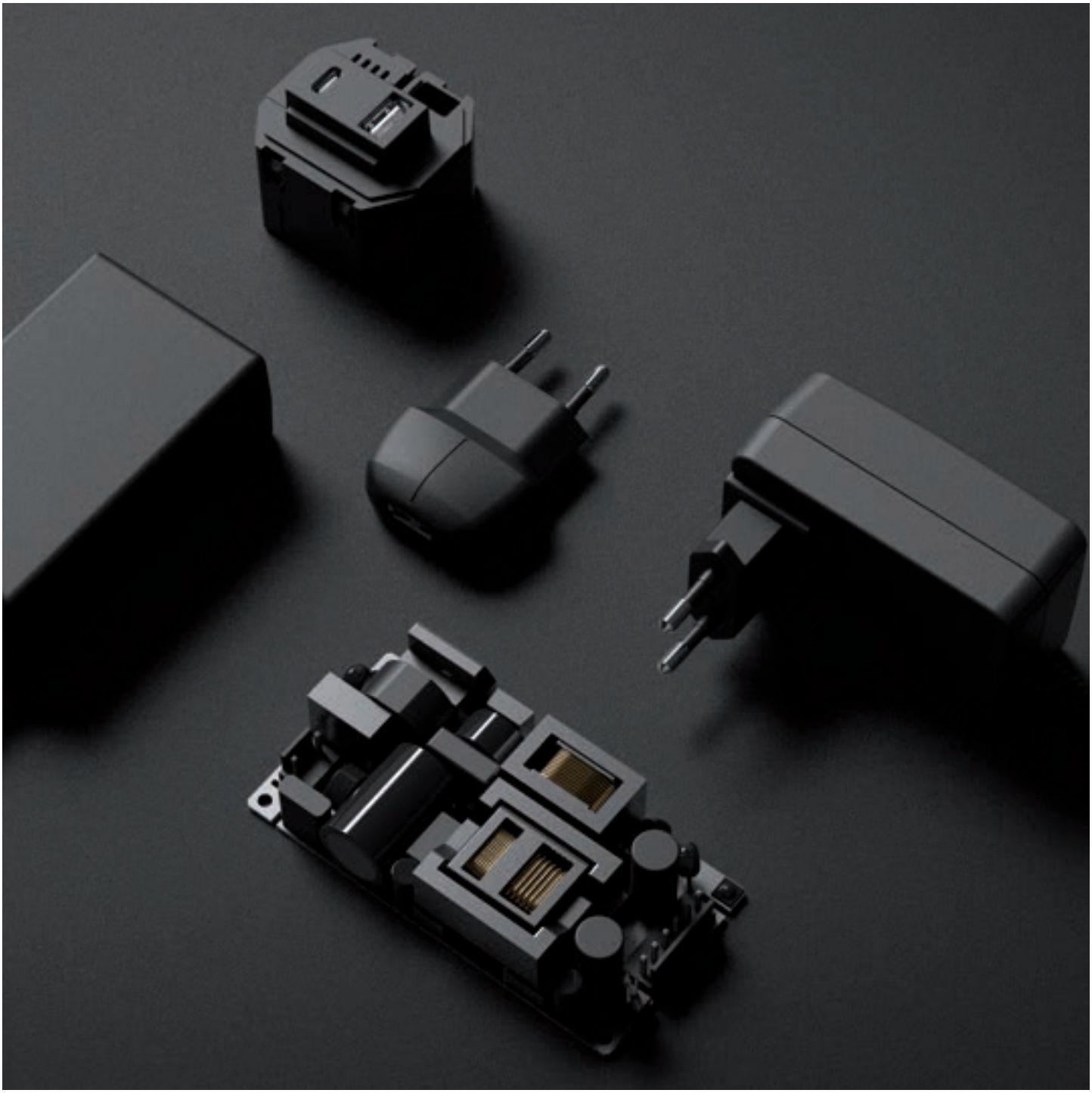
Electronic Manufacturing Services

Service portfolio

Traceability & MES	Uninterrupted traceability
PCB assembly	THT SMT
Placement technology	Adhesive technology Reflow technology Wave soldering Selective soldering
Testing	Automatic optical inspection In-circuit tests Functional tests Safety tests X-ray inspection
Equipment protection	Protective coatings for circuit boards Potting technology
Assembly	Screwdriving Ultrasonics technology
Labeling	Pad printing Laser labeling
Battery manufacturing	Assembly and testing of battery packs
Small-batch production	Prototyping
Handling of complete sub-assemblies	From circuit boards to whole devices
Testing equipment	Development and construction inhouse
Material management	Worldwide
Certifications	DIN EN ISO 9001:2000 DIN EN ISO 14001:2005 DIN EN ISO 13485:2016

Technical equipment

SMD assembly (50,000 components/h)	ASM X 2 ASM X 3 ASM X 4 MPM Printer Dispenser GPD/Micronic
THT assembly (90.000 components/h)	Universal 8 XT Triple Scan Universal VCD/Sequencer 8
Wave soldering	ERSA Powerflow N2 (lead free) ERSA selective soldering system
Testing equipment	AOI systems (EOL, paste AOI) 3D coordinate measuring machine (Mitutoyo BHN 506) In-circuit/combined testers (Reinhardt/SPEA) Laser trimmer (general scanning) Functional testing technology incl. high-voltage and leakage current tester (Sefelec) EMC lab X-ray unit
Potting/varnishing	Scheugenflug



Power Supplies

Maximum efficiency and long service life

FRIWO

POWER SUPPLIES

02

Power Supply Solutions


FRIWO

Ready for the future

Over the last few decades, our power supplies have become synonymous with innovative strength, safety, quality, and efficiency around the world. A prominent example of our high-quality standards is our particular expertise in medical technology. This field, like in a few other fields of application, requires reliable product safety, long life, and durability. Expertise that also benefits all other fields: from industrial use and the IT sector through to professional audio equipment, we supply the power required.

It doesn't matter whether it is a standard product or a customized development, our unique global manufacturing and logistics concept ensures fastest possible delivery times and maximum product availability. With all our developments, we always work with the appropriate foresight for upcoming changes in norms and increasingly stringent efficiency standards – ensuring that you are prepared today for what the future may bring!

FOXNEO: A standard product that sets new standards.

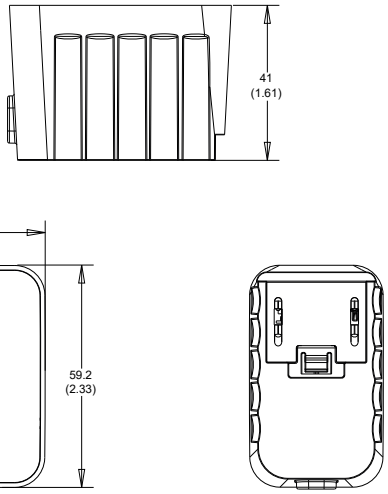
With the FOXNEO family of devices, FRIWO completely redefines power supplies in terms of design.

But the inner workings are also impressive: high efficiencies and low standby losses stand for compliance with the latest efficiency standards. In addition, the lowest leakage currents, the MOPP protection class and a long service life enable use in the most demanding environments.

And best of all: delivery times as you could wish for. Within the shortest possible time to the configured design power supply? Only FOXNEO can do that!

NEO006.0-I-X

FOX NEO6-X



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

Voltage	Current	Ripple voltage
5 V	1400 mA	180 mV pp
12 V	600 mA	200 mV pp
24 V	300 mA	240 mV pp

Please use the **NEO configurator** to order your individual desired configuration:
friwo.link/neoconfigurator

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	160 – 80 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 3 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	5000 m

Safety specifications

Layout acc. to safety standard	IEC 62368-1
Approvals	EU, USA, AUS, JPN, CN, RUS
Safety class	II
EMC	EN 55032, EN 55035*

Mechanical data

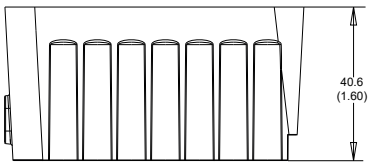
Dimensions	59.2 x 35.4 x 41.0 mm
Weight	62 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	Secondary adapter system

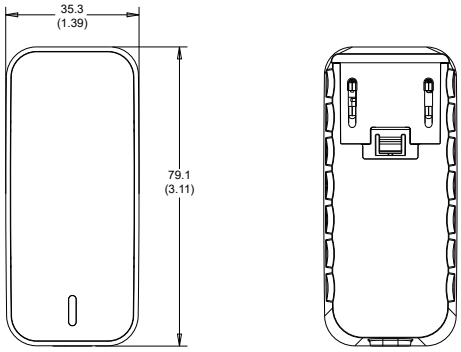
* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

Date of release: 08/2021

NEO012.0-I-X

FOX NEO12-X





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

Voltage	Current	Ripple voltage
5 V	2000 mA	150 mV pp
12 V	1000 mA	170 mV pp
24 V	500 mA	240 mV pp

Please use the **NEO configurator** to order your individual desired configuration:
friwo.link/neoconfigurator

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	300 –150 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 2 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	5000 m

Safety specifications

Layout acc. to safety standard	IEC 62368-1
Approvals	EU, USA, AUS, JPN, CN, RUS
Safety class	II
EMC	EN 55032, EN 55035

Mechanical data

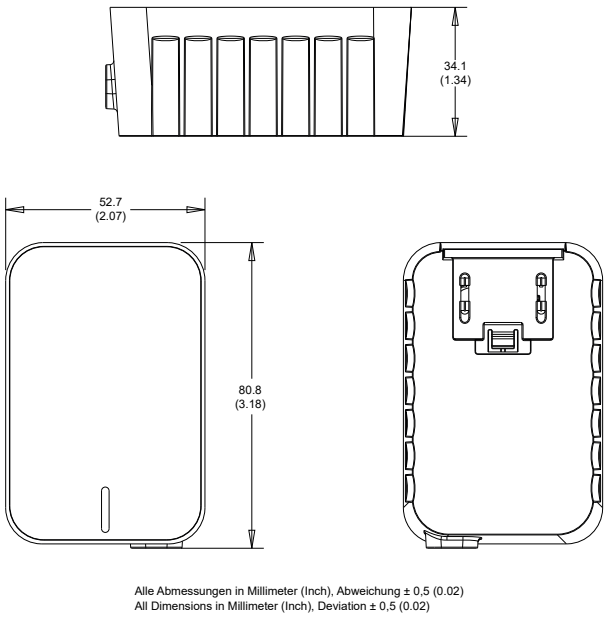
Dimensions	79.1 x 35.3 x 40.6 mm
Weight	86 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	Secondary adapter system

* MIL217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

Date of release: 08/2021

NEO018.0-I-X

FOX NEO18-X



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

Voltage	Current	Ripple voltage
5 V	3000 mA	150 mV pp
12 V	1500 mA	120 mV pp
24 V	750 mA	180 mV pp

Please use the **NEO configurator** to order your individual desired configuration:
friwo.link/neoconfigurator

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	400 – 200 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 1 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 50° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	5000 m

Safety specifications

Layout acc. to safety standard	IEC 62368-1
Approvals	EU, USA, AUS, JPN, CN, RUS
Safety class	II
EMC	EN 55032, EN 55035

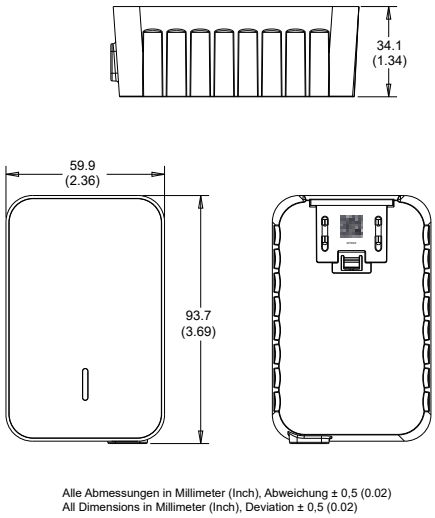
Mechanical data

Dimensions	80.8 x 52.7 x 34.1 mm
Weight	105 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

NEO030.0-I-X

FOX NEO30-X



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

Voltage	Current	Ripple voltage
5 V	5000 mA	150 mV pp
12 V	2500 mA	120 mV pp
24 V	1250 mA	200 mV pp

Please use the **NEO configurator** to order your individual desired configuration:
friwo.link/neoconfigurator

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	600 – 300 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 3 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	4000 m

Safety specifications

Layout acc. to safety standard	IEC 62368-1
Approvals	EU, USA, AUS, JPN, CN, RUS
Safety class	II
EMC	EN 55032, EN 55035

Mechanical data

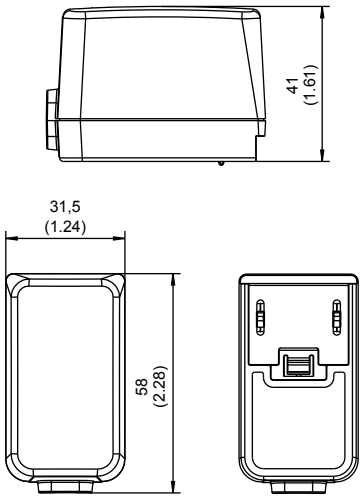
Dimensions	93.7 x 59.9 x 34.1 mm
Weight	135 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	Secondary adapter system

* MIL217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

Date of release: 08/2021

FW8002.1

FOX6-X



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

Voltage	Current	Ripple voltage	Article no.
5 V	1400 mA	180 mV pp	1960487
5.9 V	1200 mA	150 mV pp	1960488
7.5 V	800 mA	150 mV pp	1960489
9 V	800 mA	150 mV pp	1960490
12 V	600 mA	200 mV pp	1960491
15 V	500 mA	200 mV pp	1960492
18 V	400 mA	180 mV pp	1960493
24 V	300 mA	240 mV pp	1960494

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	160 – 80 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 3 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	5000 m

Safety specifications

Layout acc. to safety standard	IEC 62368-1
Approvals	EU, USA, AUS, JPN
Safety class	II
EMC	EN 55032, EN 55035

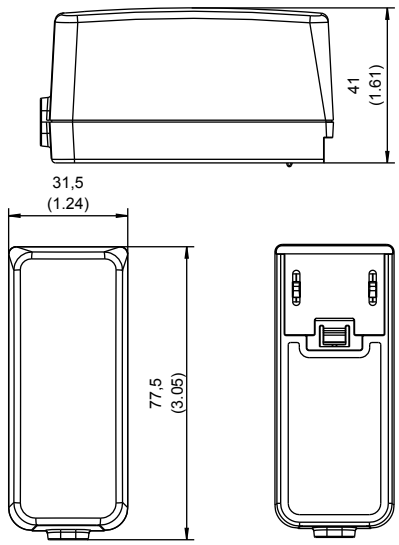
Mechanical data

Dimensions	58.0 x 31.5 x 41.0 mm
Weight	108-120 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW8000

FOX12-X



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

Voltage	Current	Ripple voltage	Article no.
5 V	2000 mA	100 mV pp	1898115
5.9 V	2000 mA	100 mV pp	1898116
7.5 V	1400 mA	100 mV pp	1898117
9 V	1300 mA	100 mV pp	1898118
12 V	1000 mA	100 mV pp	1897510
15 V	800 mA	100 mV pp	1898120
18 V	660 mA	100 mV pp	1898121
24 V	500 mA	100 mV pp	1898122

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	300 –150 mA
Leakage current	≤ 200 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 2 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 40° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	5000 m

Safety specifications

Layout acc. to safety standard	IEC62368-1
Approvals	EU, USA, AUS, JPN
Safety class	II
EMC	EN 55024, EN 55032

Mechanical data

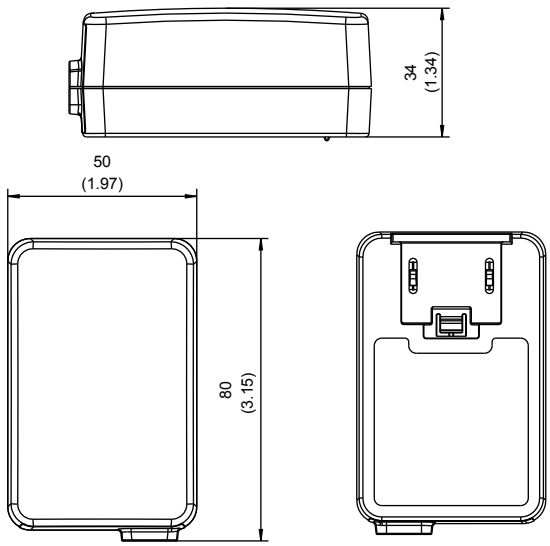
Dimensions	77.5 x 31.5 x 41.0 mm
Weight	127 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

Date of release: 08/2021

FW8001

FOX18-X



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

Voltage	Current	Ripple voltage	Article no.
5 V	3000 mA	150 mV pp	1898142
5.9 V	3000 mA	120 mV pp	1898143
7.5 V	2400 mA	120 mV pp	1898144
9 V	2000 mA	120 mV pp	1898145
12 V	1500 mA	120 mV pp	1898146
15 V	1200 mA	150 mV pp	1898147
18 V	1000 mA	180 mV pp	1898148
24 V	750 mA	180 mV pp	1898149

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	400 – 200 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 1 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 50° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	5000 m

Safety specifications

Layout acc. to safety standard	IEC 62368-1
Approvals	EU, USA, AUS, JPN
Safety class	II
EMC	EN 55035, EN 55032

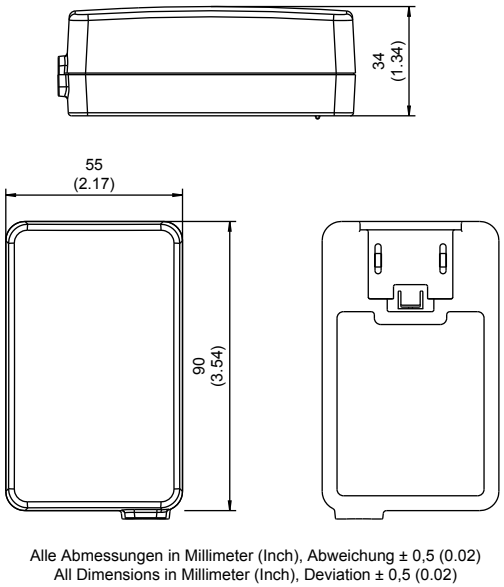
Mechanical data

Dimensions	80.0 x 50.0 x 34.0 mm
Weight	157 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW8030

FOX30-X



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

Voltage	Current	Ripple voltage	Article no.
5 V	5000 mA	150 mV pp	1898151
5.9 V	4200 mA	150 mV pp	1898152
7.5 V	4000 mA	150 mV pp	1898153
9 V	3300 mA	120 mV pp	1898154
12 V	2500 mA	120 mV pp	1898155
15 V	2000 mA	150 mV pp	1898156
18 V	1670 mA	200 mV pp	1898157
24 V	1250 mA	200 mV pp	1898158

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	600 – 300 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 3 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	4000 m

Safety specifications

Layout acc. to safety standard	IEC 62368-1
Approvals	EU, USA, AUS, JPN
Safety class	II
EMC	EN 55035, EN 55032

Mechanical data

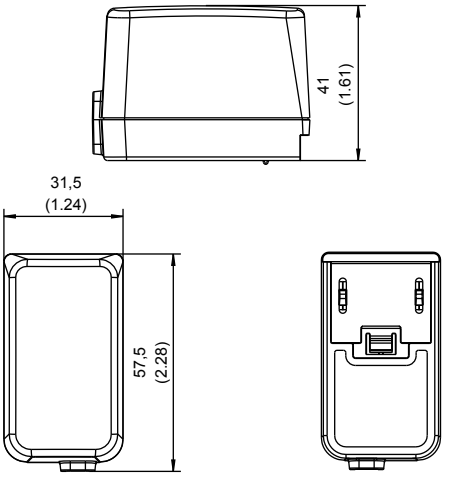
Dimensions	90.0 x 55.0 x 34.0 mm
Weight	187 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

