EFFEKTA®
innovating power.

Power supplies

Diverse and scalable

- UPS/AC Power supplies
- DC Power supplies
- Energy storage / Batteries
- Solar power

effekta.com/en

innovating power.

EFFEKTA®

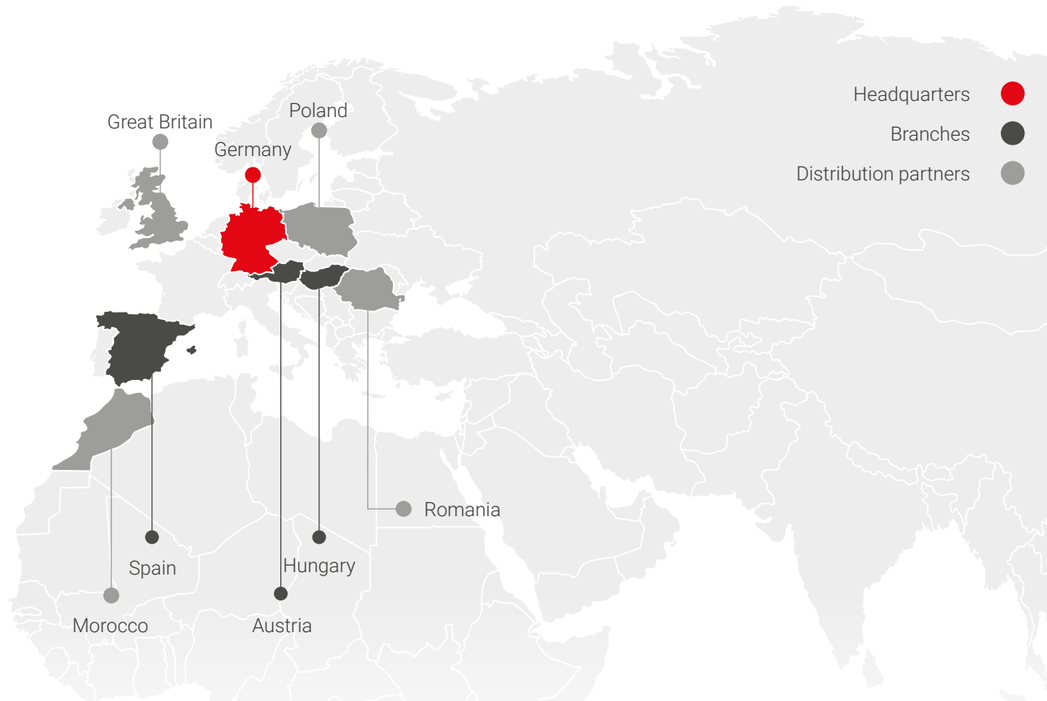
Table of contents

Company

What started out in 1984 as a small company by the name of HJ Elektronik is now one of the leading manufacturers of uninterruptible power supply (UPS) units: With around 80 employees, we work on a daily basis to provide ever better products and services.
Starting with uninterruptible power supply units as our core product, we have extended our portfolio over the years - expanding our expertise at the same time: As well as UPS units in the office sector and for mounting in 19“ racks our product range now also includes rectifiers and inverters for solar power generation as well as power packs, accumulators and battery monitoring systems.

Special units
Our commitment is embodied in more than innovative products in meaningful configurations for the data processing market: We also deliver conviction on a significant scale in industrial applications and in other sensitive areas. We provide companies such as Berliner Verkehrsbetriebe, Daimler AG, Siemens AG, Deutsche Telekom AG, BASF AG, Bayer AG (Leverkusen) or the German Aerospace Institute [Deutsches Institut für Luft- und Raumfahrt] with bespoke uninterruptible power supply units. This enables our products to provide a vast array of devices, some of them extremely sensitive, with very reliable protection.

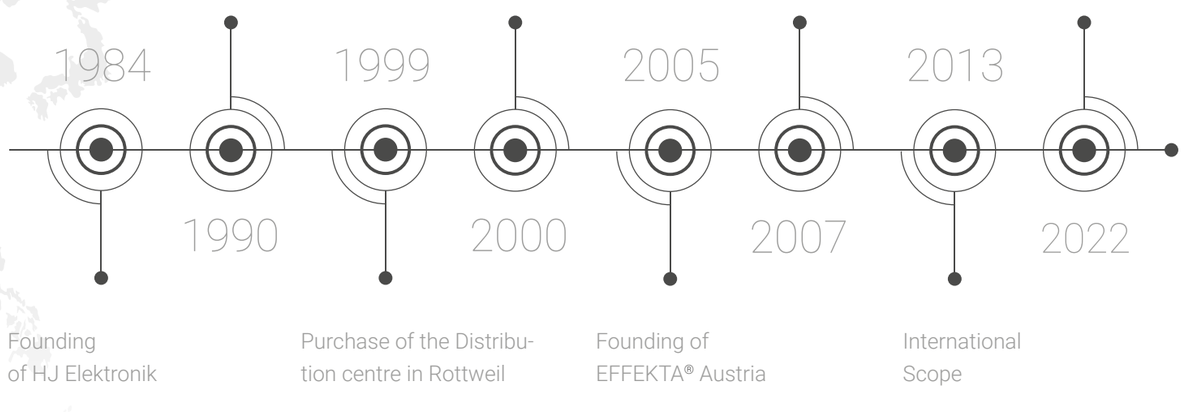
Service
The high performance standard of our services is as central to us as the quality of our products: Maintenance, repair and emergency service for all of our products and systems comprise a firm part of what we offer – regardless of whether the order is for a small UPS unit for the office or for a bespoke system in a sensitive industrial environment. EFFEKTA® has always defined service with this motto: You can depend upon us.



80 employees at headquarters in Rottweil

3 branches in the EU

60 global distribution partners



Bespoke solutions

Special requirements often require special solutions: EFFEKTA® has always set itself specialist tasks of this kind, and has consistently risen to the challenge supremely well. However, what is it that makes a special solution from EFFEKTA® so beneficial for the customer?

Customer-specific configuration
Other companies turn to their existing portfolio to assemble a solution that goes just some way to meeting customer requirements. In contrast, we at EFFEKTA® go further and configure an entirely new UPS unit to meet the needs of a customer with targeted precision. We base what we do on more than the wishes of a single customer: We bring our experience to bear, and propose a design that is not only cost-effective but also technologically the most appropriate one, with the best credentials for a long-term future. After all, nothing is more aggravating than to find, year down the line, that a UPS unit configured at one point in time is no longer capable of meeting more recent requirements.

Customer-specific service
The spectrum of services that EFFEKTA® is capable of providing far exceeds the configuration, installation and commissioning of a customer-specific bespoke solution. We are always pleased to provide continuous inspection and maintenance of units installed by ourselves – your advantage as a customer with an EFFEKTA® service contract: You can always be certain that your UPS units are always technically right up-to-date and are capable of meeting defined requirements. Furthermore, you can also depend upon us to keep you posted on sensible improvements to make to your unit – whether technical or commercial in nature.

Complete packages for a complete price
You probably wish for more than a one-stop shop for the design, installation and maintenance of your UPS unit, specifically also wishing for peace of mind in terms of spare parts and battery replacement. Please ask us about our complete packages that cover all conceivable forms of service support for your desired period of time. If you so wish, also as a leasing package!

**Together we will find a solution.
Let us help you:**

Phone: +49 741 17451-0
Email: info@effekta.com
Web: **www.effekta.com/en**

Best practice

Nothing illustrates what is possible as effectively as an example: We have therefore put together, in concise format, a couple of Best Practice stories and references.

Energy-saving elevator UPS in 'Climate House' in Bremerhaven

Albert Schenk GmbH & Co. KG was immediately faced by two basic requirements to satisfy in its project at 'Climate House Bremerhaven 8° East' (left photo), specifically in relation to the traditional OSMA elevators: The objective not only entailed implementing the energy efficiency stipulations of VDI standard 4707 for no fewer than seven elevators, but also to provide autonomous power to stationary elevators in a way that entails the lowest possible level of power consumption. There was also a question of resource conservation - a key promotional claim of this Climate House - the aim being to build an energy-efficient structure that delivers a low environmental impact. Through a consistent policy of optimization, EFFEKTA® succeeded with its 'MTD Industry' version of UPS to develop an uninterruptible power supply system with a very low power consumption, positioning it by as much as 70% below the standard power consumption level of standard UPS units on the market.

Standard power supply units for MERCK KGaA

Since 2008, UPS units from EFFEKTA® have been deployed on the premises of MERCK parent company plant to protect the entire production site in the event of mains power failures. Until MERCK began its collaboration with EFFEKTA®, it used units from a number of different manufacturers. This made the inspection and maintenance of their units a complex matter. Working jointly with the customer, EFFEKTA® developed a complete UPS system for this production location with features such as virtually
indefinite scalability, maximum availability, optimum redundancy and simple troubleshooting. For MERCK, EFFEKTA® implemented a comprehensive leasing package that includes the UPS units, their installation on the site, the commissioning process and a complete maintenance management system – giving this customer an extremely
dependable and transparent overview of the costs involved.

A scalable UPS, one able to meet the growing needs of the IT faculty at the Technical University of Vienna (TU Wien)

The dedicated main server at the IT faculty at the Technical University of Vienna is a central instrument all of its research, tuition and administration. It will come as no surprise to learn that the faculty needs very particular requirements to be satisfied for these technical service providers. As early as 2015, it became apparent that the 80 kVA unit installed in 2010 would soon become insufficiently powerful to meet growing levels of need. A new, modular UPS unit was therefore installed to meet future levels of demand. At that time, the initial performance rating of 160 kVA was sufficient to meet the forecast needs of the next 5 years. It therefore provided plenty of cover for initial needs and can be expanded up to 320 kVA. An external bypass is incorporated for problem-free maintenance of the new UPS unit to disengage the EFFEKTA® UPS unit fully from the system whenever service is required, or a malfunction needs to be remedied.

OSMA® AUFZÜGE

MERCK

TU WIEN

More examples under:
effekta.com/en/best-practice

EFFEKTA®

For nearly 40 years, we have been **specializing** in the manufacture and development of **UPS devices**. We continuously expand our product portfolio and offer efficient solutions for **solar inverters**, **solar power storage** and **management**.

We develop individual solutions for you that meet requirements of the highest quality.

EFFEKTA®

Sector-based expertise

We are grateful to our many years of experience for the frequent opportunities these have provided for meeting customers from new sectors, other world regions and to get to know their needs. We have therefore gathered a great deal of expertise in the design of UPS units, all of which benefi ts our customers as we continue to perfect the design of the EFFEKTA® range of UPS units. Here is a summary of some of the aspects we include when planning bespoke solutions or UPS units:

Extreme Temperatures
Depending on the intended installation site, an EFFEKTA® UPS device can also be configured for extreme temperature ranges so that it functions reliably in extreme cold and intense heat.

Extreme Heights
The thinner the air, the less effective its insulting function becomes: We also adapt EFFEKTA® UPS devices per request to extreme altitudes with a specific construction method and optimal insulation.

Humidity
If there is a risk that an EFFEKTA® UPS device has been exposed to increased humidity with condensation, we can also take this into account in advance in the design of a system and prevent short circuits.

Dust
To protect the control electronics, we take separate precautions in particularly dusty environs. This prevents the EFFEKTA® UPS from failing to operate even in the case of considerable dirt and particles.

Mechanical Load
For environs that allow for mechanical loads of the EFFEKTA® UPS, we design, upon request, especially robust housings and display, connection and operating technologies so that your UPS does not break down.

Aggressive Atmosphere
In environs with corrosive gases or other factors in the air, we focus on a special material design for your EFFEKTA® UPS to be able to safeguard the permanent functioning.

EFFEKTA®
innovating power.

Is stationary.

Is moving.

You **won’t** have any standstills
with **EFFEKTA®**.

effekta.com/en

UPS/AC Power supplies

UPS / AC power supply units
Systems from 400 VA to 3,6 MW for devices and systems that operate on alternating current

UPS classification

Mains disturbances and the proper UPS								
For protection suitable UPS class	Mains disturbances							
	power failures >10ms	Voltage fluctuations < 16ms	Peaks 4-16ms	Continuous undervoltage	Continuous overvoltage	lightning effects	Voltage surges (Surge) <4ms	Frequency fluctuations
VFI	✓	✓	✓	✓	✓	✓	✓	✓
VI	✓	✓	✓	✓	✓	✗	✗	✗
VFD	✓	✓	✓	✗	✗	✗	✗	✗

To supply a load with uninterruptible power, different technologies are used. To distinguish them technically correct and to evaluate their protection, the standards EN 50091-3 and IEC 62040-3 are used:

VFI Output **V**oltage and **F**requency **I**ndependent from mains supply
VI Output **V**oltage **I**ndependent from mains supply
VFD Output **V**oltage and **F**requency **D**ependent from mains supply

Comparison

New definition	Old definition
VFI UPS output frequency independent of power, voltage and frequency fluctuations within the limits according to IEC 61000-2-2	- On-line - Double conversion
VI UPS output frequency depending on the mains frequency, voltage (electronic / passive) stabilized within the limits of normal operation	- Single Conversion - Delta conversion - Line-Interactive
VFD UPS output frequency depending on voltage and frequency variations of the power grid	- Off-line - Stand-by

Line Interactive Systems (VI)

Features
- Short switchover time
- Bi-directional inverter
- Output voltage SINE WAVE predominantly / partly RECTANGULAR
- Good price performance ratio
- Booster function

Applications
- PBXs
- Workstations
- CAD systems
- SPS systems
- Small Servers
- Lifts

Models
- Office Home (VFD)
- Office series
- OFFICE RM
- COMPACT RM
- MTX series
- MTD-RT-series

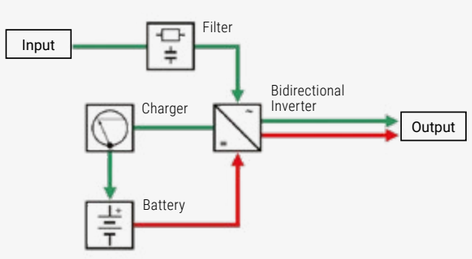
Online double conversion (VFI)

Features
- Safest UPS technology
- Protection against all conducted disturbances
- Stable output voltage
- No switching delay period
- Bypass function

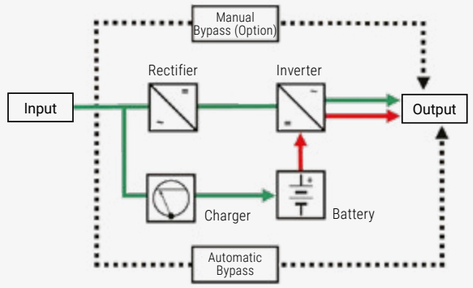
Applications
- PBXs
- Workstations
- Servers
- Measuring systems
- Medical equipment (without life supporting!)
- Critical industrial / IT applications

Models
- ADIRA T/RT 700-3000 VA
- RT Lithium
- ADIRA T/RT 6-10 kVA
- MINERVA 31
- TRIAS RM
- TRITON PF1, M2, M3
- THOR Modular II T20, TB20, T50
- THOR RM
- THOR 31

Switching principle



Line-Interactive



Online Double-Conversion

Line-Interactive / VFD
Office-Home series

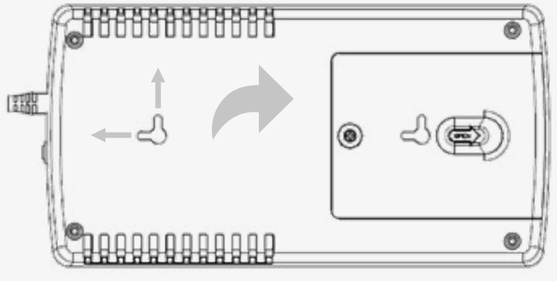
The OFFICE Home range made by EFFEKTA® protects your office equipment, such as PCs and their peripherals, from mains power failures. The compact dimensions of this UPS unit enable the UPS system to be incorporated elegantly in the most confined of spaces.

Another special feature of this UPS is its integrated multiple-function connector strip. It features 3 isolated ground receptacles with a UPS function and 3 isolated ground receptacles for overvoltage protection. All relevant information is displayed on a backlit LCD display with touchscreen.

Details

Side view

Side view



Sketch of reverse side

Characteristics

- UPS classification VFD-SY-333 (IEC 62040-3)
- Offline-technology
- Compact design
- Output modified sine wave
- Cold start function (starting in battery mode)
- Automatic reboot when power supply is restored
- Microprocessor control
- Automatic frequency detection
- Simple battery replacement
- USB interface as standard
- Management software
- 12 months warranty

Special features

- CD display with touchscreen
- Exceptionally compact design
- Suitable for wall mounting
- Multiple-function connector strip
- Programmable self-test, battery test
- Off-mode charging

Specifications

Office Home		
Power	Power in VA	800
	Power in W	480
Autonomy time	PC load	15
Technology	Offline	VFD-SY-333 in accordance with IEC 62040-3
Phase	Input / Output	1-phase / 1-phase
Input	Nominal input voltage	230 VAC
	Input voltage range	180-270 VAC
	Input frequency range	50/60 Hz (Auto-Sensing)
Output	Output voltage	230 VAC
	Voltage Regulation	±10%
	Frequency Range	50 Hz oder 60 Hz ± 1 Hz
	Transfer time	2-6 ms typical / 10 ms max.
	Voltage form	Modified sine wave
Battery	Type	Maintenance free lead-acid battery
	Life time	5 years
	Charging current (max)	0.5 A
	Recharging time	ca. 8 h / 90% capacity
Communication	Interface	USB
	Display	LC-Display
Dimensions / Weight	Dimensions (H x W x D in mm)	95 x 158,5 x 305
	Weight	2.9 kg
	Protection	IP 20
Terminals	Input	Mains power cable with isolated ground two-pin grounded connector
	Output	3 x isolated ground receptacles with UPS protection / 3 x isolated ground receptacles with overvoltage protection
Environmental conditions	Temperature	0°C – 40°C, 20°C recommended
	Humidity	0-90 % RH @ 0- 40°C (non condensing)
	Acoustic Noise	Normal mode nearly noiseless <40 dB
Safety / Enclosure	Safety	EN 62040-1
	EMC	EN 62040-2, class C2
	Certifications	CE

EFFEKTA®

Line-Interactive
Office series

EFFEKTA®`s OFFICE is suitable to protect your office equipment as PCs and peripherals from power outages. It is available in sizes 400, 600, 800, 1000, 1500 and 2000VA. With the compact dimensions of these UPS it finds its place even in the smallest office in your company or at home.

The availability of the power is significantly improved and operation could not be simpler. All relevant information is displayed on a backlit LCD display with touch screen.

Rear view

1000-2000 VA and 400-800 VA**

Rear view of models with USB interface and RS232 interface.

Characteristics

- UPS classification VI-SY-333 (IEC 62040-3)
- Line-Interactive technology
- Compact design
- Output modified sine wave
- Cold start function (starting in battery mode)
- Microprocessor control
- Automatic frequency detection
- Automatic Voltage Regulation (AVR) with Boost and Buck function
- USB- and RS232-interface as standard
- Management software
- 12 months warranty

Special features

- Off-mode charging
- Touch screen
- 400-1000 VA noiseless without fan
- Automatic restart after power returned

Specifications

Office		400	600	800	1000	1500	2000
Power	Power in VA	400	600	800	1000	1500	2000
	Power in W	240	360	480	600	900	1200
Autonomy time	PC load	5 min	12 min	15 min	25 min	35 min	30 min
Technology	Line-Interactive	VI-SY-333 in accordance with IEC 62040-3					
Phase	Input / Output	1-phase / 1-phase					
Input	Nominal voltage	230 VAC					
	Input voltage range	170-280 VAC					
	Input frequency range	50/60 Hz (Auto-Sensing)					
Output	Output voltage	230 VAC					
	Voltage Regulation	±10%					
	Frequency Range	50 Hz or 60 Hz ± 1 Hz					
	Transfer time	4-6 ms typical / 10 ms max.					
	Voltage form	modified sine wave					
Battery	Type	Maintenance free lead-acid battery					
	Life time	5 years					
	Charging current (max)	1.0 A					
	Recharging time	ca. 8 h / 90% capacity					
Communication	Interface	USB, RS232 (RS variant)					
	Display	LC-Display					
Dimensions / Weight	Dimensions (H x W x D in mm)	142 x 105 x 300			182 x 130 x 320		
	Weight	3.7 kg	4.4 kg	5 kg	8.2 kg	10.4 kg	10.6 kg
	Protection	IP 20					
Terminals	Input	IEC (10 A)					
	Output	4 x IEC C13 (10 A)					
Environmental conditions	Temperature	0°C – 40°C, 20°C recommended					
	Humidity	0-90 % RH @ 0- 40°C (non condensing)					
	Acoustic Noise	nearly noiseless <40 dB				<45 dbA	
Safety / Enclosure	Safety	EN 62040-1					
	EMC	EN 62040-2, class C2					
	Certifications	CE					

** 1000 VA without fan, otherwise identical housing form
2000 VA with 6 IEC outputs, otherwise identical housing form

Line-Interactive **OFFICE-RM**

The OFFICE RM is a cost-effective line interactive system that protects sensitive consumers from power outages. It is available in powers of 600 and 1000 VA.
This device can be used in particular for computers and small servers or for active network components in 19 "system cabinets.
With its exceptionally compact design and very low installation depth, the OFFICE RM is ideal for smaller network cabinets.

Detail view

Front view of the OFFICE RM series

Rear view of the OFFICE RM series

EFFEKTA®

Characteristics

- UPS-classification VI-SY-333 (IEC 62040-3)
- Microprocessor control
- Automatic frequency synchronisation
- UPS software for the common OS
- Incl. USB interface
- Incl. slot for SNMP adapter
- 12 months warranty

Special features

- Automatic Voltage Regulation (AVR) with Boost and Buck function
- Compact design
- Low installation depth:
  600VA model only 230mm
  1000VA model only 300mm
- User-friendly, illuminated LCD display
- Noiseless (without fan)

Specifications

OFFICE RM		OFFICE RM 600	OFFICE RM 1000
Power	Power in VA/W	600 VA / 360 W	1000 VA / 600 W
Autonomy time	PC load in min.	12	25
Technology	Line-Interactive	VI-SY-333 in accordance with IEC 62040-3	
Phase	Input / Output	1-phase / 1-phase	
Input	Nominal voltage	220, 230, 240 VAC	
	Input voltage range	162-290 VAC	
	Input frequency range	60/50 Hz (auto-sensing)	
Output	Output voltage	220, 230, 240 VAC	
	Voltage Regulation	±10%	
	Frequency Range (Battery mode)	50 Hz or 60 Hz ±1 Hz	
	Transfer time	2-6 msec typical	
	Voltage form	Modified sinewave	
Battery	Type	Maintenance free lead acid battery	
	Expected life time	5 years (optional 10 years)	
	Recharging time	To 90% in 4-6 hours	
Communication	Interface	USB, SNMP-Slot	
	Display	LCD	
Dimensions / Weight	Dimensions (H x W x D in mm) 19" rack mountable	86 x 438 x 230	86 x 438 x 300
	Weight in kg	6,5	11,6
	Protection	IP20	
Terminals	Input	IEC (10 A)	
	Output	8 x IEC C13 (10 A)	
Environmental conditions	Temperature	0~40° C	
	Humidity	20~90% (non condensing)	
	Acoustic noise	<40 dB (1 m)	
Safety / Enclosure	Safety	IEC/EN62040-1, IEC/EN60950-1	
	EMC	IEC/EN62040-2, IEC61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-6, IEC61000-4-8	
	Certifications	CE	

EFFEKTA®

UPS 750-3000 VA
Compact RM

The Compact RM is a cost-effective line-interactive system that protects sensitive consumers from power failures. It is available with powers from 750 to 3000 VA.

This device can be used in particular for computers and small servers or for active network components in 19" system cabinets.

With its extraordinarily compact design and low installation depth, the Compact RM is particularly suitable for smaller network and control cabinets.

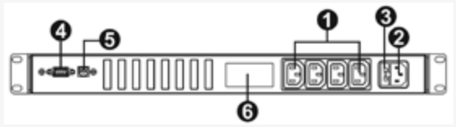
Characteristics

- UPS classification VI-SS-311 according to IEC 62040-3
- Sine wave output
- Microprocessor control
- Automatic frequency detection
- UPS software for the common OS
- Including USB interface
- Incl. RS232 interface
- Including slot for SNMP adapter
- 12 months warranty

Special features

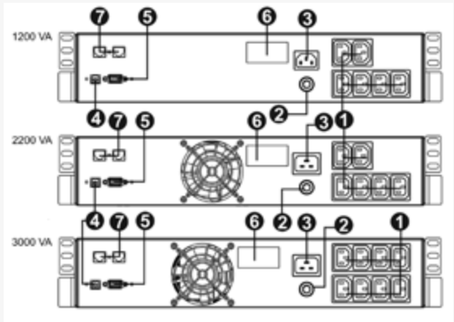
- AVR automatic voltage regulation with Boost & Buck function
- Low installation height:
  - 750 VA model only 1U
  - 1200-3000 VA models only 2U
- Low installation depth:
  - 750 VA model only 280 mm
  - 1200-2200VA models only 310mm
  - 3000 VA model only 438 mm
- User-friendly backlit LCD display
- Quiet (750/1200VA noiseless as there is no fan)

Detail view



Above: Rear view of the Compact RM 750 VA

Top and Right - Back Elements:
1.) AC outputs
2.) AC input
3.) Input breaker/fuse
4.) RS232
5.) USB
6.) Intelligent slot
7.) Surge protection for modem/network



Above: rear view of Compact RM 1200, 2200, 3000 VA

Specifications

Model Compact RM		750 VA	1200 VA	2200 VA	3000 VA
Power	Nominal power in VA/W	750 / 450	1200 / 720	2200 / 1320	3000 / 1800
Autonomy time	@ 100% load / @ 50% load in min.	1.5 / 10	2 / 8	1 / 7	1.5 / 7.5
Technology	Line-Interactive	VI-SS-311 in accordance with IEC 62040-3			
Phase	Input / Output	1P / 1P			
Input	Nominal voltage	230 VAC			
	Input voltage range	± 10%			
	Input frequency range	50/60 Hz ± 5Hz			
Output	Output voltage	230 VAC			
	Voltage Regulation	± 10%			
	Frequency Range (Battery mode)	50/60 Hz ± 1Hz			
	Transfer time	approx. 4ms			
	Voltage form	Sine wave			
Battery	Type	Maintenance free lead-acid battery			
	Expected life time	5 years (optional 10 years)			
	Recharging time	To 90% in 8 hours			
Communication	Interfaces	USB, RS 232			
	Expansion slots	Slot for optional SNMP-card			
	Display	LCD-Display: Display of operating modes and various status values			
Dimensions / Weight	Dimensions UPS (HxBxT in mm)	1HE*438*280	2HE*438*310	2HE*438*310	2HE*438*460
	Weight in kg	8.2	11	13	18
	Protection	IP20			
Terminals	Input	IEC (10 A)	IEC (10 A)	IEC (16 A)	IEC (16 A)
	Output	4 x IEC C13 (10 A)	6 x IEC C13 (10 A)		8 x IEC C13 (10 A)
Environmental	Temperature	0-40°C			
	Humidity	0-90 % (non-condensing)			
	Acoustic noise	< 40 dB		< 45 dB	
Protection /Standards	Safety	EN 62040-1			
	EMC	EN 62040-2 class C2			
	Certifications	CE			

Options for extended communication and maximum availability:

- SNMP/web card for monitoring in network environments
- External manual bypass for UPS maintenance / replacement of the UPS unit without shutting it down
- Special designs available for industrial applications (connections / special housings, etc.)

Line-Interactive
MTX series

The MTX is a modern line-interactive UPS with a power factor of 0.9. It is available with power ratings of 800, 1100, 1500, 2000, and 3000 VA.

All of the important information about the UPS can be viewed easily on the illuminated LC display. The sleek design of this quiet unit blends seamlessly into any office environment.

To provide uninterruptible power for even longer periods, the capacity of MTX UPS units can be extended by adding external battery packs, available as optional extras.

Details

Rear view of MTX 800/1100, 1500, 2000 and 3000

battery pack

Options for extended communication and maximum availability:

- SNMP/web or relay card for monitoring in network environments
- Additional battery modules to provide an uninterruptible power supply for up to several hours
- External manual bypass for planned UPS maintenance work or replacement of the UPS unit without shutting it down

EFFEKTA®

Characteristics

- UPS-classification VI-SS-311 (IEC 62040-3)
- Line-Interactive technology
- Sine wave output
- High efficiency (> 97%)
- Automatic frequency detection & self-test
- Automatic restart when mains power is restored
- Cold start function (starting in battery mode)
- Hot-Swap
- Slot for additional (relay contacts / SNMP card)
- Management software
- 24 months‘ warranty

Special features

- Excellent power factor of 0.9
- Equiped with RS-232 and USB port as standard
- Intelligent battery test with a display
- Nearly noiseless (Suitable for office environments)
- Programmable UPS outputs
- External battery packs can be added to all models
- User-friendly illuminated LC display
- Early detection of faults
- Silent ECO mode: When batteries are fully charged, it switches the fan(s) off
- Green Mode: UPS switches off in battery mode if no load is detected

Specifications

MTX		800	1100	1500	2000	3000
Power	Power in VA	800	1100	1500	2000	3000
	Power in W	720	990	1350	1800	2700
Autonomy time 100% / 50% load (cos. phi 0.7)	With internal batteries in minutes	7 / 17	5 / 12	7 / 17	5 / 12	6 / 14
	Internal batteries + 1 x battery pack	19 / 45	13 / 31	25 / 60	19 / 45	20 / 48
	Longer autonomy times on request					
Technology	Line-Interactive	VI-SS-311 in accordance with IEC 62040-3				
Phase	Input / Output	1-phase / 1-phase				
Input	Nominal voltage	208/220/230/240 VAC				
	Input voltage range	170-280 VAC				
	Input frequency range	50/60 Hz (Auto-Sensing)				
Output	Output voltage	208/220/230/240 VAC				
	Voltage Regulation	±1.5%				
	Frequency Range	50 Hz or 60 Hz ± 1 Hz				
	Transfer time	2-6 ms typical / 10 ms max.				
	Overload Capability (Line Mode)	< 120% 5 min.				
	Overload Capability (Battery Mode)	< 110% 1 min.				
	Voltage form	sine wave				
Efficiency	Utility mode	max. 97%				
Battery	Type	Maintenance free lead-acid battery				
	Life time	5 years, optional 10 years				
	Charging current (max)	1.5 A				
	Hot-Swappable	yes				
	Recharging time	ca. 6 h / 90% capacity				
Communication	Interface	RS232, USB, EPO				
	Slot for further communication cards	Optional relay contacts or SNMP card				
	Display	Multi language LC-Display				
Dimensions / Weight	Dimensions UPS (H x W x D in mm)	240 x 145 x 376		240 x 145 x 484		338 x 190 x 427
	Dimensions battery pack (HxBxT in mm) optional	240 x 145 x 397				338 x 190 x 416
	Weight (UPS)	12.7 kg	13.1 kg	20.4 kg	21.6 kg	30.5 kg
	Weight (battery pack)	depending on the quantity of batteries				
	Protection	IP 20 (optionally higher protection class possible)				
Terminals	Input	IEC (10 A)			IEC (16 A)	
	Output	8 x IEC C13 (10 A)				8xIEC C13 10A 1xIEC C19 16A
Environmental conditions	Temperature	0°C – 40°C, 20°C recommended				
	Humidity	0-90 % RH @ 0- 40°C (non condensing)				
	Acoustic Noise	Normal mode: nearly noiseless <45 dB Battery-mode / charging < 55dB				
Safety / Enclosure	Safety	EN 62040-1				
	EMC	EN 62040-2, class C2				
	Certifications	CE				

EFFEKTA®

Line-Interactive
MTD-RT series

The MTD RT and MTD XL RT is EFFEKTA®'s high-end line-interactive version of the MTD series. The back-up time of the XL-models can be extended by additional external battery packs in a unified design.