Date of release: 08/2021

FW8002/USB

FOX6-X-USB



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

Voltage	Current	Ripple voltage	Article no.
5 V	1400 mA	80 mV pp black housing	1960266
5 V	1400 mA	80 mV pp white housing	1960946
5 V	1000 mA	80 mV pp	1898582

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	160 mA - 80 mA, 120 - 65 mA (1898582)
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 3 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	5000 m, , 4000m (1898582)

Safety specifications

Layout acc. to safety standard	IEC 62368-1
Approvals	EU, USA, AUS, JPN
Safety class	II
EMC	EN 55035, EN 55032

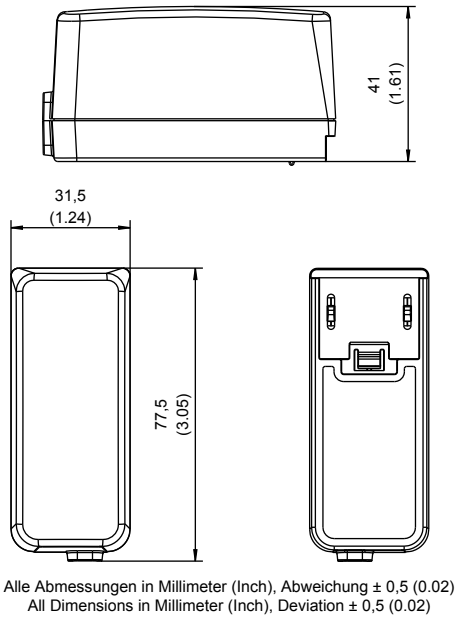
Mechanical data

Dimensions	57.5 x 31.5 x 41.0 mm
Weight	50 g , 57 g (1898582)
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	USB socket type A

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW8000/USB

FOX12-X-USB



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

Voltage	Current	Ripple voltage	Article no.
5 V	2200 mA	80 mV pp	1897730

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	300 – 150 mA
Leakage current	≤ 90 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 2 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 40° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	5000 m

Safety specifications

Layout acc. to safety standard	IEC62368-1
Approvals	EU, USA, AUS, JPN
Safety class	II
EMC	EN 55035, EN 55032

Mechanical data

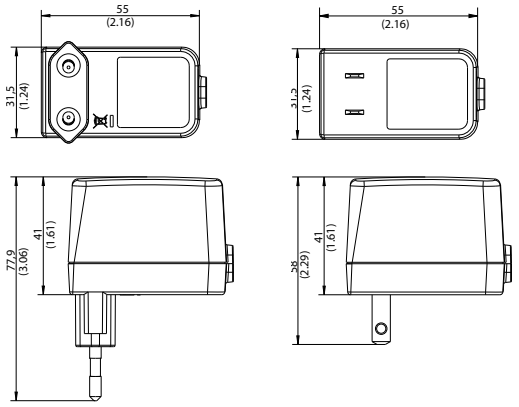
Dimensions	77.5 x 31.5 x 41.0 mm
Weight	65 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	USB socket type A

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

Date of release: 08/2021

FW8002.1

FOX6-F



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

Voltage	**Current**	**Article no.** (Euro)	**Article no.** (US)
5 V	1400 mA	1961458	1961466
5.9 V	1200 mA	1961459	1961467
7.5 V	800 mA	1961460	1961468
9 V	800 mA	1961461	1961469
12 V	600 mA	1961462	1961470
15 V	500 mA	1961463	1961471
18 V	400 mA	1961464	1961472
24 V	300 mA	1961465	1961473

Minimum order quantity: on request

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	160 – 80 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 2 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	5000 m

Safety specifications

Layout acc. to safety standard	IEC 62368-1
Approvals	EU, USA
Safety class	II
EMC	EN 55032, EN 55035

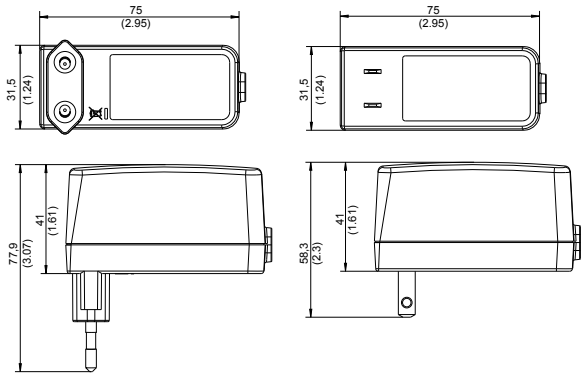
Mechanical data

Dimensions	77.5 x 31.5 x 41.0 mm
Weight	108 g
Connectors	
AC input:	see article no.
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW8000

FOX12-F



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

Voltage	**Current**	**Article no.** (Euro)	**Article no.** (US)
5 V	2000 mA	1898758	1898767
5.9 V	2000 mA	1898759	1898768
7.5 V	1400 mA	1898760	1898769
9 V	1300 mA	1898761	1898770
12 V	1000 mA	1898762	1898771
15 V	800 mA	1898763	1898772
18 V	660 mA	1898764	1898773
24 V	500 mA	1898765	1898774

Minimum order quantity: on request

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	300 –150 mA
Leakage current	≤ 200 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 2 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	5000 m

Safety specifications

Layout acc. to safety standard	IEC 62368-1
Approvals	EU, USA
Safety class	II
EMC	EN 55024, EN 55035

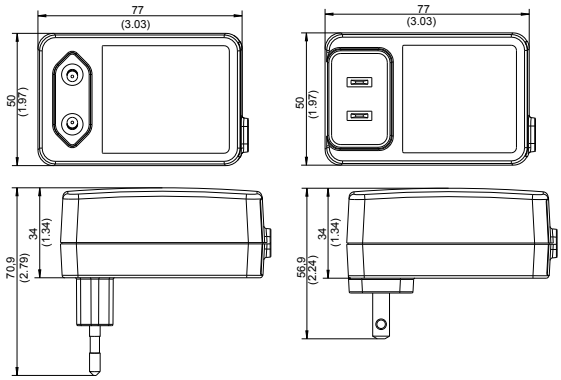
Mechanical data

Dimensions	77.5 x 31.5 x 41.0 mm
Weight	130 g
Connectors	
AC input:	see article no.
DC output:	Secondary adapter system

* MIL217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW8001

FOX18-F



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

Voltage	**Current**	**Article no.** (Euro)	**Article no.** (US)
5 V	3000 mA	1898877	1898886
5.9 V	3000 mA	1898878	1898887
7.5 V	2400 mA	1898879	1898888
9 V	2000 mA	1898880	1898889
12 V	1500 mA	1898881	1898890
15 V	1200 mA	1898882	1898891
18 V	1000 mA	1898883	1898892
24 V	750 mA	1898884	1898893

Minimum order quantity: on request

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	400 – 200 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 2 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 50° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	5000 m

Safety specifications

Layout acc. to safety standard	IEC 62368-1
Approvals	EU, USA
Safety class	II
EMC	EN 55035, EN 55032

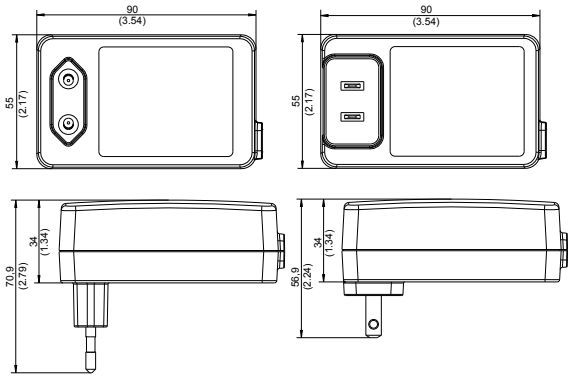
Mechanical data

Dimensions	77.0 x 50.0 x 34.0 mm
Weight	162 g
Connectors	
AC input:	see article no.
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW8030

FOX30-F



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

Voltage	**Current**	**Article no.** (Euro)	**Article no.** (US)
5 V	5000 mA	1898795	1898804
5.9 V	4200 mA	1898796	1898805
7.5 V	4000 mA	1898797	1898806
9 V	3300 mA	1898798	1898807
12 V	2500 mA	1898799	1898808
15 V	2000 mA	1898800	1898809
18 V	1670 mA	1898801	1898810
24 V	1250 mA	1898802	1898811

Minimum order quantity: on request

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	600 – 300 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 3 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	4000 m

Safety specifications

Layout acc. to safety standard	IEC 62368-1
Approvals	EU, USA
Safety class	II
EMC	EN 55035, EN 55032

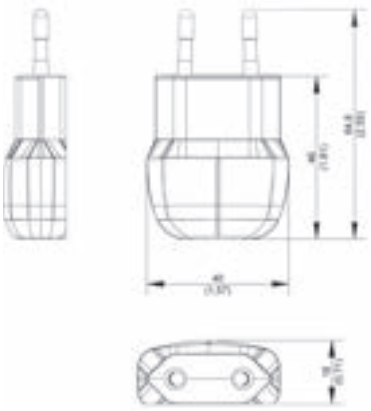
Mechanical data

Dimensions	90.0 x 55.0 x 34.0 mm
Weight	187 g
Connectors	
AC input:	see article no.
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW8005/USB

FOX5-F-USB



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

Voltage	Current	Article no.
5 V	1000 mA	1897974 black housing
5 V	1000 mA	1899018 white housing

Minimum order quantity: on request

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	150 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782

Environmental specifications

Operating temperature	0 – 40° C
Humidity	5 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	2000 m

Safety specifications

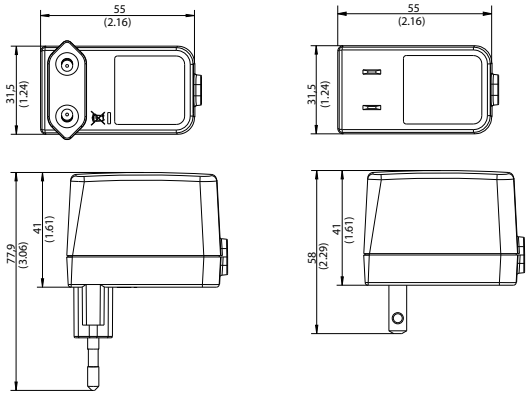
Layout acc. to safety standard	IEC 62368-1, UL62368-1
Approvals	EU
Safety class	II
EMC	EN 55024, EN 55032, EN 55035, FCC Part 15/B

Mechanical data

Dimensions	64.8 x 40 x 18 mm
Weight	34 g
Connectors	
AC input:	Euro plug
DC-Ausgang:	USB socket type A

FW8002/USB

FOX6-F-USB



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

Voltage	**Current**	**Article no.** (Euro)	**Article no.** (US)
5 V	1400 mA	1961492	1961493

Minimum order quantity: on request

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	160 - 80 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 3 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	5000 m

Safety specifications

Layout acc. to safety standard	IEC 62368-1
Approvals	EU, USA
Safety class	II
EMC	EN 55035, EN 55032

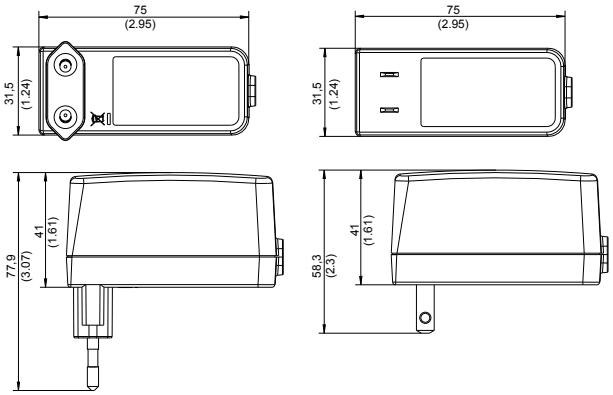
Mechanical data

Dimensions	57.5 x 31.5 x 41.0 mm
Weight	50 g
Connectors	
AC input:	see article no.
DC-Ausgang:	USB socket type A

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW8000/USB

FOX12-F-USB



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

Voltage	**Current**	**Article no.** (Euro)	**Article no.** (US)
5 V	2200 mA	1898895	1898896

Minimum order quantity: on request

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	300 – 150 mA
Leakage current	≤ 90 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 2 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 40° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	5000 m

Safety specifications

Layout acc. to safety standard	IEC 62368-1
Approvals	EU, USA
Safety class	II
EMC	EN 55035, EN 55032

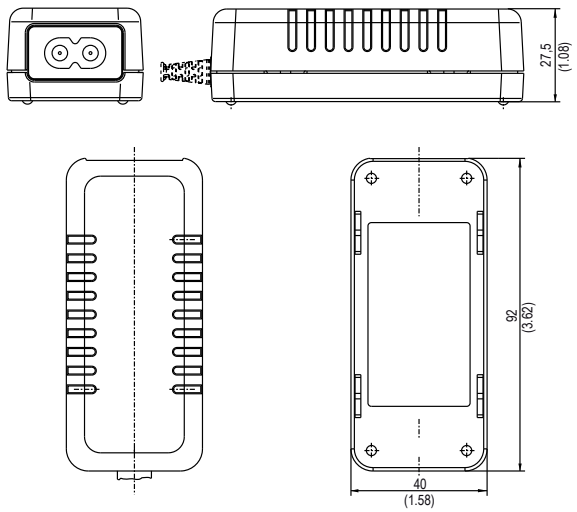
Mechanical data

Dimensions	75.0 x 31.5 x 41.0 mm
Weight	68 g
Connectors	
AC input:	see article no.
DC-Ausgang:	USB socket type A

* MIL217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW8004/DT

DT12



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

Voltage	Current	Ripple voltage	Article no.
5 V	2000 mA	120 mV pp	1961521
12 V	1000 mA	120 mV pp	1961522
24 V	500 mA	120 mV pp	1961523

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	250 – 130 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 40° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	2000 m

Safety specifications

Layout acc. to safety standard	IEC62368-1, UL62368-1
Approvals	EU, USA
Safety class	II
EMC	EN 55032:2015, EN 55035:2017

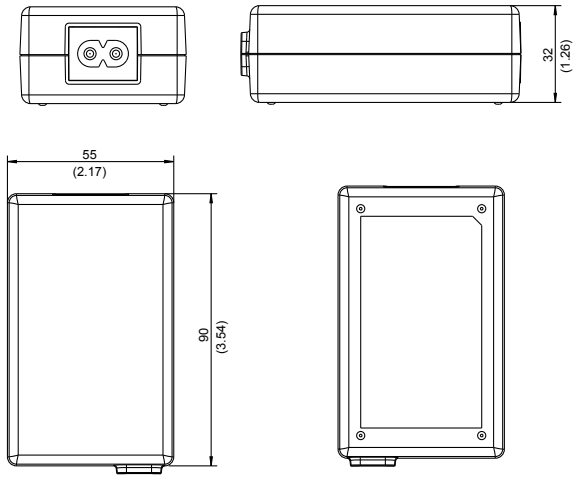
Mechanical data

Dimensions	92.0 x 40.0 x 27.5 mm
Weight	189 g, 135 g (1961522, 1961523)
Connectors	
AC input:	2 pole, IEC 60320-C8 socket
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW8030/dt

FOX30-D



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

Voltage	Current	Ripple voltage	Article no.
5 V	5000 mA	150 mV pp	1898169
5.9 V	4200 mA	150 mV pp	1898170
7.5 V	4000 mA	150 mV pp	1898171
9 V	3300 mA	120 mV pp	1898172
12 V	2500 mA	120 mV pp	1898173
15 V	2000 mA	150 mV pp	1898174
18 V	1670 mA	200 mV pp	1898175
24 V	1250 mA	200 mV pp	1898177

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	300 – 600 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 3 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C (FOX30-D)
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	4000 m

Safety specifications

Layout acc. to safety standard	IEC 62368-1
Approvals	EU, USA, AUS, JPN
Safety class	II
EMC	EN 55035, EN 55032

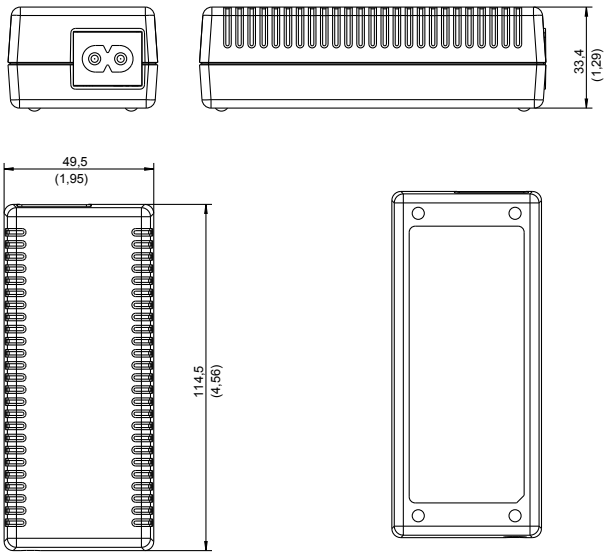
Mechanical data

Dimensions	90.0 x 55.0 x 32.0 mm
Weight	185 g
Connectors	
AC input:	2 pole, IEC 60320-C8 socket
DC output:	Secondary adapter system

* MIL217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW8060

FOX60-D



Alle Abmessungen in Millimeter (Inch), Abweichung ± 0,5 (0,02)
All Dimensions in Millimeter (Inch), deviation ± 0,5 (0,02)

Voltage	Current	Ripple voltage	Article no.
12 V	5000 mA	240 mV pp	1898544
15 V	4000 mA	240 mV pp	1898545
18 V	3300 mA	240 mV pp	1898546
24 V	2500 mA	240 mV pp	1898547

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	1300 mA
Leakage current	≤ 250 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 3 s
Stand-by	≤ 0.21 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 40° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	3000 m

Safety specifications

Layout acc. to safety standard	IEC 62368-1
Approvals	EU, USA, AUS, JPN
Safety class	II
EMC	EN 55035, EN 55032

Mechanical data

Dimensions	114.5 x 49.5 x 33.4 mm
Weight	250 g
Connectors	
AC input:	2 pole, IEC 60320-C8 socket
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

Medical power supply: The heart of the application

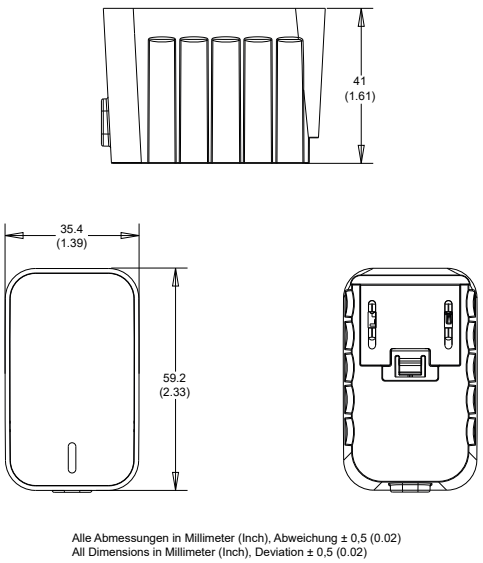
Heart failure – one of the most feared medical incidents. If the heart fails, then so does everything else. The same is true of your application's power supply. If it fails, then the entire system is affected – with catastrophic consequences for medical technology.

That is why a reliable power supply partner is essential. We want to live up to that expectation. Since the invention of the first plug-in power supply unit in 1971, our customers have relied on our expertise – and we have manufactured far over a billion power supply units. Almost half a century's experience, and our German engineering skill, guarantee your application's power supply – and with it the patient's safety.

Our highly efficient plug-in power supply units have always set standards. From the lowest standby losses and minimal leakage current to the patented interchangeable AC plugs with IP42 protection; from the robust casing for the industry to the well thought-out design for sophisticated high-end usage – you are sure to find what you are looking for!