Its RackTower housing and the rotating LCD display allow both the use as a tower unit as well as installation in 19" cabinets.

Rear view

MTD 1000 / 1500 RT

MTD 2000 RT und 3000 RT

All MTD RT models offer at least 8 IEC C13 (10A) Consumer outputs.

Options for extended communication and maximum availability:

- SNMP/web or relay card for monitoring in network environments
- Additional battery modules to provide an uninterruptible power supply for up to several hours
- External manual bypass for planned UPS maintenance work or replacement of the UPS unit without shutting it down

Characteristics

- UPS-classification VI-SS-311 (IEC 62040-3)
- Line-interactive technology
- Excellent power factor of 0.9
- High efficiency (> 97%)
- „RackTower" can be used both as a standalone unit, as well as a 19" rack mount unit
- XL-models expandable by external battery packs
- Huge input voltage range
- User-friendly LCD display with backlight
- Programmable outputs
- Hot swappable batteries
- Sine wave output
- Automatic frequency detection
- Equiped with RS-232 and USB port as standard
- Slot for optional adapters: relay-card or SNMP
- Management software
- 24 months' warranty

Specifications

MTD		1000 RT	1500 RT	2000 RT	3000 RT
Power	Power in VA	1000	1500	2000	3000
	Power in W	900	1350	1800	2700
Autonomy time 100% / 50% load (cos. phi 0.7)	With internal batteries in minutes	7 / 15	5 / 11	7 / 15	5 / 11
	Internal batteries + 1 x battery pack	26 / 55	14 / 30	25 / 53	13 / 28
	Longer autonomy times on request (XL)				
Technology	Line-Interactive	VI-SS-311 in accordance with IEC 62040-3			
Phase	Input / Output	1-phase / 1-phase			
Input	Nominal voltage	220/230/240 VAC			
	Input voltage range	161-276 VAC			
	Input frequency range	50/60 Hz (Auto-Sensing)			
Output	Output voltage	220/230/240 VAC			
	Voltage Regulation	±5%			
	Frequency Range	50 Hz or 60 Hz ± 1 Hz			
	Transfer time	2-6 ms typical / 10 ms max.			
	Overload Capability (Line Mode)	< 110% for 3 min.			
	Overload Capability (Battery Mode)	< 110% for 30 sec.			
	Voltage form	sine wave			
Efficiency	Utility mode	max. 97%			
Battery	Type	Maintenance free lead-acid battery			
	Life time	5 years, optional 10 years			
	Charging current (max)	1,5A standard / 4,5A XL version / ab. 2 battery pack 7A			
	Hot-Swappable	Yes			
	Recharging time	ca. 6 h / 90% capacity			
Communication	Interface	RS232, USB, EPO			
	Slot for further communication cards	Optional relay contacts or SNMP card			
	Display	LC-Display			
Dimensions / Weight	Dimensions (H x W x D in mm)	86.5 (2U) x 438 (19") x 430		86.5 (2U) x 438 (19") x 600	
	Dimensions of battery extension (HxBxT in mm) optional	86.5 (2U) x 438 (19") x 430		86.5 (2U) x 438 (19") x 600	
	Weight UPS (Standard / XL)	16 kg / 12 kg		29.5 kg / 18.6 kg	
	Weight battery pack	depending on the quantity of batteries			
	Protection	IP 20 (optionally higher protection class possible)			
Terminals	Input	IEC (10 A)		IEC (16 A)	
	Output	8 x IEC C13 (10 A)			8 x IEC C13 (10 A) 1 x IEC C19 (16 A)
Environmental conditions	Temperature	0°C – 40°C, 20°C recommended			
	Humidity	0-90 % RH @ 0- 40°C (non condensing)			
	Acoustic Noise	< 52 dB			
Safety / Enclosure	Safety	EN 62040-1			
	EMC	EN 62040-2, class C2			
	Certifications	CE			

EFFEKTA®

UPS
ADIRA T 0.7-3 kVA

The ADIRA T 0.7-3 kVA with its compact design can be used in even very limited space. The autonomy time can be extended extremely flexibly using external battery packs.

The ADIRA T 0.7-3 kVA has a power factor of 1.0. The UPS shows particular strength in communication. She is u.a. Equipped as standard with an Ethernet port to be connected to the cloud. Furthermore, the UPS can be monitored via WIFI with a mobile APP.

The UPS has extensive setting options, such as password protection, wiring errors, overload alarm

SINEWAVE OUTPUT

PF 1
Powerfactor 1

Optional with lithium-iron Phosphate (LiFePo4) batteries

lithium

- Increased operating temperature range
- Increased number of possible charge/discharge cycles
- Less weight with the same battery capacity

Detail views

Left ADIRA T 2-3 kVA
Right ADIRA T 0.7-1.5 kVA

Back sides from left to right:
0.7-1.5 kVA (incl. XL) / 2 kVA (incl. XL) / 3 kVA / 3 kVA XL

Characteristics

- UPS classification VFI-SS-111 according to IEC 62040-3
- Excellent power factor of 1.0
- Online double-converter with sine output switchable to ECO mode (line-interactive)
- User-friendly dot matrix LCD display
- Very high efficiency of up to 96% in normal operation
- Large input voltage window (160-300VAC)
- LCD display with support for 8 languages
- Low-noise thanks to intelligent fan control
- Larger charger for higher charging currents (XL)
- Operation in ambient temperature up to 45°C
- High overload capacity
- Integrated emergency-stop contact (RPO)
- Incl. RS232/USB and expansion slot
- UPS software for the common operating systems
- 24 months warranty

Specifications

ADIRA T Models		700, 700 XL	1000, 1000 XL	1500, 1500 XL	2000, 2000 XL	3000, 3000 XL
Power	Nominal Power in VA	700/700	1000/1000	1500/1500	2000/2000	3000/3000
Autonomy time 100/50% load	Standard configuration in min.	10 / 24	6 / 15	3 / 9	6 / 16	3 / 10
	Higher autonomy times	On request				
Technology	Online double conversion	VFI-SS-111 in accordance with IEC 62040-3				
Phase	Input / Output	1-phase / 1-phase				
Input	Nominal voltage	220/230/240VAC				
	Input voltage range	160~300VAC				
	Input frequency range	45~55Hz/54~66Hz (Auto-Sensing)				
	Distortion (THDi)	<5%				
Output	Output voltage	220/230/240VAC				
	Voltage regulation	±1%				
	Frequency range	50/60 ± 0.2 Hz				
	Transfer time	None				
	Overload Capability	100%~105%: continuous operation; 105%~125%: > 5 min; 125%~150%: > 30 s; >150%: > 500 ms				
	Voltage form	Sinewave				
Efficiency	Normal mode	93%			96%	
	ECO mode	>99%				
Battery	Voltage	36VDC			72VDC	
	Capacity (Ah)	12V/9Ah	12V/9Ah	12V/9Ah	12V/9Ah	12V/9Ah
	Type	Maintenance free lead-acid battery				
	Estimated life time	5 years, optional 10 years				
	Charging current (max)	1.5 A / 8 A (XL-Version)				
	Recharging time	to 90% in 3 hours typical / XL versions depending on battery configuration				
Communication	Interface	RS 232, USB (incl. USB HID function), relay contact, RPO				
	Slot for further communication cards	1 x for optional SNMP or relay card				
	Display	LCD display and LED indicators				
	Special features	APP control via optional WIFI module RJ45 Ethernet port for direct cloud or local network connection				
Dimensions / Weight	Dimensions UPS (HxWxD in mm)	220x145x404			318x192x428	
	Dimensions battery pack (HxWxD in mm) optional and XL-Versions	220x145x404			318x192x428	
	Weight UPS in kg incl. Batt.	14	14	14.3	26.0	26.4
	Weight UPS in kg XL-Version without Batteries	6.4	6.4	6.7	11.0	11.4
	Weight battery pack in kg with 1 / 2 battery strings	12/19			24/39	
	Protection	IP20				
Terminals	Input	IEC C14 (10 A)	IEC C14 (10 A)	IEC C14 (16 A)	IEC C20 (16 A)	IEC C20 (16A) XL: Klemmen
	Output	4 x IEC C13 (10A)	4 x IEC C13 (10A)	4 x IEC C13 (10A)	8 x IEC C13 (10A)	8 x IEC C13 (10A) + Klemmen (XL)
Environmental conditions	Temperature	0-40° C (@ 80% load up to 45° C)				
	Humidity	20~90% (not condensing)				
	Acoustic noise	<40dB (1m / @ typical load)			<45dB (1m / @ typical load)	
Protection/ Standards	Safety	IEC/EN62040-1, IEC/EN60950-1				
	EMC	IEC/EN62040-2 class C2, IEC61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-6, IEC61000-4-8				
	Certifications	CE				

UPS

ADIRA RT 0.7-3 kVA

The ADIRA RT 0.7-3 kVA with its compact design can also be used in very limited space. The autonomy time can be extended extremely flexibly using external battery packs. As a "rack tower" model, it can be set up both vertically and horizontally and is suitable for installation in 19" cabinets. The LCD display can be rotated by 90° for this purpose. The ADIRA RT 0.7-3 kVA has a power factor of 1.0.

The UPS It can be perfectly integrated into your monitoring system thanks to the integrated RS232 and USB interfaces and an optional SNMP card (via the expansion slot). The UPS has extensive setting options, such as password protection, wiring errors, overload alarm.

Optional with lithium-iron Phosphate (LiFePo4) batteries

lithium

- Increased operating temperature range
- Increased number of possible charge/discharge cycles
- Less weight with the same battery capacity

Detail views

Rear view (from left to the right):
0.7-1.5kVA / 2kVA (incl. XL) / 3kVA / 3kVA XL

Optionally, the 2 / 3 kVA models are also available as a "short version" with a low installation depth (505 mm).

Characteristics

- UPS classification VFI-SS-111 according to IEC 62040-3
- Excellent power factor of 1.0
- Online double-converter with sine output switchable to ECO mode (line-interactive)
- User-friendly DOT matrix LCD display
- Very high efficiency of up to 96% in normal operation
- Large input voltage window (160-300VAC)
- Programmable load segments/output sockets
- LCD display with support for 8 languages
- LCD display can be rotated 90° for device use as a tower or for 19" installation
- Low-noise thanks to intelligent fan control
- Larger charger for higher charging currents (XL)
- Integrated emergency-stop contact (EPO)
- Incl. RS232/USB and expansion slot
- UPS software for the common operating systems
- 24 months warranty

Specifications

ADIRA RT Models		700, 700 XL	1000, 1000 XL	1500, 1500 XL	2000, 2000 XL	3000, 3000 XL
Power	Nominal Power in VA	700/700	1000/1000	1500/1500	2000/2000	3000/3000
Autonomy time 100/50% load	Standard configuration in min.	10 / 24	6 / 15	3 / 9	6 / 16	3 / 10
	Higher autonomy times	On request				
Technology	Online double conversion	VFI-SS-111 in accordance with IEC 62040-3				
Phase	Input / Output	1-phase / 1-phase				
Input	Nominal voltage	220/230/240VAC				
	Input voltage range	160~300VAC				
	Input frequency range	45~55Hz/54~66Hz (Auto-Sensing)				
	Distortion (THDi)	<5%				
Output	Output voltage	220/230/240VAC				
	Voltage regulation	±1%				
	Frequency range	50/60 ± 0.2Hz				
	Transfer time	None				
	Overload Capability	100%~105%: continuous operation; 105%~125%: >5min; 125%~150%: >30s; >150%: > 500ms				
	Voltage form	sine wave				
Efficiency	Normal mode	93%			96%	
	ECO mode	>99%				
Battery	Voltage	36VDC			72VDC	
	Capacity (Ah)	9Ah				
	Type	Maintenance free lead-acid battery				
	Estimated life time	5 years, optional 10 years				
	Charging current (max)	1.5A / 8A (XL-Version)				
	Recharging time	to 90% in 3 hours typical / XL versions depending on battery configuration				
Communication	Interface	RS 232, USB (incl. USB HID function), relay contact, RPO				
	Card Expansion Slot	1 x for optional SNMP or relay card				
	Display	LCD display and LED indicators				
	Special features	APP control via optional WIFI module RJ45 Ethernet port for direct cloud or local network connection				
Dimensions / Weight	Dimensions UPS (HxWxD in mm)	85.5(2HE) x 438 x 445			85.5(2HE) x 438 x 600	
	Dimensions battery pack (HxWxD in mm) optional and XL-Versions	85.5(2HE) x 438 x 445			85.5(2HE) x 438 x 600	
	Weight UPS in kg incl. Batt. Weight UPS in kg XL-Version without Batteries	15.5 8.0	15.5 8.0	15.8 8.2	25.7 10.6	26.2 11.0
	Weight battery pack in kg with 1/2 battery strings	15/23			25/40	
	Protection	IP20				
Terminals	Input	IEC C14 (10 A)			IEC C20 (16 A)	IEC C20 (16 A)
	Output	8 x IEC C13 (10A)			8 x IEC C13 (10A)	8 x IEC C13 (10A) 1 x IEC C19 (16A)
Environmental conditions	Temperature	0-40°C (@ 80% load up to 45°C)				
	Humidity	20~90% (non-condensing)				
	Acoustic noise	<45dB (1m / @ typical load)			<50dB (1m / @ typical load)	
Protection / Standards	Safety	IEC/EN62040-1, IEC/EN60950-1				
	EMC	IEC/EN62040-2 class C2, IEC61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-6, IEC61000-4-8				
	Certifications	CE				

EFFEKTA®

UPS 1-3KW
RT Lithium

The RT Lithium with its compact design can be used in very limited space. Thanks to the lithium battery, it provides long autonomy times and, with over 2000 charge/discharge cycles, offers an extraordinarily high cycle stability.

The power consumption is almost ideally sinusoidal. Furthermore, the RT Lithium offers a power factor of 1.0.

With the adjustable current distribution, non-critical consumers can be switched off in battery operation in order to extend the autonomy time.

Characteristics

- UPS classification VFI-SS-111 according to IEC 62040-3
- Excellent power factor of 1.0
- Online double-converter with sine output switchable to ECO mode (line-interactive)
- Can be used as a tower or 19“ version
- User-friendly rotatable LCD display
- Compact design of only 2 U
- Large voltage input range
- 24 months warranty

Special features

- High number of cycles of the lithium battery (over 2000)
- This means far longer battery life than conventional lead-acid batteries
- Can be used in a higher temperature range
- Low service costs due to less frequent battery replacement
- 30% lower weight of the entire system
- Integrated emergency-stop switch (EPO)
- Incl. RS232/USB and expansion slot
- UPS software for the common OS

Detail view

Above:
RT Lithium 1 kVA prepared for 19“ rack mounting

Right from top to bottom:
Rear RT Lithium 1kVA
Rear RT Lithium 2kVA
Rear RT Lithium 3kVA

All RT Lithium models offer at least 8 IEC C13 (10A) consumer outputs

Options for extended communication and highest availability:

- SNMP/Web or relay card for monitoring in network environment
- Additional battery modules to increase the bridging time to several hours
- External manual bypass for scheduled UPS maintenance or UPS replacement without shutdown
- Custom-made products for industrial applications available (connectors / special housings, etc.)

Specifications

Model RT Lithium		1 kVA	2 kVA	3 kVA
Power	Nominal power in VA/W	1000/1000	2000/2000	3000/3000
Autonomy time	100% load (PF 0,7)	9	9	9
Technology	Online double conversion	VFI-SS-111 according to IEC 62040-3		
Phase	Input / Output	1-phase / 1-phase		
Input	Nominal voltage configurable	230, 240VAC		
	Input voltage range	160-300VAC, ±5%		
	Input frequency range	40-70 Hz (auto-detect)		
Output	Output voltage	230, 240VAC		
	Voltage regulation	±1%		
	Output frequency range	46~54Hz (@ 50Hz) or 56~64Hz (@ 60Hz)		
	Switching time	None		
	Overload Capability (Line mode)	105~125% for 1 minute, 125~130% for 30 seconds, >130% for 0.2 seconds after each switching to bypass		
	Overload Capability (Battery mode)	105~125% for 1 minute, 125~130% for 10 seconds, >130% for 0.2 seconds, then the UPS output is switched off		
	Voltage form	Sine wave		
Efficiency	Normal mode	90%	92%	92%
	ECO-mode	95%	96%	96,5%
Battery	Type (Lithium)	25.6V / 9AH	76.8V / 6AH	76.8V / 9AH
	Life time	Approx. 10 years / over 2000 charge/discharge cycles		
	Charging current (max)	2 A		
Communication	Interfaces	RS 232 / USB		
	Expansion slot	1 x for optional SNMP- or relay-card		
	Display	LCD Display and LEDs		
Dimensions / Weight	Dimensions UPS (HxWxD in mm) as 19“-version	86.5x440x325	86.5x440x500	86.5x440x640
	Weight UPS in kg incl. batteries	9.6	16.1	20.97
	Protection	IP20		
	Input	IEC (10 A)	IEC (16 A)	IEC (16 A)
Terminals	Output	8 x IEC C13 (10A)	8 x IEC C13 (10A)	8 x IEC C13 (10A) 1 x IEC C19 (16 A)
	Temperature	-25~55°C		
Environmental conditions	Humidity	0~95% (non-condensing)		
	Acoustic noise	<55 dB (1 m)		
	Safety	IEC/EN62040-1, IEC/EN60950-1		
Safety / Standards	EMC	IEC/EN62040-2, IEC61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-6, IEC61000-4-8		
	Standards	CE		

Online double conversion
ADIRA T 6-10 kVA

The ADIRA T is currently the most compact online double conversion UPS system and can be used in the smallest space. It can be extended extremely flexibly in the autonomy time by external battery packs.

The current consumption is almost perfectly sinusoidal. Furthermore, the ADIRA T offers a power factor of 1.0.

With an efficiency of up to 95% in normal operation, it is one of the most effective and economical UPS systems on the market and thus ideally suited to save cash.

Rear view

ADIRA T 6 kVA / 10 kVA

ADIRA T XL 6 kVA

ADIRA T XL 10 kVA

Options for advanced communication and highest availability:

- SNMP / web or relay card for monitoring in network environments
- Additional battery modules to increase the autonomy time to several hours
- External manual bypass for scheduled UPS maintenance or UPS replacement without shutdown
- Special designs available for industrial applications (connections / special housings, etc.)

EFFEKTA®

Characteristics

- UPS classification VFI-SS-111 according to IEC 62040-3
- VFI sine wave output can be switched to High Efficiency mode
- Battery remaining indicator on LCD display
- Extremely compact design
- UPS software for all common OS
- Incl. RS232 / USB and expansion slot
- Integrated Emergency Power Off (EPO)
- 24 months warranty

Special

- Excellent power factor of 1.0
- Superior efficiency of up to 95% in normal operation
- Battery number can be set to 16 up to 20 pc. per battery string
- Low noise thanks to intelligent fan control
- Larger 12A charger for higher charging currents (XL)
- Dry-In / Dry-Out interface as standard
- Parallel redundant operation possible
- Multi-language LC display. English, German or Spanish as menu language selectable

Specifications

ADIRA T		6000	10000
Power	Power in VA	6000/6000	10000/10000
Autonomy time 100/50% load (cos. phi 0.7)	With internal batteries in minutes	12/25	6/13
	Higher autonomy times	As XL-model on request	
Technology	Online double conversion	VFI-SS-111 in accordance with IEC 62040-3	
Phase	Input / Output	1- phase / 1-phase	
Input	Nominal voltage configurable	220/230/240VAC	
	Input voltage range	160-276VAC	
	Input frequency range	50/60Hz (Auto-Sensing)	
Output	Output voltage	220/230/240 VAC	
	Voltage regulation	±1%	
	Frequency range	50Hz / 60Hz ± 1Hz	
	Transfer time	None	
	Overload Capability (Line Mode)	< 125% for 10min., < 150% for 30sec.	
	Voltage form	sine wave	
Efficiency	Normal mode / ECO mode	max. 95% / max. 98%	
Battery	Type	Maintenance free lead-acid battery	
	Life time	5 years, optional 10 years	
	Nominal DC-voltage	240VDC	
	Charging current (max)	4A Standard / 12A XL-version	
	Recharging time	ca. 3h to 90% capacity depending on the equipment	
Communication	Interface	RS232, USB, switch contacts, EPO, parallel port	
	Slot for further communication cards	Optional relays- or SNMP-card	
	Display	LCD Display and LED	
Dimensions / Weight	Dimensions UPS (HxWxD in mm)	589 x 225 x 600 (XL-version: 348 x 225 x 600)	
	Dimensions of battery extension (H x W x D in mm) optional	589 x 225 x 490	
	Weight UPS (without batt. / XL)	14 kg	16 kg
	Weight UPS (Standard)	68 kg	70 kg
	Weight battery pack	66 / 116 kg	
	Protection	IP20	
Terminals	Input	Fixed connection on terminals	
	Output	Fixed connection on terminals	
Environmental conditions	Temperature	0°C – 40°C, 20°C recommended	
	Humidity	0-90 % RH @ 0- 40°C (non condensing)	
	Acoustic Noise	40 - 55dB(A)@1m	45 - 60dB(A)@1m
Safety / Enclosure	Safety	EN 62040-1	
	EMC	EN 62040-2 class C3	
	Certifications	CE	

Online double conversion
ADIRA RT 6-10 kVA

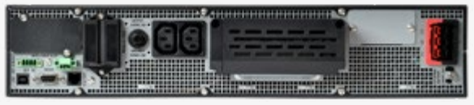
The ADIRA RT is currently the most compact online double conversion UPS system and can be used in the smallest space. It can be extended extremely flexibly in the autonomy time by external battery packs.
With its Racktower design, it can also be used in 19"-ca-binets as a plug-in device.

The current consumption is almost perfectly sinusoidal. Furthermore, the ADIRA RT offers a power factor of 1.0.

With an efficiency of up to 95% in normal operation, it is one of the most effective and economical UPS systems on the market and thus ideally suited to save cash.

Detail view

ADIRA RT 6/10 kVA for 19" cabinet installation



ADIRA RT 6/10 kVA backs in a uniform design

Options for advanced communication and highest availability:

- SNMP / web or relay card for monitoring in network environments
- Additional battery modules to increase the autonomy time to several hours
- External manual bypass for scheduled UPS maintenance or UPS replacement without shutdown
- Special designs available for industrial applications (connections / special housings, etc.)

EFFEKTA®

Characteristics

- UPS classification VFI-SS-111 according to IEC 62040-3
- VFI sine wave output can be switched to High Efficiency mode
- Battery remaining indicator on LCD display
- Extremely compact design
- UPS software for all common OS
- Incl. RS232 / USB and expansion slot
- Integrated Emergency Power Off (EPO)
- Rack Tower Design: Can be used as tower or 19"
- 24 months warranty

Special

- Excellent power factor of 1.0
- Superior efficiency of up to 95% in normal operation and up to 98% in ECO-mode
- Battery number can be set to 16 up to 20 pc. per battery string
- Low noise thanks to intelligent fan control
- Larger 12A charger for higher charging currents (XL)
- Dry-In / Dry-Out interface as standard
- Parallel redundant operation possible
- Multi-language LC display. English, German or Spanish as menu language selectable

Specifications

ADIRA RT		6000	10000
Power	Power in VA	6000/6000	10000/10000
Autonomy time 100/50% load (cos. phi 0.7)	With internal batteries in minutes	12/25	6/13
	Higher autonomy times	As XL-model on request	
Technology	Online double conversion	VFI-SS-111 in accordance with IEC 62040-3	
Phase	Input / Output	1- phase / 1-phase	
Input	Nominal voltage configurable	220/230/240VAC	
	Input voltage range	160-276VAC	
	Input frequency range	50/60Hz (Auto-Sensing)	
Output	Output voltage	220/230/240 VAC	
	Voltage regulation	±1%	
	Frequency range	50Hz / 60Hz ± 1Hz	
	Transfer time	None	
	Overload Capability (Line Mode)	< 125% for 10min., < 150% for 30sec.	
	Voltage form	sine wave	
Efficiency	Normal mode / ECO mode	max. 95% / max. 98%	
Battery	Type	Maintenance free lead-acid battery	
	Life time	5 years, optional 10 years	
	Nominal DC-voltage	240VDC	
	Charging current (max)	4A Standard / 12A XL-version	
	Recharging time	ca. 3h to 90% capacity depending on the equipment	
Communication	Interface	RS232, USB, switch contacts, EPO, parallel port	
	Slot for further communication cards	Optional relays- or SNMP-card	
	Display	LCD Display and LED	
Dimensions / Weight	Dimensions UPS (HxWxD in mm)	2U x 438 x 685	
	Dimensions of battery extension (H x W x D in mm) optional	3U x 438 x 625	
	Weight UPS (without batt.)	14 kg	16 kg
	Weight battery pack	62 kg	
	Protection	IP20 (optionally higher degrees of protection possible)	
Terminals	Input	Fixed connection on terminals	
	Output	Fixed connection on terminals	
Environmental conditions	Temperature	0°C – 40°C, 20°C recommended	
	Humidity	0-90 % RH @ 0- 40°C (non condensing)	
	Acoustic Noise	40 - 55dB(A)@1m	45 - 60dB(A)@1m
Safety / Enclosure	Safety	EN 62040-1	
	EMC	EN 62040-2 class C3	
	Certifications	CE	

UPS Tower
MINERVA 31 10 / 15 / 20 kVA

The MINERVA 31 is currently the most compact double conversion UPS system with 3-phase input and 1-phase output for use in the smallest space. It can be extended extremely fl exibly in terms of autonomy time by means of external battery packs. In addition, the input can also be confi gured as 1-phase in addition to 3-phase.
The current consumption is almost ideally sinusoidal. Furthermore, the MINERVA 31 offers an output power factor of 1.0.

With an effi ciency of up to 94.5% in normal operation, it is one of the most effective and economical UPS systems on the market and thus ideally suited for saving money.

Rear view

MINERVA 31 Rear view

Options for extended communication and highest availability:

- SNMP/web or relay card for monitoring in network environments
- Additional battery modules to increase the bridging time to several hours
- External manual bypass for scheduled UPS maintenance or UPS replacement without shutdown
- Special designs available for industrial applications (connections / special enclosures, etc.)

EFFEKTA®

Characteristics

- UPS classification VFI-SS-111 according to IEC 62040-3
- Online double converter with sine wave output switchable to high efficiency mode
- Battery remaining time display on LCD
- Extraordinarily compact design
- Service-friendly battery replacement
- UPS software for all common OS
- Incl. RS232/USB and expansion slot
- Integrated emergency stop contact (REPO)
- 24 months warranty

Special features

- Unbeatable price advantage in this power class
- Outstanding power factor of 1.0
- Outstanding efficiency of up to 94.5% in normal operation
- Line feedback THDi <2.5%
- Automatic battery test adjustable via display
- Low-noise due to intelligent fan control
- Dry-In/Dry-Out interface as standard
- Parallel redundant operation possible
- Multilingual 7“ LC colour touch display

Specifications

Model MINERVA 31		10 kVA	15 kVA	20 kVA
Input (AC)	Nominal power in VA/W	10000/10000	15000/15000	20000/20000
Autonomy time @ 100 / 50% Load	As standard in min.	2 / 10	6 / 16	2 / 10
	higher autonomy times on request	On request		
Technology	Online double conversion	VFI-SS-111 according to IEC 62040-3		
Phase	Input	380/400/415 VAC, (3Ph+N+PE) or 220/230/240 VAC, (L+N+PE)		
	Output	220/230/240 VAC, (L+N+PE)		
Input	Nominal voltage configurable	380/400/415VAC or 220/230/240VAC		
	Input voltage range	208~478VAC or 120~276VAC		
	Input frequency range	40-70Hz (autodetect)		
Output	Output voltage	220/230/240 VAC		
	Voltage regulation	±1%		
	Frequency range	50 Hz / 60 Hz ± 1 Hz		
	Transfer time	none		
	Overload Capability (Line Mode)	< 125% for 10 min., < 150% for 30 Sek.		
	Voltage form	Sine wave		
Efficiency	Normal-Mode	Max. 94.5%		
	ECO- Mode	Max. 98%		
Battery	Type	maintenance-free sealed lead fleece batteries		
	Expected service life	5 years / optional 10 years		
	Nominal DC-voltage	192-240VDC configurable		
	Max. charging current standard	max. 20 A		
	Time to recharge	from 2 h. to 90%, depending on the battery capacity		
Communication	Interfaces	RS232, USB, Relay, EPO, Parallelport		
	Slots for communication cards	Optional Relay card or SNMP- card		
	Display	multilingual LC-display and LED		
Dimensions / Weight	Dimensions UPS (HxWxD in mm)	868 x 250 x 900		
	Dimensions battery cabinet (HxWxD in mm) optional	868 x 250 x 828		
	UPS weight in kg (with standard battery configuration)	118 1x20 pcs.	173 2x20 pcs.	174 2x20 pcs.
	Weight of battery cabinet in kg	depending on the battery configuration		
	Protection	IP20		
Terminals	Input	hardwired		
	Output	hardwired		
Environmental conditions	Temperature	0°C – 40°C, 20°C recommended		
	Humidity	0-90 % RH @ 0- 40°C (not condensing)		
Safety / Standards	Safety	EN 62040-1		
	EMC	EN 62040-2 Class C3		
	Standards	CE		

UPS
TRIAS RM 6 / 10 kVA

The new TRIAS RM UPS system from EFFEKTA® is one of the few 19“ systems with 3-phase input and 1-phase output in 19“ design.
With 6 kVA or 10 kVA output power at power factor 1 allows a setup of a highly available UPS system in 19“ cabinets.
By parallel connection up to 4 systems can be combined to achieve n+x redundancy.
The TRIAS RM is thus an ideal solution for servers, banks, industrial/IT equipment, communication systems and other network devices that require comprehensive protection.

Detail view

Left image from top to bottom:
Rear of the connection unit (PDU)
Back of the UPS
Back of the battery pack

Above:
All important information on a clear backlit and multilingual 2.4“ LC colour touch display

Options for extended communication and highest availability:

- SNMP-/Web or relay card for monitoring in network environment
- Additional battery cabinets to increase the bridging time to several hours
- Special designs available for industrial applications (connections / special housings, etc.)

EFFEKTA®

Characteristics

- UPS classification VFI-SS-111 according to IEC 62040-3
- Online double converter with sine wave output switchable to ECO mode
- Service-friendly battery exchange
- UPS software for all common operating systems
- Integrated remote emergency stop contact (REPO)
- 24 months warranty

Highlights

- 3-phase input
- Unbeatable price advantage in this power class
- Excellent power factor of 1.0
- Mains feedback THDi <3%
- Automatic battery test adjustable via display
- Parallel redundant n+x operation possible
- Multilingual 2.4“ LC colour touch display

Specifications

Model TRIAS RM		6 kVA	10 kVA
Power	Nominal power in VA/W	6000	10000
Autonomy time	Standard configuration in min at 100%/50% load	8 / 20	10 / 25
	Longer autonomy times on request		
Technology	On-line double converter	VFI-SS-111 according to IEC 62040-3	
Phase	Input / Output	1-phase/1-phase or 3-phase/1phase	
Input	Nominal voltage configurable	380/400/415VAC or 220/230/240VAC	
	Input voltage range	208~478VAC or 120~276VAC	
	Input frequency range	40-70Hz (autodetect)	
	Distortion (THDi)	≤3% (100% non-linear load)	
Output	Output voltage	220/230/240VAC	
	Power factor	1.0	
	Voltage regulation	±1%	
	Frequency range	Mains operation: ±1%, ±2%, ±4%, ±5%, ±10% of nominal frequency (optional) Battery operation: 50 Hz / 60 Hz ± 0.2Hz	
	Transfer time	0 ms	
	Overload Capability (Line Mode)	≤110%: for 60 min, ≤125%: for 10 min, ≤150%: for 1 min, ≥150% immediate switchover to the bypass.	
	Overload Capability (Battery Mode)	≤110%: for 10 min, ≤125%: for 1 min, ≤150%: for 1 sec, ≥150% immediate switch-off of the UPS.	
	Voltage form	Sine wave	
	Crest-Factor	3:1	
	THD	≤2% @ linear load ≤5% @ non-linear load	
Efficiency	Normal Mode	max. 93.5%	
Battery	Type	maintenance-free sealed lead fleece batteries	
	Expected service life	5 years (optional 10 years)	
	DC rated voltage	192-240VDC adjustable, Standard 240VDC	
	Max. charging current standard	max. 12A	max. 14A
Communication	Interfaces	RS232, RS485, Parallel, REPO, MAINTAIN- AUXSWS port	
	Slots for communication cards	1 x for Relays- or SNMP-card	
	Display	LCD-Display and LEDs	
Dimensions / weight	Dimensions UPS (HxWxD in mm)	131 (3U) x 443 x 675	
	Weight UPS in kg	27	28
	Dimensions (HxWxD mm)	131 (3U) x 443 x 720	
	Weight battery pack incl. batt. in kg	80	
	Dim. connection box (HxWxD in mm)	131 (3U) x 443 x 655	
	Weight connection box in kg	12	
Terminals UPS / connection box	Protection	IP20	
Connections Battery	Input	Fixed connection on terminals	
Environmental conditions	Output	Fixed connection on terminals	
Protection / Standards	Battery pack	Battery cable with plug from / to UPS	
	Temperature	0°C – 40°C, 20°C recommended	
	Humidity	0-95 % RH (non-condensing)	
	Safety	EN 62040-1	
	EMC	EN 62040-2 class C3	
	Standards	CE	

UPS large systems
TRITON PF1

With the TRITON PF1 UPS, EFFEKTA® offers a modern, modular online double-converter with 3-phase input and output.

The system is operated with a power module from 10 to max. 40 kVA. In this way, the TRITON achieves a very high-power density. The system is operated with a power module from 10 to max. 40 kVA. In this way, the TRITON achieves a very high-power density.
The TRITON PF1 has a power factor of 1.0 throughout from 10-40 kVA.

Detail view

Front accessible modules

Front of a power module

Options for extended communication and highest availability:

- SNMP/Web or relay card for monitoring in network environment
- Additional battery cabinets to increase the bridging time to several hours
- External manual bypass for scheduled UPS maintenance or UPS replacement without shutdown
- Warranty Extensions
- Customer-oriented individual service and maintenance contracts

EFFEKTA®

Characteristics

- UPS classification VFI-SS-111 according to IEC 62040-3
- Online double-converter with sine output THDI ≤ 3%
- Simple service thanks to the modular structure
- Up to 4 systems can be connected in parallel
- Large voltage input window
- High efficiency (up to 95%)
- Switchable to ECO mode (> 98%, line-interactive)
- All models with a power factor of 1.0
- EPO (Emergency Power Off / Remote Power Off)
- Temperature controlled fans
- 3-stage gentle battery charging process
- Extensive communication interfaces
- Management software for all common OS
- 24 months warranty

Specifications

Model TRITON PF1		10 kVA	15 kVA	20 kVA	30 kVA	40 kVA
Input (AC)	Nominal power in VA/W	10000	15000	20000	30000	40000
Autonomy time @ 100/50% Load (cos. phi 0.8)	As standard in min.	12 / 30	6 / 23	12 / 30	2 / 13	7 / 30
	higher autonomy times on request					
Technology	Online double conversion	VFI-SS-111 according to IEC 62040-3				
Phase	Input / Output	3-phase / 3-phase				
Input	Nominal voltage configurable	380/400/415VAC				
	Input voltage range	208-478VAC				
	Input frequency range	50/60Hz (autodetect)				
	Distortion (THDi)	< 3%				
Output	Output voltage	380/400/415VAC				
	Voltage regulation	±1%				
	Power factor	1.0				
	Frequency range	50Hz or 60Hz ± 0.2Hz				
	Transfer time	0ms				
	Overload Capability (Line Mode)	< 125% for 10 min/ < 150% for 1 min				
	Voltage form	Sinewave				
Efficiency	Normal-Mode / ECO-Mode	max. 94.5 / 98%			max. 95.0 / 98%	
Battery	Type	maintenance-free sealed lead fleece batteries				
	Expected service life	5 years/ optional 10 years				
	Max. charging current standard	14A	16A	18A	20A	
	Time to recharge	from 2 h., depending on the battery capacity				
Communication	Interfaces	RS232, RS485, Parallel, Intelligent slot, Relay card (optional), SNMP card(optional)				
	Communication cards (option)	Relay- or SNMP-card				
	Slots for communication cards	2				
	Display	multilingual LC-display				
	Parallel connection	max. 4 units for redundancy or increasing output power				
Dimensions / Weight	Dimensions UPS (HxWxD in mm)	1600 x 600 x 780				
	UPS weight in kg (with standard battery configuration)	288	288	388	384	573
	Weight of battery cabinet in kg	depending on the battery capacity				
Terminals	Protection	IP 20 (optionally higher protection class possible)				
	Input	hardwired				
	Output	hardwired				
Environmental conditions	Temperature	0°C – 40°C, 20°C recommended				
	Humidity	0-90 % RH @ 0- 40°C (not condensing)				
	Operation noise	<55dB				
Safety / Standards	Safety	EN 62040-1				
	EMC	EN 62040-2 class C3				
	Standards	CE				

AC large UPS
TRITON M2

With the TRITON EFFEKTA® offers a modern, modular design, online double conversion UPS with 3-phase input & output.

The system is operated with two 30 or 40kVA power modules. Further up to 4 of these systems can be operated in parallel.

The power modules allow easy maintenance and replacement and therefore low service costs (very low MTTR value).

Details

Modules accessible from the front

To make commissioning, operation and maintenance as simple as possible, the modules as well as all controls and interfaces can be accessed from the front.

The intelligent slots provide expansion options for additional communication boards.

Options for extended communication and maximum availability:

- SNMP/web or relay card for monitoring in network environments
- Additional battery modules to provide an uninterruptible power supply for up to several hours
- External manual bypass for planned UPS maintenance work or replacement of the UPS unit without shutting it down
- Extended warranty arrangements
- Customer-oriented individual service and maintenance contracts

EFFEKTA®

Characteristics

- UPS classification VFI-SS-111 (IEC 62040-3)
- Online double conversion with sinusoidal output
- Easy maintenance through modular design
- Large input voltage range
- High input power factor up to 1 (0.99)
- High efficiency (up to 95%)
- Switchable to ECO mode (> 98%, line-interactive)
- High output power factor (0,9)
- EPO (remote shutdown)
- Temperature-controlled fan
- 3-step gentle battery charging method
- Extensive communication interfaces
- Management software for all common OS
- 24 months warranty

Specifications

TRITON M2		60 kVA	80 kVA
Power	Power in VA	60000	80000
	Power in W	54000	72000
Autonomy time 100% / 50% load (cos. phi 0.7)	With internal batteries in minutes	7 / 17	4 / 10
	Longer autonomy times on request		
Technology	Online double conversion	VFI-SS-111 in accordance with IEC 62040-3	
Phase	Input / Output	3-phase / 3-phase	
Input	Nominal voltage	380/400/415 VAC	
	Input voltage range	208-478 VAC	
	Input frequency range	50/60 Hz (Auto-Sensing)	
	Circuit feedback THDI	< 3%	
Output	Output voltage	380/400/415 VAC	
	Voltage Regulation	±2%	
	Power factor	0.9	
	Frequency Range	50 Hz or 60 Hz ± 1 Hz	
	Transfer time	none	
	Overload Capability (Line Mode)	< 125%: 10 min. / < 150%: 1 min.	
	Voltage form	sine wave	
Efficiency	Normal mode / ECO mode	max. 95 / 98%	
Battery	Type	Maintenance free lead-acid battery	
	Life time	5 years, optional 10 years	
	Charging current (max)	10A	
	Recharging time	8 h, dependent on accumulator capacity	
Communication	Interface	USB, RS232, RS485, EPO, REPO dry contact, Temp.sensor	
	Communication cards	Optional relay contacts or SNMP card	
	Slot for communication cards	2	
	Display	multi language LC-Display	
	Parallel switching	Max. 4 systems for redundancy or to boost performance	
Dimensions / Weight	Dimensions UPS (H x W x D in mm)	1200 x 600 x 780	
	Weight UPS (without accumulators)	189 kg	195 kg
	Dimensions of battery extension (H x W x D in mm)	1200 x 600 x 780	
	Weight battery cabinet with standard configuration	606 kg	881 kg
	Protection	IP 20 (optionally higher protection class possible)	
Terminals	Input	Fixed connection on terminals	
	Output	Fixed connection on terminals	
Environmental conditions	Temperature	0°C – 40°C, 20°C recommended	
	Humidity	0-90 % RH @ 0- 40°C (non condensing)	
	Acoustic Noise	< 55 dB	
Safety / Enclosure	Safety	EN 62040-1	
	EMC	EN 62040-2, class C3	
	Certifications	CE	

EFFEKTA®

AC large UPS
TRITON M3

With the TRITON EFFEKTA® offers a modern, modular design, online double-conversion UPS with 3-phase input & output.

For simple commissioning, operation and maintenance of all controls, ports and the module are accessible from the front.

Details

Modules accessible from the front

Options for extended communication and maximum availability:

- SNMP/web or relay card for monitoring in network environments
- Additional battery modules to provide an uninterruptible power supply for up to several hours
- External manual bypass for planned UPS maintenance work or replacement of the UPS unit without shutting it down
- Extended warranty arrangements
- Customer-oriented individual service and maintenance contracts

Characteristics

- UPS classification VFI-SS-111 (IEC 62040-3)
- Online double conversion with sinusoidal output
- Easy maintenance through modular design
- High efficiency (up to 95%)
- Switchable to ECO mode (> 98%, line-interactive)
- High output power factor (0,9)
- Temperature-controlled fan
- 100% suitable for load imbalances
- Programmable maintenance management
- Extensive communication interfaces
- 24 months warranty
- Also available with power factor 1.0

Specifications

TRITON M3		120 kVA	160 kVA	200 kVA
Power	Power in VA	120	160	200
	Power in W	108	144	180
Autonomy time 100% / 50% load (cos. phi 0.7)	With internal batteries in minutes	7 / 17	9 / 19	6 / 13
	Longer autonomy times on request			
Technology	Online double conversion	VFI-SS-111 in accordance with IEC 62040-3		
Phase	Input / Output	3-phase / 3-phase		
Input	Nominal voltage	380/400/415 VAC		
	Input voltage range	208-478 VAC		
	Input frequency range	50/60 Hz (Auto-Sensing)		
	Circuit feedback THDI	< 2%		
Output	Output voltage	380/400/415 VAC		
	Voltage Regulation	±1%		
	Power factor	0.9		
	Frequency Range	50 Hz or 60 Hz ± 1 Hz		
	Transfer time	none		
	Overload Capability (Line Mode)	< 125%: 10 min. / < 150%: 1 min.		
	Voltage form	sine wave		
Efficiency	Normal mode / ECO mode	max. 95 % / 98 %		
Battery	Type	Maintenance free lead-acid battery		
	Life time	10 years		
	Charging current (max)	30 A	40 A	50 A
	Recharging time	5 h, dependent on accumulator capacity		
Communication	Interface	USB, RS232, RS485, EPO, REPO dry contact, Temp. sensor contact		
	Communication cards	Optional relay contacts or SNMP card		
	Slot for communication cards	2		
	Display	multi language LC-Display		
	Parallel switching	Max. 4 systems for redundancy or to boost performance		
Dimensions / Weight	Dimensions UPS (H x W x D in mm)	1600 x 600 x 850		
	Weight UPS (without accumulators)	345 kg	379 kg	413 kg
	Dimensions battery cabinet with standard configuration (H x W x D in mm)	2000 x 600 x 1100		
	Weight battery cabinet with standard configuration	1421 kg	2 x 1076 kg	2152 kg
	Protection	IP 20 (optionally higher protection class possible)		
Terminals	Input	Fixed connection on terminals		
	Output	Fixed connection on terminals		
Environmental conditions	Temperature	0°C – 40°C, 20°C recommended		
	Humidity	0-90 % RH @ 0- 40°C (non condensing)		
	Acoustic Noise	< 70 dB		
Safety / Enclosure	Safety	EN 62040-1		
	EMC	EN 62040-2, class C3		
	Certifications	CE		

3-phase UPS
THOR RM 10-30 kVA

The THOR RM is currently the most compact online double conversion UPS system and can be used in the smallest space. It is suitable for parallel redundant operation and can be extended to extremely long autonomy times using external battery packs.

With its rack design, it can be used as a plug-in device to set up an individually designed UPS system in all 19-inch network cabinets.

With an effi ciency of over 95% in normal operation, it is one of the most effective and economical 3-phase UPS sys-tems on the market and is therefore ideally suited to saving money.

Detail views

THOR RM Front

THOR RM for 19“ cabinet installation

Options for advanced communication and highest availability:

- SNMP / web card for monitoring in network environments
- Additional battery modules to increase the autonomy time to several hours
- Special designs available for industrial applications (connections / special housings, etc.)

Suitable for 19“ cabinet installation

THOR RM for 19“ cabinet installation

Optionally available 19“ mounting rails enable problem-free installation in a standard 19“ cabi-net system.

All components from UPS to batteries to connec-tion unit each require 3 height units (U).

Battery packs

With additional battery packs, the autonomy time of the UPS system can be extended almost indefi nitely.

Like the UPS, the battery packs can of course be integrated into 19“ cabinets.

Professional Accessories

Connection Unit (for standard design)

The UPS connection unit with bypass function is used to protect the UPS modules and to isolate the UPS for maintenance work.

External Remote Display (Option)

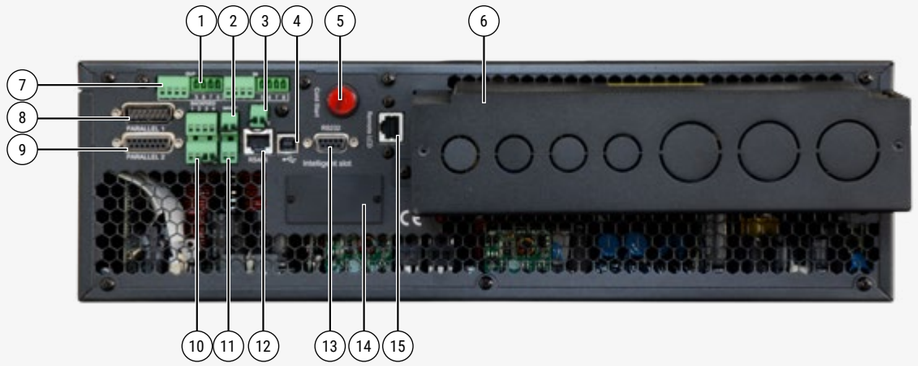
With the remote display, the entire UPS system can be confi gured, monitored and controlled via a cable supplied. All relevant data are clearly displayed on the backlit 7“ LCD display.

Continued on next page ▶

EFFEKTA®

Connection overview

THOR RM rear panel with connectors



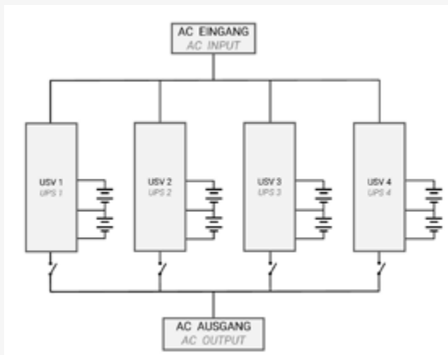
1) Connection for back feed protection
2) Bypass switch (connection unit) signalling contact
3) Output switch signalling contact
4) USB port
5) Cold start button
6) Terminal block for input, output and battery
7) Dry contact connection
8) Parallel port 1
9) Parallel port 2
10) EPO connector
11) Temperature sensor connector (for NTC)
12) RS485 connection
13) RS232 connection
14) Smart slot (SNMP card)
15) Connection for external 7" display

Parallel option

THOR RM in parallel operation

Up to 4 THOR RM devices can be operated in parallel. Such a group of UPSs connected in parallel behaves like a large UPS system but offers the advantage of higher reliability and redundancy.

Battery groups can be connected separately or in parallel, which means that the system can be operated with a separate battery per UPS module or with a common battery.



Characteristics

- UPS classification VFI-SS-111 according to IEC 62040-3
- VFI sine wave output
- UPS software for all common OS
- Incl. RS232 / USB and expansion slot
- Integrated Emergency Power Off (EPO)
- Rack design: Can be used as a 19" rack
- 24 months warranty

Special features

- Excellent power factor of 1.0
- Parallel redundant operation of up to 4 systems possible
- Cold start function (start in battery operation)
- Outstanding efficiency of over 95.5%
- Dry-In/Dry-Out interface as standard
- Multi colour display

Specifications

THOR RM		10 kVA	20 kVA	30 KVA
Power	Nominal power in VA/W	10000/10000	20000/20000	30000/30000
Autonomy time 100/50% Load (cos. phi 0.8)	As standard in min.	15/32	15/32	9/20
	Quantity battery packs	2	4	4
	Higher autonomy times	scalable with additional battery packs		
Technology	Online double conversion	VFI-SS-111 according to IEC 62040-3		
Phase	Input / Output	3-phase/ 3-phase		
Input	Nominal voltage configurable	380/400/415VAC		
	Input voltage range	305~485Vac		
	Input frequency range	50/60 Hz (auto-detect)		
	Distortion (THDi)	≤3% @ linear load		
Output	Output voltage	380/400/415VAC		
	Voltage regulation	±1%		
	Power factor	1.0		
	Frequency range	1. Mains operation: synchronized with input when Input frequency >±10% (±1%/±2%/±4%/±5% optional) 2. Battery operation :50/60*(1±0.02%) Hz		
	Transfer time	None		
	Overload Capability (Line Mode)	≤ 110% for 60 min, ≤ 125% for 10 min., ≤ 150% for 1 min.		
	Voltage form	Sine wave		
	Distortion (THD)	≤2% @ linear load ≤4% @ non-linear load		
Efficiency	Normal mode	max. 95.5 %		
Battery	Type	Maintenance free lead-acid battery		
	Life time	5 years, optional 10 years		
	Nominal DC-voltage	480VDC, (optional 360 - 600VDC)		
	Charging current	max. 18A (adjustable depending on the battery capacity)		
	Recharging time	approx. 3 hours to 90% capacity depending on configuration		
Communication	Interface	RS232, USB, RS485, dry contacts, REPO, parallel and backfeed port		
	Slot for further communication cards	for optional SNMP-card		
	Display	LCD-Display and LEDs		
Dimensions / Weight	Dimensions UPS (HxWxD in mm)	3HE x 481 x 808,5		
	Dimensions of battery extension (H x W x D in mm)	3U x 481 x 750		
	Weight UPS in kg	25	27	
	Weight battery pack in kg	2x 77	4x 77	
	Protection	IP20		
Terminals	Input	Fixed connection on terminals		
	Output	Fixed connection on terminals		
Environmental conditions	Temperature	0°C – 40°C, 20°C recommended		
	Humidity	0-90 % RH @ 0- 40°C (non-condensing)		
	Acoustic Noise	< 55 dB (A)@1m		
Safety / Enclosure	Safety	EN 62040-1		
	EMC	EN 62040-2 Class C3		
	Certifications	CE		

EFFEKTA®

UPS Modular Tower
THOR 31 6-30 kVA

For the highest demands on flexibility and reliability, EFFEKTA® recommends the new THOR 31 UPS system with 3-phase input and 1-phase output.

The outstanding efficiency of up to 99% in ECO mode makes this system one of the most efficient UPS systems on the market.

The modular design with 6 kVA / kW modules allows to set up a high availability UPS system up to 30 kW with a total of 5 modules. With their help, an n+x redundancy can be set up. Furthermore, up to 4 systems can be connected in parallel.

Characteristics

- UPS classification VFI-SS-111 according to IEC 62040-3
- Online double conversion UPS with sine wave output switchable to high efficiency mode
- Battery remaining time on LCD display
- Extraordinarily compact design
- Service-friendly battery replacement
- UPS software for all common OS
- Incl. 2 expansion slots
- Integrated remote emergency stop contact (REPO)
- 24 months warranty

Special features

- Unbeatable price advantage in this power class
- Outstanding power factor of 1.0
- Outstanding efficiency of up to 94.5% in normal operation
- Mains feedback THDi <2.5%
- Automatic battery test adjustable via display
- Low noise due to intelligent fan control
- Dry-in/dry-out interface as standard
- Parallel redundant operation possible
- Multilingual 7“-large LC-color touch display

Specifications

Model THOR Modular 31		6 – 30 kVA
Power	Nominal power in VA/W	6000 - 30000
	Power per module	6 kVA / 6 kW
Bridging time	UPS system THOR Modular 31	Configurable according to number of modules and battery capacity
Technology	Online continuous converter	n+x technology scalable / VFI-SS-111 according to IEC 62040-3
Phases	Input/Output	1-phase/1-phase or 3-phase/1-phase
Input	Nominal voltage configurable	380/400/415 VAC or 220/230/240 VAC
	Input voltage range	208~478 VAC or 120~276 VAC
	Input frequency range	40-70 Hz (automatic detection)
	Mains feedback THDi	≤3% (100% non-linear load).
Output	Output voltage	220/230/240 VAC
	Power factor	1.0
	Voltage regulation	±1%
	Frequency range	Mains operation: ±1%, ±2%, ±4%, ±5%, ±10% of rated frequency (optional). Battery operation: 50 Hz / 60 Hz ± 0.2 Hz
	Changeover time	0 ms
	Overload normal operation	≤110%: for 60 min, ≤125%: for 10 min, ≤150%: for 1 min, ≥150% immediate switchover to bypass.
	Overload battery operation	≤110%: for 10 min, ≤125%: for 1 min, ≤150%: for 1 sec, ≥150% immediate switch-off of the UPS.
	Voltage mode	Sine
	Crest factor	3:1
	THD	≤2% with linear load ≤5% with non-linear load
Efficiency	Normal operation	max. 94%
	ECO operation	max. 98%
Battery	Type	Maintenance-free lead-fleece accumulators
	Service life expectancy	5 years (optional 10 years)
	DC rated voltage	192-240 VDC adjustable, standard 240VDC
	Maximum charging current	max. 12A per power module / max. 60 A UPS system
Communication	Interfaces	RS232, 2xRS485, switching contacts, REPO
	Expansion slot	2 x for relay or SNMP card
	Display	LCD display and LED indicators
Dimensions / Weight	UPS dimensions (HxWxD in mm)	1400 x 600 x 840
	Weight UPS without modules in kg	150
	Weight UPS power module in kg	25
	Dimensions battery cabinet (HxWxD in mm)	1200 x 600 x 780
	Weight battery cabinet in kg	depending on battery configuration
	Protection class	IP20
Connections	Input	Fixed connection on terminals
	Output	Fixed connection on terminals
Environmental conditions	Temperature	0°C - 40°C, 20°C recommended
	Humidity	0-95% RH (non-condensing)
Protection / Standards	Safety	EN 62040-1
	EMC	EN 62040-2 class C3
	Approvals	CE

Detail views

Thor 31 Module

Thor 31 Steuereinheit

Options for advanced communication and highest availability:

- SNMP/web or relay card for monitoring in network environments.
- Additional battery modules to increase backup time to several hours
- External manual bypass for scheduled UPS maintenance or UPS replacement without shutdown
- Special designs available for industrial applications (connectors / special enclosures, etc.)

3-phase modular UPS
THOR II T20 10-100 kVA

With the THOR II T20, EFFEKTA® offers a modular double conversion UPS with 3-phase input & output in 3-level inverter technology.

All operating elements, interfaces and power modules are accessible from the front for easy commissioning, operation and maintenance. Intelligent battery management with configurable charging mode ensures long battery life. Furthermore, battery tests are individually configurable. The current consumption is almost ideally sinusoidal. Furthermore, the THOR II offers a power factor of 1.0.
With an efficiency of over 95.5% in normal operation, it is one of the most effective and economical UPS systems on the market and thus ideally suited for saving money.

Details views

2U power module (above) | IO/parallel control panel (bottom)

THOR II T20 (Example 100 kVA system cabinet)

Options for extended communication and highest availability:

- SNMP/web for monitoring in network environments
- Additional batteries to increase backup time to several hours
- External manual bypass for scheduled UPS maintenance or UPS replacement without shutdown
- Special designs available for industrial applications (connections / special enclosures, etc.)

Convenient service concept

Modular and easy to maintain

- Easily exchangeable power modules
- Fan change from the front
- Filter change from the front
- User-friendly multilingual LCD control panel
- Firmware upgrade directly on LCD via USB stick or SD card
- Superior MTBF & MTTR
- Remote monitoring and connectivity options

The UPS can be configured easily and directly via the 7" display.

The power modules can be easily exchanged or extended from the front of the UPS cabinet.

Safety first

Redundant power modules 10 or 20 kVA

The THOR II T20 can be equipped with 10 or 20 kVA modules. The N+1 redundancy ensures the simplest service and extensive fail-safety. If one of the modules is out of service, but the remaining modules are within the total capacity of the load, the UPS continues to operate without interruption.

In addition to the power supply, the fans are also redundant so that, for example, if one fan fails, the system does not come to a standstill but can still supply up to 50% of the

Power Walk In / Inter Power Walk In

Power Walk In:
This function ensures a progressive rectifier start when the power supply is restored. This means that the power modules are switched on again one after the other, which prevents switch-on peaks in your power grid.

Inter Power Walk In:
This is a similar function, but several UPSs connected in parallel are restarted sequentially when the power returns.

Low initial and operating costs:

- Scalable performance and autonomy time = Less initial investment; investment as you grow
- High and constant efficiency of up to 95.5% and over 99% in Eco mode
- Intelligent sleep mode saves energy: modules in sleep mode remain in inverter mode but with output switched off and are activated when needed without switching time.
- Modules are hot-swappable and fans can be replaced from the front.
- Front access for serviceability and maintenance

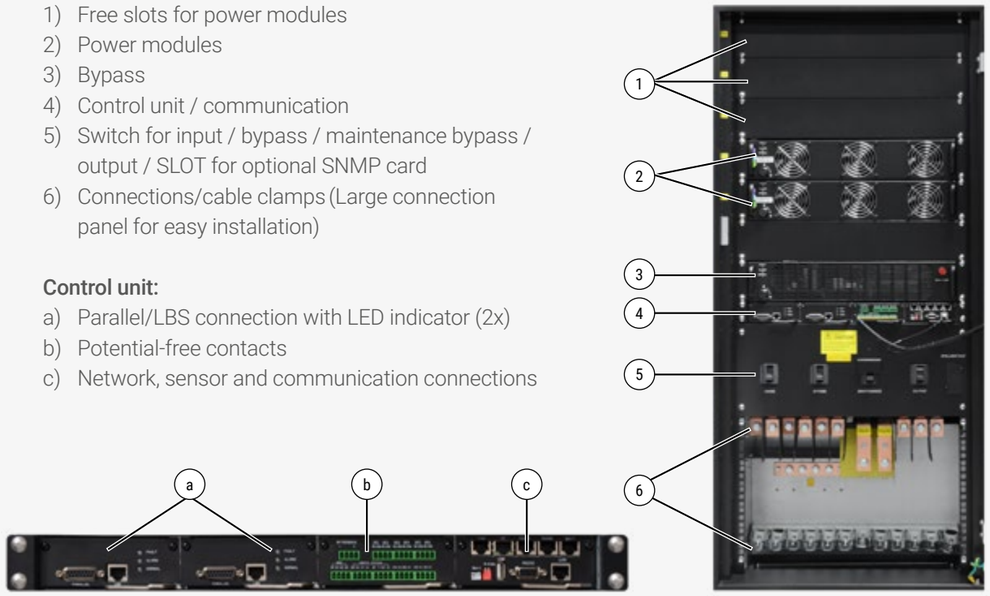
Continued on next page ▶

Clear connections

1) Free slots for power modules
2) Power modules
3) Bypass
4) Control unit / communication
5) Switch for input / bypass / maintenance bypass / output / SLOT for optional SNMP card
6) Connections/cable clamps (Large connection panel for easy installation)

Control unit:

a) Parallel/LBS connection with LED indicator (2x)
b) Potential-free contacts
c) Network, sensor and communication connections



THOR II T20 (Example 100 kVA system cabinet equipped with two power modules)

Redundant and scalable

The THOR II T20 can be equipped with 10 or 20 kVA modules and expanded if necessary. The N+1 redundancy guarantees the simplest service, highest availability and extensive failure safety.