NEO006.0-I-X

FOX NEO6-XM



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

Voltage	Current	Ripple voltage
5 V	1400 mA	180 mV pp
12 V	600 mA	200 mV pp
24 V	300 mA	240 mV pp

Please use the **NEO configurator** to order your individual desired configuration:
friwo.link/neoconfigurator

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	160 – 80 mA (FOX6-X)
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 3 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	3000 m

Safety specifications

Layout acc. to safety standard	IEC/ES 60601-1, IEC/UL 62368-1
Approvals	EU, USA, AUS, JPN, CN, RUS
Safety class	II
EMC	EN 60601-1-2:2015, EN 55032:2015, EN 55035:2017
Medical protection	2 x MOPP

Mechanical data

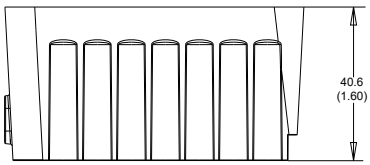
Dimensions	59.2 x 35.4 x 41.0 mm
Weight	62 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	Secondary adapter system

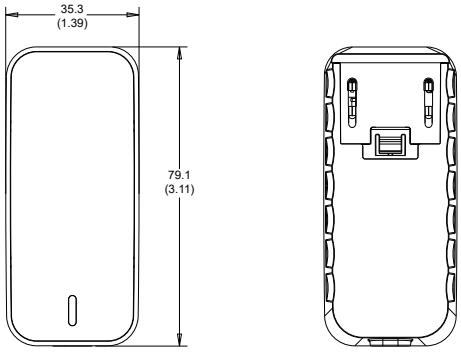
* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

Date of release: 08/2021

NEO012.0-I-X

FOX NEO12-XM





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

Voltage	Current	Ripple voltage
5 V	2000 mA	150 mV pp
12 V	1000 mA	170 mV pp
24 V	500 mA	240 mV pp

Please use the **NEO configurator** to order your individual desired configuration:
friwo.link/neoconfigurator

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	300 –150 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 2 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	5000 m

Safety specifications

Layout acc. to safety standard	IEC/ES 60601-1, IEC/UL 62368-1
Approvals	EU, USA, AUS, JPN, CN, RUS
Safety class	II
EMC	EN 60601-1-2:2015, EN 55032:2015, EN 55035:2017
Medical protection	2 x MOPP

Mechanical data

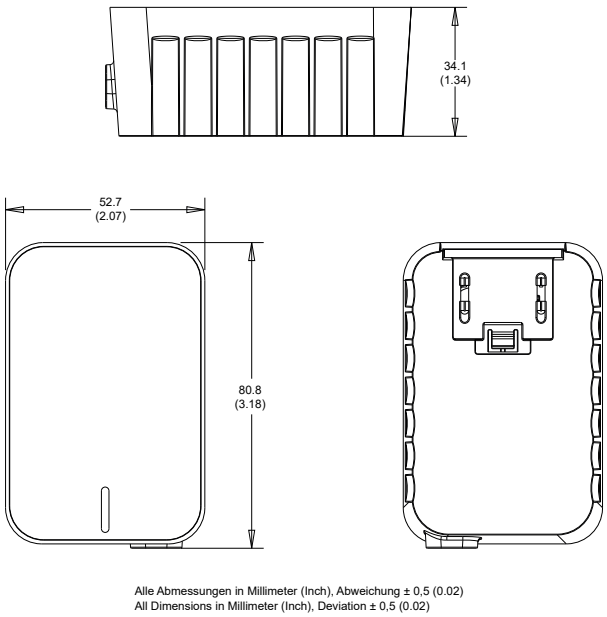
Dimensions	79.1 x 35.3 x 40.6 mm
Weight	86 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

Date of release: 08/2021

NEO018.0-I-X

FOX NEO18-XM



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

Voltage	Current	Ripple voltage
5 V	3000 mA	150 mV pp
12 V	1500 mA	120 mV pp
24 V	750 mA	180 mV pp

Please use the **NEO configurator** to order your individual desired configuration:
friwo.link/neoconfigurator

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	400 – 200 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 1 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 50° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	5000 m

Safety specifications

Layout acc. to safety standard	IEC/ES 60601-1, IEC/UL 62368-1
Approvals	EU, USA, AUS, JPN, CN, RUS
Safety class	II
EMC	EN 60601-1-2:2015, EN 55032:2015, EN 55035:2017
Medical protection	2 x MOPP

Mechanical data

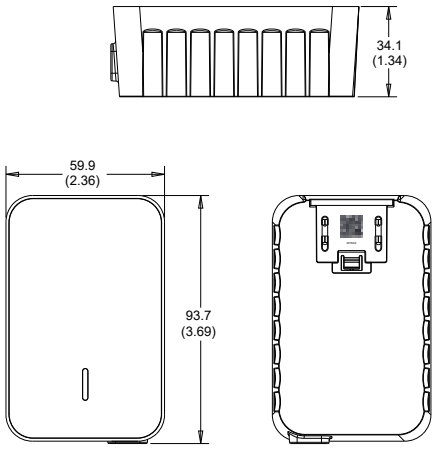
Dimensions	80.8 x 52.7 x 34.1 mm
Weight	105 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

Date of release: 08/2021

NEO030.0-I-X

FOX NEO30-XM



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

Voltage	Current	Ripple voltage
5 V	5000 mA	150 mV pp
12 V	2500 mA	120 mV pp
24 V	1250 mA	200 mV pp

Please use the **NEO configurator** to order your individual desired configuration:
friwo.link/neoconfigurator

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	600 – 300 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 3 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C (FOX30-X)
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	4000 m

Safety specifications

Layout acc. to safety standard	IEC/ES 60601-1, IEC/UL 62368-1
Approvals	EU, USA, AUS, JPN, CN, RUS
Safety class	II
EMC	EN 60601-1-2:2015, EN 55032:2015, EN 55035:2017
Medical protection	2 x MOPP

Mechanical data

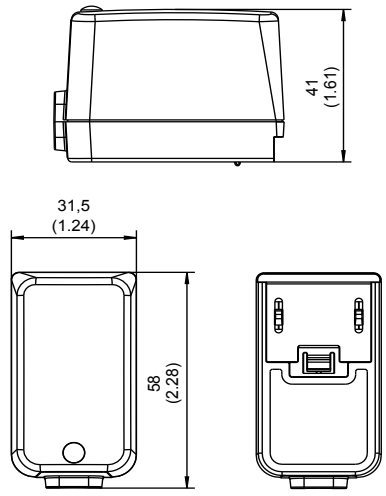
Dimensions	93.7 x 59.9 x 34.1 mm
Weight	135 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

Date of release: 08/2021

FW8002.1M

FOX6-XM



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

Voltage	Current	Ripple voltage	Article no.
5 V	1400 mA	180 mV pp	1960496
5.9 V	1200 mA	150 mV pp	1960497
7.5 V	800 mA	150 mV pp	1960498
9 V	800 mA	150 mV pp	1960499
12 V	600 mA	200 mV pp	1960500
15 V	500 mA	200 mV pp	1960501
18 V	400 mA	180 mV pp	1960502
24 V	300 mA	240 mV pp	1960503

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	160 – 80 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 3 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	3000 m

Safety specifications

Layout acc. to safety standard	IEC/ES 60601-1
Approvals	EU, USA, AUS, JPN
Safety class	II
EMC	EN 60601-1-2:2015
Medical protection	2 x MOPP

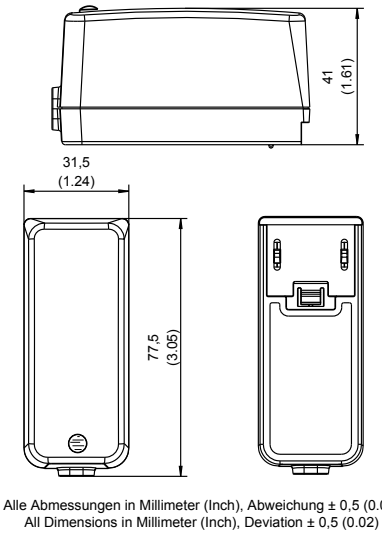
Mechanical data

Dimensions	58.0 x 31.5 x 41.0 mm
Weight	108 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW8000M

FOX12-XM



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

Voltage	Current	Ripple voltage	Article no.
5 V	2000 mA	100 mV pp	1898124
5.9 V	2000 mA	100 mV pp	1898125
7.5 V	1400 mA	100 mV pp	1898126
9 V	1300 mA	100 mV pp	1898127
12 V	1000 mA	100 mV pp	1898128
15 V	800 mA	100 mV pp	1898129
18 V	660 mA	100 mV pp	1898130
24 V	500 mA	100 mV pp	1898131

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	300 –150 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 2 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	3000 m

Safety specifications

Layout acc. to safety standard	IEC/ES 60601-1
Approvals	EU, USA, AUS, JPN
Safety class	II
EMC	EN 60601-1-2:2015
Medical protection	2 x MOPP

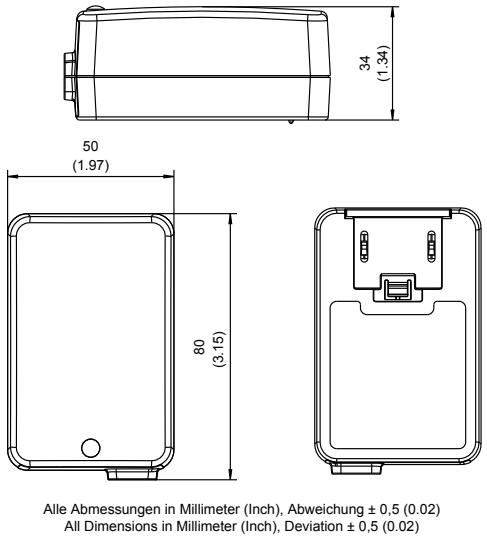
Mechanical data

Dimensions	77.5 x 31.5 x 41.0 mm
Weight	127 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW8001M

FOX18-XM



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

Voltage	Current	Ripple voltage	Article no.
5 V	3000 mA	150 mV pp	1898133
5.9 V	3000 mA	120 mV pp	1898134
7.5 V	2400 mA	120 mV pp	1898135
9 V	2000 mA	120 mV pp	1898136
12 V	1500 mA	120 mV pp	1898137
15 V	1200 mA	150 mV pp	1898138
18 V	1000 mA	180 mV pp	1898139
24 V	750 mA	180 mV pp	1898140

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	400 – 200 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 1 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 50° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	5000 m

Safety specifications

Layout acc. to safety standard	IEC/ES 60601-1
Approvals	EU, USA, AUS, JPN
Safety class	II
EMC	EN 60601-1-2:2015
Medical protection	2 x MOPP

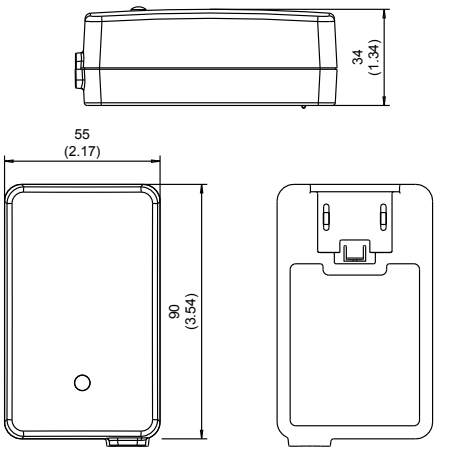
Mechanical data

Dimensions	80.0 x 50.0 x 34.0 mm
Weight	157 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW8030M

FOX30-XM



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

Voltage	Current	Ripple voltage	Article no.
5 V	5000 mA	150 mV pp	1898160
5.9 V	4200 mA	150 mV pp	1898161
7.5 V	4000 mA	150 mV pp	1898162
9 V	3300 mA	120 mV pp	1898163
12 V	2500 mA	120 mV pp	1898164
15 V	2000 mA	150 mV pp	1898165
18 V	1670 mA	200 mV pp	1898166
24 V	1250 mA	200 mV pp	1898167

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	600 – 300 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 3 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C (FOX30-X)
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	4000 m

Safety specifications

Layout acc. to safety standard	IEC/ES 60601-1
Approvals	EU, USA, AUS, JPN
Safety class	II
EMC	EN 60601-1-2:2015
Medical protection	2 x MOPP

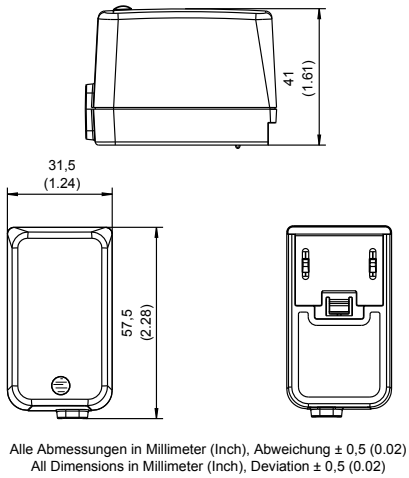
Mechanical data

Dimensions	90.0 x 55.0 x 34.0 mm
Weight	187 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW8002.1M/USB

FOX6-XM-USB



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

Voltage	Current	Ripple voltage	Article no.
5 V	1400 mA	80 mV pp black housing	1960267
5 V	1400 mA	80 mV pp white housing	1960945

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	160 mA - 80 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 3 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	3000 m

Safety specifications

Layout acc. to safety standard	IEC/ES 60601-1
Approvals	EU, USA, AUS, JPN
Safety class	II
EMC	EN 60601-1-2:2015
Medical protection	2 x MOPP

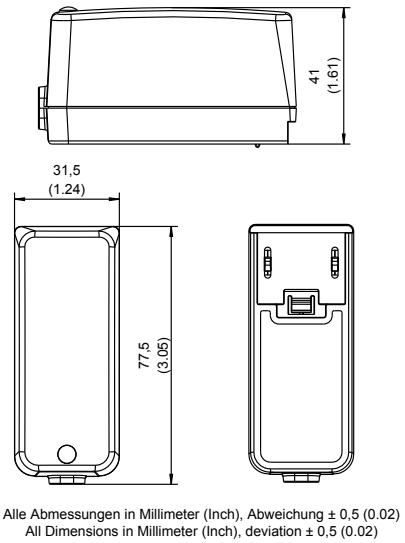
Mechanical data

Dimensions	57.5 x 31.5 x 41.0 mm
Weight	68 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	USB socket type A

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW8000M/USB

FOX12-XM-USB



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

Voltage	Current	Ripple voltage	Article no.
5 V	2200 mA	80 mV pp	1898350

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	300 – 150 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 2 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	3000 m

Safety specifications

Layout acc. to safety standard	IEC/ES 60601-1
Approvals	EU, USA, AUS, JPN
Safety class	II
EMC	EN 60601-1-2:2015
Medical protection	2 x MOPP

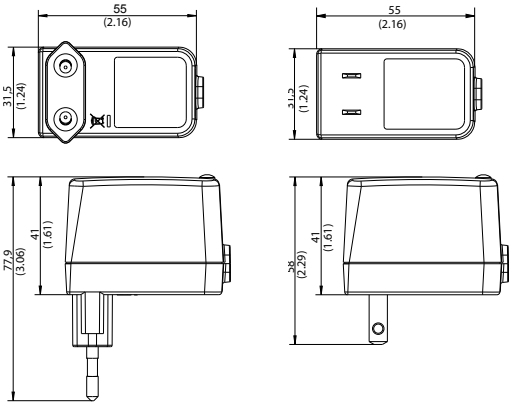
Mechanical data

Dimensions	77.5 x 31.5 x 41.0 mm
Weight	65 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	USB socket type A

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW8002.1M

FOX6-FM



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

Voltage	**Current**	**Article no.** (Euro)	**Article no.** (US)
5 V	1400 mA	1961474	1961482
5.9 V	1200 mA	1961475	1961483
7.5 V	800 mA	1961476	1961484
9 V	800 mA	1961477	1961485
12 V	600 mA	1961478	1961486
15 V	500 mA	1961479	1961487
18 V	400 mA	1961480	1961488
24 V	300 mA	1961481	1961489

Minimum order quantity: on request

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	160 – 80 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 2 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	3000 m

Safety specifications

Layout acc. to safety standard	IEC 60601-1
Approvals	EU, USA
Safety class	II
EMC	EN 55032, EN 55035 EN 60601-1-2 4th Edition
Medical protection	2 x MOPP

Mechanical data

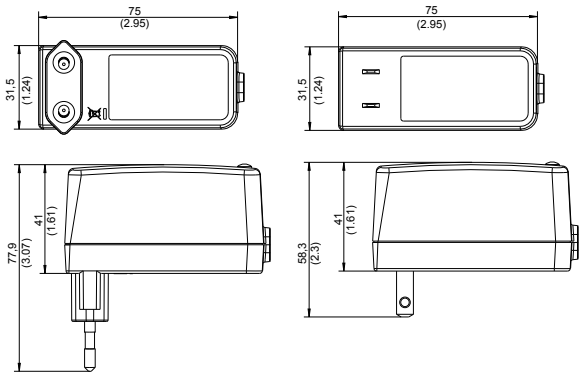
Dimensions	55.0 x 31.5 x 41.0 mm
Weight	108 g
Connectors	
AC input:	see article no.
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

Date of release: 08/2021

FW8000M

FOX12-FM



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

Voltage	Current	Article no. (Euro)	Article no. (US)
5 V	2200 mA	1898776	1898785
5.9 V	2000 mA	1898777	1898786
7.5 V	1400 mA	1898778	1898787
9 V	1300 mA	1898779	1898788
12 V	1000 mA	1898780	1898789
15 V	800 mA	1898781	1898790
18 V	660 mA	1898782	1898791
24 V	500 mA	1898783	1898792

Minimum order quantity: on request

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	300 – 150 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 2 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	3000 m

Safety specifications

Layout acc. to safety standard	IEC 60601-1
Approvals	EU, USA
Safety class	II
EMC	EN 55032, EN 55035 EN 60601-1-2 4th Edition
Medical protection	2 x MOPP

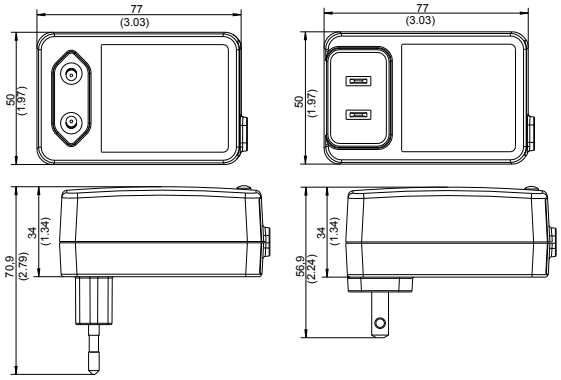
Mechanical data

Dimensions	75.0 x 31.5 x 41.0 mm
Weight	134 g
Connectors	
AC input:	see article no.
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW8001M

FOX18-FM



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

Voltage	**Current**	**Article no.** (Euro)	**Article no.** (US)
5 V	3000 mA	1898937	1898946
5.9 V	3000 mA	1898938	1898947
7.5 V	2400 mA	1898939	1898948
9 V	2000 mA	1898940	1898949
12 V	1500 mA	1898941	1898950
15 V	1200 mA	1898942	1898951
18 V	1000 mA	1898943	1898952
24 V	750 mA	1898944	1898953

Minimum order quantity: on request

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	400 – 200 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 2 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 50° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	5000 m

Safety specifications

Layout acc. to safety standard	IEC 60601-1
Approvals	EU, USA
Safety class	II
EMC	EN 55032, EN 55035 EN 60601-1-2 4th Edition
Medical protection	2 x MOPP