As a result, the UPS grows in performance according to your requirements.

THOR II Cabinet-module constellations**				
power range*	Maximum power @ N+1 redundancy	Possible module sizes	Maximum number of modules*	UPS cabinet size H x W x D in mm
10-30 kVA/kW	20 kVA/kW	10 kVA/kW	3	1200 x 600 x 850
10-50 kVA/kW	40 kVA/kW	10 kVA/kW	5	1400 x 600 x 850
20-60 kVA/kW	40 kVA/kW	20 kVA/kW	3	1200 x 600 x 850
20-100 kVA/kW	80 kVA/kW	20 kVA/kW	5	1400 x 600 x 850

* For N+1 redundancy, an additional module is required in addition to the desired total output.
** We will be happy to calculate batteries and the matching cabinets according to your requirements on request.

Characteristics

- Excellent power factor of 1.0
- UPS classification VFI-SS-111 according to IEC 62040-3
- VFI sine wave output can be switched to ECO High Efficiency mode
- UPS software for all common OS
- Incl. RS232 / USB and expansion slot
- Integrated Emergency Power Off (EPO)
- Dry-In/Dry-Out interface as standard
- 24 months warranty

Special features

- Temperature sensor for temperature-controlled charging voltage to increase battery life
- Adjustable battery voltage (variable number of batteries)
- Simple service through modular structure
- N+X parallel redundant operation of up to 4 systems possible
- Redundant parallel control unit
- Power supply modules and fans redundant
- Outstanding efficiency of 95.5% in normal operation and 99% in ECO mode

Specifications

THOR II T20		10-30 kVA/kW	20-60 kVA/kW	10-50 kVA/kW	20-100 kVA/kW
Power	Nominal power in kVA/kW	10-30 kVA/kW	20-60 kVA/kW	10-50 kVA/kW	20-100 kVA/kW
	Power per module	10 kVA/kW	20 kVA/kW	10 kVA/kW	20 kVA/kW
	Number of modules max.	3		5	
Backup time		On request / depending on the battery configuration			
Technology		n+x technology scalable / VFI-SS-111 according to IEC 62040-3			
Phases	Input / Output	3-phase / 3-phase			
Input	Configurable nominal voltage	380/400/415 VAC			
	Input voltage range	138~485 VAC			
	Input frequency range	40 Hz - 70 Hz			
Mains feedbacks	THDI	≤3 % (100% nonlinear load)			
Output	Output voltage	380/400/415 VAC			
	Voltage regulation	±1 %			
	Frequency range normal operation	±1 % / ±2 % / ±4 % / ±5 % / ±10 % of the nominal frequency (optional)			
	Frequency range battery operated	50/60 Hz ± 0,2 %			
	Transfer time	none			
	Overload	For mains operation: 105% < load ≤ 110%: Switching to bypass after 60 min. 110 % < load ≤ 125 %: Switchover to bypass after 10 min 125 % < load ≤ 150 %: Switchover to bypass after 1 min > 150 %: immediate switch-off			
	Voltage form	Sine wave			
Efficiency	Normal-Mode / ECO-Mode	95.5 in line mode / 99 % in ECO mode			
Batteries	Type	Maintenance free lead-acid battery			
	Service life expectancy	5 / 10 years			
	DC nominal voltage	±180 V/192 V/±204 V/±216 V/±228 V/±240/±252/±264/±276/±288/±300 VDC (30/32/34/36/38/40/42/44/46/48/50 blocks adjustable)			
	Maximum charging current	18 A per module (charging current is set according to the battery bank capacity)			
	Time to recharge	from 5 hours, depending on battery capacity			
Communication	Interfaces	CAN, RS232, RS485, LBS, parallel, relay card, SNMP card (optional)			
	Display	multilingual LC display			
Dimensions / weight	UPS dimensions (H x W x D in mm)	1200 x 600 x 850		1400 x 600 x 850	
	UPS modules (H x W x D in mm)	86 (2U) x 440 x 620			
	Dimensions of battery extension	on request			
	Weight UPS in kg (without batt.)	approx. 150 kg		approx. 180 kg	
	UPS modules	21 kg			
	Weight battery bank (with batt.)	on request / depending on battery capacity			
	Protection class	IP20			
Connections	Input | Output	fixed connection on terminals | fixed connection on terminals			
Environmental conditions	Temperature	[0 - 40 °C], Recommended: + 15 °C...+ 25°C			
	Humidity	0 - 95 % (non-condensing)			
	Operating noise	< 58 dB		< 61 dB	
Protection/standards	Safety | EMC | Service	EN 62040-1 | EN 62040-2 | EN 62040-3			
	Approvals	CE			

EFFEKTA®

3-phase modular UPS
THOR II TB20 10-60 kVA

Integrated
Battery Modules

With the THOR II TB20, EFFEKTA® offers a compact, modular online double-conversion converter with 3-phase input and output in 3-level inverter technology.

Integrated, space-saving, modular battery expansion modules to increase the backup time, even retroactively.

The control elements, interfaces, battery packs and power modules are accessible from the front for easy commissioning, operation and maintenance.

Detail views

2U power module (top) | IO/Parallel - control panel (below)

THOR II TB20 (system cabinet with partial extension of battery modules)

Options for extended communication and highest availability:

- SNMP/web for monitoring in network environments
- Additional batteries to increase backup time to several hours
- External manual bypass

Convenient service concept

Modular and easy to maintain

- Easily exchangeable power modules
- Fan change from the front
- Filter change from the front
- User-friendly multilingual LCD control panel
- Firmware upgrade directly on LCD via USB stick or SD card
- Superior MTBF & MTTR
- Remote monitoring and connectivity options

Up to 5 slots are available for battery packs, which can be easily replaced or added

Up to three power modules can be easily exchanged or expanded from the front of the UPS cabinet

Safety first

Redundant power modules 10 or 20 kVA

The THOR II TB20 can be equipped with 10 or 20 kVA modules. The N+1 redundancy ensures the simplest service and extensive fail-safety. If one of the modules is out of service, but the remaining modules are within the total capacity of the load, the UPS continues to operate without interruption.

In addition to the power supply, the fans are also redundant so that, for example, if one fan fails, the system does not come to a standstill but can still supply up to 50 % of the load.

Power Walk In / Inter Power Walk In

Power Walk In:
This function ensures a progressive rectifier start when the power supply is restored. This means that the power modules are switched on again one after the other, which prevents switch-on peaks in your power grid.

Inter Power Walk In:
This is a similar function, but several UPSs connected in parallel are restarted sequentially when the power returns.

Low initial and operating costs:

- Scalable performance and autonomy time = Less initial investment; investment as you grow.
- High and constant efficiency of up to 95.5 % and over 99 % in Eco mode.
- Intelligent sleep mode saves energy: modules in sleep mode remain in inverter mode but with output switched off and are activated when needed without switching time.
- Modules are hot-swappable and fans can be replaced from the front.
- Complete front access for serviceability and maintenance

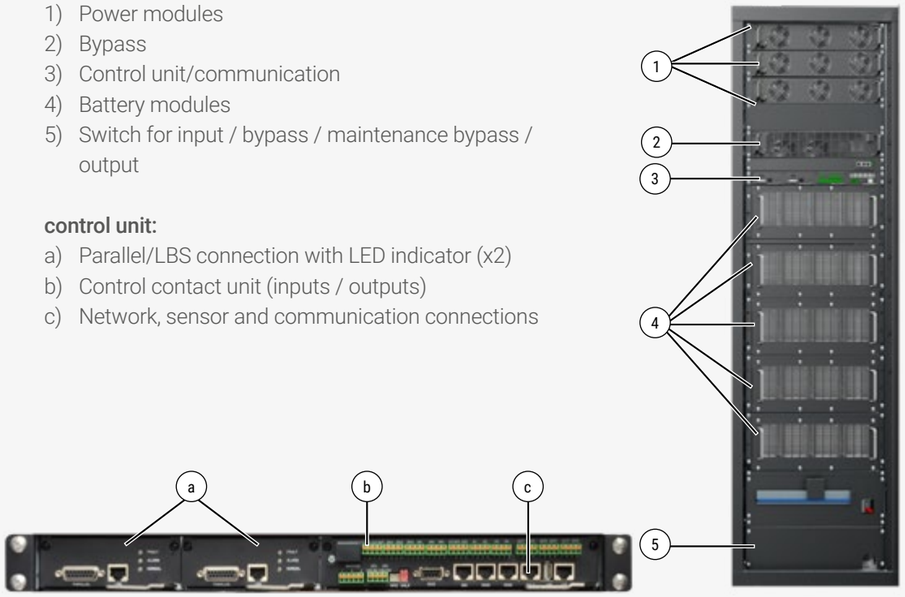
Continued on next page ▶

Clear connections

1) Power modules
2) Bypass
3) Control unit/communication
4) Battery modules
5) Switch for input / bypass / maintenance bypass / output

control unit:

a) Parallel/LBS connection with LED indicator (x2)
b) Control contact unit (inputs / outputs)
c) Network, sensor and communication connections



THOR II TB20 (Example 100 kVA system cabinet equipped with 3 power modules)

Redundant and scalable

The THOR II TB20 can be equipped with 10 or 20 kVA modules and expanded if necessary. The N + 1 redundancy guarantees the simplest service, the highest availability and extensive reliability.

The same applies to the battery slots. A maximum of 5 racks can be equipped with 40 batteries á 12 V / 9.5 AH each and serviced / exchanged during operation.

THOR II TB20 Cabinet-module constellations**			
power range*	Maximum power @ N+1 Redundancy	Possible module size (s)	Maximum number of modules*
10-30 kVA/W	20 kVA/W	10 kVA/W	3
20-60 kVA/W	40 kVA/W	20 kVA/W	3

* For N + 1 redundancy, an additional module is required in addition to the desired total output.

** We will be happy to calculate batteries and the matching cabinets according to your requirements on request.

Characteristics

- UPS classification VFI-SS-111 according to IEC 62040-3
- VFI sine wave output can be switched to ECO High Efficiency mode
- UPS software for all common OS
- Incl. RS232 / USB and expansion slot
- Integrated Emergency Power Off (EPO)
- 24 months warranty

Special features

- Excellent power factor of 1.0
- Intelligent battery management with configurable charging mode
- N + X parallel redundant operation of up to 6 systems
- Redundant parallel control unit
- Power supply modules and fans redundant
- Outstanding efficiency of over 95.5% in normal operation, over 99% in eco mode
- Large 7 "multi-language touchscreen LCD panel

Specifications

THOR II T20		10-30 kVA/kW	20-60 kVA/kW
Power	Nominal power in kVA/kW	10-30 kVA/kW	20-60 kVA/kW
	Power per module	10 kVA/kW	20 kVA/kW
	Number of modules max.	3	
Backup time		On request / depending on the battery configuration	
Technology		n + x technology scalable / VFI-SS-111 according to IEC 62040-3	
Phases	Input / Output	3-phase / 3-phase	
Input	Configurable nominal voltage	380 / 400 / 415 VAC	
	Input voltage range	138~485 VAC	
	Input frequency range	40Hz - 70Hz	
Mains feedbacks	THDI	≤3 % (100 % nonlinear load)	
Output	Output voltage	380 / 400 / 415 VAC	
	Voltage regulation	±1 %	
	Frequency range Normal mode	±1 % / ±2 % / ±4 % / ±5 % / ±10 % of the nominal frequency (optional)	
	Frequency range Battery mode	50/60 Hz ± 0.2 %	
	Transfer time	None	
	Overload	For mains operation: 105 % < load ≤ 110 %: Switching to bypass after 60 min. 110 % < load ≤ 125 %: Switchover to bypass after 10 min 125 % < load ≤ 150 %: Switchover to bypass after 1 min 125 % < load ≤ 150 %: Switchover to bypass after 1 min	
	THD	> 150 %: immediate switch-off	
	Voltage form	Sine wave	
Efficiency	Normal-Mode	max. 95.5 %	
Batteries	Type	Maintenance free lead-acid battery	
	Service life expectancy	5 / 10 years	
	DC nominal voltage	±240 VDC	
	Batteries used	Max. 5 battery slots with max. 40 x 12 V, 9.5 AH batteries per battery slot	
	Maximum charging current	18 A power module (charging current is set according to the battery bank equipment)	
	per UPS cabinet	54 A per UPS cabinet	
	Time to recharge	depending on battery capacity	
Communication	Interfaces	CAN, RS232, RS485, LBS, parallel, relay card, SNMP card (optional)	
	Display	multilingual LC display	
Dimensions / weight	UPS dimensions (H x W x D in mm)	2000 x 600 x 1000	
	UPS modules (H x W x D in mm)	86 (2U) x 440 x 620	
	Weight UPS in kg (without batt.)	approx. 363 kg	
	UPS modules	19 kg / 21 kg	
	Weight battery bank (with batt.)	approx. 120 kg	
	Protection class	IP20	
Connections	Input | Output	fixed connection on terminals | fixed connection on terminals	
Environmental conditions	Temperature	[0 – 40 °C], Recommended: + 15 °C...+ 25 °C	
	Humidity	0~95 % (non-condensing)	
	Operating noise	< 61dB	
Protection / standards	Safety | EMC | Service	EN 62040-1 | EN 62040-2 | EN 62040-3	
	Certification	CE	

3-phase modular UPS
THOR II T50 50-600 kVA

With the THOR II T50, EFFEKTA® offers a modern online double conversion ups with 3-phase input & output in 3-level inverter technology, built with powerful 50 kW power modules.
All operating elements, interfaces and power modules are ac-cessible from the front for easy commissioning, operation and maintenance.
Intelligent battery management with configurable charging mode ensures long battery life. Furthermore, battery tests are individually configurable.
With an efficiency of over 96 % in normal operation, it is one of the most effective and economical UPS systems on the market and thus ideally suited for saving money.

Details views

**Above 3U power module,
bottom IO/parallel control panel**

**THOR II T50, 200 kVA equipped with
two 50 kVA power modules**

Options for extended communication and highest availability:

- SNMP/web for monitoring in network environments
- Additional batteries to increase backup time to several hours
- External manual bypass for scheduled UPS maintenance or UPS replacement without shutdown
- Special designs available for industrial applications (connections / special enclosures, etc.)

Convenient service concept

Modular and easy to maintain

- Easily exchangeable power modules
- Fan change from the front
- Filter change from the front
- User-friendly multilingual LCD control panel
- Firmware upgrade directly on LCD via USB stick or SD card
- Superior MTBF & MTTR
- Remote monitoring and connectivity options

Safety first

Redundant power modules

The THOR II T50 can be equipped with 50 kVA modules. The N+1 redundancy ensures the simplest service and extensive fail-safety. If one of the modules is out of service, but the remaining modules are within the total capacity of the load, the UPS continues to operate without interruption.

In addition to the power supply, the fans are also redundant so that, for example, if one fan fails, the system does not come to a standstill but can still supply up to 50% of the load.

Power Walk In / Inter Power Walk In

Power Walk In:
This function ensures a progressive rectifier start when the power supply is restored. This means that the power modules are switched on again one after the other, which prevents switch-on peaks in your power grid.

Inter Power Walk In:
This is a similar function, but several UPSs connected in parallel are restarted sequentially when the power returns.

Low initial and operating costs:

- Scalable performance and autonomy time = Less initial investment; investment as you grow.
- High and constant efficiency of up to 96 % and over 99% in Eco mode.
- Intelligent sleep mode saves energy: modules in sleep mode remain in inverter mode but with output switched off and are activated when needed without switching time.
- Modules are hot-swappable and fans can be replaced from the front.
- Front access for serviceability and maintenance

Continued on next page ▶

Clear connections

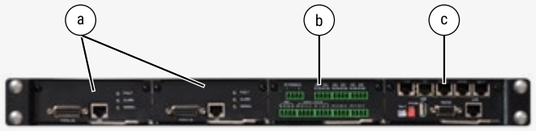
THOR II T50 (Example 300 kVA system cabinet equipped with six power modules)

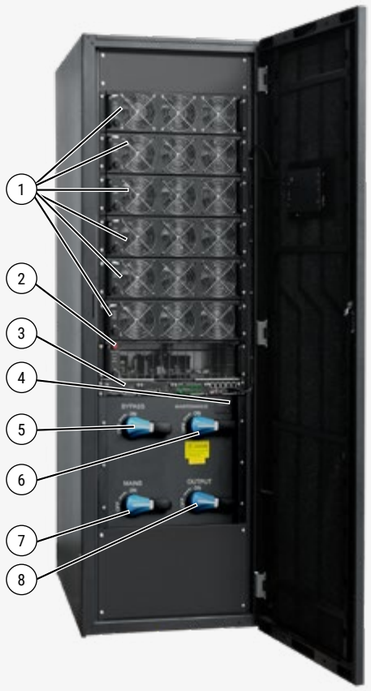
Picture right:

1.) Power modules
2.) Bypass module
3.) Control unit/communication
4.) SNMP (Intelligent) Slot
5.) Switch bypass
6.) Switch maintenance
7.) Switch Input
8.) Switch Output

Picture below (Control unit/communication):

a) Parallel-/LBS connection with LED-indicator (2 x)
b) Dry contacts
c) Network-, sensor- und communication connections





Parallel connectable

THOR T50 in parallel operation

Up to 6 THOR II T50 units (≤600 kVA) systems can be ope-rated in parallel. Such a group of UPSs con-nected in parallel behaves like a large UPS system, but offers the advantage of higher reliability and redundancy.

Battery groups can be connected separately or in pa-rallel, so that either a separate battery for each UPS or a common battery for all UPSs is available.

Characteristics

- UPS classification VFI-SS-111 according to IEC 62040-3
- VFI sine wave output can be switched to ECO High Efficiency mode
- UPS software for all common OS
- Incl. RS232 / USB and expansion slot
- Integrated Emergency Power Off (EPO)
- 24 months warranty

Special features

- Excellent power factor of 1.0
- Temperature sensor for temperature-controlled charging voltage to increase battery life
- Redundant parallel control unit
- Power supply modules and fans redundant
- Outstanding efficiency of 96 % in normal operation and 99 % in ECO mode
- Dry-In/Dry-Out interface as standard

Specifications

THOR II T50			150 kVA	200 kVA	300 kVA	400 kVA	500 kVA	600 kVA
Power	Nominal power in kVA/ kW		50-150	50-200	50-300	50-400	50-500	50-600
	Power per modul		50 kVA/kW					
	Number of modules max.		3	4	6	8	10	12
Backup time			on request / depending on the battery configuration					
Technology	Online double conver-sion		n + x technology scalable / VFI-SS-111 according to IEC 62040-3					
Phases	Input / Output		3-phase / 3-phase					
Input	Configurable nominal voltage		380/400/415 VAC					
	Input voltage range		305~485 VAC					
	Input frequency range		40Hz-70Hz					
Circuit feedback	THDI		≤3% (100% non-linear load)					
Output	Output voltage		380/400/415VAC					
	Voltage regulation		±1%					
	Frequency range	normal operation	±1% / ±2% / ±4% / ±5% / ±10% der Nennfrequenz (optional)					
		battery operation	(50/60 ±0.1) Hz					
	Transfer time		none					
	Overload inverter		105% < load ≤ 110% for 60 min, 110% < load ≤ 125% for 10 min, 125% < load ≤ 150% for 1 min, then switching to bypass					
	Voltage form		sinusoidal					
Efficiency	Normal-Mode / ECO-Mode		max. 96 % / 99 %					
Battery	Type		maintenance free lead-acid battery					
	Service life expectancy		10–12 Years					
	DC nominal voltage		±180V/192V/±204V/±216V/±228V/±240/±252/±264/±276/±288/±300VDC (30/32/34/36/38/40/42/44/46/48/50 blocks adjustable)					
	Maximum charging current		20 A per module (charging current is set according to the battery bank capacity)					
	Time to recharge		depending on battery capacity					
Communication	Interfaces		CAN, RS232, RS485, LBS, Parallel, dry contacts, SNMP-card (optional)					
	Display		multilingual 7"-LC-Display					
Dimensions / weight	UPS (HxWxD in mm)		1200x600x 850	1600x600x 850	2000x600x 850	2000x1200x 850		2000x1400x 850
	UPS w/o modules in kg		180	200	260	450	480	550
	Battery cabinet		depending on battery capacity					
	UPS modules (HxWxD in mm)		130 (3U) x 440 x 620					
	UPS modul in kg		34					
	Protection class		IP21					
Connections	Input		fixed connection on terminals					
	Output		fixed connection on terminals					
Environmental conditions	Temperature		[0 – 40 °C], Recommended: + 15 °C…+ 25°C					
	Humidity		0-95 % RH @ 0- 40°C (non-condensing)					
	Operating noise		< 70 dB					
Protection / Standards	Safety | EMC | Service		IEC 62040-1 | IEC 62040-2 | IEC 62040-3					
	Approvals		CE					

Industrial specials
PEGASUS II Industry EA1

PEGASUS II Industry IP54 Model EA1 is available in various versions from 10-40 kVA.

For industrial use or projects with special requirements on UPS technology, EFFEKTA® develops individual systems. Protection category IP54 means that the UPS system can also be installed in challenging industrial environments.

Other bespoke solutions, ones tailored to meet the requirements of an individual customer, such as special colors or warning colors, ventilation systems or others are possible.

Characteristics

- UPS classification VFI-SS111 (IEC 62040-3)
- Online double conversion
- Batteries inside the UPS cabinet
- PFC rectifier with IGBT technology
- Modular technology
- Output either 1- or 3-phase
- High efficiency
- Digital signaling processor
- Modules with progressive self diagnostics
- Clearly arranged LCD display
- RS232 and expandability for various interfaces
- 24 months warranty

Special features

- Protected IP 54 cabinet system
- Pull-UPS electronics for service purposes
- Socket for easy wiring
- Special ventilation system (optional cooling unit)

EFFEKTA®

Industrial specials
PEGASUS II Industry GA1

EFFEKTA® develops individual systems for industrial use or projects that present unusual requirements on UPS technology.

This model is available in various versions, from 10-40 kVA. Protection category IP54 means that the UPS system can also be installed in challenging industrial environments.

Other bespoke solutions, ones tailored to meet the requirements of an individual customer, such as special colors or warning colors, ventilation systems or others are possible.

Characteristics

- UPS-classification VFI-SS-111 (IEC 62040-3)
- online double conversion
- PFC rectifier with IGBT technology
- Modular construction
- Pull-power modules
- Output either 1- or 3-phase
- Modules with comprehensive self-diagnostics
- High efficiency
- Sine wave output
- Digital signal processor
- Clearly arranged LCD display
- RS232 and expandability for various interfaces
- 24 months warranty

Special features

- Protected IP 54 cabinet system
- Special color according to customer specifications
- Pull-UPS electronics for service purposes
- Long periods of autonomy are possible
- Socket for easy wiring
- Special ventilation system (optional cooling unit)

UPS 1-3 KW **RT Industrie**

Based on RT Industrie, EFFEKTA® develops individual systems for industrial use or for projects with customized requirements for UPS technology (individual customizing).

The high-quality metal housing with its exceptionally compact design and particularly low installation depth is ideally suited even for smaller network or control cabinets.

The RT Industrie UPS series has replaceable dust fi lters as standard, giving it the ideal robustness for harsh industrial conditions.

Details

RT Industrie 1 kVA rear panel
Above Schuko sockets, below powerCON terminals

RT Industrie 3 kVA rear panel with external battery pack (bottom) and hardwired input and output

Examples of special adaptations:

- Additional battery modules to increase the back-up time to several hours
- Special batteries, for example 10 year batteries
- External manual bypass for scheduled UPS maintenance or UPS replacement without shutdown
- Special connections for power supply inputs or consumer outputs (IEC, powerCON, terminals, etc.) or sub-distributions
- Special housings, like IP54 housings, air-conditioned versions, outdoor housings or 19“ systems
- Special colors incl. logo/footprint, standard is RAL 7035 (light grey)
- Monitoring, remote shutdown, emergency stop

… and more. Ask us, we will be pleased to advise you!

High-tech – even in the basic models

- Hot swap function

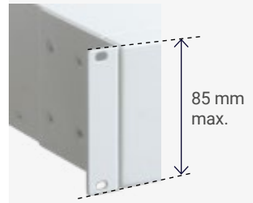
RT Industrie batteries have been designed for replacement during operation (hot swap). To this end, the front panel can be easily removed without much effort or tools. This increases the availability of your UPS many times over, even in the event of maintenance.

- Replaceable dust filter

Is your UPS supposed to work in a dusty, harsh industrial environment for a long time without malfunctions or failures? This is made easier by the replaceable dust filters of RT Industrie, which protect the interior of the UPS from harsh environmental conditions such as dust and dirt.

- 6-pin battery connector including PE connection (protective earth) / Compact and practical design

Safe and secure connection between the external battery packs and the UPS (3000 VA version) by means of 6-pin battery connectors including PE connection.



Cabinet height only 85 mm! RT Industrie UPSs can be installed in 19" cabinets with slide rails without any loss in height. The shallow installation depth is further supported by the handle-free installation angles.

- Standard emergency stop connection / from 3 kVA also remote on/off

Where high safety requirements are involved, the RT Industrie fits perfectly into the overall project with its standard emergency power off (EPO) connection and remote on/off connection (ERO External / standard from 3000 VA version, can be retrofitted for 1000 VA).

Continued on next page ▶

EFFEKTA®

There's no such thing as "can't": customised solutions

- Customised UPS input and output connections

You can choose between hard-wired versions, Schuko sockets or special sockets such as Neutrik powerCon or lockable IEC sockets to secure the plug connections against accidental disconnection or polarity reversal.

Our development team implements a wide variety of connection types for consumer outputs or inputs along with the appropriate communication systems for your individual project. Please do not hesitate to ask us, we will be happy to advise you!

UPS inputs and outputs in all common designs and adapted to your specific needs.

- 19" universal mounting rails

Sliding installation rails for 19" cabinets to ensure secure mounting in the 19" cabinet.

- Suitable for 470-740 mm installation depth
- Up to 35 kg load capacity
- Mounting material included

Further options:

- Additional battery modules extending the bridging time to several hours
- Special batteries such as 10-year batteries
- External manual bypass for scheduled UPS maintenance or UPS replacement without having to power down
- Bespoke products available for industrial applications (special enclosures, paint finishes, etc.)

Characteristics

- UPS classification VFI-SS-111 according to IEC 62040-3
- Online continuous converter with sine wave output switchable to ECO mode (line-interactive)
- Wide voltage input window
- UPS software for the most common OS
- Incl. RS232/USB and expansion slot
- 24 months warranty

Special features

- Excellent output power factor of 1.0
- Compact design of only 2 U and very low installation depth
- High-quality metal housing in industrial design
- RAL 7035 Light grey
- Project-flexible various input and output connections selectable
- Integrated emergency stop contact (EPO)

Specifications

RT Industrie		RT Industrie 1000	RT Industrie 3000
Power	Power in VA / W	1000 / 1000	3000 / 3000
Autonomy time 100 % / 50 % load (PF 0.7)	Standard configuration in min.	5 / 11	4 / 9
	Higher autonomy times	on request	
Technology	Online double conversion	VFI-SS-111 in accordance with IEC 62040-3	
Phases	Input / Output	1-phase / 1-phase	
Input	Nominal voltage configurable	230, 240 VAC	
	Input voltage range	110 VAC – 300 VAC ±5% (load dependent)	
	Input frequency range	50 / 60 Hz (auto-sensing)	
Output	Output voltage configurable	200, 208, 220, 230, 240 VAC	
	Voltage regulation	±1 %	
	Frequency range	50 / 60 Hz ± 0.1 %	
	Transfer time AC<>Battery	none	
	Transfer time Inverter<>Bypass	4 ms (typical)	
	Overload capabilitiy (normal mode)	105~110 % for 10 min., 110~130 % for 1 min., 130~150 % for 5 sec. >150 % immediate switchover to bypass	
	Overload capabilitiy (battery mode)	105~110 % for 1 min., 110~130 % for 5 sec. >130 % immediate shutdown of the UPS output	
	Voltage form	sine wave	
Efficiency	Normal mode	>91 %	>92 %
	ECO-mode	>98 %	
Battery	Typ	12V 9 Ah	
	Nominal DC-voltage	24 VDC	96 VDC
	Design life	5 years (optional 10 years)	
	Charging current (max)	max. 2 A	max. 12 A
	Recharging time	app. 4h to 90 % capacity (depending on the equipment)	
Communication	Interfaces	RS 232 / USB / EPO	RS 232 / USB / EPO / remote ON/OFF
	Expansion slot	for optional relays- or SNMP-card	
Dimensions w/o connection plug /-cable	UPS (H x W x D in mm)	85 x 440 x 421	85 x 440 x 435
	Battery pack (H x W x D in mm)	Internal batteries	85 x 440 x 421
Weight	UPS in kg	12.2	9.1
	Battery pack incl. batteries in kg	-	28.1
	Protection	IP 20	
	Color	RAL 7035 (light grey)	
Terminals	Input Version: IEC / Schuko / powerCON	IEC (10A) / IEC (10A) / AC3MPA-1	hard wired
	Output Version: IEC / Schuko / powerCON	8 x IEC C13 (10 A) / 2 x Schuko / NAC3MPB-1	hard wired
Environmental conditions	Temperature	0~40°C	
	Humidity	20~90 % (non condensing)	
	Acoustic noise	<50 dB (1 m)	
Safety / standards	Safety	EN62040-1	
	EMC	EN62040-2, class 2	
	Approvals	CE	

UPS 2 KW
RT III Lithium

The RT III Lithium can provide long bridging times due to the external lithium battery and offers an exceptionally high cycle stability with up to 6000 charge/discharge cycles.