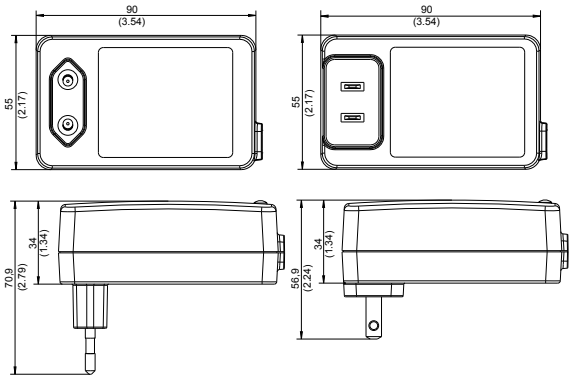
Mechanical data

Dimensions	77.0 x 50.0 x 34.0 mm
Weight	164 g
Connectors	
AC input:	see article no.
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW8030M

FOX30-FM



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

Voltage	Current	Article no. (Euro)	Article no. (US)
5 V	5000 mA	1898813	1898822
5.9 V	4200 mA	1898814	1898823
7.5 V	4000 mA	1898815	1898824
9 V	3300 mA	1898816	1898825
12 V	2500 mA	1898817	1898826
15 V	2000 mA	1898818	1898827
18 V	1670 mA	1898819	1898828
24 V	1250 mA	1898820	1898829

Minimum order quantity: on request

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	600 – 300 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 3 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C,
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	4000 m

Safety specifications

Layout acc. to safety standard	IEC 60601-1
Approvals	EU, USA
Safety class	II
EMC	EN 55032, EN 55035 EN 60601-1-2 4th Edition
Medical protection	2 x MOPP

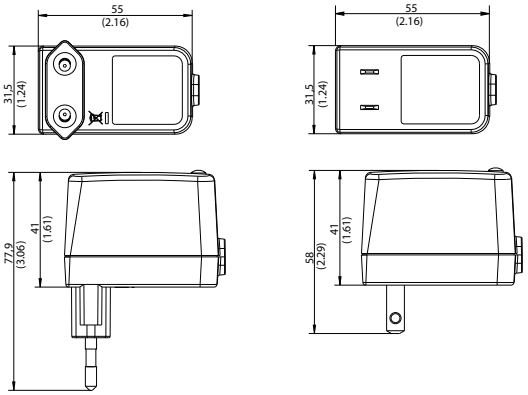
Mechanical data

Dimensions	90.0 x 55.0 x 34.0 mm
Weight	187 g
Connectors	
AC input:	see article no.
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW8002.1M/USB

FOX6-FM-USB



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

Voltage	**Current**	**Article no.** (Euro)	**Article no.** (US)
5 V	1400 mA	1961490	1961491

Minimum order quantity: on request

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	80 - 160 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 2 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	3000 m

Safety specifications

Layout acc. to safety standard	IEC 60601-1
Approvals	EU, USA
Safety class	II
EMC	EN 55032, EN 55035 EN 60601-1-2 4th Edition
Medical protection	2 x MOPP

Mechanical data

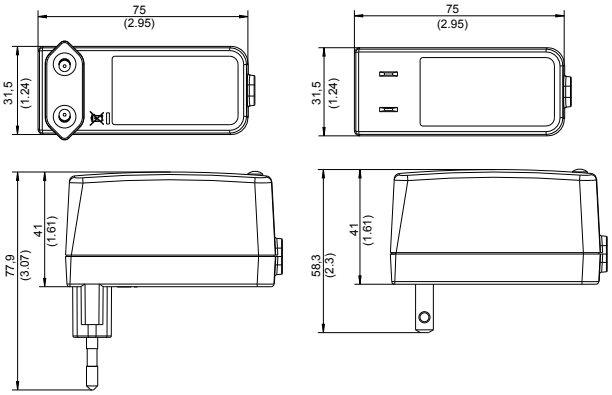
Dimensions	55.0 x 31.5 x 41.0 mm
Weight	68 g
Connectors	
AC input:	see article no.
DC-Ausgang:	USB-Buchse Typ A

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

Date of release: 08/2021

FW8000M/USB

FOX12-FM-USB



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

Voltage	Current	Article no. (Euro)	Article no. (US)
5 V	2200 mA	1898871	1898872

Minimum order quantity: on request

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V ± 10 %
Frequency	50 – 60 Hz
Input current	300- 150 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 2 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	3000 m

Safety specifications

Layout acc. to safety standard	IEC 60601-1
Approvals	EU, USA
Safety class	II
EMC	EN 55032, EN 55035 EN 60601-1-2 4th Edition
Medical protection	2 x MOPP

Mechanical data

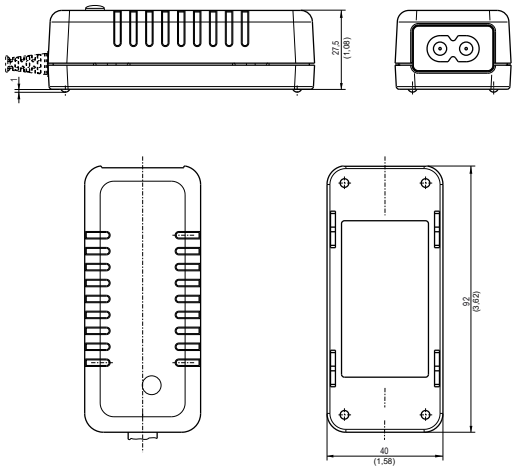
Dimensions	75.0 x 31.5 x 41.0 mm
Weight	73 g
Connectors	
AC input:	see article no.
DC-Ausgang:	USB-Buchse Typ A

Date of release: 08/2021

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW8004M/DT

DT12-M



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

Voltage	Current	Ripple voltage	Article no.
5 V	2000 mA	120 mV pp	1960134
12 V	1000 mA	120 mV pp	1960077
24 V	500 mA	120 mV pp	1960227

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	250 – 130 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 40° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	2000 m

Safety specifications

Layout acc. to safety standard	IEC 60601-1, ES60601-1
Approvals	EU, USA
Safety class	II
EMC	EN 60601-1-2:2015
Medical protection	2 x MOPP

Mechanical data

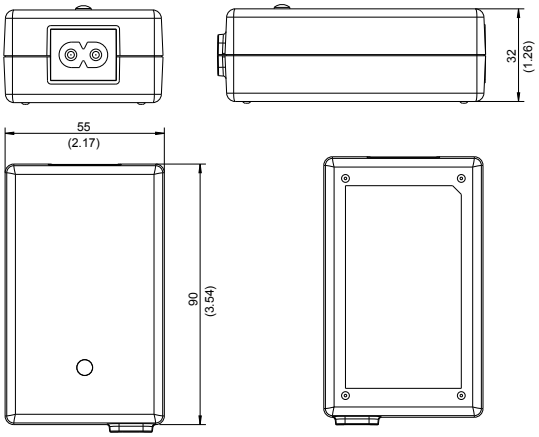
Dimensions	92.0 x 40.0 x 27.5 mm
Weight	189 g, 135 g (1960077, 1960227)
Connectors	
AC input:	2 pole, IEC 60320-C8 socket
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

Date of release: 08/2021

FW8030M/DT

FOX30-DM



Voltage	Current	Ripple voltage	Article no.
5 V	5000 mA	150 mV pp	1898179
5.9 V	4200 mA	150 mV pp	1898180
7.5 V	4000 mA	150 mV pp	1898181
9 V	3300 mA	120 mV pp	1898182
12 V	2500 mA	120 mV pp	1898183
15 V	2000 mA	150 mV pp	1898184
18 V	1670 mA	200 mV pp	1898185
24 V	1250 mA	200 mV pp	1898186

Characteristics

+ Efficiency level VI
+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	300 – 600 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 3 s
Stand-by	≤ 0.1 W
Efficiency	DoE: 10 CFR §430.32, energy efficiency level VI ErP: Commission Regulation (EU) 2019/1782
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 45° C (FOX30-D)
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	4000 m

Safety specifications

Layout acc. to safety standard	IEC 62368-1
Approvals	EU, USA, AUS, JPN
Safety class	II
EMC	EN 55035, EN 55032
Medical protection	2 x MOPP

Mechanical data

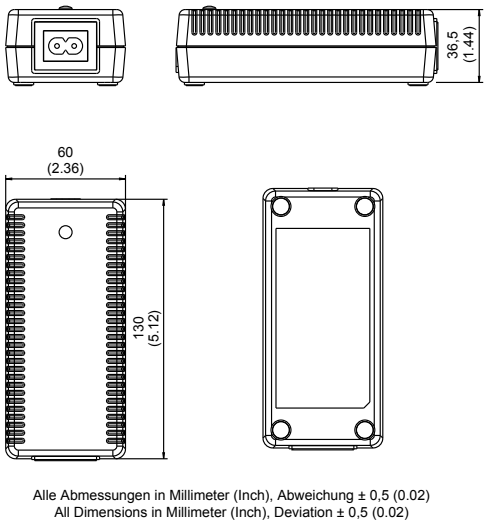
Dimensions	90.0 x 55.0 x 32.0 mm
Weight	185 g
Connectors	
AC input:	2 pole, IEC 60320-C8 socket
DC output:	Secondary adapter system

* MIL217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

Date of release: 08/2021

FW7405M

DT50-M



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

Voltage	Current	Ripple voltage	Article no.
5 V	5000 mA	120 mV pp	1890649
12 V	3800 mA	120 mV pp	1890650
15 V	3000 mA	120 mV pp	1890839
24 V	2200 mA	120 mV pp	1825898

Characteristics

+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	1100 – 500 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Turn-on delay	≤ 3 s
Stand-by	≤ 0.75 W
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 40° C
Humidity	10 – 90 %
Storage temperature	-40 – 70° C
Operating altitude	4000 m

Safety specifications

Layout acc. to safety standard	IEC 60601-1
Approvals	EU, USA, AUS,
Safety class	II
EMC	EN 60601-1-2 4th Editon
Medical protection	2 x MOPP

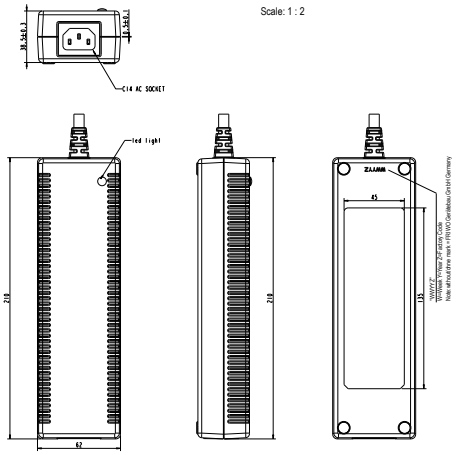
Mechanical data

Dimensions	60.0 x 130.0 x 36.5 mm
Weight	250 - 375 g
Connectors	
AC input:	2 pole, IEC 60320-C8 socket
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

DT150-24 MOPP

DT150-M



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

Voltage	Current	Ripple voltage	Article no.
24 V	6250 mA	240 mV pp	1893142

Characteristics

+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	2000 – 700 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
Stand-by	≤ 0.5 W
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 40° C
Humidity	5 – 95 %
Storage temperature	-20 – 70° C
Operating altitude	4000 m

Safety specifications

Layout acc. to safety standard	IEC 60601-1
Approvals	EU, USA
Safety class	I
EMC	EN 60601-1-2:2015
Medical protection	2 x MOPP

Mechanical data

Dimensions	62.0 x 210.0 x 38.8 mm
Weight	622 g
Connectors	
AC input:	3 pole, IEC 60320-C14 socket
DC output:	Cable with coaxial plug 11.0 x 6.5 x 3.0 mm

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

Open frame

Peak values worldwide

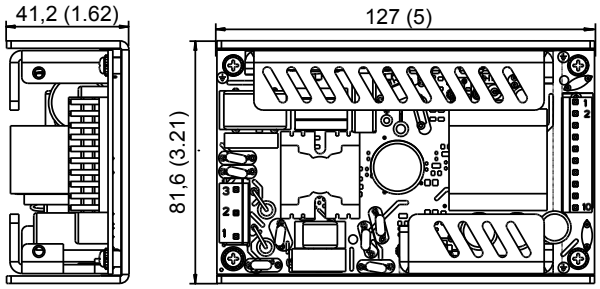
FRIWO

Maximum efficiency in minimal installation space

Designed for maximum resistance to vibration, shock and temperature, our built-in power supply components set standards with their immense service life. In minimal installation spaces, they achieve peak values for efficiency and no-load losses and are also ideally suited for use in medical and measurement technology thanks to their minimal leakage current.

FRIWO revolutionizes its existing open frame product portfolio with the new „HERC" device series. The product name stands as an abbreviation for „High Efficiency and Rapid Customization" and already expresses two essential features of the compact built-in power supplies: Very high efficiency meets an adaptable open design for fast customer-specific modifications..

OF150



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

Voltage	Current	Ripple voltage	Article no.
24 V	6250 mA	≤ 240 mV pp	1893247

Characteristics

+ Overload protection
+ Continuously short circuit proof
+ Overvoltage protection

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	1800 – 800 mA
Earth leakage current	≤ 500 µA
Touch current	≤ 100 µA
Output voltage tolerance	± 5 %
Stand-by	≤ 0.5 W
MTBF	200.000 h*

Environmental specifications

Operating temperature	-20 – 70° C
Humidity	95 % max.
Storage temperature	-20 – 85° C
Operating altitude	2000 m

Safety specifications

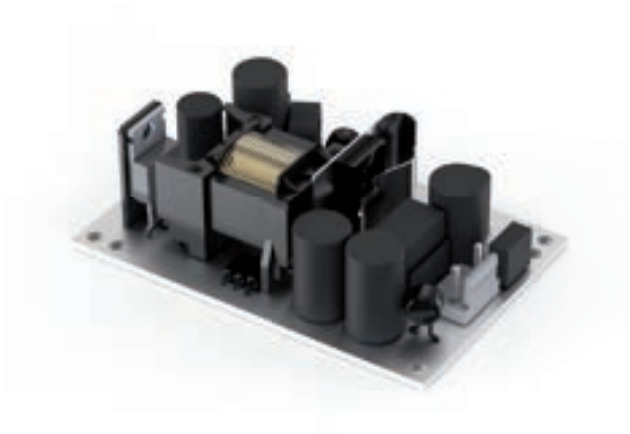
Layout acc. to safety standard	IEC 60601-1
Approvals	EU, US
EMC	EN 55035, EN 55032, EN 60601-1-2

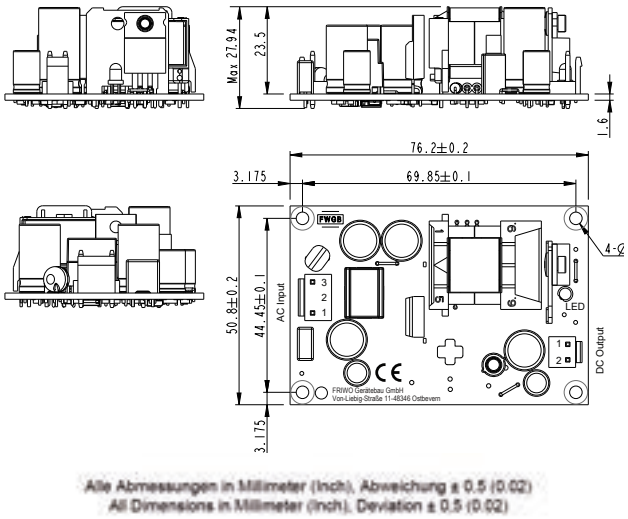
Mechanical data

Dimensions	127.0 x 75.4 x 35.0 mm (OF150 without U-bracket), 127.0 x 81.6 x 41.2 mm (OF150 with U-bracket)
Weight	240 g (OF150 without U-bracket), 340 g (OF150 with U-bracket)

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

HERC18





Voltage	Current	Ripple voltage	Article no.
5 V	3000 mA	150 mV pp	1899395
12 V	1500 mA	120 mV pp	1899396
15 V	1200 mA	150 mV pp	1899397
24 V	750 mA	180 mV pp	1899233

Characteristics

+ Overload protection
+ Continuously short circuit proof
+ Overvoltage protection

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	400 – 200 mA
Earth leakage current	≤ 10 µA
Touch current	≤ 10 µA
Output voltage tolerance	+/- 5 %
Stand-by	≤ 0,075 W
	≤ 0,1 W (1899233)
MTBF	200.000 h*

Environmental specifications

Operating temperature	-25 – 70° C
Humidity	95 % max.
Storage temperature	-40 – 85° C
Operating altitude	3000 m

Safety specifications

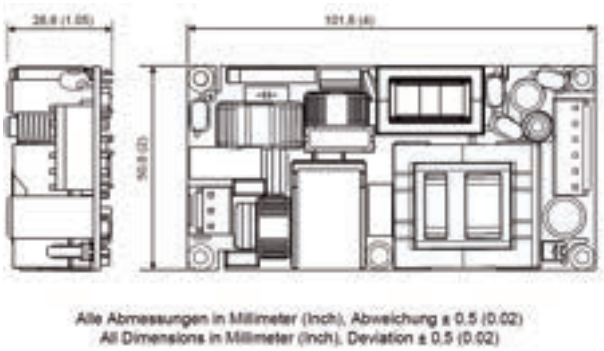
Layout acc. to safety standard	IEC 60601-1, IEC62368-1
Approvals	EU, USA
EMC	EN 55032, EN 55024, EN 60601-1-2

Mechanical data

Dimensions	76,4 x 51.0 x 27.94 mm
Weight	55 g

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

HERC175



Voltage	Current CC*	Current FC	Ripple voltage	Article no.
24 V	5000 mA	7300 mA	240 mV pp	1899059

*CC: Convection Cooling
FC: Forced Cooling

Characteristics

+ Overload protection
+ Continuously short circuit proof
+ Overvoltage protection

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	1800 – 900 mA
Earth leakage current	≤ 100 µA
Touch current	≤ 100 µA
Output voltage tolerance	+/- 3 %
Stand-by	≤ 0,21 W
MTBF	200.000 h*

Environmental specifications

Operating temperature	-20 – 70° C
Humidity	95 % max.
Storage temperature	-40 – 85° C
Operating altitude	5000 m

Safety specifications

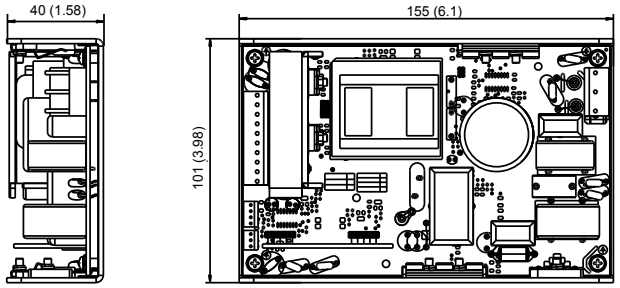
Layout acc. to safety standard	IEC 60601-1, IEC62368-1
Approvals	EU
EMC	EN 55035, EN 55032, EN 55024, EN 60601-1-2

Mechanical data

Dimensions	101,6 x 50,8 x 26.6 mm
Weight	156 g

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25°C, 100% load)

OF250



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

Voltage	Current	Ripple voltage	Article no.
24 V	10500 mA	≤ 240 mV pp	1891705

In approval

Characteristics

+ Overload protection
+ Continuously short circuit proof
+ Overvoltage protection

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	3500 – 1200 mA
Earth leakage current	≤ 500 µA
Touch current	≤ 100 µA
Output voltage tolerance	± 5 %
Stand-by	≤ 1.0 W
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 50° C
Humidity	95 % max.
Storage temperature	-20 – 85° C
Operating altitude	3000m

Safety specifications

Layout acc. to safety standard	IEC 60601-1, 62368-1 (in Zulassung)
Approvals	EU, US
EMC	EN 55035, EN 55032, EN 60601-1-2

Mechanical data

Dimensions	155.0 x 101.0 x 40.0 mm
Weight	600 g

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

Flush-mounted power supplies

Power inside walls

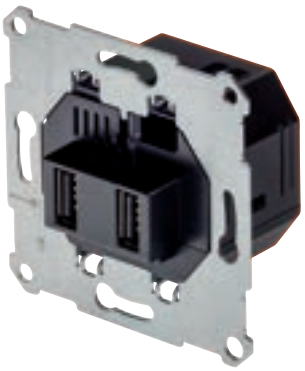
FRIWO

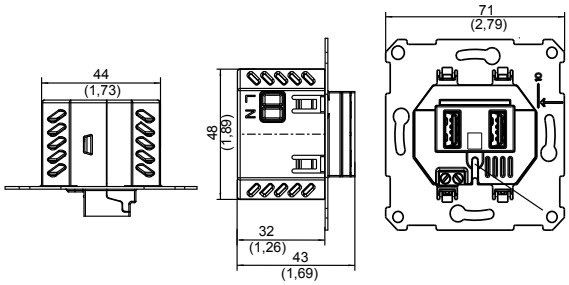
Seeing what is not visible

Particularly durable power supply units, which disappear invisibly into the wall when installed in standard flush-mounted sockets! In addition to potted devices for use in demanding environments (e.g. in the sanitary sector or in security technology), this product range also includes power supply solutions with modern USB ports that replace the standard socket outlet.

FW7810

UP USB-A





Alle Abmessungen in Millimeter (Inch), Abweichung ± 0,5 (0,02)
All Dimensions in Millimeter (Inch), deviation ± 0,5 (0,02)

Voltage	Current	Ripple voltage	Article no.
5 V	3000 mA	80mV pp	1899549

Characteristics

+ Overload protection
+ Continuously short circuit proof
+ Overvoltage protection
+ Efficiency level VI

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	300 mA
Leakage current	≤ 30 µA
Output voltage tolerance	± 5 %
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 35° C
Humidity	10 – 90 %
Storage temperature	-20 – 70° C

Safety specifications

Layout acc. to safety standard	IEC62368-1
Approvals	EU
EMC	EN55032, EN55035

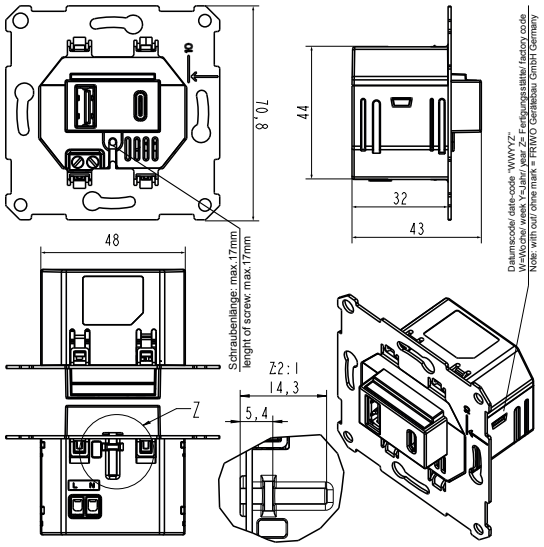
Mechanical data

Dimensions	48.0 x 44.0 x 43.0 mm
Weight	74 g
Connectors	
AC input:	Screw terminal 2 x 2.5 mm²
DC output:	USB socket type A

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW7810

UP USB-A/C



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

Voltage	Current	Ripple voltage	Article no.
5 V	3000 mA	80mV pp	1899702

Characteristics

+ Overload protection
+ Continuously short circuit proof
+ Overvoltage protection

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	300 mA
Leakage current	≤ 30 µA
Output voltage tolerance	± 5 %
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 35° C
Humidity	10 – 90 %
Storage temperature	-20 – 70° C

Safety specifications

Layout acc. to safety standard	EN62368-1
Approvals	EU, CN, RUS
EMC	EN 55032, EN 55035

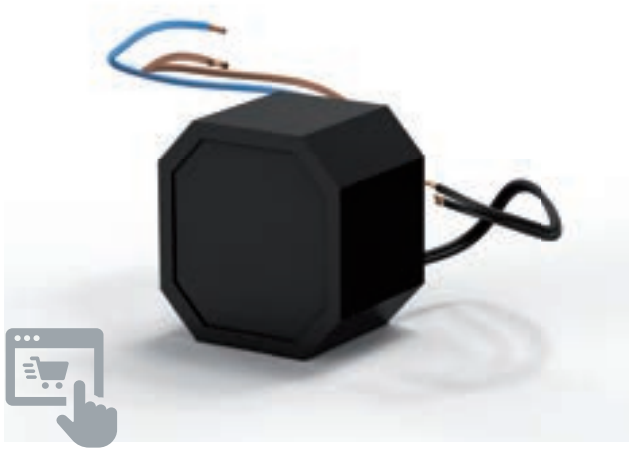
Mechanical data

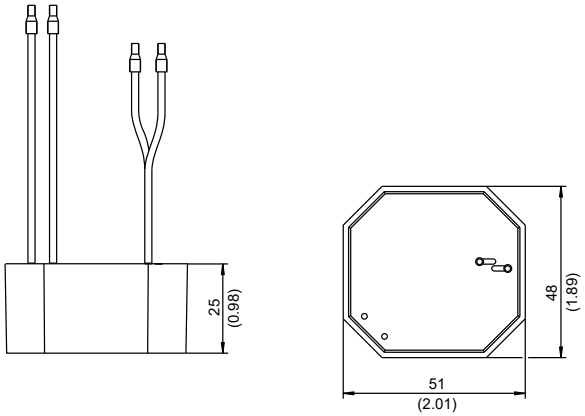
Dimensions	48.0 x 44.0 x 43.0 mm
Weight	108 g
Connectors	
AC input:	Screw terminal 2 x 2.5 mm²
DC output:	USB socket type A, USB socket type C

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW7801

UP6





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

Voltage	Current	Ripple voltage	Article no.
9 V	660 mA	300 mV pp	1891507
12 V	500 mA	300 mV pp	1891508

Characteristics

+ Overload protection
+ Continuously short circuit proof
+ Overvoltage protection

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	130 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 40° C
Humidity	10 – 95 %
Storage temperature	-20 – 70° C

Safety specifications

Layout acc. to safety standard	IEC61558-1, IEC61558-2-16, UL1310
Approvals	EU, US
EMC	EN 55011, EN 55014-1, EN 55014-2, EN 61000-6-2, EN 61000-6-3

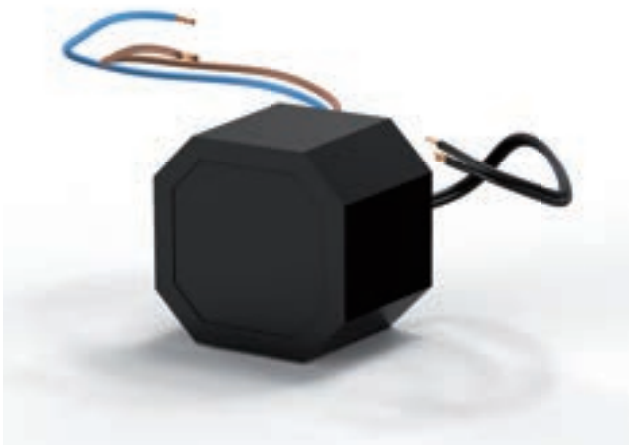
Mechanical data

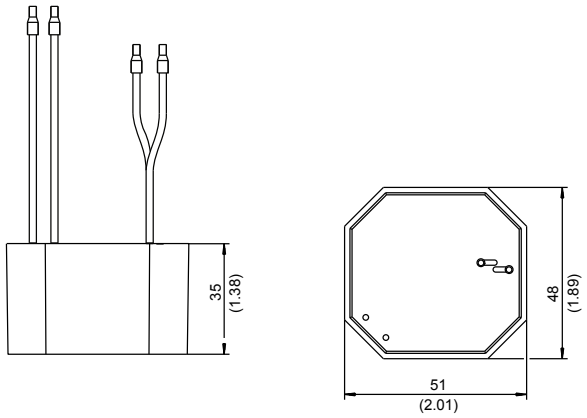
Dimensions	51.0 x 48.0 x 25.0 mm
Weight	109 g
Connectors	
AC input:	160 mm cable
DC output:	160 mm cable

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW7802

UP12





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

Voltage	Current	Ripple voltage	Article no.
12 V	1000 mA	300 mV pp	1891767
24 V	500 mA	300 mV pp	1891768

Characteristics

+ Overload protection
+ Continuously short circuit proof
+ Overvoltage protection

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	300 mA
Leakage current	≤ 25 µA
Output voltage tolerance	± 5 %
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 40° C
Humidity	10 – 95 %
Storage temperature	-20 – 70° C

Safety specifications

Layout acc. to safety standard	IEC61558-1, IEC61558-2-16
Approvals	EU
EMC	EN 55011, EN 55014-1, EN 55014-2, EN 61000-6-2, EN 61000-6-3

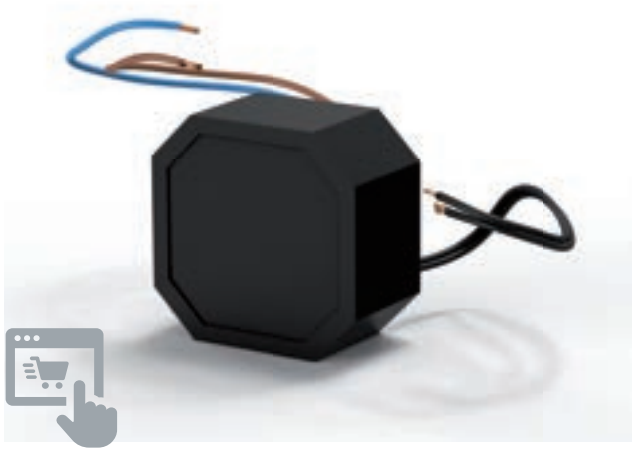
Mechanical data

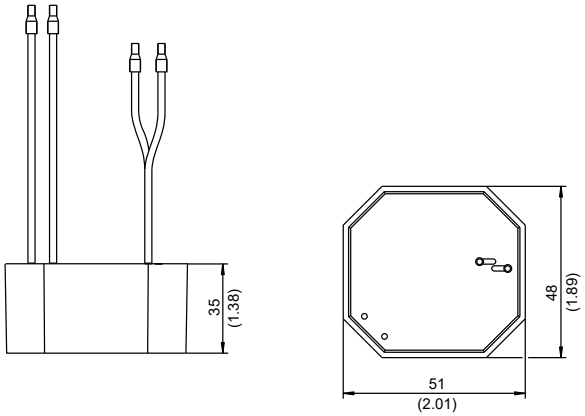
Dimensions	51.0 x 48.0 x 35.0 mm
Weight	142 g, 130 g (1891767)
Connectors	
AC input:	150 mm cable
DC output:	150 mm cable

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW7803

UP18





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

Voltage	Current	Ripple voltage	Article no.
12 V	1500 mA	400 mV pp	1832688
24 V	750 mA	300mV pp	1891685

Characteristics

+ Overload protection
+ Continuously short circuit proof
+ Overvoltage protection

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	400 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 5 %
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 40° C
Humidity	10 – 95 %
Storage temperature	-20 – 70° C

Safety specifications

Layout acc. to safety standard	IEC61558-1
Approvals	EU
EMC	EN 55011, EN 55014-1, EN 55014-2, EN 61000-6-2, EN 61000-6-3

Mechanical data

Dimensions	51.0 x 48.0 x 35.0 mm
Weight	130 g
Connectors	
AC input:	150 mm cable
DC output:	150 mm cable

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

Chargers

Fastest charging times for use on the go

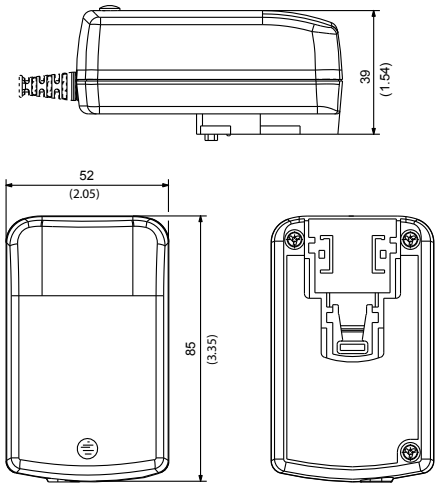
FRIWO

Always ready to use

Premium charging technology from FRIWO: This is the ideal solution for use on the go. Even our standard portfolio includes extremely energy-efficient chargers with minimal standby losses. Yet we are particularly proud of our customized solutions. With our market-leading charging technology, we supply numerous global companies from ambitious sectors such as mobile tools and gardening equipment, medical technology and electromobility, making us one of the key players in charging technology.

FW7290

Li-Ion Charger GPP18



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

Cells	Voltage	Current	Article no.
2	7.2 V	1500 mA	1832658

Characteristics

+ Overload protection + Overvoltage protection
+ Continuously short circuit proof
+ Battery NTC sensor: R = 10 kR / B = 3977

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	400 - 200 mA
Leakage current	≤ 100 µA
Output voltage tolerance	± 10 %
Stand-by	≤ 0.5 W
Efficiency	DoE: 10 CFR §430.32 CEC: Appliance efficiency regulation

Environmental specifications

Operating temperature	0 – 40° C
Humidity	10 – 95 %
Storage temperature	-20 – 70° C
Operating altitude	2000 m

Safety specifications

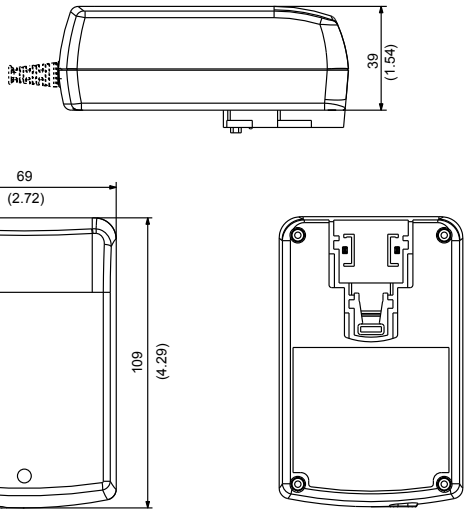
Layout acc. to safety standard	UL1310, IEC/EN60335-1, IEC/EN60601-1
Safety class	II
EMC	EN 55014-1:2017, EN 55014-2:2015

Mechanical data

Dimensions	85.0 x 52.0 x 39 mm
Weight	239 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	Secondary adapter system

FW7300

Li-Ion Charger GPP36



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

Cells	Voltage	Current	Article no.
1	3.6 V	4000 mA	1834050
2	7.2 V	3500 mA	1834051
3	10.8 V	2500 mA	1834052
4	14.4 V	2000 mA	1834053
5	18 V	1600 mA	1834054

Characteristics

+ Overload protection + Overvoltage protection
+ Continuously short circuit proof
+ Reverse polarity protection + Timer: 12 h
+ Battery NTC sensor: R = 10 kR / B = 3977

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	800 - 350 mA
Leakage current	≤ 100 µA
Output voltage tolerance	± 10 %
Turn-on delay	≤ 1
Stand-by	≤ 0.8 W
Efficiency	DoE: 10 CFR §430.32 CEC: Appliance efficiency regulation
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 40° C
Humidity	5 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	2000 m

Safety specifications

Layout acc. to safety standard	IEC60335-1, IEC60335-2-29, UL1310
Safety class	II
EMC	EN 55014-1, EN 55014-2

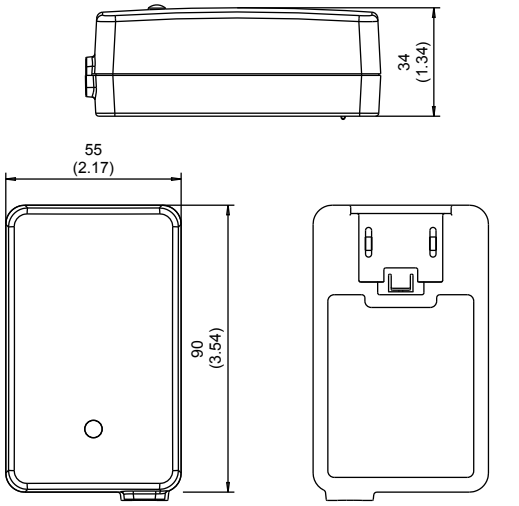
Mechanical data

Dimensions	69.0 x 109.0 x 45.4 mm
Weight	353 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW8103M

Li-Ion Charger FOX30-C



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

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

Cells	Voltage	Current	Article no.
3	10,8 V	2000 mA	1960274
4	14,4 V	1500 mA	1899125

Characteristics

+ Overload protection + Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	500 - 300 mA
Leakage current	≤ 100 µA
Output voltage tolerance	± 1 %
Efficiency	DoE: 10 CFR §430.32 CEC: Appliance efficiency regulation
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 40° C
Operating altitude	5000m
Humidity	5 – 90 %
Storage temperature	-25 – 70° C

Safety specifications

Layout acc. to safety standard	IEC60335-1, 60601-1
Approvals	EU, US
Safety class	II
EMC	EN 55032, EN 55035, EN60601-1-2 4th Edition

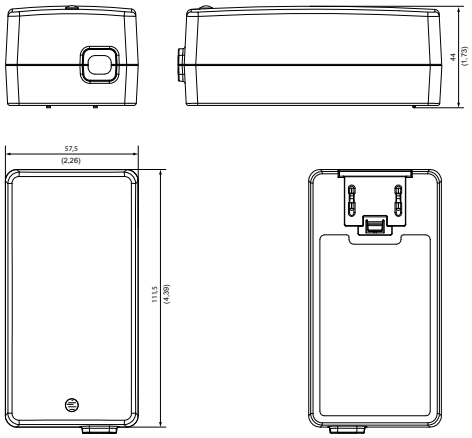
Mechanical data

Dimensions	90.0 x 55.0 x 34.0 mm
Weight	254 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	JST plug

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25°C, 100% load)

FW8104M

Li-Ion Charger FOX40-C



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

Cells	Voltage	Current	Article no.
3	10,8 V	2600 mA	1960275
4	14,4 V	2100 mA	1899119

Characteristics

+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	640 - 350mA (Art. no. 1960275) 660 - 320mA (Art. no. 1899119)
Leakage current	≤ 100 µA
Output voltage tolerance	± 1 %
Efficiency	DoE: 10 CFR §430.32 CEC: Appliance efficiency regulation
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 40° C
Humidity	10 – 90 %
Storage temperature	-20 – 70° C

Safety specifications

Layout acc. to safety standard	IEC60335-1, IEC60335-2-29, IEC60601-1, UL1310
Approvals	EU, US
Safety class	II
EMC	EN 55014-1, EN 55014-2, EN60601-1 4th ed.

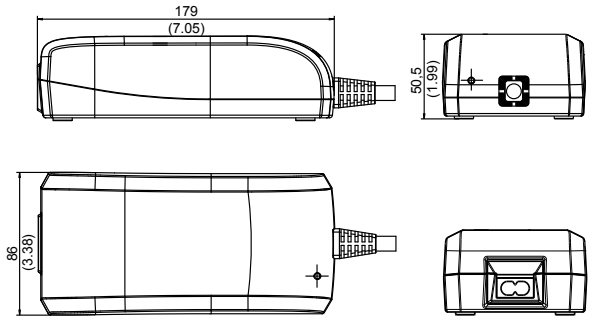
Mechanical data

Dimensions	111,5 x 57,5 x 44 mm
Weight	290 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	JST plug

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

FW8100M

Li-Ion Charger FOX90-C



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

Cells	Voltage	Current	Article no.
7	25.2 V	3000 mA	1897113
8	28.8 V	2600 mA	1897114
10	36 V	2100 mA	1897115

Characteristics

+ Overload protection + Overvoltage protection
+ Continuously short circuit proof
+ Reverse polarity protection + Timer: 12 h
+ Battery NTC sensor: R = 10 kR / B = 3977

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	1840 – 850 mA (Article no. 1897114, 1897115), 1850 – 870 mA (Article no. 1897113)
Leakage current	≤ 100 µA
Reverse current	50 µA
Output voltage tolerance	± 1 %
Turn-on delay	≤ 5 s
Stand-by	≤ 0.5 W
Efficiency	DoE: 10 CFR §430.32 CEC: Appliance efficiency regulation
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 40° C
Humidity	5 – 90 %
Storage temperature	-25 – 70° C
Operating altitude	3000 m

Safety specifications

Layout acc. to safety standard	IEC60335-1, IEC60335-2-29, IEC60601-1, UL1310
Safety class	II
EMC	EN 55014-1, EN 55014-2, EN60601-1-2 4th Ed.