The RT III Lithium provides an output power factor of 1.0 with a sinusoidal output voltage curve.

With the adjustable current distribution, non-critical loads can be switched off in battery mode to extend the autonomy time.

Details

Connections of the RT III UPS

Connections of the Lithium-Battery

Options for extended communication and maximum availability:

- SNMP/web or relay card for monitoring in network environments
- Additional battery modules to provide an uninterruptible power supply for up to several hours
- External manual bypass for scheduled UPS maintenance or UPS replacement without shutdown
- Special designs available for industrial applications (connections / special housings, etc.)

EFFEKTA®

Characteristics

- UPS classification VFI-SS-111 according to IEC 62040-3
- VFI sine wave output can be switched to ECO-Mode (line-interactive)
- Compact design of only 2 U and 4U / 5U with Lithium battery
- Large voltage input range
- UPS software for the common OS
- Incl. RS232 / USB and expansion slot
- 24 months warranty

Special features

- Unique energy density: High bridging times with low space requirements and weight.
- High charge/discharge rate of the lithium battery (up to 6000)
- Ideal for mobile applications such as mobile workstations / cradles
- Can operate in higher ambient temperature than conventional UPS (up to 50°C)
- Excellent power factor of 1.0
- Battery management system integrated in the battery

Specifications

Modell		RT III Lithium 2 kVA
Power	Power in VA/W	2000/2000
Autonomy time (Powerfactor 0,7)	With standard Lithium battery in Min.	approx. 40
	Higher autonomy times	on request
Technology	Online double conversion	VFI-SS-111 according to IEC 62040-3
Phase	Input / Output	1-phas3 / 1-phas3
Input	Nominal voltage configurable	230, 240 VAC
	Input voltage range	160-300 VAC, ±5%
	Input frequency range	40-70 Hz (auto-sensing)
Output	Output voltage	230, 240 VAC
	Voltage regulation	±1%
	Output frequency range	47~53 Hz (@ 50 Hz) or 57~63 Hz (@ 60 Hz)
	changeover time	none
	Overload Capability (line mode)	105~110% for 10min, 110~130% for 1min, 130~150% for 5sec >150% immediate switchover to bypass
	Overload Capability (battery mode)	105~110% for 1min, 110~130% for 5sec >130% immediate shutdown of the UPS output
	Voltage form	sine wave
Efficiency	Normal mode	>92%
	ECO-mode	>96%
Battery	Type	Lithium Ion (LiFePo4) battery with 48V, 50Ah
	Life time	up to 15 years
	Charging current (max)	12 A
Communication	Interfaces	RS 232 or USB
	Slot for further communication cards	1 x for SNMP- or relay card
	Display	LC-Display and LEDs
Dimensions / Weight	Dimensions UPS (HxWxD in mm) as 19" rack-mountable device	86.5x440x460
	Dimensions of battery extension (HxWxD in mm)	89x442x410 or 132x442x420
	Weight ups	8.3 kg
	Weight Lithium battery	24 kg or 32 kg
	Protection	IP20
Terminals	Input	IEC (16 A)
	Output programmable in segments	8 x IEC C13 (10A)
Environmental conditions	Temperature	0~50°C
	Humidity	20~90% (non-condensing)
	Acoustic Noise	<50 dB (1 m)
Safety / Enclosure	Safety (ups)	IEC/EN62040-1, IEC/EN60950-1
	EMC	IEC/EN62040-2, IEC61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-6, IEC61000-4-8
	Certification (ups)	CE
	Certifications Lithium battery	TüV / CE / UN38.8

Industrial specials

MTD Industry

The MTD industry for lifts is an EFFEKTA® special production. This line-interactive UPS is specifically designed for the requirements of elevator controls.

The low internal power consumption of less than 10 watts helps operators of elevators to achieve a more favorable energy rating.

The batteries are housed in an external enclosure and can be replaced during operation. The entire UPS is extremely compact and prepared for wall mounting.

Characteristics

- UPS classification VI-SY-333 (IEC 62040-3)
- Output Power: 1200VA / 800W
- Input voltage: 230 (162-290) VAC, 50Hz
- Output modified sine
- Autonomy time: about 3 minutes at 80% loadt
- Batteries: 2 x 12V / 9Ah
- Maintenance-free sealed lead-acid batteries

Special features

- Automatic bypass
- Separately removable battery holder
- Messages via relay: Bypass status
- Messages via optocoupler: Battery LOW, UPS fault
- Programmable functions on input: Standby / power saving mode, Battery test

Details

Front view

Rear view

Battery (on the left) and UPS (on the right)

Further UPS-Special Appliances

One of the outstanding strengths of EFFEKTA® is the production of special models on customer request. Especially for requirements in industrial UPS use, EFFEKTA® offers you special solutions in all performance ranges from completely new developments to minor but effective modifi cations of the standard devices.

Example MSX-UPS on the right:
AC UPS based on an MTD 2000
Power 2000VA / 1250W
Special feature:
This UPS has been optimized for use in the food industry. It is integrated into a stainless-steel control cabinet and is splash-proof.

Special Connectors

Custom-made standard UPSs are available for customers with special security requirements, such as devices with fi xed connections, special plugs or lockable IEC sockets to protect against accidental unplugging of plugs.

Top left:
UPS MTD-RT 1000 VA standard model

Left:
Same UPS but with lockable IEC sockets

UPS management
Software

The UPS management software solution PowerShut Plus runs as a client/server application for heterogeneous networks or local computers. It works on all common operating systems variants. All Servers on the network can be shut down via RCCMD (Multiserver-Shutdown). The software provides all important UPS information such as battery level, temperature, condition of line-voltage and others in clear graphical displays. Disruptions can be reported by e-mail, mobile phone or fax.

Software Solutions

- Wide selection of scalable UPS management and monitoring solutions: From single-desktop systems to multi-platform computer centers.
- Remote monitoring and management for sensitive systems that require reliable and stable protection.

UPSMAN Features

- Monitoring of UPS systems with serial or USB interfaces
- Event dependent sending of network messages, e-mails and SMS
- Scheduler for time controlled execution of arbitrary functions, such as reboot, shutdown and others
- Local or network shutdown of up several hundred computers
- Time dependent control of up to 4 consumer groups (optional hardware required)
- Logging of all UPS status information and measurement values
- Integrated RFC 1628 compliant SNMP-Agent
- Password protection of all UPS remote control features
- Available in 11 languages
- Available for all WINDOWS flavours like W11, W10, W8, W2022 server and many LINUX flavours like SUSE, RedHat, Ubuntu, Debian, Mandrake, Caldera and Open Linux.

UPS management
SNMP CS 141

CS141 adapters are available as stand-alone version and as a slot card. Both constructions are to have a fully equipped standard version and as a budget version is excluded functionality. For some UPS models you particularly compact and space saving of the CS 141 MINI available.

Characteristics

- Compilation of data from EFFEKTA UPSs via one of the serial ports.
- Providing status information on several webpages through the embedded Web server.
- Execution of user-defined events, such as the controlled shutdown of multiple computers via RCCMD in case of system hazard.
- User notification via email, SMS, network messages
- status reports and event histories
- Data analysis with graphical display
- Termination of standard tasks
- Expandable by a SENSORMANAGER, for connecting various environmental sensors
- Optional: additional MODBUS functionality

Specifications

CS 141	Professional		Budget	MINI
Design / Version	External	Slot	Slot	Slot
Power supply	12V (min. 9V, max. 30V DC), 150 mA			
Size W x L x H	69 x 126 x 35 mm	60 x 120 x 29 mm	60 x 120 x 29 mm	42 x 80 x 26 mm
Weight	210 g	66 g	66 g	36 g
Ethernet	1000 Mbit Base-T auto sense			
RS232 Interface	2	2	1	2
USB Interface	1	-	-	-
AUX Interface	1	1	-	-
MIB	RFC 1628 and private extension			

Accessories

ATS-16 / 30 A

The ATS-16 is a transfer switch for 1-phase electricity networks and switches between two power sources (manually or automatically). So it ensures a redundant power supply connected equipment up to 16A.

EFFEKTA® recommends to use a VFI UPS system as power source.

Characteristics

- Break-Before-Make-Switching
- Protection against backfeed (EN62310-1)
- Overload and short circuit protection
- Redundant power supply (source 1 and 2)
- AC source detection (voltage and current detection)
- Output detection (current detection)
- LED display
- 24 months warranty

Specifications

ATS		16 HV	16K	32K
Power	Power in A	16	16	30
Phase	Input / Output	1-phase / 1-phase		
Input	Rated Voltage configurable	230VAC		
	Input voltage range	160-290 VAC	190 - 275 VAC	
	Voltage Regulation	± 12% ~ ± 20%	± 5%	
	Input frequency range	50/60 Hz ± 6Hz		
Output	Output voltage nom.	230 VAC		
	Voltage Regulation	± 12% ~ ± 20%	± 5%	
	Frequency Range	50/60 Hz ± 6Hz		
	Transfer time	15 msec.	7.6 - 27 msek. (load-dependent)	
Communication	Interface	RS232, REPO	none	
	Display	LED		
Dimensions / Weight	Dimensions UPS (H x W x D in mm)	44 x 430 x 430	44 x 430 x 285	
	Weight UPS	4.5 kg	3.5 kg	3.5 kg
	Protection	IP 20		
Terminals	Input	2 x IEC 16A		Fixed connection
	Output	6 x IEC 10A, 1 x IEC 16A	1 x IEC 10 A, 1 x IEC 16A	Fixed connection, 1 x IEC 10A
Environmental conditions	Temperature	0°C – 40°C		
	Humidity	0-90 % RH @ 0- 40°C (non condensing)		
	Acoustic Noise	Almost noiseless < 40 dB		
Safety / Enclosure	Safety	EN 62040-1		
	EMC	EN 62040-2		
	Certifications	CE		

Accessories

STS 100-800 A

The STS is used as a transfer switch in 3-phase power grids and switches between two power sources (manually or automatically). So it ensures power supply redundancy of connected devices from 100 to 800A. Break-Before-Make-switching prevents both power sources being connected simultaneously to the consumer.

Characteristics

- Permanent monitoring of the power sources
- Break-Before-Make Switching
- Automatic switching back
- Manual switching possible
- 3- or 4-pole versions available
- Display: kVA, kW, CF, PF, A, V, Hz.
- Redundant cooling with monitored fans
- Front access to all power components
- Neutral with 2 x Inom
- Interfaces: RS 232, RS 485 (MODBUS protocol)
- Double maintenance bypass prevents cross connection
- 24 months warranty

Specifications

STS		100 A	250 A	400 A	630 A	800 A
Power	Power	230V AC L-N, 400 VAC ph-ph, other voltages on request				
	Voltage window	± 10% (up to ± 20% on request)				
	Rated current	100 A	250 A	400 A	630 A	800 A
	Rated frequency, Frequency range	50/60Hz, ± 2Hz (up to ± 4Hz on request)				
	Transfer phase angle	Standard 10° (5° ÷ 30° on request)				
Output	Output voltage	Same as Input				
	Output frequency	Same as Input (50/60 Hz)				
	Output current	Same as Input				
	Maximum transfer time	4-15 ms depending on the phase angle				
Communication	Display	Graphical LCD display, mimic LED panel and keyboard				
	Connections	RS485 (Modbus RTU protocol), Standard: 4 SPDT relays, optional 6 additional SPDT relays				
Mechanic	Dimensions (H x W x D in mm)	1475 x 820 x 835			1900 x 1220 x 860	
	Weight	265 kg	290 kg	305 kg	615 kg	660 kg
	Input terminals	3-phase hardwired with neutral				
	Output terminals	3-phase hardwired with neutral				
Regulations / standards	Standards	EN62040-1				
	EMC	EN62040-2				
	Standards	CE				

Continued on next page ▶

Accessories **External Bypass**

To ensure the highest possible availability of the EFFEKTA®- UPS systems, in particular in critical applications, bypasses are used which bypass the UPS during maintenance work and continue to supply power to the load without interruption after manual switching.

A

B

C

D

E

External Bypass	A	B	C	D	E
UPS connection type	1-phase IEC 16 A 6 x IEC 10 A 1 x IEC 16 A	1-phase (Schuko, IEC, terminals)	3/3p, 3/1p, 1/1p (hard-wired)	3/3p, 3/1p, parallel (hard-wired)	3/3p, parallel (hard-wired)
Current max.	16 A		63 A	100/125 A	160-800 A
Suitable UPS size in kVA	Up to 3kVA		Up to 30 kVA (3/3p)	40/60 kVA (parallel: 2x10 / 2x30 kVA)	Up to 500 kVA
Mounting / Construction	19" rack	Wall mounting			Wall mounting or cabinet
Dimensions (H x W x D in mm)	19", 1,5 U, 180 mm (depth)	200 x 200 x 130	290 x 250 x 155	500 x 450 x 165	Dependent on UPS power
special functions	Readiness indicator UPS (LED)	-	-	-	-

External Bypass **Custom Solutions**

EFFEKTA® also offers special solutions in the bypass sector, which are adapted to the individual requirements of our customers and their system environment.

Example right above:
Bypass switch 19“ for powerCON 20A
All the operating elements required for operation are positioned on the front of the device.
The connections on the rear panel are of the Neutrik powerCON 20A (NAC3MPA-1) type.

Example on the right:
Double bypass for two separate UPS systems, housed in a space-saving housing for installation in 19“ cabi-nets.
The UPSs are hardwired to terminals on the rear panel.

The bypass is available as:
40 A model for 2 UPSs of 6 kVA each or
20 A model for 2 UPSs of 3 kVA each

Accessories **Relay Cards**

The relay card is an electronic module that is used for the potential-free exchange of signals between a UPS and a higher-level controller. The user has the possibility, completely electrically isolated, to receive signals from the UPS and also to send com-mands to the UPS.

The output signals are present until the UPS switches off and is de-energized. In general, if the UPS is de-energized, all contacts on the relay card open, regardless of whether they are configured as openers or closers.

EFFEKTA®
innovating power.

Has failed.

Ready for operation.

Always **ON** with **EFFEKTA®**.

effekta.com/en

DC power supply units

Everything for the efficient supply of DC power
Power supplies, rectifiers, inverters, DIN rail UPS and charger units for industrial and TPS applications

DC UPS DIN rail **DCH series**

Reliability and availability in a small space. The DCH series power supplies with UPS function are the most compact of its kind and impress with extraordinary overload behavior. They are characterized by a variety of applications and their robust IP 20 housing is the perfect solution for all DIN rail applications. By the power boost mode, the DCH offers 300% of the rated power for 4 seconds. Thus, it can be used as a reliable overload protection and is ideally suitable for consumers with high inrush currents, such as electric motors.

Classic DCH series 12, 24 or 48V

New model:
can be set
to 12 or 24V

Multifunctional Display

Optionally temperature-controlled charging: External temperature sensor for optimal temperature controlled charging voltage.

One device for many battery types: Since the user can select several predefi ned charging curves via jumper, the DCH series is suitable for all types of batteries. Standard open and sealed AGM or lead-acid batteries can be used. Ni-Cd and Li-ion batte-ries can be used optionally. Recharging is done via automatic 4-step battery charge according to IUoU. A “boost” charge is selectable.

Wide range of applications: A variety of certifi cations (including UL 60950-1, CE) enables the global use of the DCH series as well as in areas where specifi c stan-dards are required.

Extensive diagnostics: Errors are detected early through comprehensive measurements, such as: battery not connected, sulfated battery, short circuit, reverse polarity of the connections or suitability of the type of battery (voltage test).

Wide input voltage range: The DC UPS can be opera-ted in an extremely wide input voltage range of 90 to 305 V.

Reliable technology: The components of the DCH se-ries represent a highly reliable and effi cient technology with an MTBF of> 300,000 h according to IEC61709.

Effective technology: Thanks to the use of advanced technology, the DCH series reaches an effi ciency of more than 91%.

Communication and control: Electrically isolated relay contacts are available to monitor the power supply. Further communication interfaces: MODBUS devices
>400W, Integration and confi guration via separate software, Interface for parallel operation: redundancy or capacity expansion on certain models possible (see specifi cations).

New in EFFEKTA program: DC UPS with output voltage adjustable to 12 or 24V. Multifunction display for configuration and monitoring of the DC systems.

Specifications

Standards and certifications: Conformity: IEC / EN 60335-2-29, Chargers: EN60950 / UL 60950-1; EEC EMC Directive; 2006/95 / EC, DIN41773 (charge cycle); Interference emission for industrial areas: EN61000-6-4; Interference immunity for industrial areas: EN 61000-6-2; Immunity to fast transient electrical disturbances: EN 61000-4-4/EC; Immunity to Surge Voltage.

DCH			12 V, 3 A	12 V, 6 A	12 V, 10 A	12 V, 35 A
Input	Rated voltage [VAC]		115-230-277	115-230-277	115/230-277	115/230-277
	Voltage range [VAC]		90 - 305	90 - 305	90 - 305	90-135, 180-305
Output (Normal mode)	Rated voltage [VDC]		12			
	Rated current [A]		3	6	10	35
	Power max. [W]		36	72	120	420
	Efficiency (@ 50% I_n)		≥89%	≥89%	≥89%	≥90%
	Redundant operation or power enhancement		No	No	No	Yes
Output	Voltage range [VDC] @ I_n		10 – 14.4 [VDC]			
	Peak current [A]	Mains 4 Sec.	9	18	30	105
		Batt. 4 Sec.	6	12	20	70
	Deep discharge protection		9.5 ± 0.5			
	Charge current adjustment		Range: 10-100% (max. In)			
Communication	Relay contacts		Messages: normal power or backup operation, discharged or defective battery			
	Dimensions HxWxD [mm]		115x65x135	115x65x135	115x65x135	115x150x135
Mechanical/ environment	Weight [kg]		0.60	0.60	0.60	1.55
	Operating temperature		-25 to +70°C			
	Humidity		95% Humidity (non-condensing)			

DCH			24 V, 3 A	24 V, 5 A	24 V, 10 A	24 V, 20 A
Input	Rated voltage [VAC]		115-230-277	115-230-277	115/230-277	115/230-277
	Voltage range [VAC]		90 - 305	90 - 305	90-135/180-305	90-135, 180-305
Output (Normal mode)	Rated voltage [VDC]		24			
	Rated current [A]		3	5	10	20
	Power max. [W]		72	120	240	480
	Efficiency (@ 50% I_n)		≥89%	≥89%	≥83%	≥90%
	Redundant operation or power enhancement		No	No	No	Yes
Output	Voltage range [VDC] @ I_n		22 – 28.8 [VDC]			
	Peak current [A]	Mains 4 Sec.	9	15	30	60
		Batt. 4 Sec.	6	10	20	40
	Deep discharge protection		19.5 ± 0.5			
	Charge current adjustment		10-100% (max. I_n)			
Communication	Relay contacts		Messages: normal power or backup operation, discharged or defective battery			
	Dimensions HxWxD [mm]		115x65x135	115x65x135	115x100x135	115x150x135
Mechanical/ environment	Weight [kg]		0.60	0.60	0.85	1.55
	Operating temperature		-25 to +70°C	0.60	0.85	1.55
	Humidity		95% Humidity (non-condensing)			

DCH			48 V, 5 A	48 V, 10 A	12V,15A/24V,10 A	Multifunction-Display
Input	Rated voltage [VAC]		115-230-277	115-230-277	115-230-277	
	Voltage range [VAC]		90-305/180-305	90-305/180-305	90 – 305	**Main functions:** - Monitoring - Configuration - Alarm management - History - Event programming
Output (Normal mode)	Rated voltage [VDC]		48	48	12/24 selectable	
	Rated current [A]		5	10	15/10	
	Power max. [W]		240	480	280	
	Efficiency (@ 50% In)		≥83%	≥91%	≥91%	
	Redundant operation or power enhancement		No	No	No	**Consumption:** 130mA/ 1.6W typical
Output	Voltage range [VDC] @ I_n		44 – 57.6 [VDC]	44 – 57.6 [VDC]	10-14.4 / 22-28.8[VDC]	**Anzeige:** 3,5" LCD-Display with 160° viewing angle
	Peak current [A]	Mains 4 Sec.	15	30	12V/45A – 24V30A	
		Batt. 4 Sec.	10	20	12V/30A – 24V20A	
	Deep discharge protection		39 ± 1	39 ± 1	9-10/19-20	**Gateway for:** - Ethernet - CAN-Bus - MODBUS
	Charge current adjustment		10-100% (max. In)			
Communication	Relay contacts		Messages: normal power, backup operation, discharged or defective batt.			
	Dimensions HxWxD [mm]		115x100x135	115x150x135	115x100x135	**Protocols:** SNMP, MODBUS TCP, MODBUS RTU, SAE J1939
Mechanical/ environment	Weight [kg]		0.85	1.55	0.85	
	Operating temperature		-25 to +70°C			
	Humidity		95% Humidity (non-condensing)			

EFFEKTA®

EFFEKTA®

DC power supply **DC ST801**

DC ST801, 48 VDC, modular, up to 3 x 850 W

The DC ST801 power supply system is designed for various applications such as DC UPS systems or TPS applications. It provides superior reliability at an extremely compact space, including processor controlled battery charging, programmable relay contacts and configurable DC outputs. Numerous options provide solutions for global applications in different environments. This system is prepared for up to 3 rectifiers GR 850.

Details

Front view DC ST801

Rear view DC ST801

Characteristics

- 19" / 1U shelf power system up to 2550 W
- Easy connection by screw terminals
- High efficiency up to 95,2%
- High power density
- Very short depth (for 300mm ETSI housing)
- Rectifier parallel-redundancy
- Rectifier GR 850 with temperature-controlled ventilation
- Integrated temperature sensor for temperature compensation
- Easy setup and programming via web browser
- The supply to the load through the rectifier is guaranteed even in case of failure of the controller
- 24 months warranty

Specifications

DC ST801		
General	Efficiency	≥ 95,2 %
	EMC	EN 55022, class B
	Safety	EN 300 386
	Cooling	Fan cooled, temperature controlled
	Protection	IP 20
Input	AC connection	1 x L/N/PE
	Nominal voltage	230 VAC
	Voltage range	80 ... 300 Vrms
	Voltage range, reduced power	80 ... 130 Vrms
	Frequency range	45-66 Hz
	Current nominal	5.8 Arms
	Recommended protection	16 A
Output	Nominal voltage	-53.5 VDC
	Voltage range	-42 … -58 VDC
	Output current	47.4 ADC
	Power limitation	3 x 850 W
	Rated power	2550 W
	Power, redundant	1700 W
DC Output	Overload protection	Max. 6 pieces / 2 … 30A
	Standard kit	each 1 x 2/6/10/16/20/30A
	LVD	F1 – F4
	PLD	F5 + F6
Battery connector	Fuses	2 x 50 A
Mechanics	Construction	Steal rack
	Cabinet standard	19 Zoll
	Width	430 mm
	Depth, overall	280 mm (excluding rectifier)
	Height, overall	44.45 mm (1 HE)
	Weight, system	4.5 kg (excluding rectifier)
	Weight, rectifier	each 0.6 kg
Environment	Operation temperature	-35 … +60 °C (power reduction from 45°C)
	Relative humidity	95% max., non condensing
Control / monitoring	Controller	ORION

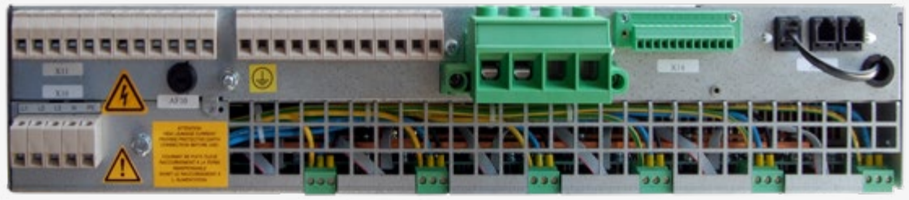
DC power supply **DC ST802**

DC ST802, 48 VDC, modular, bis 6 x 850 W

The ST802 DC power supply system is designed for various applications such as DC UPS or TPS applications. It offers high reliability at an extremely compact space, including processor controlled battery charging, programmable relay contacts and configurable DC outputs. This compact slide contains controllers, deep discharge protection (LVD), priority load shedding (PLD) current sensors, battery fuses and up to 12 separately fused DC outputs. These features together with the very short depth are the key factors for the success of this power system, offering cost-effective and reliable solutions.

Details

Front view DC ST802



Rear view DC ST802

Characteristics

- 19" / 2U shelf power system up to 5100 W
- Easy connection by screw terminals
- High efficiency up to 95,2%
- High power density
- Very short depth (for 300mm ETSI housing)
- Rectifier parallel-redundancy
- Rectifier GR 850 with temperature-controlled ventilation
- Integrated temperature sensor for temperature compensation
- Easy setup and programming via web browser
- The supply to the load through the rectifier is guaranteed even in case of failure of the controller
- 24 months warranty

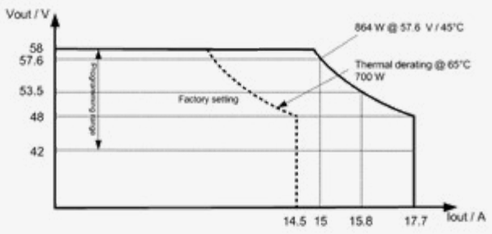
Specifications

DC ST802		
General	Efficiency	≥ 95.2 %
	EMC	EN 55022, class B
	Safety	EN 300 386
	Cooling	Fan cooled, temperature controlled
	Protection	IP 20
Input	AC connection	3 x L/N/PE
	Nominal voltage	230 VAC
	Voltage range	80 ... 300 Vrms
	Voltage range, reduced power	80 ... 184 Vrms
	Frequency range	45-66 Hz
	Current nominal	4 A per rectifier
	Recommended protection	10A per rectifier
Output	Nominal voltage	-53,5 VDC
	Voltage range	-42 ... -58 VDC
	Output current @ U_{nenn}	95,3 ADC
	Power limitation	6 x 850 W
	Rated power	5100 W
DC Output	Circuit breaker: Hydraulic-magnetic	Max. 12 pcs. / 2 ... 30 A
	Standard configuration	2 x 6 A, 9 x 16 A, 1 x 25 A
Battery connector	Fuses	2 x 100 A
Mechanics	Construction	Steal rack
	Cabinet standard	19 IN
	Width	430 mm
	Depth, overall	320 mm
	Height, overall	88.2 mm (2U)
	Weight, system	7kg (excluding rectifier)
	Weight, rectifier	Each 0.6 kg
Environment	Operation temperature	-35 ... +60 °C (power reduction from 45°C)
	Relative humidity	95 % max., non condensing
Control / monitoring	Controller	ORION

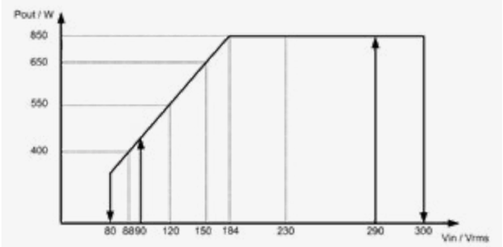
Rectifier **GR 850**

The GR 850 is a singlephase, «hot-pluggable», fan-cooled rectifier. With its exceptional power density (30 W / in³) it offers optimal solutions for the 1 U' shelf DC ST801 and the 2 U' shelf DC ST802 in the power range from 850W up to 5100W.
The small installation depth and the large temperature range are further advantages of this modern rectifier. The high efficiency (up to 95, 2%) guarantees an energy-saving operation. In addition less cooling energy is needed. Due to the temperature- independent fan control, a low noise level is achieved.

Characteristic curves



Output characteristics



Input characteristics

Characteristics

- Space saving – very high power density
- Low inrush current
- Energy saving – High efficiency up to 95,2 %
- Simple installation - Hot pluggable
- Low noise level
- Wide input voltage range 80 … 300 Vrms
- High reliability
- Power factor correction
- Optimized power availability
- Temperature range -40C°...+70°C
- 24 months warranty

Specifications

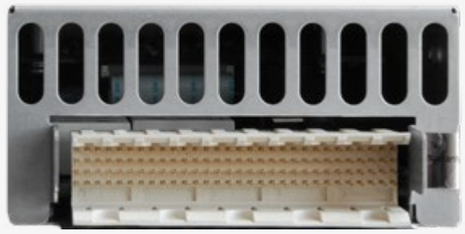
GR 850		
General	Efficiency	≥ 95.2 %
	EMC, radiated	EN 55022, class B
	Safety	EN / IEC 60950, UL 60950, CAN / CSA - C22.2
	Environment	RoHS conform
	Cooling	Fan cooled
	Power density	30 W/in³
	Sound level	44 dB(A)
Input	Voltage range	80 ... 300 Vrms
	do., red. power	80 ... 184 Vrms
	Inrush current	20 Apeak
	Current maximum	6 Apeak
	Harmon. distortion THD	< 5 %
	Power factor	Mit PFC~ 1
	EMC, grid-bound	EN 55022, class B
	Supply input	Rear / pluggable
Output	Voltage, nominal	53.5 VDC
	Setting range	42 ... 58 VDC
	Surge protection	59 VDC
	EMC, grid-bound	EN 55022, class A
	Current limiting, nom.	17.7 ADC
	Power limitation	850 W
	Circuit point output	Rear / pluggable
	Output protection	Internal fuse
User interface	Status display	LED «ok» / LED «COM» / LED «LD» / LED «STA»
Environmental conditions	Temperature	-40...+70 °C
	With red. power	+45...+70 °C
	Rel. humidity	95% max., without condensation
Dimensions / weight	Width	51.8 mm
	Height	40 mm
	Depth	247.2 mm
	Weight	0.6 kg
Control / monitoring	System controller	ORION

Controller
Orion

The Orion System Controller is the latest release of the central control unit for the EFFEKTA® DC power systems. The user-friendly display provides the main information about the state of the power supply system. New features such as the „efficiency mode" can help to reduce operating costs of the systems. In this case are unused modules, for example at lower load shut down in order to increase the efficiency of the system. An integrated web server provides a user-friendly interface with a standard Web browser for both local and remote communication. The communication with the connected components via CAN bus.