Techanical data

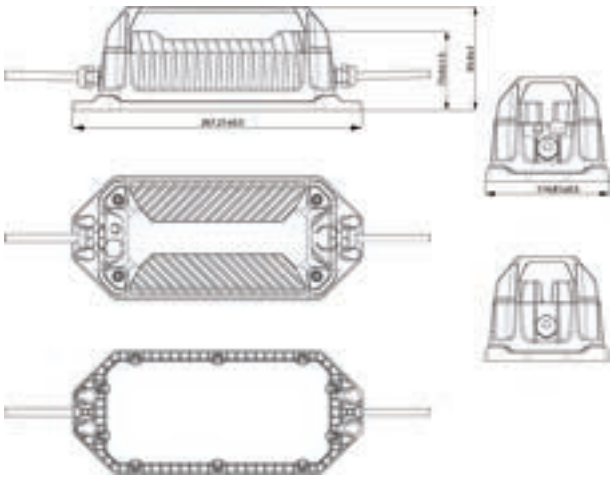
Dimensions	179.0 x 86.0 x 50.5 mm
Weight	507 g
Connectors	
AC input:	2 pole, IEC60320-C8
DC output:	3 pole, JST plug

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

Date of release: 08/2021

LEV500

Li-Ion Charger LEV500



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

Cells	Voltage	Current	Article no.
14	36 – 58,8 V	0 – 8500 mA	1960948

Characteristics

+ Device status via LED display
+ Overvoltage protection
+ Continuously short circuit proof
+ Removable handle
+ Industrial robust, compact design
+ IP 65
+ Reverse polarity protection
+ Over temperature protection

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	220 – 240 V
Frequency	50 – 60 Hz
Input current	2.8 – 2 A
Output voltage tolerance	± 1 %

Environmental specifications

Operating temperature	-20 – 50° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C

Safety specifications

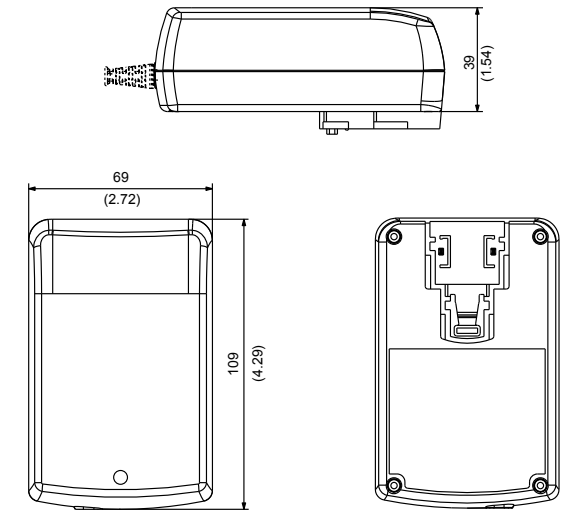
Layout acc. to safety standard	IEC60335-1, IEC60335-2-29
Approvals	EU
Safety class	I
EMC	EN 55014-1, EN 55014-2

Mechanical data

Dimensions	267,2 x 114,8 x 73,0 mm
Weight	2215 g
Connectors	
AC input:	3 pole, 1 m length

FW7300

LiFePO4 Charger GPP36



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

Cells	Voltage	Current	Article no.
2	6.6 V	3500 mA	1834056
4	13.2 V	2000 mA	1834058

Characteristics

+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	180 – 450 mA
Leakage current	≤ 100 µA
Output voltage tolerance	± 10 %
Turn-on delay	≤ 1 s
Stand-by	≤ 0.8 W
Efficiency	DoE: 10 CFR §430.32 CEC: Appliance efficiency regulation
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 40° C
Humidity	5 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	2000 m

Safety specifications

Layout acc. to safety standard	IEC60335-1, IEC60335-2-29, UL1310
Safety class	II
EMC	EN 55014-1, EN 55014-2

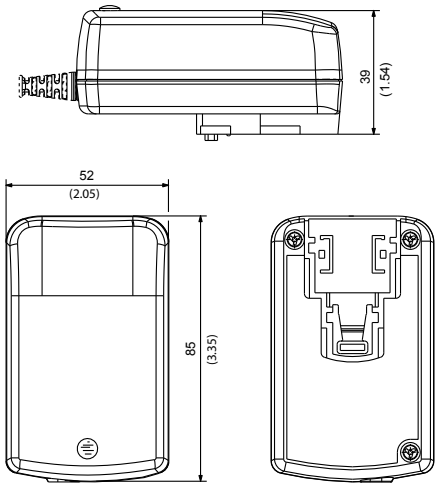
Mechanical data

Dimensions	69.0 x 109.0 x 45.5 mm
Weight	353 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25°C, 100% load)

FW7290

NiCd/NiMH Charger GPP18



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

Cells	Voltage	Current	Article no.
2 - 6	2.4 - 7.2 V	3000 mA	1832656

Characteristics

+ Overload protection + Overvoltage protection
+ Continuously short circuit proof
+ Battery NTC sensor: R = 10 kR / B = 3977

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	400 - 200 mA
Leakage current	≤ 100 µA
Output voltage tolerance	± 10 %
Stand-by	≤ 0.5 W
Efficiency	DoE: 10 CFR §430.32 CEC: Appliance efficiency regulation

Environmental specifications

Operating temperature	0 – 40° C
Humidity	10 – 95 %
Storage temperature	-20 – 70° C
Operating altitude	2000 m

Safety specifications

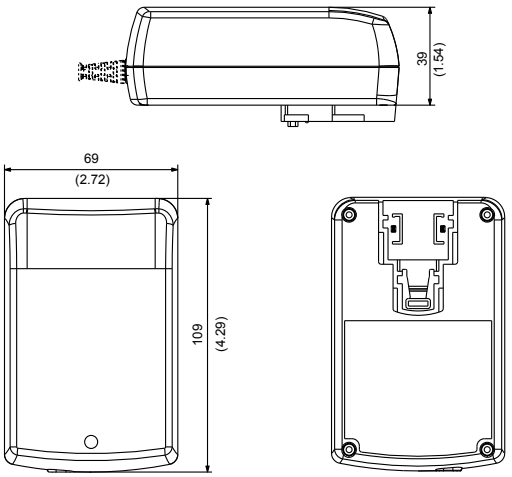
Layout acc. to safety standard	UL1310, IEC/EN60335-1, IEC/EN60601-1
Safety class	II
EMC	EN 55014-1:2017, EN 55014-2:2015

Mechanical data

Dimensions	85.0 x 52.0 x 39.0 mm
Weight	150 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	Secondary adapter system

FW7300

NiCd/NiMH Charger GPP36



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

Cells	Voltage	Current	Article no.
2 - 12	2.4 - 14.4 V	1600 - 4000 mA	1834049

Characteristics

+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	180 – 450 mA
Leakage current	≤ 100 µA
Output voltage tolerance	± 10 %
Turn-on delay	≤ 1 s
Stand-by	≤ 0.8 W
MTBF	100.000 h*

Environmental specifications

Operating temperature	0 – 40° C
Humidity	5 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	2000 m

Safety specifications

Layout acc. to safety standard	IEC60335-1, IEC60335-2-29, UL1310
Safety class	II
EMC	EN 55014-1, EN 55014-2

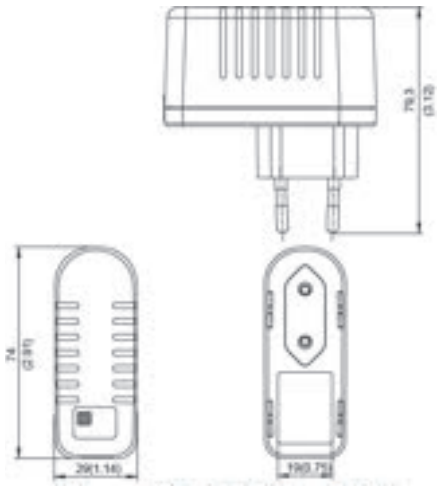
Mechanical data

Dimensions	69.0 x 109.0 x 45.5 mm
Weight	320 g
Connectors	
AC input:	Interchangeable primary adapter system
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25°C, 100% load)

FW7118M

Pb Charger PP8



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

Cells	Voltage	Current	Article no.
3	6 V	900 mA	1890125
6	12 V	500 mA	1824396

Characteristics

+ Overload protection
+ Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

CE

Further approvals possible after consultation

Technical data

Input voltage	100 – 240 V
Frequency	50 – 60 Hz
Input current	135 – 65 mA
Leakage current	≤ 10 µA
Output voltage tolerance	± 10 %
Turn-on delay	≤ 1 s
Stand-by	≤ 0.5 W
MTBF	200.000 h*

Environmental specifications

Operating temperature	0 – 40° C
Humidity	10 – 95 %
Storage temperature	-40 – 70° C
Operating altitude	2000 m

Safety specifications

Layout acc. to safety standard	IEC/EN 60335-1, IEC/EN IEC60335-2-29
Safety class	II
EMC	EN 55014-1:2017, EN 55014-2:2015

Mechanical data

Dimensions	29.0 x 74.0 x 79.3 mm
Weight	146 g (article no. 1890125), 158 g (article no. 1824396)
Connectors	
AC input:	Euro plug
DC output:	Secondary adapter system

* Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25 °C, 100% load)

Battery packs

Certified safety thanks to state-of-the-art technology

FRIWO

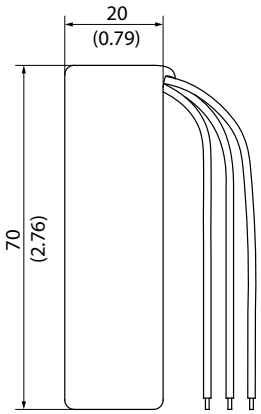
One source solutions

Mobile power supply units from a single source: as systems supplier, we also offer battery packs as well as chargers. In addition to the standard range of solutions, we assemble and manufacture customer-specific solutions – both for stationary and mobile use. All with the option of being labeled “Made in Germany” and certified according to UN38.3 (transport of batteries).

In addition to the international development and manufacturing capacities, FRIWO also has its own approval department, which carries out the corresponding approval processes in close collaboration with the responsible authorities.

FB1S1P

Battery Pack 1S1P



Alle Abmessungen in Millimeter (Inch), Abweichung ± 1 (0.04)
All Dimensions in Millimeter (Inch), Deviation ± 1 (0.04)

Nominal voltage	Capacity	Connector	Article no.
3.65 V	2850 mAh	Wires: GND black, NTC yellow, PLUS red	5500173

Picture similar. The color of the shrink tubing may differ.

Technical data

Cell type	INR18650-29E
Charge voltage	4.2 V
Charge current	1375 mA
Max. charge current	2750 mA
Discharge current (cont.)	2750 mA
Discharge voltage	2.75 V
NTC	10 K, B=3980
Cell balancing	No

Safety specifications

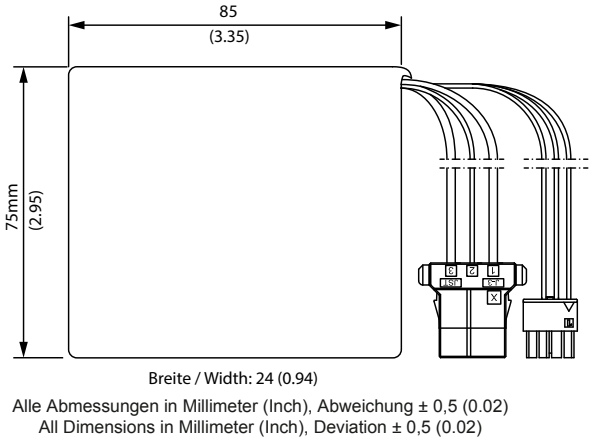
Layout acc. to safety standard	UN38.3

Mechanical data

Dimensions	20.0 x 20.0 x 70.0 mm
Weight	53 g
Cable length	200 mm
Connector	Without connector

FB4S1P

Battery Pack 4S1P



Nominal voltage	Capacity	Connector	Article no.
14.6 V	2850 mAh	Power: JST-Stecker: PIN 1 GND black, PIN 2 NTC yellow, PIN 3 PLUS red Communication: PIN 1 SMB GND grey, PIN 2 SMBC white, PIN 3 SMBD green, PIN 4 not used	5500099

Picture similar. The color of the shrink tubing may differ.

Technical data

Cell type	INR18650-29E
Charge voltage	16.8 V
Charge current	1375 mA
Max. charge current	2750 mA
Discharge current (cont.)	2750 mA
Discharge voltage	10.0 V
NTC	10 K, B = 3435
Cell balancing	Yes
Communication	SMBus

Safety specifications

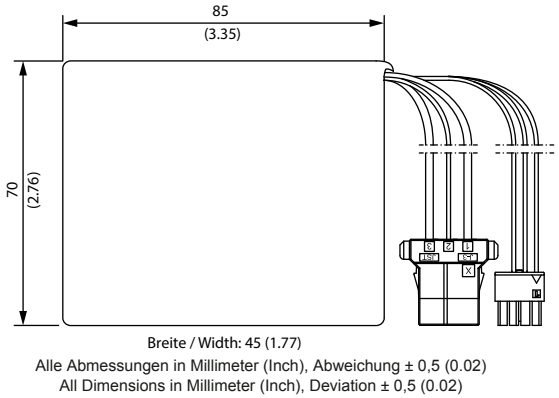
Layout acc. to safety standard	IEC62133-2, UN38.3

Mechanical data

Dimensions	85.0 x 75.0 x 24.0 mm
Weight	219 g
Connector	JST J300, TE, Micro Mate-N-Lok

FB4S2P

Battery Pack 4S2P



Nominal voltage	Capacity	Connector	Article no.
14.6 V	5700 mAh	Power: JST connector: PIN 1 GND black, PIN 2 NTC yellow, PIN 3 PLUS red Communication: PIN 1 SMB GND grey, PIN 2 SMBC white, PIN 3 SMBD green, PIN 4 not used	550000

Picture similar. The color of the shrink tubing may differ.

Technical data

Cell type	INR18650-29E
Charge voltage	16.8 V
Charge current	2750 mA
Max. charge current	5500 mA
Discharge current (cont.)	2750 mA
Discharge voltage	10.0 V
NTC	10 K, B = 3380
Cell balancing	Yes

Safety specifications

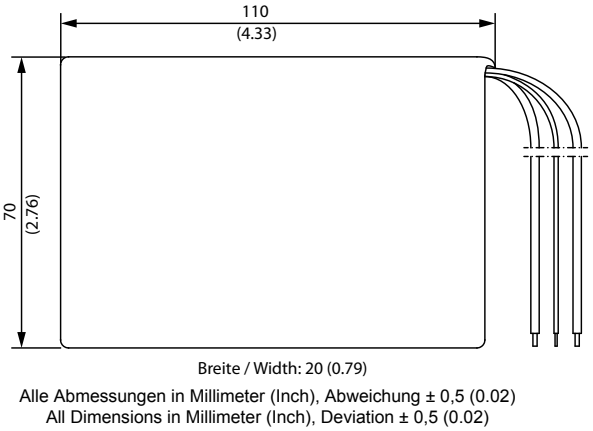
Layout acc. to safety standard	UN38.3

Mechanical data

Dimensions	85.0 x 45.0 x 70.0 mm
Weight	405 g
Connector	JST J300, TE, Micro-Mate-N-Lock

FB5S1P

Battery Pack 5S1P



Nominal voltage	Capacity	Connector	Article no.
18.25 V	2850 mAh	JST connector: PIN 1 GND black, PIN 2 NTC yellow, PIN 3 PLUS red	5500004
18.25 V	2850 mAh	Wires: GND black, NTC yellow, PLUS red	5500091
18.25 V	2850 mAh	Power: JST connector: PIN 1 GND black, PIN 2 NTC yellow, PIN 3 PLUS red Communication: PIN 1 SMB GND grey, PIN 2 SMBC white, PIN 3 SMBD green, PIN 4 5V	5500133

Picture similar. The color of the shrink tubing may differ.

Technical data

Cell type	INR18650-29E
Charge voltage	21 V
Charge current	1375 mA
Max. charge current	2750 mA
Discharge current (cont.)	2750 mA
Discharge voltage	10.0 V
NTC	10 K, B = 3980
Cell balancing	Yes
Communication	SMBus (5500134)

Safety specifications

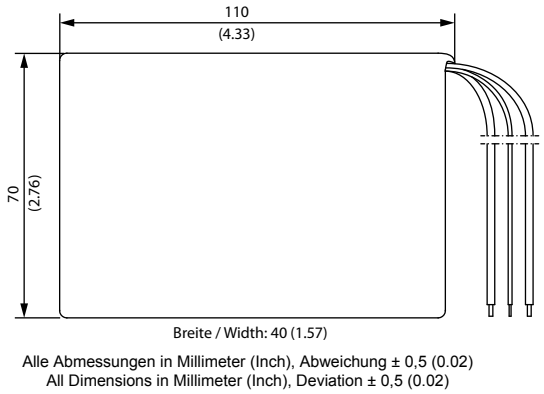
Layout acc. to safety standard	IEC62133-2, UN38.3

Mechanical data

Dimensions	110.0 x 20.0 x 70.0 mm
Weight	268 g
Connector	JST J300 (Article no. 5500004, 5500133), TE, Micro-Mate-N-Lock (Article no. 5500133)

FB5S2P

Battery Pack 5S2P



Nominal voltage	Capacity	Connector	Article no.
18.25 V	5700 mAh	Power: JST connector: PIN 1 GND black, PIN 2 NTC yellow, PIN 3 PLUS red Communication: PIN 1 SMB GND grey, PIN 2 SMBC white, PIN 3 SMBD green, PIN 4 5V	5500134

Picture similar. The color of the shrink tubing may differ.

Technical data

Cell type	INR18650-29E
Charge voltage	21.0 V
Charge current	2750 mA
Max. charge current	5500 mA
Discharge current (cont.)	5500 mA
Discharge voltage	12.5 V
NTC	10 K, B = 3980
Cell balancing	Yes
Communication	SMBus

Safety specifications

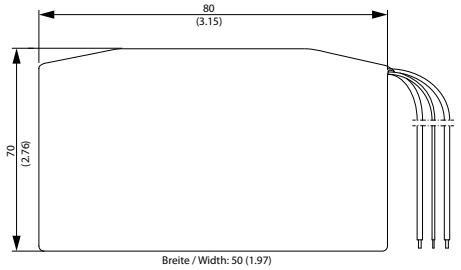
Layout acc. to safety standard	UN38.3

Mechanical data

Dimensions	110.0 x 40.0 x 70.0 mm
Cable length	200 mm
Connector	JST, J300, TE, Micro Mate-N-Lock

FB7S1P

Battery Pack 7S1P



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

Nominal voltage	Capacity	Connector	Article no.
25.55 V	2850 mAh	JST connector: PIN 1 GND black, PIN 2 NTC yellow, PIN 3 PLUS red	5500006
25.55 V	2850 mAh	Litzen: GND black, NTC yellow, PLUS red	5500093
25.55 V	2850 mAh	Power: JST connector: PIN 1 GND black, PIN 2 NTC yellow, PIN 3 PLUS red Communication: PIN 1 SMB GND grey, PIN 2 SMBC white, PIN 3 SMBD green, PIN 4 5V	5500135

Picture similar. The color of the shrink tubing may differ.