Details

Front view



Rear view

Characteristics

- Pluggable
- Replacement during operation
- Programmable relay contacts
- Easy system expansion
- Digital system bus
- Sophisticated battery management
- Remote monitoring via modem or LAN
- Integrated web server
- Energy saving features
- Monitoring of additional equipment
- Advanced system control / monitoring
- 24 months warranty

Specifications

Orion		
Input	Input voltage range	18 - 75 VDC
	Current	0.75 ADC max.
	Input protection	Fuse 2A, extern
User interface	Status display	LED «ok», LED «alarm»
Features	Rectifier interface	Digital, CAN-based
	Number of rectifiers	Up to 128
	Digital Inputs	Up to 225
	Relay outputs	Up to 97
	Temperature measurements	Up to 96
	Voltage, current	Up to 96
	Local monitoring / remote monitoring	LAN/RS232/WEB Browser
	Remote alarm	Relay contacts / SNMP
	SNMP-Management	Standard SNMP Manager
Funktions	Temperature compensated float voltage	
	Battery-center measurement	
	Battery pack voltage, up to 256	
	Battery charging current limit	
	Quick charge, Equalizing charging	
	Battery test, optionally with capacity measurement	
	Partial load and battery shutdown up to 96	
	Battery deep discharge protection	
	Individual rectifier control	
	Energy saving mode, cyclic rectifier operation	
	Sequential rectifier startup	
	PLC functionality	
	Event generator, 200 log entries	
Environmental conditions	Temperature	-35 … +60°C / -31 … +140°F
	Relative humidity	0-90 % RH @ 0- 40°C (non condensing)
General	Safety and Standards	EN 60950, class I, UL 60950, CAN / CSA - C22.2 EN 55022, class B EN 300 386-2
	Cooling	Convection
	Iinstallation direction	all
	Protection class	IP 20

Charger **CHA series**

The EFFEKTA® chargers offer a rapidly and gently charging process with IUoU-characteristics. Thereby they are ideal for charging lead-gel, lead-acid and AGM batteries. This 3-steps constant current charging in professional quality, batteries charge faster and more gently than comparable units on the market, whereby the service life of the batteries significantly increase. With the IUoU-characteristics, charge occurs with constant current until the gasing voltage.

Details

Battery connections

Characteristics

- Reverse polarity- and short circuit protection
- Overload protection
- IUoU-charging characteristic
- Temperature-controlled fan
- High efficiency (switching power supply-technology)
- 24 months warranty

Specifications

12 V	CHA 012-012	CHA 012-025
Input voltage	230 VAC ± 10%	
Frequency	50 Hz	
Output voltage	12 VDC	
Charging end voltage	14.4 VDC	
Charging maintenance voltage	13.6 VDC	
Charging current max.	12 A	25 A
Operating temperature	0-50° C	
Weight	2.1 kg	2.7 kg
Dimensions (H x W x D in mm)	82 x 205 x 230	82 x 205 x 290

24 V	CHA 024-008	CHA 024-014
Input voltage	230 VAC ± 10%	
Frequency	50 Hz	
Output voltage	24 VDC	
Charging end voltage	28.8 VDC	
Chrging maintenance voltage	27.2 VDC	
Charging current max.	8 A	14 A
Operating temperature	0-50° C	
Weight	2.1 kg	2.7 kg
Dimensions (H x W x D in mm)	82 x 205 x 230	82 x 205 x 290

48 V	CHA 048-008
Input voltage	230 VAC ± 10%
Frequency	50 Hz
Output voltage	48 VDC
Charging end voltage	57.6 VDC
Chrging maintenance voltage	54.4 VDC
Charging current max.	8 A
Operating temperature	0-50° C
Weight	2.7 kg
Dimensions (H x W x D in mm)	82 x 205 x 290

EFFEKTA®

Inverters **WRSL-series**

The EFFEKTA® WRSL-series inverters are pure sine-wave inverters. They are suitable in the low and middle performance range as AC-power supplies for industrial and mobile applications.

Characteristics

- Output voltage 230 VAC
- Input voltage 12, 24 or 48 VDC
- Battery low alarm
- Overload-/voltage reversal-/short-circuit-safe
- Screwable terminals on the rear side
- 24 months warranty

Specifications

WRSL 700	012-700	024-700	048-700
Power	700 W		
Output voltage	200/220/230/240 VAC ±3% switchable		
Input voltage	12 VDC	24 VDC	48 VDC
Battery low shutdown	10.0 V	20.0 V	42.0 VDC
Dimensions	295(L) ×179(W) ×81(H) mm		
Weight	2.8 kg		

WRSL 1000	012-1000	024-1000	048-1000
Power	1000 W		
Output voltage	200/220/230/240 VAC ±3% switchable		
Input voltage	12 VDC	24 VDC	48 VDC
Battery low shutdown	10.0 V	20.0 V	42.0 VDC
Dimensions	331(L) ×179(W) ×81(H) mm		
Weight	3.8 kg		

WRSL 1500	012-1500	024-1500	048-1500
Power	1500 W		
Output voltage	200/220/230/240 VAC ±3% switchable		
Input voltage	12 VDC	24 VDC	48 VDC
Battery low shutdown	10,0 V	20,0 V	42,0 VDC
Dimensions	395(L) ×189(W) ×94(H) mm		
Weight	4,7 kg		

WRSL 2000	012-2000	024-2000	048-2000
Power	2000 W		
Output voltage	200/220/230/240 VAC ±3% switchable		
Input voltage	12 VDC	24 VDC	48 VDC
Battery low shutdown	10.0 V	20.0 V	42.0 VDC
Dimensions	414(L) ×189(W) ×94(H) mm		
Weight	5.4 kg		

WRSL 3000	012-3000	024-3000	048-3000
Power	3000 W		
Output voltage	200/220/230/240 VAC ±3% switchable		
Input voltage	12 VDC	24 VDC	48 VDC
Battery low shutdown	10.0 V	20.0 V	42.0 VDC
Dimensions	517(L) ×241(W) ×134(H) mm		
Weight	9.9 kg		

Details

WRSL-700/1000 front- and rear view

WRSL-1500 front view

WRSL-2000 rear view

WRSL-3000 front- and rear view

EFFEKTA®
innovating power.

Data lost.

Data
backed up.

effekta.com/en

Energy storage

Lithium PV and AGM lead acid batteries
Zero-maintenance energy storage systems and accessories for solar and UPS applications

Lithium storage unit Pylontech **US2000C/3000C**

Solar lithium storage unit 48V / 2.4kWh (US2000C) / 3.5kWh (US3000C)

The Pylontech US2000C and US3000C are state-of-the-art lithium storage systems: With the highest level of safety and a long service life – even with regular deep discharge – they meet the high demands placed on solar storage systems. The fast charging and discharging properties typical of lithium batteries allow to store or release a large amount of energy in a short period of time. This predestines the US2000C and US3000C for use in solar storage solutions for private households.

Characteristics

- Higher cycle stability than its predecessors with now over 6000 charge / discharge cycles
- Higher depth of discharge (DoD) up to 95% @ 25°C
- Design life up to 15 years
- Built-in soft start function to avoid power surges when the inverter starts up
- Automatic address setting when connected in multi-group mode
- Absolutely failsafe lithium technology - lithium iron phosphate / LiFePo4
- Very high storage capacity ratio – lightweight and compact design
- Horizontal or vertical setup, optionally also 19“-rack mounting
- High peak charge and discharge ratings of up to 4.3 kW per module can be achieved
- Integrated battery management system
- Compatible with Series AX solar inverters in the EFFEKTA range
- Modular system for individual scaling
- 7 years manufacturer warranty PYLONTECH

US2000C and US3000C can be easily expanded freely or in a 19“ cabinet like a modular system

The storage modules comprise a lithium iron phosphate (LiFePo4) accumulator and an integrated battery management system (BMS) which monitors the status of the individual cells.
In this way, the BMS prevents the premature failure of a battery due to environmental factors.
The modular layout permits individual configuration of the storage system to achieve the required capacity level, simply by connecting the desired number of modules.

Pylontech US2000C and US3000C operate as ideal energy storage in interaction with the EFFEKTA® AX PV solar inverters. They are ideally suited as storage solutions for solar or island operation with battery support.

Consumers are supplied with electricity from the PV modules on a priority basis. In the first instance, if the PV power supply fails or is insufficient, the batteries deliver the required power. Once the batteries have discharged, the AC source (public power grid) cuts in. Surplus power from the PV modules is used to charge the batteries. Whenever the PV and AC power supply fails, consumers continue to be supplied by batteries.

Specifications

Model	US2000C	US3000C
Technology	Lithium iron phosphate (LiFePo4)	Lithium iron phosphate (LiFePo4)
Nominal voltage	48 V	48 V
Rated capacity	50 Ah / 2.4 kWh	74 Ah / 3.55 kWh
Usable capacity (95% DoD)	47.5 Ah / 2.28 kWh	70 Ah / 3.37 kWh
Max. quantity of modules / battery string	16	16
Max. quantity of battery strings in parallel	6	6
Discharge voltage range	45.5 ... 53.2 V	45.5 ... 53.2 V
Charging voltage range	52.5 ... 53.2 V	52.5 ... 53.2 V
Recommended charge / discharge current	25 A	37 A
Maximum charge / discharge current	50 A / Peak: 90 A for 15 s.	74 A / Peak: 90 A for 15 s.
Communication	RS485, CAN	RS485, CAN
Weight	24 kg	32 kg
Dimensions	442 x 410 x 89 mm	442 x 420 x 132 mm
Temperature range at charge	+0... +50° C	+0... +50° C
Temperature range during discharge	-10... 50° C	-10... 50° C
Design life	over 15 years @ 25° C	over 15 years @ 25° C
Cycle life	> 6000 @ 25° C	> 6000 @ 25° C
BMS / monitoring	Integrated battery management system in each module	
Certification	TüV / CE / UN38.3	

EFFEKTA®

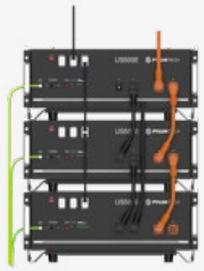
Lithium storage unit Pylontech **US5000**

Solar Lithium storage unit 48 V / 4,8 kWh

The Pylontech US5000 is a state-of-the-art lithium storage system: With the highest level of safety and a long service life - even with regular deep discharge - it meet the high demands placed on solar storage systems. The fast charging and discharging properties typical of lithium batteries make it possible to store or release a large amount of energy in a short period of time. This predestines the US5000 for use in solar storage solutions for private households.

Characteristics

- Higher cycle stability than its predecessor with now over 6000 charge / discharge cycles
- Higher depth of discharge (DoD) up to 95% @ 25°C
- Design life up to 15 years
- Built-in soft start function to avoid power surges when the inverter starts up
- Automatic address setting when connected in multi-group mode
- Absolutely failsafe lithium technology - lithium iron phosphate / LiFePo4
- Very high storage capacity ratio – lightweight and compact design
- Horizontal or vertical set-up, optionally also 19“-rack mounting
- Integrated battery management system (BMS)
- Compatible with Series AX solar inverters in the EFFEKTA® range
- Modular system for individual scaling
- 7 years manufacturer warranty PYLONTECH



US5000 can be easily expanded freely or in a 19“ cabinet like a modular system

The storage modules comprise a lithium iron phosphate (LiFePo4) accumulator and an integrated battery management system (BMS) which monitors the status of the individual cells.
In this way, the BMS prevents the premature failure of a battery due to environmental factors.

The modular layout permits individual configuration of the storage system to achieve the required capacity level, simply by connecting the desired number of modules together.

Pylontech US5000 as ideal energy storage in interaction with the EFFEKTA® AX PV

solar inverters. It is ideally suited as storage solutions for solar or island operation with battery support.

Consumers are supplied with electricity from the PV modules on a priority basis. In the first instance, if the PV power supply fails or is insufficient, the batteries deliver the required power. Once the batteries have discharged, the AC source (public power grid) cuts in. Surplus power from the PV modules is used to charge the batteries. Whenever the PV and AC power supply fails, consumers continue to be supplied by batteries.

Specifications

Modell	US5000
Technology	Lithium iron phosphate (LiFePo4)
Nominal voltage	48 V
Rated capacity	100 Ah / 4.8 kWh
Max. quantity of modules / battery string	16
Max. quantity of battery strings in parallel	6
Discharge voltage range	45,5 ... 53.2 V
Charging voltage range	52.5 ... 53.2 V
Recommended charge / discharge current	80 A
Communication	RS485, CAN
Weight	39.7 kg
Dimensions	442 x 420 x 161 mm
Temperature range at charge	+0... +50°C
Temperature range during discharge	-10... 50°C
Design life	over 15 years @ 25°C
Cycle life	> 6000 @ 25°C
BMS / monitoring	Integrated battery management system in each module
Certification	CE / UN38.3

Lithium Storage System Pylontech **UP2500 – 24V**

Solar Lithium Storage System 24V / 2.84kWh

The UP2500 is a state-of-the-art lithium storage system: with the highest level of safety and a long service life - even with regular deep discharge - they meet the high demands placed on solar storage systems. The fast charging and discharging properties typical of lithium batteries make it possible to store or release a large amount of energy in a short period of time. This predestines the UP2500 for use in solar storage solutions for private households.

Properties

- High cycle stability with over 6000 charge / discharge cycles
- High depth of discharge (DoD) up to 95% @ 25°C
- Design life up to 15 years
- Built-in soft start function to avoid power surges when the inverter starts up
- Absolutely failsafe lithium technology - lithium iron phosphate / LiFePo4
- Very high storage capacity ratio – lightweight and compact design
- Horizontal or vertical set-up, optionally also 19“-rack mounting
- Integrated battery management system
- Modular system for individual scaling
- 7-year manufacturer warranty PYLONTECH

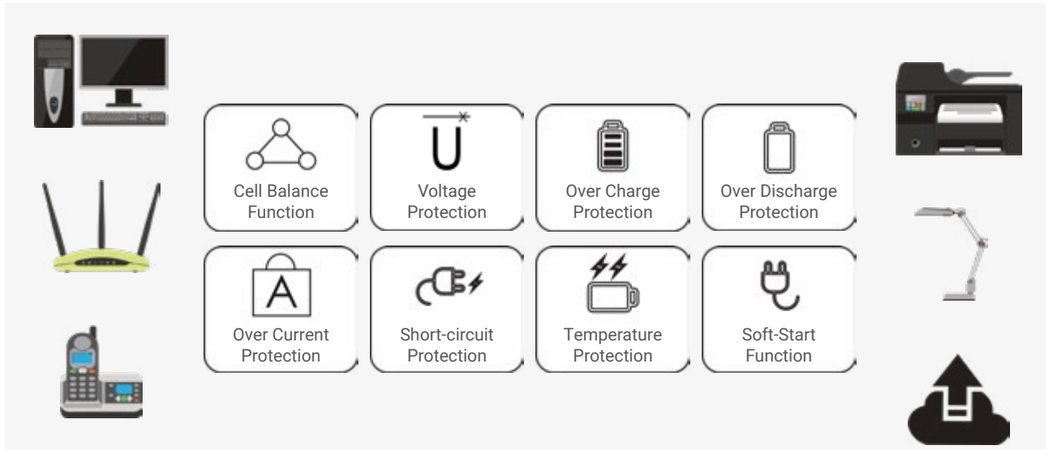
UP2500 battery modules can be easily expanded like a modular system

The storage modules comprise a lithium iron phosphate (LiFePo4) accumulator and an integrated battery management system (BMS) which monitors the status of the individual cells. In this way, the BMS prevents the premature failure of a battery due to environmental factors.

The modular layout permits individual configuration of the storage system to achieve the required capacity level, simply by connecting the desired number of modules together.

UP2500 as an ideal energy storage system are ideally suited as a storage solution for office computers, data centers, equipment in commercial buildings, banks, hospitals, schools, train stations, airports, and telecommunications...

Furthermore, the UP2500 storage solution is perfect for solar or island operation with battery support.



Specifications

Model	UP2500
Technology	Lithium iron phosphate (LiFePo4)
Nominal voltage	24V
Rated capacity	118Ah / 2.84kWh
Usable capacity (95% DoD)	106Ah / 2.55kWh
Max. quantity of modules / battery string	20
Max. quantity of battery strings in parallel	N/A
Discharge voltage range	23.3 ... 28.5V
Charging voltage range	28.2 ... 28.5V
Recommended charge / discharge current	55A
Maximum charge / discharge current	85A / Peak: 100A for 15 sec.
Communication	RS485, CAN
Weight	26.5kg
Dimensions	442 x 420 x 120mm
Temperature range at charge	+0... +50°C
Temperature range during discharge	-10... 50°C
Design life	> 15 years @ 25°C
Cycle life	> 6000 @ 25°C
BMS / monitoring	Integrated battery management system in each module
Certification	CE / UN38.3

EFFEKTA®

Lithium Energy Storage System Pylontech **FORCE-L**

Solar Lithium storage system
48 VDC, up to 24.86 kWh (L1)
48 VDC, up to 14.21 kWh (L2)

The Pylontech FORCE-L systems are battery storage systems for home applications based on lithium iron phosphate batteries, some of the new energy storage products developed and manufactured by Pylontech. They can be used to support reliable power supply for various types of appliances and systems. FORCE-L systems are particularly suitable for application scenes where high power, limited installation space, limited load capacity and long life are required. They have a modular structure and can be easily installed and expanded by plugging them into each other.

Characteristics

- Very high cycle stability of over 6000 charge/discharge cycles
- Very high depth of discharge (DoD) up to 95% @ 25°C
- Design life up to 15 years
- Extremely simple installation and commissioning for enormous time savings
- Compatible with many popular hybrid inverters
- Modular system for easy and fast capacity expansion
- Absolutely intrinsically safe lithium technology – Lithium iron phosphate / LiFePo4

FORCE L1 Controller (FC0048-100S)

FORCE L1 battery modul (FL48074)

FORCE L2 Controller (FC0048M-100S)

FORCE L2 battery modul (FL4874M)

Further features

- Very high storage density - low weight and compact design
- Up to 7 batteries can be used in a modular way *Cabinet systems and constellations on request
- Modular system for individual scaling
- 7-year manufacturer warranty PYLONTECH

The Pylontech FORCE-L1 and FORCE-L2 storage systems consist of lithium iron phosphate (LiFePo4) accumulators with a battery management system, or BMS for short, which constantly monitors the status of the accumulators down to the individual cells and protects them from overcharging, overvoltage and overtemperature, among other things.

In this way, the BMS prevents premature failure of the batteries due to environmental influences or incorrect use.
The modular design allows the individual configuration of the storage system to the required capacity by simply interconnecting the desired number of modules.

Specifications

Battery module	L1 (FL48074)	L2 (FL4874M)
Cell technology	Lithium-Iron-phosphat (LiFePo4)	Lithium-Iron-phosphat (LiFePo4)
Battery Module Voltage	48 V	48 V
Battery Module Capacity	74 Ah / 3,552 kWh	74 Ah / 3,552 kWh
Communication	RS485, CAN	RS485, CAN
Weight / Dimensions	36.5 kg / 600 x 380 x 170 (W x D x H in mm)	35.5 kg / 450 x 296 x 296 (W x D x H in mm)
Operation Temperature	+0... +50°C	
Design life / Cycle life	> 15 years @ 25°C / > 6000 cycles @ 25°C	
Transfer Certificate	UN38.3	

Model overview FORCE-L1	Larger systems with up to 7 battery modules and up to 24.86 kWh available on request		
Battery module quantity	2	3	4
Max. quantity of modules	7		
Battery System Capacity	7.1 kWh	10.65 kWh	14.21 kWh
Battery System Voltage	48 VDC		
Battery System Charge Upper-Voltage	53.5 VDC		
Battery System Discharge Lower-Voltage	44.5 VDC		
Battery System Charge/Discharge current	max. 75 A	max. 100 A	
Dimensions (W x D x H in mm)	600 x 380 x 530	600 x 380 x 700	600 x 380 x 870
Weight in kg	86.5	123	159.5
Protection Class	IP55		
Product Certificate	VDE2510-50, IEC62619, CE RED, IEC62477-1		

Model overview FORCE-L2	A maximum of 4 modules can be combined to form an L2 system with max. 14.2 kWh		
Battery module quantity	2	3	4
Max. quantity of modules	4		
Battery System Capacity	7.1 kWh	10.65 kWh	14.21 kWh
Battery System Charge Upper-Voltage	53.5 VDC		
Battery System Discharge Lower-Voltage	44.5 VDC		
Battery System Charge/Discharge current	max. 75 A		max. 100 A
Battery System Voltage	48 VDC	max. 100 A	
Dimensions (W x D x H in mm)	450 x 296 x 822	1120 x 450 x 296	1415 x 450 x 296
Weight in kg	82	117.5	153
Protection Class	IP55		
Product Certificate	VDE2510-50, IEC62619, CE RED, IEC62477-1		

EFFEKTA®

Lithium Energy Storage System Pylontech **FORCE-H**

Solar Lithium storage system
96-336VDC, up to 24.86kWh (H1)
192-384VDC, up to 14.2kWh (H2)

The Pylontech FORCE-H systems are high voltage home battery storage systems based on lithium iron phosphate batteries, some of the new energy storage products being developed and manufac-tured by Pylontech. They can be used to support reliable power supply for different types of devices and systems. FORCE-H systems are particularly suitable for application scenes where high output power, limited installation space, limited carrying capacity and long service life are required. They have a modular structure and can be easily installed and expanded by plugging them into each other.

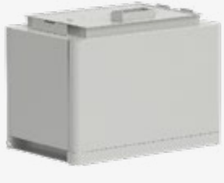
Characteristics

- Very high cycle stability of over 5000 charge/discharge cycles
- Very high depth of discharge (DoD) up to 95% @ 25°C
- Design life up to 15 years
- Extremely simple installation and commissioning for enormous time savings
- Compatible with many popular hybrid inverters
- Modular system for easy and fast capacity expansion
- Absolutely intrinsically safe lithium technology – Lithium iron phosphate / LiFePo4

FORCE H1 controller FC0500-40S (-V2)

FORCE H1 battery module FH48074

FORCE H2 controller FC0500M-40S (-V2)



FORCE H2 battery module FH9637M

Further features

- Very high storage density - low weight and compact design
- Up to 7 batteries can be used in a modular way *Cabinet systems and constellations on request
- Modular system for individual scaling
- 7-years manufacturer warranty PYLONTECH

The Pylontech FORCE-H1 and FORCE-H2 storage systems consist of lithium iron phosphate (LiFePo4) accumulators with a battery management system, BMS for short, which constantly monitors the status of the accumulators right down to the individual cells and protects them from overcharging, overvoltage and overtemperature, among other things.

In this way, the BMS prevents premature battery failure due to environmental influences or misuse.

The modular design allows the storage system to be individually configured to the required capacity by simply connecting the desired number of modules together.

Specifications

Battery module	H1 (FH48074)	H2 (FH9637M)
Cell technology	Lithium-Iron-phosphate (LiFePo4)	Lithium-Iron-phosphate (LiFePo4)
Battery Module Voltage	48V	96V
Battery Module Capacity	74Ah / 3.552kWh	37Ah / 3.552kWh
Communication	RS485, CAN	RS485, CAN
Weight / Dimensions	36kg / 170 x 600 x 380 (H x W x D in mm)	35kg / 296 x 450 x 296 (H x W x D in mm)
Operation Temperature	+0... +50°C when charging / -10... 50°C when discharging	
Design life / Cycle life	> 15 years @ 25°C / > 6000 cycles @ 25°C	
Transfer Certificate	UN38.3	

Controller (BMS)	H1 (FC0500-40S)	H2 (FC0500M-40S)
Dimensions (H x W x D in mm)	150 x 600 x 380	190 x 450 x 296
Weight	appr.10kg	
Communication	Modbus RTU\CAN	

Model overview FORCE-H1	Larger systems with up to 7 battery modules and up to 24.86 kWh / 336 VDC on request		
Battery module quantity	2	3	4
Max. quantity of modules / battery string	7		
Max. battery strings in parallel	6		
Battery System Capacity in kWh	7.1 kWh	10.65 kWh	14.2 kWh
Battery System Capacity in Ah	74Ah		
Battery System Voltage	144VDC	192VDC	240VDC
Dimensions (H x W x D in mm)	530 x 630 x 380	700 x 630 x 380	870 x 630 x 380
Weight in kg	86	122	158
Protection Class	IP55		
Product Certificate	VDE2510-50, IEC62619, CE RED, IEC62477-1		

Model overview FORCE-H2	A maximum of 4 battery modules can be combined for a H2 system with max. 14.2 kWh / 384VDC		
Battery module quantity	2	3	4
Max. quantity of modules / battery string	4		
Max. battery strings in parallel	6		
Battery System Capacity in kWh	7.1kWh	10.65kWh	14.2kWh
Battery System Capacity in Ah	37Ah		
Battery System Voltage	192VDC	288VDC	384VDC
Dimensions (H x W x D in mm)	822 x 450 x 296	1118 x 450 x 296	1414 x 450 x 296
Weight in kg	82	117	153
Protection Class	IP55		
Product Certificate	VDE2510-50, IEC62619, CE RED, IEC62477-1		

Lithium storage system Pylontech **PowerCube**

Solar Lithium storage system
96 – 480 VDC, up to 35.5 kWh (X1/X2)
240 – 864 VDC, up to 63.9 kWh (H1/H2)

Pylontech PowerCubes are high-voltage battery storage systems based on lithium iron phosphate batteries, one of the new energy storage products developed and manufactured by Pylontech. They can be used to support reliable power supplies for various types of devices and systems. PowerCube are particularly suitable for application scenes where high power, high voltages (up to 864 VDC), limited installation space, limited load capacity and long life are required.

Characteristics

- Very high cycle stability of over 5000 charge/discharge cycles
- Very high depth of discharge (DoD) up to 95% @ 25°C
- Design life up to 15 years
- Built-in soft-start-function to avoid power surges when the inverter is started by the battery
- Automatic address setting when connected in multi-group mode
- Absolutely intrinsically safe lithium technology – Lithium iron phosphate / LiFePo4

Li-Ion batteries
Top H48074, bottom H48050

Controller-modul SC500-100S (-V2) resp. SC1000-100S (-V2)

Master control module (MBMS1000) allows controlling the controllers of up to 6 cabinets (battery strings).

Further features

- Very high storage density - low weight and compact design
- Up to 18 batteries can be used in a modular way *Cabinet systems and constellations on request
- High peak charge and discharge power
- Modular system for individual scaling
- 7-year manufacturer warranty PYLONTECH

The Pylontech H48050 / H48074 storage systems consist of lithium iron phosphate (LiFePo4) accumulators with a battery management system, BMS for short, which constantly monitors the status of the accumulators right down to the individual cells and protects them from overcharging, overvoltage and overtemperature, among other things. In this way, the BMS prevents premature battery failure due to environmental influences or misuse.

The overall system is controlled using the external controller SC500-100S / SC1000-100S..

The modular design allows the storage system to be individually configured to the required capacity and extremely high voltages (up to 864 VDC) by simply connecting the desired number of modules together.

Specifications

Battery	H48050	H48074
Cell technology	Lithium-Iron-phosphat (LiFePo4)	Lithium-Iron-phosphat (LiFePo4)
Battery nominal voltage	48V	48V
Battery rated capacity	50Ah / 2.4kWh	74Ah / 3.55kWh
Discharge voltage range	45.5 ... 53.2V	
Charging voltage range	52.5 ... 53.2V	
Max. charge / discharge current	50A	74A
Communication	RS485, CAN	RS485, CAN
Weight / dimensions	24kg / 442 x 390 x 100mm (W x D x H)	32kg / 442 x 390 x 132mm (W x D x H)
Temperature range	+0... +50°C @ charge mode / -10... 50°C @ discharge mode	
Design life / Cycle life	> 15 years @ 25°C / > 5000 cycles @ 25°C	
BMS / monitoring	Integrated battery management system in each module	
Certificates	TüV / CE / UN38.3	

Battery-controller	SC500-100S (-V2)	SC1000-100S (-V2)
Operating voltage	60~500 VDC	200~1000 VDC
Max charge/discharge current	100 A	
Self-consumption	8 W	
Weight / dimensions	8.5kg / 442x390x132 (W x D x H)	
Communication	Modbus RTU\CAN	
Protection	IP20	
Design Life	15+ years	
Temperature	Operation: 20~65°C / storage: -40~80°C	
Certificates	TüV, CE	
Protection Class	IP55	
Product Certificate	VDE2510-50, IEC62619, CE RED, IEC62477-1	

PowerCube systems overview	X1	X2	H1	H2
Rated voltage	96-480V	96-480V	240-864V	240-864V
Battery module 50Ah	H48050	-	H48050	-
Battery module 70Ah	-	H48074	-	H48074
Number of battery modules	2-10	2-10	5-18	5-18
Controller	SC500-100S (-V2)	SC500-100S (-V2)	SC1000-100S (-V2)	SC1000-100S (-V2)
Multi String MBMS	MBMS1000	MBMS1000	MBMS1000	MBMS1000
Max. parallel strings	6	6	6	6

EFFEKTA®

Pylontech BP

The Pylontech BP Rack is a one-piece battery cabinet with painted galvanised steel for the installation of Pylontech LiFePo batteries.

- Polyester powder-coated, embossed surface
- Front door with freely selectable stop
- Removable side panels
- Equipped with cable entries at the bottom and at the top with pre-cut profiles
- Grounding kit
- Protection class: IP20
- Set of adjustable support feet.
- Rear battery support rails included

Available types and sizes

Modell	Dimensions	Empty weight	Weight fully equipped	Compatibility
BP 12U	Height 671 mm Width 600 mm Depth 510 mm 12 U available	23 kg	165 kg	Up to 6x US2000C or 4x US3000C
BP 24U	Height 1205 mm Width 600 mm Depth 510 mm 24 U available	40 kg	325 kg	Up to 12x US2000C or 8x US3000C or 4 - 7 H48050 + BMS or 4 - 7 H48074 + BMS
BP 42U	Height 2005 mm Width 600 mm Depth 510 mm 42 U available	61 kg	561 kg	Configurable on request.