Technical data

Cell type	INR18650-29E
Charge voltage	29.4 V
Charge current	1375 mA
Max. charge current	2750 mA
Discharge current (cont.)	2750 mA
Discharge voltage	17.5 V
NTC	10 K, B = 3988 (5500006, 5500093) 10 K, B = 3980 (55000135)
Cell balancing	Yes
Communication	SMBus (5500135)

Safety specifications

Layout acc. to safety standard	UN38.3

Mechanical data

Dimensions	85.0 x 45.0 x 70.0 mm, 80.0 x 50.0 x 70.0 mm (Article no. 5500135)
Weight	410 g, 383 g (Article no. 5500135)
Cable length	200 mm
Connector	JST,J300 (Article no. 5500006, 5500135), TE, Micro Mate-N-Lock (Article no. 5500135)

FB7S2P

Battery Pack 7S2P

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

Nominal voltage	Capacity	Connector	Article no.
25.55 V	5700 mAh	Power: JST connector: PIN 1 GND black, PIN 2 NTC yellow, PIN 3 PLUS red Communication: PIN 1 SMB GND grey, PIN 2 SMBC white, PIN 3 SMBD green, PIN 4 5V	5500136

Picture similar. The color of the shrink tubing may differ.

Technical data

Cell type	INR18650-29E
Charge voltage	29.4 V
Charge current	2750 mA
Max. charge current	5500 mA
Discharge current (cont.)	5500 mA
Discharge voltage	17.5 V
NTC	10 K, B = 3980
Cell balancing	Yes
Communication	SMBus

Safety specifications

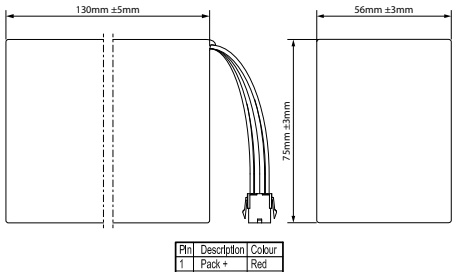
Layout acc. to safety standard	IEC62133-2, UN38.3

Mechanical data

Dimensions	133.0 x 38.0 x 75.0 mm
Weight	710 g
Cable length	200 mm
Connector	JST, J300, TE, Micro Mate-N-Lock

FB7S3P

Battery Pack 7S3P



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

Nominal voltage	Capacity	Connector	Article no.
25.55 V	8550 mAh	Power: JST connector: PIN 1 GND black, PIN 2 NTC yellow, PIN 3 PLUS red Communication: PIN 1 SMB GND grey, PIN 2 SMBC white, PIN 3 SMBD green, PIN 4 5V	5500198

Picture similar. The color of the shrink tubing may differ.

Technical data

Cell type	INR18650-29E
Charge voltage	29.4 V
Charge current	4125 mA
Max. charge current	8250 mA
Discharge current (cont.)	8250 mA
Discharge voltage	18.2 V
NTC	10 K, B = 3980
Cell balancing	Yes
Communication	SMBus

Safety specifications

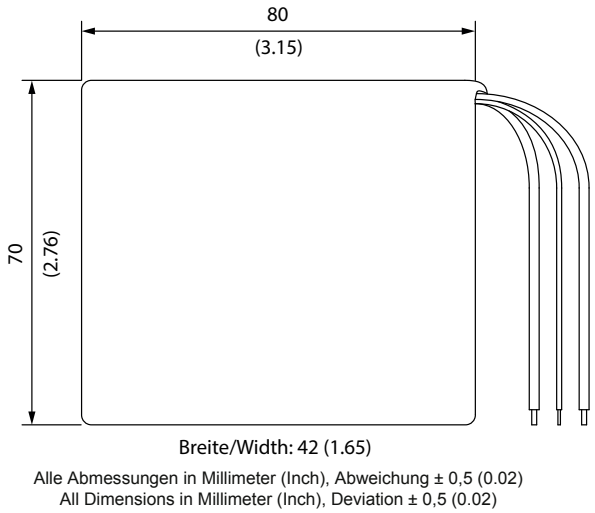
Layout acc. to safety standard	UN38.3, IEC 62133-2

Mechanical data

Dimensions	130.0 x 56.0 x 75.0 mm
Weight	1135 g
Cable length	200 mm
Connector	Molex Mini-Fit Jr.

FB8S1P

Battery Pack 8S1P



Nominal voltage	Capacity	Connector	Article no.
29.2 V	2850 mAh	Power: JST connector: PIN 1 GND black, PIN 2 NTC yellow, PIN 3 PLUS red Communication: PIN 1 SMB GND grey, PIN 2 SMBC white, PIN 3 SMBD green, PIN 4 not used	5500153

Picture similar. The color of the shrink tubing may differ.

Technical data

Cell type	INR18650-29E
Charge voltage	33,6 V
Charge current	1350 mA
Max. charge current	2750 mA
Discharge current (cont.)	2750 mA
Discharge voltage	2750 V
NTC	10 K, B = 3980
Cell balancing	No
Communication	SMBus

Safety specifications

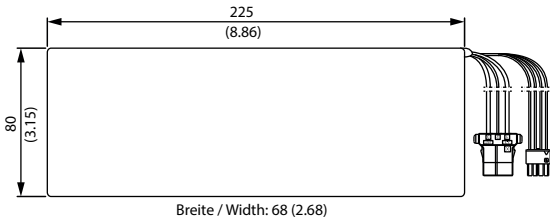
Layout acc. to safety standard	UN38.3

Mechanical data

Dimensions	80.0 x 42.0 x 70.0 mm
Weight	383 g
Cable length	180 – 200 mm
Connector	TE, Micro Mate-N-Lock

FB10S3P

Battery Pack 10S3P



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

Nominal voltage	Capacity	Connector	Article no.
36.5 V	8550 mAh	Power: JST connector: PIN 1 GND black, PIN 2 NTC yellow, PIN 3 PLUS red Communication: PIN 1 SMB GND grey, PIN 2 SMBC white, PIN 3 SMBD green, PIN 4 5V	5500008

Picture similar. The color of the shrink tubing may differ.

Technical data

Cell type	INR18650-29E
Charge voltage	42.0 V
Charge current	4125 mA
Max. charge current	8550 mA
Discharge current (cont.)	8250 mA
Discharge voltage	25.0 V
NTC	10 K, B = 3988
Cell balancing	Yes
Communication	SMBus

Safety specifications

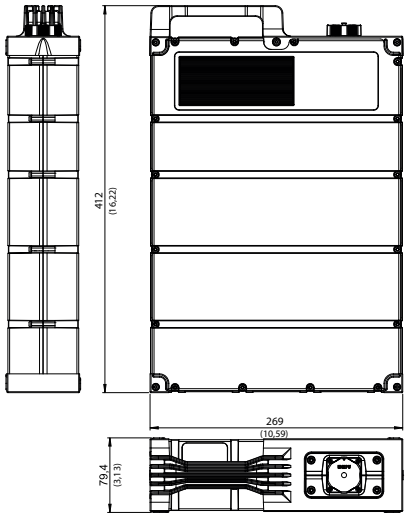
Layout acc. to safety standard	UN 38.3 (in approval)

Mechanical data

Dimensions	225.0 x 68.0 x 80.0 mm
Weight	1592 g
Cable length	180 – 200 mm
Connector	TE, Micro Mate-N-Lock

FB14S12P

Battery Pack 14S12P



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

Nominal voltage	Capacity	Connector	Article no.
50.4 V	40.2 Ah	Weipu WY28K8BZ Kommunikation: PIN 1 BAT-, PIN 2 BAT+, PIN 3 Charge sense, PIN 4 CAN low, PIN 5 CAN high, PIN 6 BAT enable, PIN 7 12 V, PIN 8 n.c.	5500320

This article is currently not yet available for order. Please check the FRIWO webshop for availability.

Technical data

Cell type	INR18650-35E
Charge voltage	58.8 V
Charge current	12 A
Max. charge current	20 A
Discharge current (cont.)	60 A
Discharge voltage	42 V
Cell balancing	Yes
Communication	CAN-BUS

Safety specifications

Layout acc. to safety standard	IEC62133-2:2017

Mechanical data

Dimensions	412.0 x 269.0 x 79.4 mm
Weight	11000 g
Connector	Weipu WY28K8BZ

LED Drivers
Smart lighting control

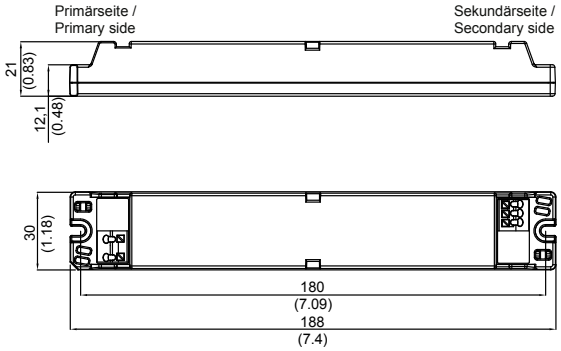
FRIWO

Flexible solution for minimal installation space

The LED driver series from FRIWO: Customized power supply solutions for your lighting concept. From vandalism-proof flush-mounted installation to use in the narrowest of spaces, our standard range offers the optimum basis for creating lighting solutions.

FRIWO's LED drivers stand for efficiency at the highest level. With regard to safety (EN 61347-1/-2-13), EMC (EN 55015) and harmonics (EN 61000-3-2), LED power supplies have to meet special requirements. In compliance with all these guidelines, the drivers of the LT family realize current and voltage regulation in only one device.

LT40



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

Characteristics

+ Overload protection + No load protected
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	220 – 240 V
Frequency	50 – 60 Hz
Input current	180 mA
Leakage current	≤ 250 µA
Output voltage tolerance	± 2 %
Output current tolerance	± 5 %
MTBF	200.000 h*

Environmental specifications

Operating temperature	-20 – 45° C
Humidity	10 – 95 % (not condensing)
Storage temperature	-40 – 70° C
Operating altitude	2000 m

Safety specifications

Layout acc. to safety standard	EN 61347-1, EN 61347-2-13
Safety class	II (with protective covers)
Approvals	EN 55015, EN 61000-3-2, EN 61547, EN 62384

Mechanical data

Dimensions	188.0 x 30.0 x 21.0 mm
Weight	106 g, 120 g (LT40-36/1050), 117 g (LT40-48/700)
Connectors	
AC input:	Terminal strips 0.5 – 1.5 mm²
DC output:	Terminal strips 0.5 – 1.5 mm²

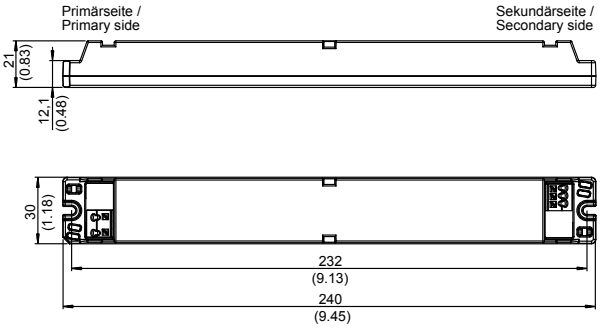
Output data

Model	Constant current mode (CC)		Constant voltage mode (CV)		Article no.
	Voltage	Current	Voltage	Current	
LT40-24/1460	10 - 23.5 V	1460 mA	24 V	0 -1400 mA	1899790
LT40-36/1050	15 - 35.3 V	1050 mA	36 V	0 -1000 mA	1961232
LT40-48/700	22 - 47.0 V	700 mA	48 V	0 - 665 mA	1961231

Date of release: 08/2021

*Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25°C, 100% load)

LT50 DALI



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

Characteristics

+ Overload protection + Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	220 – 240 V
Frequency	50 – 60 Hz
Input current	250 mA
Leakage current	≤ 250 µA
DALI / PUSH-DIM	264V AC / 50V DC
Output voltage tolerance	± 2 %
Output current tolerance	± 5 %
Stand-by	< 0,5 W
MTBF	200.000 h*

Environmental specifications

Operating temperature	-20 – 45° C
Humidity	5 – 90 % (not condensing)
Storage temperature	-40 – 70° C
Operating altitude	2000 m

Safety specifications

Layout acc. to safety standard	EN 61347-1, EN 61347-2-13,
Safety class	II (with protective covers)
EMC	EN 55015, EN 61000-3-2, EN 61547, EN 62384

Mechanical data

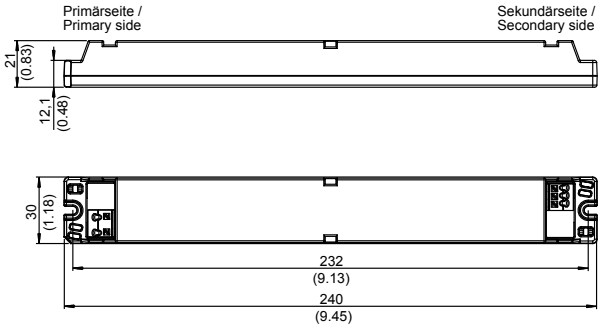
Dimensions	240.0 x 30.0 x 21.0 mm
Weight	130 g
Connectors	
AC input:	Terminal strips 0.5 – 1.5 mm²
DC output:	Terminal strips 0.5 – 1.5 mm²

Output data

Model	Constant current mode (CC)		Constant voltage mode (CV)		Article no.
	Voltage	Current	Voltage	Current	
LT50-24/2100 DALI CV	–	–	24 V	0 - 2100 mA	1899313

*Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25°C, 100% load)

LT60



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

Characteristics

+ Overload protection + Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	220 – 240 V
Frequency	50 – 60 Hz
Input current	300mA
Leakage current	≤ 250 µA
Output voltage tolerance	± 2 %
Output current tolerance	± 5 %
MTBF	200.000 h*

Environmental specifications

Operating temperature	-20 – 45° C
Humidity	5 – 95 % (not condensing)
Storage temperature	-40 – 70° C
Operating altitude	2000 m

Safety specifications

Layout acc. to safety standard	EN 61347-1, EN 61347-2-13,
Safety class	II (with protective covers)
Approvals	EN 55015, EN 61000-3-2, EN 61547, EN 62384

Mechanical data

Dimensions	240.0 x 30.0 x 21.0 mm (LT60), 305 x 30 x 24 (LT60-24/2500)
Weight	130 g
Connectors	Terminal strips 0.5 – 1.5 mm²

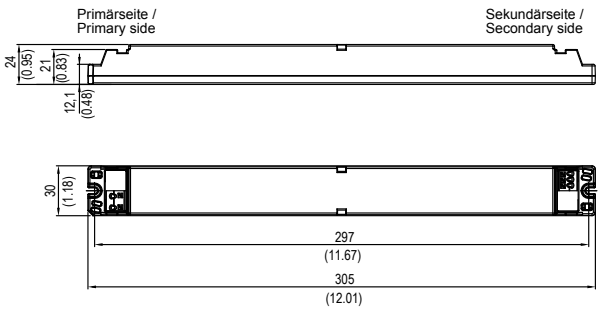
Output data

Model	Constant current mode (CC)		Constant voltage mode (CV)		Article no.
	Voltage	Current	Voltage	Current	
LT60-24/2500	15 - 23.5 V	2500 mA	24 V	0 - 2375 mA	1961230
LT60-36/1600	22 - 35.0 V	1600 mA	36 V	0 - 1520 mA	1961233

Date of release: 08/2021

*Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25°C, 100% load)

LT100



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

Characteristics

+ Overload protection + Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	220 – 240 V
Frequency	50 – 60 Hz
Input current	500mA
Leakage current	≤ 250 µA
Output voltage tolerance	± 2 %
Output current tolerance	± 5 %
MTBF	200.000 h*

Environmental specifications

Operating temperature	-20 – 45° C
Humidity	5 – 90 % (not condensing)
Storage temperature	-40 – 70° C
Operating altitude	2000 m

Safety specifications

Layout acc. to safety standard	EN 61347-1, EN 61347-2-13
Safety class	II (with protective covers)
EMC	EN 55015, EN 61000-3-2, EN 61547, EN 62384

Mechanical data

Dimensions	305.0 x 30.0 x 24.0 mm
Weight	185 g
Connectors	Terminal strips 0.5 – 1.5 mm²

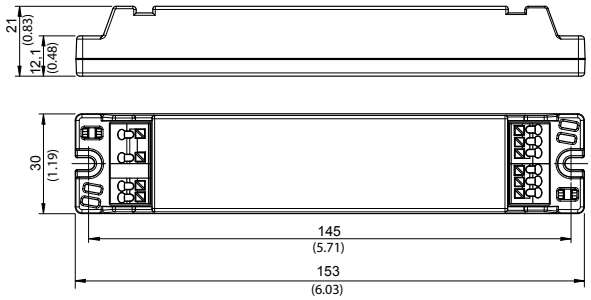
Output data

Model	Constant current mode (CC)		Constant voltage mode (CV)		Article no.
	Voltage	Current	Voltage	Current	
LT100-24/4200	15 - 23.5 V	4200 mA	24 V	0 - 4000 mA	1961227
LT100-48/2100	30 - 47.0 V	2100 mA	48 V	0 - 2000 mA	1961226

Date of release: 08/2021

*Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25°C, 100% load)

DIMMbox



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

Characteristics

+ Overload protection + Overvoltage protection
+ Continuously short circuit proof

Labels / Certifications

Further approvals possible after consultation

Technical data

Input voltage	220 – 240 V
Frequency	50 – 60 Hz
Rated input voltage	15-50V DC
Rated input current without LED	12-14mA
Input / Output current	max. 5A
Power consumption	0,18 - 0,7W bei 15-50V DC
Rated input voltage	SWD/DALI max. 264V AC oder 50V DC
Surge voltage strength	SWD input 2KV
Rated input voltage	1-10V input max. 12V DC (safety extra-low voltage)
SYNC input/ output	0-5V DC / f=150Hz
MTBF	200.000 h*

Environmental specifications

Operating temperature	-20 – 45° C
Humidity	5 – 90 % (not condensing)
Storage temperature	-40 – 70° C
Operating altitude	2000 m

Safety specifications

Layout acc. to safety standard	EN 61347-1, EN 61347-2-13
Safety class	II (with protective covers)
EMC	EN 55015, EN 61547

Mechanical data

Dimensions	153.0 x 30.0 x 21.0 mm
Weight	57 g
Connectors	Terminal strips 0.5 – 1.5 mm²

Output data

Model	Constant current mode (CC)		Article no.
	Voltage	Current	
DIMMbox	15 - 50 V	5000 mA	1894848
DIMMbox CV	15 - 50 V	5000 mA	1897004

Date of release: 08/2021

*Mil217F (based on calculations at 120 VAC / 60 Hz & 230 VAC / 50 Hz, ambient temperature 25°C, 100% load)

Accessories

More products, with more features

FRIWO

Expanding the possibilities

Primary adapters
The easy-to-use, interchangeable primary adapters for FRIWO's adapter systems make it possible to use products globally and can result in considerable reductions in the cost of logistics. The company's IP42 splash-proof adapters featuring IP42-certifi ed splash protection, which are available from FRIWO for the FOX system, are a particular highlight. The IEC adapter (IEC320 C8) off ers a standard alternative for countries with different power plugs.

Secondary adapters
All of FRIWO's standard devices are delivered with a 1.83-meter round cable and its tried-and-tested, comprehensive secondary adapter system. A range of easy-to-mount coaxial and jack connectors makes the system extremely fl exible for use in a wide range of applications. The required polarity can be achieved by reversing the secondary connector. Custom cables can also be installed.

Power cords
Together with the DT range and the FOX and GPP interchangeable adapter system from FRIWO, power cords with the IEC320 C7 power plug offer the right solution for every country. All power cords are 2 meters long and suitable for use with the appropriate IEC320 C8 socket.

Protective covers for LED drivers
Protective covers for the LT range from FRIWO off er an easy way to permanently install LED drivers and light control units, while also protecting their electrical contacts.