Lithium storage system
SOFAR BTS E5...E20-D5

Solar Lithium storage system
5 / 10 / 15 / 20 kWh

SOFARSOLAR's newest low-voltage battery system consists of up to 4 LiFePO4 battery modules, and one battery distribution unit.

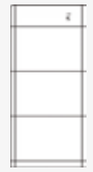
The battery capacity can easily be expanded through the system's modular, stackable design. In combination with click-to-connect cables, installati-on is both fast and user-friendly. Up to two systems can be connected in parallel, amounting to 40 kWh of energy storage capacity.

The BTS series is compatible with SOFARSOLAR's HYD 5K–20KTL hybrid and ME 5K–20KTL battery inverter series.

Properties

- Modular and integrated design for easy transporta-tion and installation
- Flexible battery capacity expansion
- User-friendly one-button battery operation
- Maximal battery energy with pack optimization
- Extremely low battery selfconsumption in sleep mode
- Energy storage specially for ME / HYD 5...20KTL-3PH inverters
- 10 years manufacturer warranty

Specifications

Model	BTS E5-DS5	BTS E10-DS5	BTS E15-DS5	BTS E20-DS5
System				
Battery type	LFP			
Battery distribution unit	BTS 5K-BDU			
Number of battery distribution units	1			
Battery module	BTS 5K			
Number of battery modules	1	2	3	4
Battery total energy (kWh)1	5.12	10.24	15.36	20.48
Usable energy (kWh)2	4.75	9.5	14.25	19
Max. Discharge power (kW)	2.5	5	7.5	10
Rated voltage (V)	400			
Voltage range for full load (V)	350-425			
Rated charge/discharge current (A)	7	14	21	28
Degree of protection	IP65			
Ambient temperature range3	-10°C – 50°C			
Allowable relative humidity range	5 – 95%			
Max. operating altitude4	4000m			
Weight (kg)	59	110	161	212
Dimensions (mm)	708x170x680	708x170x1100	708x170x1520	708x170x900
Installation	Floor stand			
Cooling	Natural			
Display	LED indicators			
Communication	CAN			
Compatible inverters	Please refer to the BTS E5 ... 20-DS5 configuration list			
Warranty	10 years manufacturer warranty			

Battery Module	
Model	BTS 5K
Battery module energy (kWh)1	5.12
Depth of discharge (DOD)	90.0%
Rated power (W)	2500
Dimensions (mm) (WxDxH)	708x170x420
Weight (kg)	50

Battery Distribution Unit	
Model	BTS 5K-BDU
Max. charge/discharge current (A)	35
Dimensions (mm)	708x170x200
Weight (kg)	7.5

Standards	
Certificates	UN 38.3, IEC 62619, IEC 62040-1, SAA, etc.

1 Test conditions: 0.2C charge/discharge at 25°C, 100% DoD.
2 Based on the battery cell.
3 Please refer to the temperature derating curve.
4 If the altitude is >2000 m, derating is required. Please refer to the derating curve.

Power-CHEST

Mobile Powerstation lithium

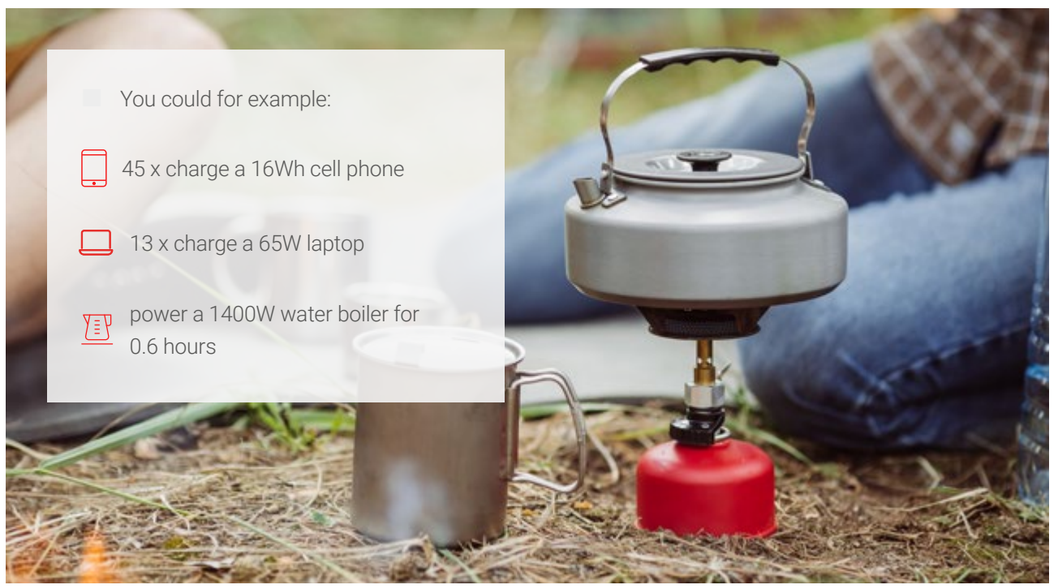
Mobile Lithium Storage System
Portable Powerstation with 700 or 1400W

Independent, mobile power supply for your devices. The innovative, portable power station Power-CHEST offers everything necessary for mobile power supply. With built-in intelligent battery management system for overload protection and solar fast charging, there are no limits to outdoor use.

The Powerstation Power-CHEST can be charged via a power outlet, in the car via the cigarette lighter or via a solar panel.

The device can be charged with solar panels (up to 400 W) within 2.5 hours to 90% battery capacity, on the mains even within 1 hour.

Outdoor – with REAL POWER!



You could for example:

- 45 x charge a 16Wh cell phone
- 13 x charge a 65W laptop
- power a 1400W water boiler for 0.6 hours

Properties / Specifications

General		
Battery	Lithium iron phosphate / LiFePo4 battery	
Dimensions HxWxL in mm	235 x 228 x 345	197 x 190 x 268
Weight in kg	12.1	7.5
Capacity	1010Wh / 23.4Ah	524Wh / 20.8Ah
Warranty	12 months	

Discharge		
AC-power	1400 W	700 W
AC-voltage / freq.	230 VAC / 50Hz	
Cigarette-lighter	13.6V/10A/136W	13.6V/10A/136W
USB A	4pcs.: 5V/9V/12V/ 2,4A (28W max.)	3pcs.: 5V/9V/12V /2.4A (28W max.)
USB C	2pcs.: 5V/9V/12V/15V/3A 20V-5A 100W max.	1pcs.: 5V/9V/12V/15V/20V/3A 60W max.

Charge to 90% capacity		
AC-input	1h	1h
Photovoltaic	2.5h	2.5h
Cigarette-lighter	5-8.5h	4-6h

LCD coloured display

- Easy to read due to 8° inclination
- Comfortable automatic brightness control

2x Schuko, 4x USB-A, 2x USB-C

- You can really power everything

Multiple recharging options

- 1 h
- 2.5 h
- 4-8.5 h

EFFEKTA®

Lithium-Ion-Battery

BTLi 12-100B
BTLi 12-120B

The batteries of the BTLi series are maintenance-free lithium-ion rechargeable batteries (LiFePO4) with a service life expectancy of >5000 cycles and only 40% of the weight of lead-acid batteries. They use a built-in Battery Management System (BMS) for maximum reliability. Excellent for camping, outdoor and caravan but also e.g. for UPS systems, DC power supplies, security systems and as solar or wind energy storage.

The BTLi 12-120B and BTLi 12-100B also have a built-in Bluetooth interface, which can be used to monitor the charge level and battery status at any time via Android or IOS app.

Special features

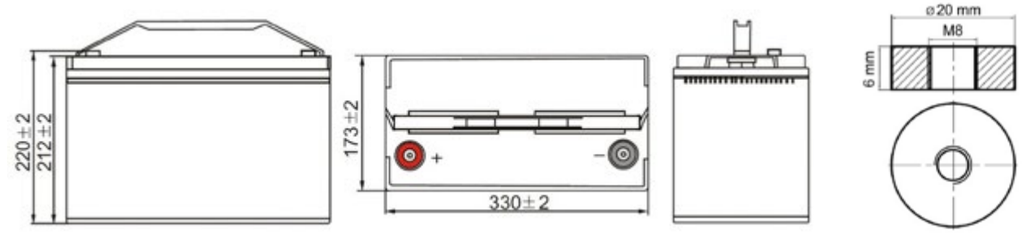
Your benefits:

- >5000 charge/discharge cycles
- Thus far longer battery life than conventional lead-acid batteries
- Low service costs due to rarely necessary battery replacement
- Only 40% of the weight of lead batteries
- Can be used in higher temperature window
- Battery management system (BMS) integrated into the battery
- Wireless operation, configuration and monitoring of the BMS via German/English-language APP
- Monitoring APP available for Android as well as for iOS
- 24 months warranty

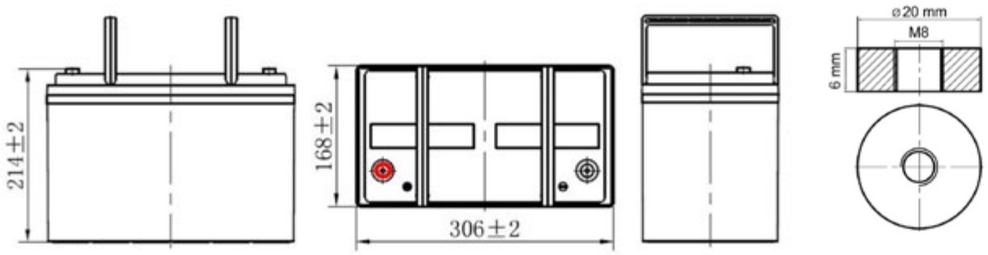
Professional Android/iOS app in German/English language for control over battery functions, condition and capacity.

Specifications

Dimensions BTLi 12-120B



Dimensions BTLi 12-100B



Specifications		BTLi 12-120B	BTLi 12-100B
Battery type		LiFePO4	
Nominal voltage		12.8V	
Nominal capacity / energy		120Ah / 1560Wh	100Ah / 1280Wh
Cycle life		>5000 cycles @ 0.2C 50%DoD / >3000 cycles @ 0.2C 80%DoD	
Connections		M8 Screw connection, contact surface Ø 20mm	
Enclosure material / enclosure class		Acrylnitril-Butadien-Styrol (ABS) / IP65	
Permissible mounting position		Max. 90° to upright normal position (see picture above right)	
Internal resistance		≤20mΩ	≤50mΩ
Self-discharge		<3% (@ 25°C / month)	
Standard charging	Charging voltage	14.6 ± 0.2V	
	Charging process	0.2 C to 14.6V	
	Charging current	50A	
	Charging current max.	100A	
	Overcharge protection	15.0V ± 0.2V	
Standard discharging	Discharge current max.	100A	
	Discharge current peak	150A (<1sec.)	
	Discharge cut-off voltage	8.8V	
BMS Battery management		Integrated	
Monitoring		Bluetooth with smartphone app	
Operating temperature ranges (At 60±25% relative humidity)	Discharging	-20°C .. +60°C	
	Charging	0°C .. +45°C	
	Storage	0°C .. +40°C	
Dimensions	Length	330 ±2mm	306±2mm
	Width	173 ±2mm	168±2mm
	Hight	220 ±2mm	214±2mm
	Weight	14kg	12kg

EFFEKTA®

Batteries
BT series

Our long-standing experience with emergency power systems and uninterruptible power supply units is our guarantee for the highest quality and reliability of EFFEKTA® batteries.

EFFEKTA® batteries are modern AGM (Absorbent Glass Mat) accumulators. Low levels of self-discharge are achieved by bonding the electrolyte in glass-fibre mat. A recharge is needed every six months unless the accumulator was stored at temperatures in excess of 20°C. AGM batteries are leak proof and can be installed in almost any location.

Advantage

- Fully maintenance-free
- Excellent high-current capability
- Classified as non-dangerous in accordance with IATA
- Cycle-resistant
- Robust construction
- Location-independent
- Valve-regulated plastic container as overload protection
- 6 months warranty

Ideally suited for use in

- Uninterruptible power supplies (UPSs)
- Telecommunications systems
- Fire alarm and safety systems
- Medical equipment

Models view

BT 12-5

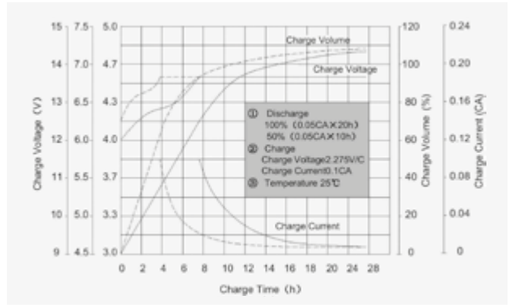
BT 12-7

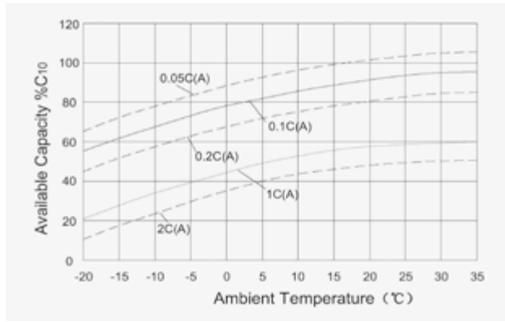
BT12-18

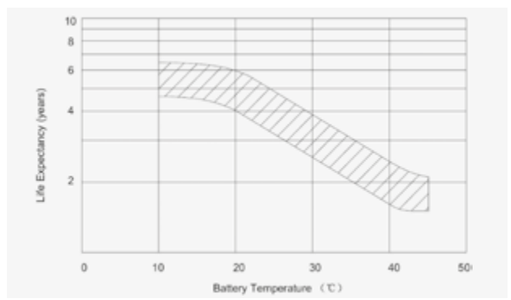
BT 12-28

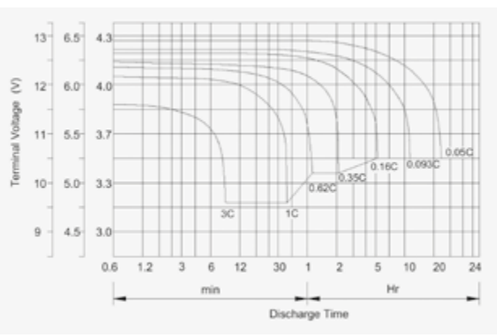
Specifications

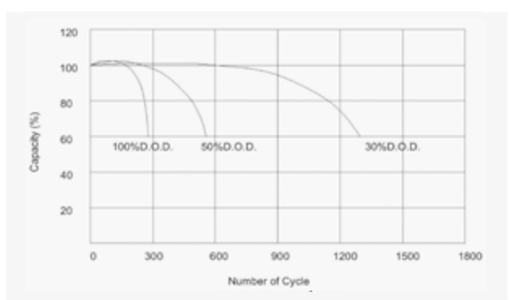
Type	Voltage in (V)	Capacity in Ah (C20)	L (mm)	W (mm)	H (mm)	H (mm) Max.	Weight in kg	Terminal
12 V types								
BT 12-1,2	12	1.2	97	43	52	58	0.6	F1
BT 12-2,3	12	2.3	178	34.5	60.5	66.5	0.97	F1
BT 12-2,8	12	2.8	104.5	47.5	69.5	69.5	1	F2/F1
BT 12-3,2	12	3.2	134.5	67	59.5	65.5	1.3	F1
BT 12-5	12	5	90	70	101	107	1.7	F2/F1
BT 12-7 (VdS)	12	7	151	65	95	101	2.26	F2 / S type: F1
BT 12-9,5K	12	9.5	151	65	95	101	2.63	F2
BT 12-12 (VdS)	12	12	151	98	95	101	3.6	F2
BT 12-18	12	18	181	77	167	167	5	F3
BT 12-18i	12	18	181	77	167	167	5	F13
BT 12-20	12	20	181	77	167	167	5.9	F3 / F13
BT 12-28	12	28	166	175	125	125	8.6	F13
BT 12-28S	12	28	166	126	174	174	8.6	F11
6 V types								
BT 6-3,2	6	3.2	134	34	60.5	66.5	0.65	F1
BT 6-12	6	12	151	50	95	100	1.8	F2 / F1

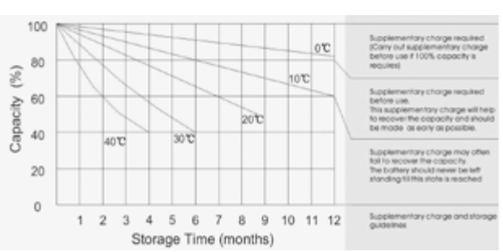












Batteries

BTL series

Our long-standing experience with emergency power systems and uninterruptible power supply units is our guarantee for the highest quality and reliability of EFFEKTA® batteries.

EFFEKTA® batteries are modern AGM (Absorbent Glass Mat) accumulators. Low levels of self-discharge are achieved by bonding the electrolyte in glass-fibre mat. A recharge is needed every six months unless the accumulator was stored at temperatures in excess of 20°C. AGM batteries are leak proof and can be installed in almost any location.

Advantage

- Absolutely maintenance-free
- Excellent high-current capability
- Classified as non-dangerous in accordance with IATA
- Long service life of approx. 10 years
- Robust construction
- Cycle-resistant
- Valve-regulated plastic container (overload protection)
- 12 months warranty

Ideally suited for use in

- Uninterruptible power supplies (UPSs)
- Telecommunications systems
- Fire alarm and safety systems
- Medical equipment
- Data centers
- Electronic devices and systems
- control cabinets

Modellansicht

BTL 12-12

BTL 12-18

BTL 12-28

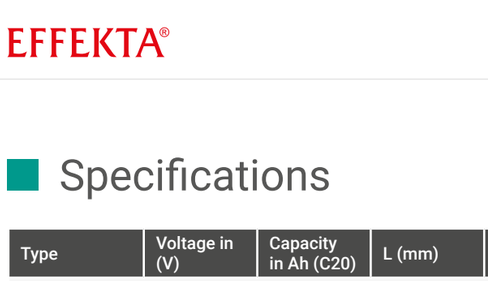
BTL 12-33

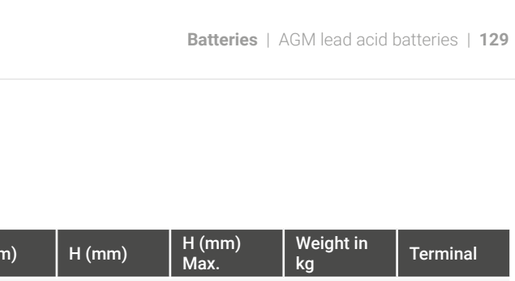
BTL 12-45

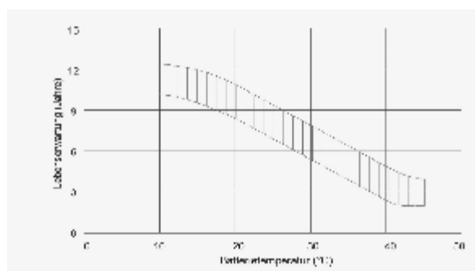
BTL 12-55

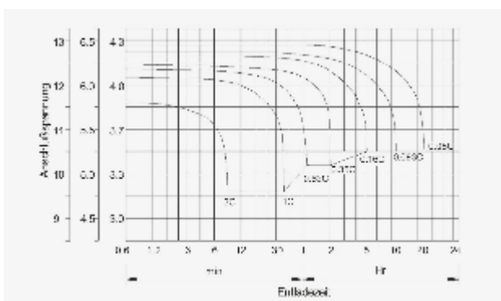
Specifications

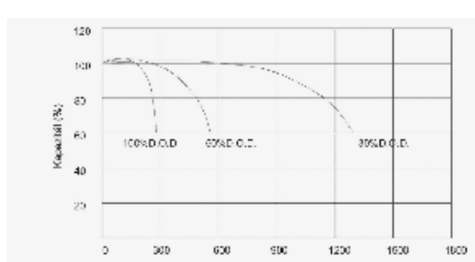
Type	Voltage in (V)	Capacity in Ah (C20)	L (mm)	W (mm)	H (mm)	H (mm) Max.	Weight in kg	Terminal
12 V - Typen								
BTL 12-9	12	9	151	65	94	100	2.7	F2
BTL 12-12	12	12	151	98	95	101	3.8	F2
BTL 12-18	12	18	181	77	167	167	5.7	M5
BTL 12-28	12	28	166	175	125	125	8.6	M5
BTL 12-33 L	12	33	195	130	159	180	10.2	M6
BTL 12-45 L	12	45	198	166	170	170	13.2	M6
BTL 12-55 L	12	55	229	138	210	235	18	M6
BTL 12-60	12	60	260	169	210	235	20.5	M6
BTL 12-65 L	12	65	350	167	180	183	21	M6
BTL 12-75 LX	12	75	260	168	208	211	24.2	M6
BTL 12-80	12	80	350	167	180	183	24	M6
BTL 12-90 LX	12	90	306	168	208	211	28.2	M8
BTL 12-100 LX	12	100	325,5	170	213	216	31.6	M8
BTL 12-120 L	12	120	407	177	227	227	35	M8
BTL 12-120 S	12	120	330	171	220	227	32	M8
BTL 12-150 L	12	150	483	170	240	240	44.5	M8
BTL 12-200	12	200	522	240	218	240	60	M8
BTL 12-260	12	260	520	268	220	225	75	M8

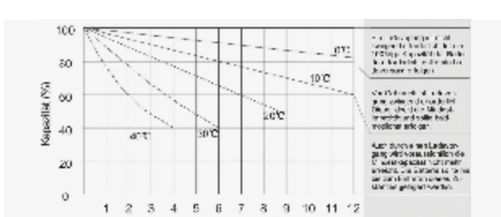












EFFEKTA®

Batteries
Front terminal

BTL front terminal batteries from EFFEKTA® have the same construction as batteries of the BTL types. However the special dimensions of the batteries mean that they are compact and easy to maintain especially in 19" rack cabinets.

Specifications

Typ	Voltage in (V)	Capacity in Ah (C10)	L (mm)	B (mm)	H (mm)	H (mm) Max.	Weight in kg
BTL 12-55 FL	12	55	277	106	225	225	17.4
BTL 12-62 FL	12	62	298	97	267	267	19.9
BTL 12-90 F	12	90	563	114	188	188	26.5
BTL 12-105 F	12	105	508	111	236	236	32.5
BTL 12-110 FK	12	110	394	109	285	285	33
BTL 12-150 FK	12	150	552	110	288	288	45

12 months warranty

Models view

BTL 12-55FL

BTL 12-105F

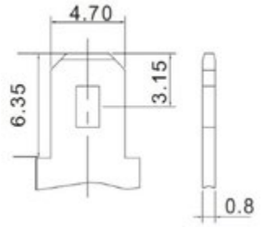
BTL 12-150FK

BTL12-62FL

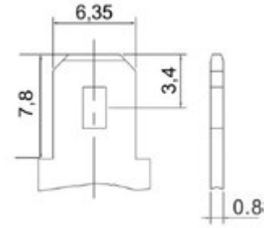
Terminal Types

Below are the most common terminal types used with EFFEKTA® batteries. If you need another type or the terminal type of the supplied battery is not listed below, please contact us. We will be glad to advise you.

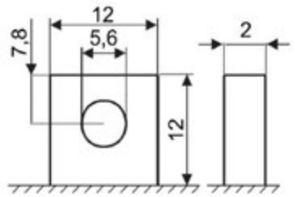
F1
Hight 6,35 mm
Width 4,70 mm
Thickness 0,8 mm



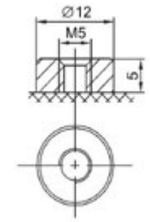
F2
Hight 7,8 mm
Width 6,35 mm
Thickness 0,8 mm



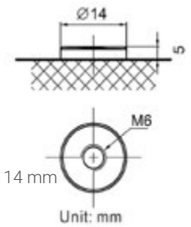
F3
Width 12 mm
Hight 12 mm
Hole ø 5,6 mm



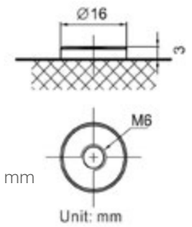
M5
Support surface ø 12 mm
Hight 5 mm



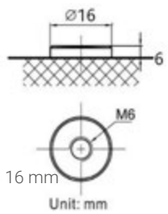
M6
Support surface ø 14 mm
Hight 5 mm



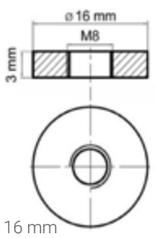
M6
Support surface ø 16 mm
Hight 3 mm



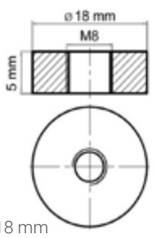
M6
Support surface ø 16 mm
Hight 6 mm



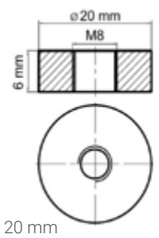
M8
Support surface ø 16 mm
Hight 3 mm



M8
Support surface ø 18 mm
Hight 5 mm



M8
Support surface ø 20 mm
Hight 6 mm

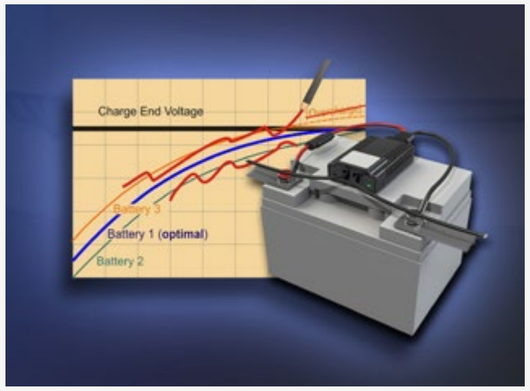


Note: All illustrations are only representative or schematic and not to scale.

Battery Analyze & Care System **BACS**

Our worldwide well-known third-generation BACS "Battery Analysis & Care System" is the most innovative product on the market that includes a battery monitoring and management system and can be integrated into the network. It cyclically checks the internal resistance, temperature and voltage of each individual accumulator.

The specially protected equalizing/balancing voltage equalization process controls the voltage of all batteries to the target value defined by the charging controller and keeps all the batteries in the optimum operating voltage range. If a battery demonstrates noticeable deviations during a discharging/charging cycle, BACS automatically notifies the relevant specialists using freely configurable notifications and visual and acoustic signals.



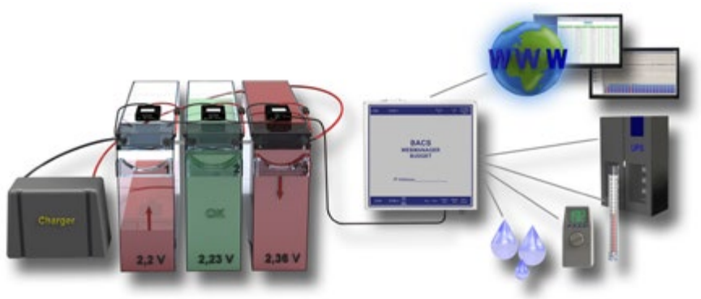
The perfect System

BACS is the perfect system for all lead-acid battery technologies and is compatible with a wide range of battery chemicals and casing concepts:

- Enclosed & closed wet cells
- Gel, AGM
- Ni-Cd, Ni-MH
- Li-Ion accumulators

The BACS WEBMANAGER can be transparently integrated

The BACS web manager from the CS141 product family is available in three different product series which means a BACS system can be flexibly and transparently adapted to both the respective additional system requirements and the spatial conditions.



Picture:
The BACS WEBMANAGER controls the battery voltage of batteries 1 and 3

BACS Webmanager

The BACS WEBMANAGER is the central control unit for every BACS system

All of the information about the individual batteries and the respective individual statuses collected from the BACS battery modules is compiled here.

The BACS web manager evaluates all of the data in real time and sends necessary control commands to the BACS battery modules, based on the data, to keep the batteries in the optimum charging state.

Active management of the entire UPS solution

Depending on installed additional parts and the configuration level, the BACS web managers has a wide range of options to perform its functions:

- Controlling air conditioning systems and emergency ventilation systems
- Detecting toxic or explosive gas mixtures
- Monitoring temperatures and humidity
- Monitoring water penetration or coolant fill levels

A process control, based on PLC, can be configured for each configurable event via an intuitive and modern interface. Technicians can therefore keep track of all aspects of a modern UPS solution by constantly monitoring not only the status of individual batteries.

IT-management and building management included

In the event of an emergency, servers have to migrate, shut down, back up their data, etc. as quickly as possible. For this reason, every BACS system is also a fully-qualified RCCMD server that can quickly and efficiently shut down even highly complex systems using the globally popular RCCMD shutdown solution.

- Linux
- Hyper-V
- VMware (individual hosts, cluster management, vSAN-Shutdown and many more)
- UNIX
- Windows

At the same time, active systems can be switched on a precise schedule via external relays and feedback about the switching statuses can be obtained so all possible hardware and software combinations are available. A BACS system can shut down the IT systems, block elevators, activate emergency lighting, unlock electrical locks, start emergency systems and much more.

BACS Modules

BACS modules: The local control elements
The BACS battery modules are not stand-alone units, but are rather the executing systems that handle the continuous monitoring of the individual battery blocks within a BACS system. BACS is not, however, limited to collecting and displaying the data collected about the voltage, temperature and interior resistance:

With the help of our unique and protected equalizing technology, the individual status of each battery is then analyzed and supplied with the respective, optimum charging current, which not only protects the batteries and optimizes performance, it also increases the efficiency of the entire system.

How it works

A UPS generally executes the charging process based on the least charged batteries as they ultimately define the performance capacity of all batteries. Since all batteries are linked in series, the UPS has difficulty determining which battery requires the maximum charging current and which battery is already fully charged.

Without BACS, this charging current has to be taken in and transferred by all batteries throughout the entire charging process, regardless of the existing individual charging status. That means the UPS has to provide more output than actually required and the batteries take in more energy than they can handle. Since the energy has to go somewhere, it is converted into, among other things, heat which, in the mediumterm, permanently damages the internal battery chemistry. This is where the BACS modules intervene in the charging process and open a bypass that conducts the excess energy around the battery which relieves the charger of the UPS:

The charging current is conducted to exactly where it is needed. The UPS itself thus operates more efficiently and the batteries are actively protected against damage due to overloads.