FOX system

Primary adapters

Primary adapters for FRIWO's easy-to-use interchangeable adapter systems allow products to be used globally and can result in considerable reductions in the cost of logistics. The adapters featuring IP42-certified splash protection, which are available from FRIWO for the FOX system, are a particular highlight.

	black		white
FOX	IPx0	IPx2	IPx0
Country	Article no.	Article no.	Article no.
EURO	1847556	1847618	1847531
UK	1847544	1847606	1847543
USA / JPN	1847554	1847604	1847533
AUS	1847553	1847624	1847534
IEC	1847552		1847535
ARG	1847548		
BRA	1847551		
CHN	1847550		
IND 2-pin	1847547		
IND 3-pin	1847546		
KOR	1847545		

Date of release: 08/2021

GPP system

Primary adapters

The easy-to-use, interchangeable primary adapters for FRIWO's adapter systems make it possible to use products globally and can result in considerable reductions in the cost of logistics. The IEC adapter (IEC320 C8) offers a standard alternative for countries with different power plugs.

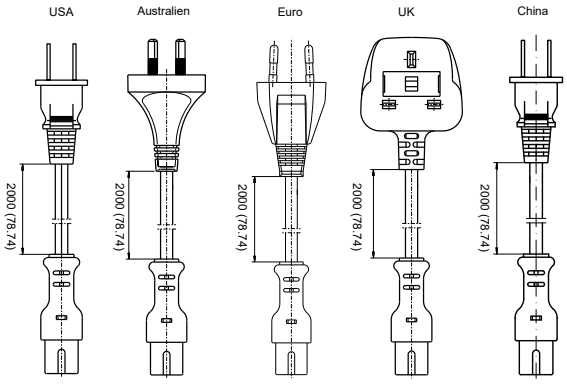
GPP	
Country	Article no.
EURO	1827417
UK	1827420
USA / JPN	1827422
AUS	1827425
IEC	1827428
ARG	1831610
BRA	1835621
CHN	1835620
IND	1831323
KOR	1835619
ZAF	1838236

Power cords

Power cords

Together with the DT range and the FOX and GPP interchangeable adapter system from FRIWO, power cords with the IEC320 C7 power plug offer the right solution for every country. All power cords are 2 meters long and suitable for use with the appropriate IEC320 C8 socket.

Power cords	
Country	Article no.
EURO	1812274
UK	1812275
USA	1812276
AUS	1812277
CHN	1843276



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

Date of release: 08/2021

Secondary adapter-system

Secondary adapters

All of FRIWO's standard devices are delivered with a 1.83-meter cable and its tried-and-tested, comprehensive secondary adapter system. A range of easy-to-mount coaxial and jack connectors makes the system extremely flexible for use in a wide range of applications. The required polarity can be achieved by reversing the secondary connector. Custom cables can also be installed.

Coaxial connectors – Straight			
Ø a.	Ø i.	Length mm	Article no.
3.5	1.3	9.5	1807699
4.0	1.7	9.5	1822557
4.0	1.7	11.0	1811994
4.8	1.7	9.5	1822559
5.5	2.1	9.5	1807700
5.5	2.1	11.5	1807701
5.5	2.1	14.0	1807697
5.5	2.5	9.5	1807698
5.5	2.5	11.5	1807702
5.5	3.3	9.5	1822561
DIN 45323			1807703

Coaxial connectors – Angled			
Ø a.	Ø i.	Length mm	Article no.
3.5	1.3	9.5	1822478
4.0	1.7	9.5	1822558
4.0	1.7	11.0	1822482
4.8	1.7	9.5	1822560
5.5	2.1	9.5	1822479
5.5	2.1	11.5	1822480
5.5	2.1	14.0	1822476
5.5	2.5	9.5	1822477
5.5	2.5	11.5	1822481
5.5	3.3	9.5	1822562
DIN 45323			1822483

Plugs / Sockets	
Description	Article no.
Texas plugs	
Straight Texas plug	1807706
Angled Texas plug	1822486
Texas sockets 2-pin	
Snap-in type	1323938
PCB type	1321609
Texas sockets 3-pin	
Snap-in type	1327259
PCB type	1363506

Jack connectors – Straight		
Ø a.	Length mm	Article no.
2.5	13	1807704
3.5	14	1807705

Jack connectors – Angled		
Ø a.	Length mm	Article no.
2.5	13	1822484
3.5	14	1822485

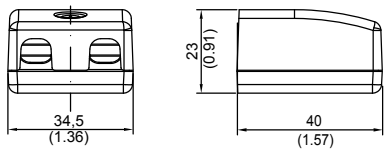
Date of release: 08/2021

Protective covers for LED drivers

LT Protective covers

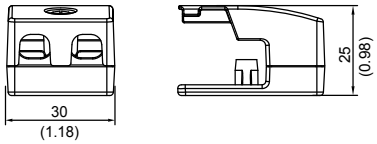
Protective covers for the LT range from FRIWO offer an easy way to permanently install LED drivers and light control units, while also protecting their electrical contacts.

Protective cover LED driver	
Description	Article no.
LT Cap	1839772
For LT20, LT40, LT50 DALI, LT60, LT80, LT100 and DIMMbox	



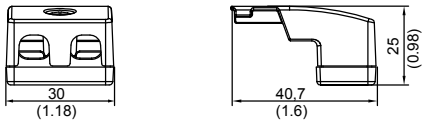
Alle Abmessungen in Millimeter (Inch), Abweichung ± 0,5 (0.02)
All Dimensions in Millimeter (Inch), Deviation ± 0,5 (0.02)

Protective cover LED driver	
Description	Article no.
LT Cap Slim	1844170
For LT20, LT40, LT50 DALI, LT60, LT80, LT100 and DIMMbox	



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

Protective cover LED driver	
Description	Article no.
LT Cap Slim Short	1896330
For LT20, LT40, LT50 DALI, LT60, LT80, LT100 and DIMMbox	



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

Date of release: 08/2021

Innovative power supply units and
drive systems for limitless mobility

FRIWO

DRIVE SYSTEM SOLUTIONS

03

Drive System Solutions

03
Drive System Solutions

TECHNOLOGY

We supply all the components required for a modern electric powertrain.

1. Display
2. Vehicle Control Unit
3. Drive Unit
4. Motor Controller
5. Battery
6. Charger
7. Enable Tool Application

As a system provider, FRIWO offers digitally controllable, precisely matched power supply and drive solutions from a single source.

Errors and ohanges excepted; illustrations similar.
For notes on connection and safe operation, please refer to the operating instructions.

CHARGER

Innovative charging concepts for maximum mobility: Equipped with the experience of almost half a century, FRIWO is your ideal partner in charging technology. Regardless of whether you require highest performance, convection cooling, temperature monitoring, active battery balancing or communication via BUS systems, our comprehensive expertise in the field of charging technology will help you find the perfect solution for your specific needs.

Full power, lower consumption

Coming from a market-leading position in the field of e-bike charging technology, we are more than familiar with the requirements of an optimal power supply for light electric vehicles. In addition to the shortest possible charging times for limitless electromobility, maximum user-friendly handling, exceptional operational lives and safety issues are of central importance for the design of our devices. Tailor-made for „green" electric mobility, it goes without saying that our highly efficient charging systems offer minimal standby losses with the aim of achieving „zero standby".

Dealing with the future of electromobility, FRIWO as an innovative company is also constantly exploring new power supply concepts. In the field of contactless energy transmission, which could represent the charging infrastructure concept for electric vehicles of the future, we have already realized efficient inductive charging systems featuring parallel data transfer.

Overview

Technical Specifications	**Value**	**Unit**
Cell type	Lithium Ions	
AC Input Voltage	195 – 280	V AC
AC Input Frequency	50 – 60	Hz
Nominal DC Output Power	500	W
DC Output Voltage	50,4 – 58,8	V
Efficiency	> 90	%
Communication Interface	CAN	
IP Class	65 IP	
DC Connector	Weipu 8Pol/Stäubli/on request	
DC cable length	120	cm
AC cable	EU/ Asia/ India	
AC cable length	50	cm
Storage temperature	-40… +70 / 10 to 95 rel. hum.	°C
Operating temperature	-20…+50 / 10 to 95 rel. hum.	°C

Views

DISPLAY

The weatherproof display is easy to read, even in direct sunlight, and keeps the driver up to date at all times. Due to the open CAN bus interface, other displays can also be integrated into our powertrain. If a vehicle does not require a fixed display, a smartphone equipped with our Emerge EV App can be used instead.

Display for light electric vehicles

The display has all the essential display elements and signal or warning lights that can be expected from an electric vehicle. The display values are updated absolutely without delay and in very high quality.

In addition, we have incorporated features that make the vehicle and the interaction with the driver even more exciting. The bar graph above the speed indicator can be operated variably and enables the display of a wide variety of information, such as the remaining overboost.

The IP67-protected display is splash-proof and can be installed outdoors.

Overview

Supply voltage	12V
Backlight	Yes
Center display	Speed, Ride mode, Boost, Temperature, State of charge, Milage, Trip milage
Icons (lower edge)	Indicators, Low beam, High beam, Charge mode, Low battery warning, On/Off
Bottom line	Voltage, Temperature, Time, etc.
Buttons	Switch bottom line, Trip reset

Views

VEHICLE CONTROL UNIT

With our VCU, we network the entire vehicle with peripheral components. An Example: In eScooter sharing models, the VCU establishes the online connection to rent the vehicle via an app. Further interfaces are USB, GPRS, 3G or 4G, which can be used differently depending on the application.

The networker

The VCU is used in complex vehicle wiring systems to control vehicle functions or as a gateway between separate CAN buses. It takes on tasks such as the evaluation and control of the lighting system or provides the necessary anti-theft protection. In addition, the VCU is also suitable for „big data applications" as it is equipped with WiFi and GPS connections to upload all collected data to a cloud.

As a complete in-house development, the functions of the VCU can be completely adapted to customer wishes and requirements.

Overview

Supply	12V
Interfaces	USB, 2x CAN
inputs	Up to 16,(5V max 20mA each Pin) Up to 4 analog intpus 12V signal range
Outputs	Up to16 (max current 1A) Up to 8 analog Inputs 5v signal range
IPX5	

Views

DRIVE UNIT

In addition to our intelligent motor control, which is also available separately and can be used with other motors, we offer complete drive units. In this case our motor control is installed directly on the motor. Together they form a perfectly matched unit for the best possible driving experience.

Project accelerator

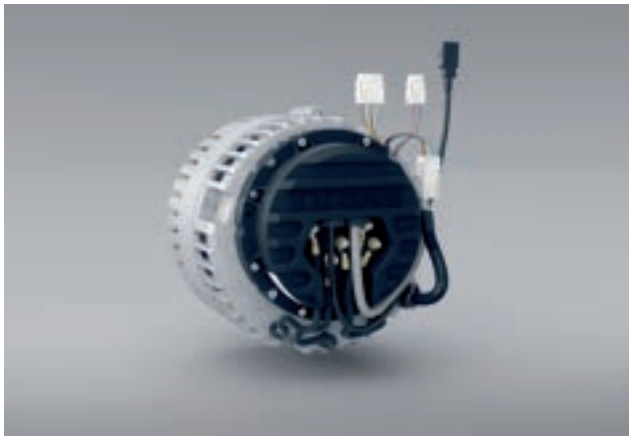
The Emerge drive unit is a powerful unit consisting of a Motenergy motor and an Emerge 6000 motor controller with a mechanical peak power of over 6.2kW. The two components are perfectly matching each other and, with a continuous output of 5kW, provide a drive unit for exciting applications.

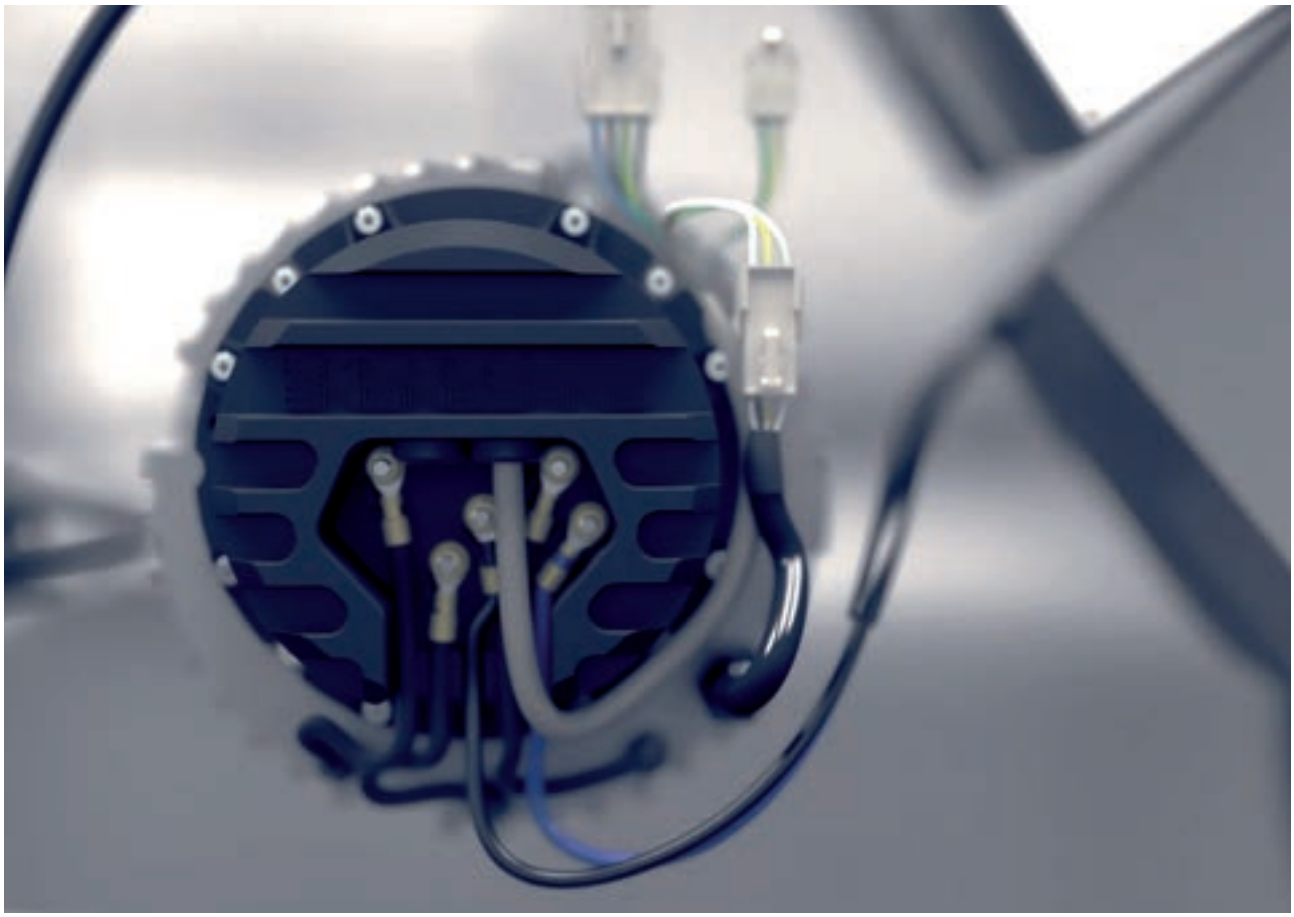
The drive unit can be controlled either via accelerator pedal and brake or via CAN bus. Four different driving profiles and performance classes can be selected via Bluetooth for a maximum driving experience. With the optional developer license, the drive unit can be specifically adapted to the application and customer requirements.

Overview

Applications	Electric scooter, go cart, golf cart, pumps, fans
Input power (el)	9kW (12PS) @ 48V
Output power (mech)	6.3kW (8.5PS)
Torque	26Nm
Efficiency	83% @ 3500/min, 4.75kW Out, 13Nm
Speed	5000/min
Recuperation	Yes
Reverse gear	Yes
CAN-Bus	Yes
Bluetooth	Yes
Diagnostic interface	USB, CAN
Weight	10.9kg
Diameter	201mm
Length	146.5mm (Motor) 52.0mm (Controller)
Shaft diameter	24mm

Views





MOTOR CONTROLLER

Our intelligent motor controller has enjoyed great success in electric scooter sharing and motor sports since 2014.
In Europe more than 4000 rental vehicles are on the road that gathered millions of kilometers and a huge amount of experience.
Thanks to two full race seasons in the WEC LMP1 class including the 24h of Le Mans race, the controller has proven its durability and special robustness.

High quality motor controller

The motor control for brushless electric drives was developed for use in light electric vehicles. Due to the small form factor, the high power up to 12kW and the best possible efficiency, we offer a high degree of freedom in vehicle development. Thanks to Bluetooth functionality and our Emerge EV App, we deliver a high-quality display solution that fits right in, basically for free.

We have developed 100% of the hardware and software ourselves and are therefore able to react quickly to customer requirements.

Overview

Supply voltage	14V - 65V
Phase current	300A
Motor types	PMSM
Control algorithm	Field oriented control with flux weakening
Functions	Automatic teach-in, four ride modes, reverse gear, boost, display control, smartphone app
Position feedback	Hall sensor
Analog inputs	2
Digital inputs	2
Communication	CAN, Bluetooth
Diagnostic interface	USB, CAN
Diameter	155mm
Height	45mm
Weight	914g

Views

BATTERY

Since 2013, our battery technology can be found in the large electric scooter rental fleets in Berlin, Munich, Stuttgart, Paris and Bordeaux, as well as in a wide range of industrial products. We developed the electronics and the software of the battery management system (BMS) ourselves and can react quickly to any functional requirement. With a UL certification, the BMS can be legally distributed in more than 50 countries worldwide, including the USA.

Battery pack

Our battery packs provide the power for Europe's largest rental scooter fleets and have proven safe continuous operation and a long service life in more than 5,000,000 km and more than 150,000 hours of charging.

24/7 continuous operation requires a robust battery management system (BMS) to ensure high safety and availability. Since we have developed 100% of the BMS electronics and software ourselves, we can react flexibly to special customer requirements and special functions.

Overview

Energy	2216 Wh
Cell type	Samsung INR 18650 35E
Cell config	14S 12P
Nominal voltage	50.4V
Voltage range	30V - 59V
Cont. current	50A
Peak current	65A
12V output	1.6A
Standby	<0.1mA
Digital inputs	Keylock (Enable), Charger
Communication	CAN-Bus
Diagnostic interface	USB, CAN
Dimensions	268mm x 76mm x 378mm
Weight	10kg

Views

ENABLE TOOL APPLICATION

For long-term driving pleasure, appropriate control and maintenance of a drive system is essential. Our self-developed service software accompanies your vehicle throughout its entire lifetime: from the development phase through series production to fault analysis in the workshop.

Service power

A lot happens during the life of an electric vehicle.
Everything starts with the development process. In order to provide the best possible support for your R&D, we supply the software to make settings on our control units, manage different versions of this data and safely carry out assembly from the prototype to the larger vehicle fleet.

During series production, the Enable Tool Application supports the calibration of control units, the commissioning of electrical systems and stores protocols in databases.

Even an electric vehicle has to be serviced. We have already developed the infrastructure to set up your dealer network. Our control units are equipped with a USB diagnostic interface to give service staff access to the fault memory or to carry out firmware updates.

We currently offer the Enable Tool Application exclusively as an annual fleet licence, which can be variably distributed among the developer and service user roles.

Overview

Interface	USB
System requirements	Microsoft Windows, Dualcore CPU @ 1.8 Ghz, 2GB RAM, 100MB HDD
Read fault codes	Service and developer
Change parameters	Developer
Create datalog	Service and developer
Create data snapshot	Developer
Transfer data snapshot on a certain OEM ECU	Service
Transfer data snapshot all OEM ECUs	Developer

Views

FRIWO Worldwide

FRIWO

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04

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