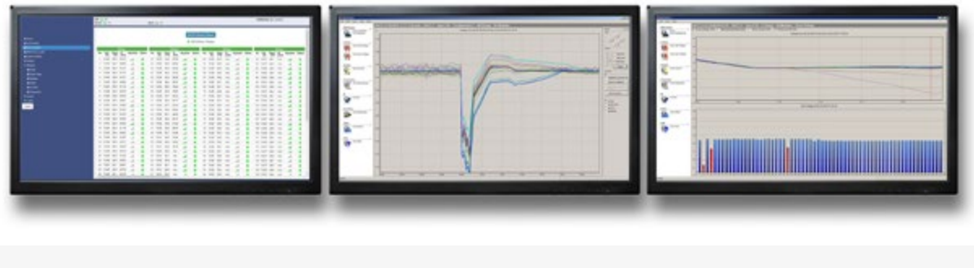
For which batteries can BACS be used?

BACS modules are available in a wide range of variants. They are suitable for all lead-based batteries and 7-5000Ah. The BACS technology is also compatible with any battery technologies on the market.

BACS Software

Powerful software from experts, for experts
Most battery failures seem random and coincidental. That is because conventional monitoring systems passively observe the current system status, so, at best, you can watch the death of a battery.
The data required for the active control process, when precisely analyzed, can provide initial indications of, for instance, poor-quality charging current, unusual temperature fluctuations within a battery or premature voltage drops during the discharging process, unusually high internal resistance, etc.

Hidden damage can be detected via a variety of minor quality losses that normally fall through the cracks. With the BACS®VIEWER and a bit of practice working with the features, the probability that an individual battery will fail can be determined, reliable statements about the overall status of the system can be made and maintenance windows can be reduced to the absolutely necessary minimum.
As a bonus, you can use the tools to automatically generate a statistical report including the status of a battery system.



For whom are these tools interesting?

Any technician involved in battery management and who, accordingly, has to work with time-sensitive maintenance windows. This software package can prepare the actual work that needs to be performed. BACS modules can be programmed in advance or important measurement data can be read out during installation and configuration.

The software products

BACS Viewer
- Collect and archive
- Deep analysis of measurement values
- Plan maintenance windows
- Fault analysis after malfunctions
- Organize documents

BACS Reader
- Read out the battery data in real time
- Configure alarm thresholds
- Inspect BACS modules
- Perform functional tests

BACS Programmer
- Check the wiring
- Program the BACS modules
- Check the data quality
- Find EM-based faults
- Replace individual module

We let the sun shine even **in the dark**.

effekta.com/en

EFFEKTA®
innovating power.

Solar power

Solar inverters
Processing and feedback control of
photovoltaic current from 1000-20000 Watts

EFFEKTA®

Multifunction inverter

AX-M2

The devices in the AX M2 series with integrated MPPT solar charge controller are 3000W / 5000W multifunction inverters / PVchargers with the combined functions of an inverter as well as a solar and battery charging device. These inverters are suitable for standalone operation in-dependent of mains supply via PV modules but can also be operated with electrical power from accumulators, generators or the public power supply grid. If insuffi cient power is being supplied from the PV modules, the device automatically tops up the power level with battery current or, if the batteries are discharged completely, it switches over to the mains power grid. A network of three AX units can be confi gured for 3-phase operation.

Details

AX M2 connections

Removable control panel including LCD display

New Features:

- Zero (0 ms) transmission time to protect critical loads such as servers and ATMs
- Detachable LCD control module with multiple communication options
- Integrated Wi-Fi for mobile monitoring (app is available)

Characteristics

- PV inverter without mains power supply
- Island operation possible
- 3000, 5000W nominal load
- 24, 48VDC Battery voltage
- PV- / Battery charger with 3-stage charge
- Battery voltage thresholds can be adjusted individually
- Cold start function
- Several power sources
- Parallel operation by up to 9 inverters
- 3-phase operation is possible
- Sine-wave output
- Can be configured via LCD display or PC software
- Automatic reboot when mains power is restored
- Protection against excessive loads an temperatures as well as short circuits
- 24 months‘ warranty

Special features

- Power factor 1
- Integrated Wi-Fi for mobile monitoring (app is available)
- Compatible with BMS communication from varous lithium battery manufacturers such as Pylontech
- Battery equalizing
- Integrated neutral-point emulation (VDE AR-E 2510-2)
- Installed MPPT solar charge controller for maximum performance from PV modules
- Intelligent fan control
- Removable LCD control module with multiple communication options

Specifications

Modell		AX M2 3 kVA, 24V	AX M2 5 kVA, 48V
Power	Power in VA / W	3000 VA / 3000 W	5000 VA / 5000 W
AC input	AC input voltage	230 VAC	
	AC input voltage range	110-280 VAC	
	AC input frequency	50 Hz/60 Hz (automatic detection)	
	Power factor	>= 0.98 @ nominal voltage (100% Last)	
Output	AC Output voltage	230 VAC ± 5 %	
	Peak performance (5 seconds)	6000 VA	10000 VA
	Output frequency	46~54 Hz oder 56~64 Hz ((normal mode) / 50 Hz ± 0,1 Hz oder 60Hz ± 0.1 Hz (battery mode)	
	Transfer time	0 ms (AC > battery mode) / 4 ms (Inverter > Bypass)	
	Wave form	Sine wave	
	Max. efficiency	93% @ normal mode, 90% @ battery mode	
Battery	Battery voltage	24 VDC	48 VDC
	Charging voltage max.	29.2 VDC	58.4 VDC
	Overload protection	34 VDC	66 VDC
Solar charger / AC charger	Max. PV power	1500 W	4000 W
	Type	MPPT	
	Max. PV charging current	60 A	80 A
	Max. AC charging current (adjustable)	60 A	60 A
	Max. charging current (adjus-ta-ble)	120 A	140 A
	Effective operating range UOP	30 ~ 115 VDC	60 ~ 115 VDC
	Max. input voltage UOCV	145 VDC	
Communication		RS232, DRY CONTACT, WI-FI, RS485, CAN, USB OTG	
General data	Size (HxWxD) in mm	525 x 303 x 140	
	Weight (in kg)	13	13,5
	Humidity	5% - 95% non condensing	
	Operating temperature	0°C to 55°C	
	Storage temperature	-15°C to 60°C	
	Protection	IP20	
Regulations / standards	Safety	EN 62109-1:2010, EN 62109-2:2011	
	EMV	EN 61000-6-4: 2007+A1: 2011/IEC 61000-6-4: 2018, EN 61000-6-2: 2017/ IEC 61000-6-2: 2016, EN 61000-3-12: 2011/ IEC 61000-3-12: 2011, EN 61000-3-11: 2000/ IEC 61000-3-11: 2017, Class A	
	Certifications	CE	

Multifunction inverter
AX M2 H

The devices in the AX M2 H series with integrated MPPT solar charge controller are 48V / 5000W multifunction inverters / PV-chargers with the combined functions of an inverter as well as a solar and battery charging device.

The AX M2 H version is designed for particularly high PV voltages of up to 500 V.

These inverters are suitable for standalone operation independent of mains supply via PV modules but can also be operated with electrical power from accumulators, generators or the public power supply grid.

If insufficient power is being supplied from the PV modules, the device automatically tops up the power level with battery current or, if the batteries are discharged completely, it switches over to the mains power grid. A network of three AX units can be configured for 3-phase operation.

Details

Removable control panel including LCD display

AX M2 H connections

New Features:

- Very high PV input voltages over a wide voltage range
- Zero (0 ms) transmission time to protect critical loads such as servers and ATMs
- Detachable LCD control module with multiple communication options
- Integrated Wi-Fi for mobile monitoring (app is available)

Characteristics

- PV inverter without mains power supply
- Island operation possible
- 5000W nominal load
- 48VDC Battery voltage
- PV- / Battery charger with 3-stage charge
- Battery voltage thresholds can be adjustedindividually
- Cold start function
- Several power sources
- Parallel operation by up to 9 inverters
- 3-phase operation is possible
- Sine-wave output
- Can be configured via LCD display or PC software
- Automatic reboot when mains power is restored
- Protection against excessive loads and temperatures as well as short circuits
- 24 months' warranty

Special features

- Power factor 1
- Very high PV input voltages over a wide voltage range (120 ~ 430 VDC)
- Selectable high power charging current
- Integrated Wi-Fi for mobile monitoring (app is available)
- Compatible with BMS communication from various lithium battery manufacturers such as Pylontech
- Battery equalizing
- Integrated neutral-point emulation (VDE AR-E 2510-2)
- Installed MPPT solar charge controller for maximum performance from PV modules
- Intelligent fan control
- Removable LCD control module with multiple communication options

Specifications

Model		AX M2 H 5kVA, 48V
Power	Power in VA / W	5000VA / 5000W
AC input	AC input voltage	230VAC
	AC input voltage range	110-280VAC
	AC input frequency	50Hz/60Hz (automatic detection)
	Power factor	>= 0.98 @ nominal voltage (100% load)
Output	AC Output voltage	230VAC ± 5%
	Output frequency	46~54Hz or 56~64Hz (normal mode) 50Hz ± 0.1Hz or 60Hz ± 0.1Hz (battery mode)
	Transfer time	0ms (AC > battery mode) 4ms (Inverter > Bypass)
	Wave form	Sine wave
	Max. efficiency	93% @ normal mode, 92% @ battery mode
Battery	Battery voltage	48VDC
	Charging voltage	Float charging 54 VDC Boost charge 58.4 VDC (battery dependent)
	Overload protection	66VDC
Solar charger / AC charger	Max. PV power	6000W
	Type	MPPT
	Max. PV charging current	30A
	Max. AC charging current (adjustable)	100A
	Max. charging current (adjustable)	100A
	Effective operating range UOP	120 ~ 430VDC
	Max. input voltage UOCV	500VDC
Communication		RS232, DRY CONTACT, WI-FI, RS485, CAN, USB OTG
General data	Size (HxWxD) in mm	480 x 310 x 140
	Weight (in kg)	12
	Humidity	5% - 95% non-condensing
	Operating temperature	0°C - 55°C
	Storage temperature	-15°C - 60°C
	Protection	IP20
Regulations / standards	Safety	EN 61000-6-4: 2007+A1: 2011; EN 61000-6-2: 2005+AC: 2005
	EMC	EN 62109-1:2010, EN 62109-2:2011
	Certifications	CE

Multifunction inverter

AX-K1

The devices in the AX K1 series with integrated MPPT solar charge controller are multi-function inverters / PV chargers with the combined functions of an inverter as well as a solar and battery charging device. These inverters are suitable for standalone operation independent of mains supply via PV modules but can also be operated with electrical power from accumulators, generators or the public power supply grid. If insufficient power is being supplied from the PV modules, the device automatically tops up the power level with battery current or, if the batteries are discharged completely, it switches over to the mains power grid. A network of three AX units can be configured for 3-phase operation.

Details

View of the underside

Monitoring Box (WiFi Box)

With the monitoring box (WiFi box), the power generation data can be called up via WLAN from a PC, smartphone or tablet PC in the web browser.

EFFEKTA®

Characteristics

- PV inverter without mains power supply
- Island operation possible
- Installed PWM solar charge controller
- 1000, 3000, 5000 W nominal load
- 12, 24, 48 VDC Battery voltage
- PV- / Battery chargert with 3-stage charge
- Battery voltage thresholds can be adjusted individually
- No more external neutral-point emulation is required
- Parallel operation by up to 9 inverters
- Several power sources
- 3-phase operation is possible
- Sine-wave output
- Can be configured via LCD display or PC software
- Automatic reboot when mains power is restored
- Protection against excessive loads and temperatures as well as short circuits
- 24 months' warranty

Special features

- Power factor 1
- Larger LC display
- Equalizing (battery)
- Integrated neutral-point emulation (VDE AR-E 2510-2)

Specifications

AX-K1		1000-12	3000-24	5000-48
Power	Power in VA	1000	3000	5000
	Power in W	1000	3000	5000
AC input	AC input voltage	230 VAC		
	AC input voltage range	100 – 270 VAC		
	AC input frequency	50 Hz / 60 Hz		
Output	Output voltage	230 VAC ± 5 %		
	Peak performance (5 seconds)	2000 VA	6000 VA	10000 VA
	Max. efficiency	95 %		
	Output frequency	50 Hz or 60 Hz, adjustable		
	Transfer time	20 ms configuration Domestic appliances / 10 ms bei Computer applications (UPS)		
	Wave form	Sine wave		
Battery	Battery voltage	12 VDC	24 VDC	48 VDC
	Charging voltage (VDC)	12.0 - 14,6	24.0 - 29.2	48.0 - 58.4
	Overload protection (VDC)	15.5	31.0	60,0
Solar charger / AC charger	Max. PV power	600 W	1200 W	2400 W
	PV charging current	50 A		
	Max. AC charging current (adjustable)	20 A	30 A	60 A
	Max. charging current (adjustable)	50 A		110 A
	Effective operating range U_{OP}	15-18 VDC	30-32 VDC	60-72 VDC
	Max. input voltage U_{OCV}	50 VDC	60 VDC	105 VDC
	Standby power consumption	1 W	2 W	
General data	Size (HxWxD) [mm]	316 x 240 x 95	355 x 272 x 100	468 x 297 x 125
	Weight (in kg)	5.0	6.9	9.8
	Humidity	5%-95% (non-condensing)		
	Operating temperature	0°C - 50°C		
	Storage temperature	-15°C - 60°C		
	Protection	IP 20		
Regulations / standards	Safety	EN 62109-1: 2010, EN 62109-2: 2011		
	EMC	EN 61000-6-4: 2007+A1: 2011; EN 61000-6-2: 2005+AC: 2005		
	Certifications	CE		

Hybrid-Inverter
SOFAR HYD-series 3-4.6 kW
1-phase

The 1-phase hybrid inverters from the HYD 3-4.6k-EP series from SOFARSOLAR are solar and battery inverters, energy management and system monitoring combined in one device.

This combination guarantees the optimal use of solar energy for a maximum self-consumption rate of the PV system.

- Increase self-consumption rates day and night with intelligent battery storage solution
- Battery charging with solar power
- Feeding the surplus solar power into the grid

Hybrid-Solar-System

EFFEKTA®

Features

- 2 MPP-trackers
- Wi-Fi, DC-circuit breaker, current sensor incl.
- Compatible with various lithium batteries such as Pylontech
- 5 years manufacturer warranty
- Different operating modes available
- Easy monitoring through monitoring App
- Mode for zero power supply configurable
- Emergency power function with 100 % power

Specifications

Specifications		HYD 3000-EP	HYD 3680-EP	HYD 4000-EP	HYD 4600-EP
Input DC (PV side)	Max. PV input power [Wp]	4500	5400	6000	6900
	MPPT operating voltage range [V]	90 - 580 VDC			
	Number of MPP trackers	2			
	Max. input current per MPPT [A]	13			
	Max. input short circuit current per MPPT [A]	18			
	Number of strings per MPP-tracker	1			
	Full power MPPT voltage range [V]	160-520 VDC	180-520 VDC	200-520 VDC	230-520 VDC
Output / Input AC (Grid side)	Nominal AC power [W]	3000	3680	4000	4600
	Max. AC power output to utility grid [VA]	3300	3680	4400	4600
	Max. AC current output to utility grid [A]	15	16	20	20,9
	Nominal grid voltage	L / N / PE, 230 VAC			
	Power factor (cosφ)	1			
	Output THDi (@Nominal output)	< 3 %			
Output AC (Emergency Power Supply)	Max. apparent power [VA]	3000	3680	4000	4600
	Peak output power [VA] / duration	3600/60Sek.	4400/60Sek.	4800/60Sek.	5520/60Sek.
	Max. output current [A]	13.6	16	18.2	20.9
	Nominal voltage, frequency	L / N / PE, 230 VAC, 50/60Hz			
	THDv (@Linear load)	< 3 %			
	Switch time	< 10 ms default			
Battery Parameters (optional)	Battery type	Lithium-ion, Lead-acid			
	Battery voltage range	42V-58V			
	Max. charging / discharging power [W]	3750	4000	4250	5000
	Max. charging / discharging current [A]	75/75	80/80	85/85	100/100
	Charging curve	Adaptation to BMS (lithium) 3-Stage adaptive with maintenance (lead batteries)			
Efficiency	MPPT-efficiency	99.9%			
	European efficiency of solar inverter	97.2%			97.3%
General Data	Dimensions (H x W x D) in mm	482 x 503 x 183			
	Weight in kg	21.5			
	Ambient temperature range	-25°C ~ 60°C			
	Inverter-Topology	transformerless			
	Standby self-consumption	<10W			
	Degree of protection	IP65 (not intended for outdoor use)			
	Noise	<25(dB)			
	LC-Display	yes			
	Communication	CAN 2.0 / RS485 / WI-FI / GPRS/Ethernet (Option)			
Connections	(AC)	Terminal connections			
	(DC)	MC4			
Standards	Grid	DIN VDE V 0126-1-1, VDE-AR-N 4105, DIN VDE V 0124-100			
	EMC	EN 61000-6-2, EN 61000-6-3, EN 61000-3-2, EN 61000-3-3, EN 61000-3-11,EN 61000-3-12			
	Safety	IEC 62109-1, IEC 62109-2, IEC62040-1			

EFFEKTA®

Hybrid-Inverter
SOFAR HYD-series 5-20 kW
3-phase

SOFAR

The three-phase HYD from SOFARSOLAR is a hybrid inverter which combines solar and battery inverter, energy management and system monitoring in one device.
The inverter meets all standards and specifications required for operation.

- Increase self-consumption rates day and night with intelligent battery storage solution
- Battery charging with solar power
- Feeding the surplus solar power into the grid

Hybrid-Solar-System

Features

- 2 MPP trackers
- Compatible with various lithium batteries such as Pylontech
- Easy monitoring through monitoring app
- 5 years manufacturer warranty
- 3-phase smart meter and DC disconnector incl.
- Emergency power function with 100 % power
- Mode for zero power supply configurable

Specifications

Specifications		HYD-5KTL-3PH	HYD-6KTL-3PH	HYD-8KTL-3PH	HYD-10KTL-3PH	HYD-15KTL-3PH	HYD-20KTL-3PH
Input (DC) (PV side)	Max. PV-power [Wp]	7500 (6000/6000)	9000 (6600/6600)	12000 (6600/6600)	15000 (7500/7500)	22500 (11250/11250)	30000 (15000/15000)
	Max. input voltage [VDC]	1000					
	Max. input current per MPP tracker [A]	12,5				25	
	Max. short circuit current per tracker [A]	15				30	
	Number of MPP-tracker	2					
	Number of strings per MPP-tracker	1				2	
	MPPT voltage [VDC]	180 – 960					
	Full power MPPT voltage range [VDC]	250-850	320–850	360–850	220 – 850	350 – 850	450 – 85
Output (AC) (ON-Grid)	Nominal AC-power [W]	5000	6000	8000	10000	15000	20000
	Max. AC-power to utility grid [VA]	5500	6600	8800	11000	16500	22000
	Max. current to utility grid [A]	8	10	13	16	24	32
	Nominal grid voltage [VAC]	3 / N / PE, 230/400					
	Power factor (cosφ)	1					
	Output-THDi	< 3 %					
Output (AC) (Back-up)	AC-power [W]	5000	6000	8000	10000	15000	20000
	Max. power [VA]	5500	6600	8800	11000	16500	22000
	Peak power [VA] / duration [sec]	10000 / 60	12000 / 60	16000 / 60	20000 / 60	22000 / 60	22000 / 60
	Max. current [A]	8	10	13	16	24	32
	Peak current [A] / duration [sec]	15 / 60	18 / 60	24 / 60	30 / 60	32 / 60	32 / 60
	Nominal output voltage [VAC]	3 / N / PE, 230/400					
	Nominal output frequency [Hz]	50/60					
	Output-THDv @linear load	< 3 %					
	Switch time [ms]	< 20					
Battery-Parameters	Battery type	Lithium-ion, Lead-acid					
	(optional)	Battery type				Lithium-ion, Lead-acid	
	Number of battery input	1			2		
	Battery voltage range [VDC]	180V – 800					
	Nom. charging/discharging power [W]	5000	6000	8000	10000	15000	20000
	Nom. charging/discharging current [A]	25			50 (25/25)		
	Charging curve	Adaptation to BMS (lithium) 3-Stage adaptive with maintenance (lead batteries)					
	Communication interface	CAN(RS485)					
Efficiency	MPPT efficiency	99.9%					
	Euro efficiency	97.5A				97.7A	
General Data	Dimensions (H x W x D)	571 x 515 x 264 mm					
	Weight	33kg			37kg		
	Ambient temperature range [°C]	-30°C ~ 60°C					
	Inverter-Topology	transformerless					
	Standby self-consumption	<15W					
	Degree of protection	IP65 (not intended for outdoor use)					
	Noise	<40(dB)			<45(dB)		
	LCD-Display	yes					
	Communication	Bluetooth / RS485 / WIFI / GPRS (Option)					
Connections	(AC)	Terminal connections					
	(DC)	MC4					
Standards	Grid	DIN VDE V 0126-1-1, VDE-AR-N 4105, DIN VDE V 0124-100					
	EMC	EN 61000-1, EN 61000-2, EN 61000-3, EN 61000-4,					
	Safety	IEC 62109-1, IEC 62109-2, NB-T32004/IEC62040-1					

Solar inverter

KS 5 series 3–5 kW

As part of your photovoltaic system, EFFEKTA® KS 5 solar inverters convert DC current directly from solar modules into AC current and feed it into the power grid. On the input side there is usually a DC/DC converter with a maximum power point tracker (MPPT) that feeds the intermediate circuit. On the output side there is a single-phase inverter, which feeds into the power grid and is automatically synchronized with the grid. The KS 5 series solar inverters with an output power of 3,000 to 5,000 watts are ideal for private use. The inverters are available as models with 1 MPP tracker (ST) or 2 MPP trackers (DT).

Special Features

Features and options:

- Outstanding efficiency (up to 98.3%)
- Innovative, lightweight and compact design
- Extended input voltage range
  up to max. 600 VDC
- Simple operation via panel with intuitive 4 buttons and LCD display
- SOLARMAN connection for easy operation, monitoring or yield evaluation

- Extensive options:
  - WLAN-Plug
  - (external) DC disconnect switch
  - (external) current sensor

Outstanding usability thanks to the high-quality control panel with LCD display. Intuitive operation with 4 buttons.

Optional operation and evaluation via SOLARMAN app[1]

Control panel with LCD display / SOLARMAN app

[1] To operate the SOLARMAN app, the mobile device must be connected to the solar inverter via WiFi (optional WiFi plug).

Characteristics

- Outstanding Euro efficiency up to 97.9%
- Innovative lightweight and compact design
- Extended input voltage range
  up to max. 600 VDC
- High MPPT accuracy
- Extremely low night power loss
- Perfect cooling concept without any fans
- Easy to install
- Easy handling
- SOLARMAN connection
- Extensive electronic protection measures
- Insulation resistance monitoring
- LCD panel (monitoring / operation)
- RS485 for optional Wi-Fi plug
- Optional (external) DC disconnect switch
- Optional (external) current sensor
- 5 years warranty

Specifications

KS 5		3000ST	5000DT
Input (DC)	Nominal DC power [W]	3000	6000*
	Max. DC voltage [V]	600VDC**	
	Max. input current per tracker [A]	15	15
	Number of MPP tracker	1	2
	MPPT voltage range [V]	80 - 560VDC**	
Output (AC)	Nominal AC power [W]	3000	4600*
	Max. AC power [W]	3300	4600*
	Max. output current [A]	14.5	20
	Wire / Nominal AC voltage	1 / N / PE, 230VAC	
	AC voltage window [V]	184VAC – 262VAC (Base 230VAC)	
	Frequency	50Hz, auto detect	
	Power factor (cosφ)	1	
	Total harmonic distortion (THDi) (%)	<3	
Efficiency	Max. efficiency	98.1%	98.3%
	Euro-efficiency	97.7%	97.9%
General / mechanical data	Dimensions (H x W x D) in mm	380x380x150	
	Weight in kg	10	11
	Operating temperature range	-25°C ~ +60°C	
	Ingress protection	IP65 (not intended for outdoor use)	
	Cooling concept	convection cooling	
	LCD-Display	yes	
	Interface	RS485/external WIFI (Option)	
Terminals	Input (AC)	terminal connections	
	Output (DC)	MC-4	
Protection	Utility grid	Over/under voltage, over/under frequency, ground fault monitoring, DC isolation fault	
	Short circuit	DC input: reverse polarity protection / electronic circuit AC output: output relay / electronic circuit	
Regulations / standards	Safety	IEC 62109-1:2010 EN 62109-1:2010 IEC 62109-1:2011 EN 62109-2:2011 VDE V 0126-1-1:2013 VDE-AR-N 4105:2018 VDE V 0124-100:2020	
	EMC	EN 61000-6-1:2019 EN 61000-6-3:2007+A1:2011	
	Certifications	CE	

* Power reduction in the corresponding country specification „Germany“ according to VDE-AR-N-4105

** Exceeding or outside of MPPT voltage range: Error message, no power feeding.

Service

Service according to expense

- Appointment according to customer requirements
- Cleaning of the installation
- Checking the mechanical condition of all installation parts
- Checking the voltage of the DC bus
- On customer's request, capacity test of the battery
- Control measurements on thyristors, diodes, transformers, filter elements etc.
- Replacement of defective batteries according to previously approved cost estimate
- Invoicing: at the respective valid EFFEKTA® cost rates

Service contract w/o fault clearance service

- Appointment 1 x per year
- Cleaning of the installation
- Checking the mechanical condition of all installation parts
- Checking the voltage of the DC bus
- Control measurements on various system parts
- On customer's request, capacity test of the battery
- Replacement of spare parts and defective accumulators against charge
- 15% discount on batteries and spare parts
- Invoicing: at the respective valid EFFEKTA® cost rates
- Contract duration at least 2 years

EFFEKTA®

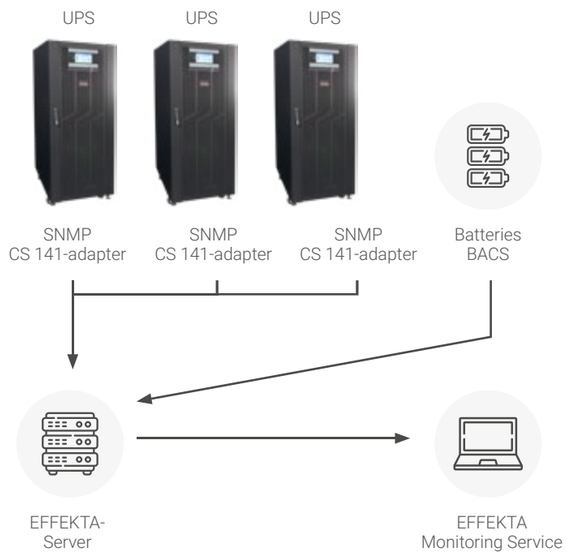
EFFEKTA® UPS-WATCH

24/7 remote monitoring of UPS and BACS
Centralised UPS management with unidirectional data traffic*

As the perfect complement to EFFEKTA® service contracts, we offer EFFEKTA® UPS WATCH for remote monitoring of your UPS.

5 steps to perfect safety

- **Monitoring by EFFEKTA service technicians** for a qualified assessment and professional response to any fault situation
- **Continuous monitoring** with uninterrupted UPS status update to ensure the highest possible system availability
- **Alarm directly** Live transmission of the alarm directly to the EFFEKTA® service centre to allow for immediate response
- **Remote diagnostics** for immediate monitoring and diagnosis of each alarm event for faster troubleshooting
- **Regular reports** that provide an overview of the operating status, reliability and technical condition of your UPS systems



* This type of connection is a one-way connection. All units regularly send out e-mails, which the EFFEKTA-SERVER collects and evaluates with the TELESERVICE module. This makes it an extremely secure and inexpensive connection type for remote monitoring.

Services and complete service

The development, installation and operation of our systems is only one part of our services. We will continually support you in repairs, inspections and maintenance work. With the EFFEKTA® service contract, we always guarantee you the flawless functioning of your system. In addition, we offer you a comprehensive service package at a complete price.

Find out more under:
effekta.com/en

EFFEKTA®

References

Banks

Bank 1 Saar ..... Saarbrücken
BHF Bank ..... Frankfurt
Sparkasse ..... Bergkamen
Sparkasse ..... Dillenburg
Sparkasse ..... Friedrichshafen
Sparkasse ..... Weilburg
Volksbank ..... Altshausen
Volksbank ..... Biberach
Volksbank ..... Donaueschingen
Volksbank ..... Dreieich
Volksbank ..... Friedrichshafen
Volksbank ..... Gardeling
Volksbank ..... Saulgau
Volksbank ..... Tettnang
Volksbank ..... Weingarten

Industry / corporations

Air Liquide DE GmbH ..... Krefeld
Alstom Turbinen ..... Nürnberg
BASF AG ..... Ludwigshafen
BASF AG ..... Willstätt
Bayer Leverkusen ..... Leverkusen
Bayer Vital ..... Fernwald
Bayer Höchst ..... Frankfurt Höchst
BMW AG ..... Munich
Bombardier ..... Braunschweig
Burda Druckzentrum ..... Offenburg
Burda Rechenzentrum ..... Munich
Mercedes-Benz ..... Stuttgart
Deutsche Bahn ..... Frankfurt
Deutsche Messe AG ..... Hannover
Deutscher Wetterdienst .... Offenbach
DORMA GmbH + Co. KG ... Ennepetal
Festo ..... Esslingen
Georg Fischer ..... Singen
Gerolsteiner Br. GmbH ..... Gerolstein
Hoechst AG ..... Frankfurt
Hoechst AG ..... Wiesbaden
Höft und Wessel AG ..... Hannover
KONE ..... Leipzig
Kaufhof ..... Köln
Klöckner Stahl GmbH ..... Bremen
Mattson ..... Plietzhausen
Mediamarkt ..... Velbert
Merck KG aA ..... Grafing
Mitropa ..... Berlin
Obi ..... Martinsried
Ravensburger Sp. GmbH .. Ravensburg
Saeco ..... Eigeltingen
Salamander ..... Kornwestheim
Scheidt & Bachmann ..... Mönchengladbach
TNT ..... Troisdorf
VW ..... Wolfsburg
Walter AG ..... Tübingen

Universities

Universität ..... Duisburg
Universität ..... Heidelberg
Universität ..... Konstanz
Universität ..... Regensburg
Universität ..... Tübingen
Universität ..... Ulm
Universität ..... Wuppertal
Universität ..... Würzburg
Uni der Bundeswehr ..... Hamburg
Uni. Gesamthochschule ... Soest
Fachhochschule ..... Darmstadt
Fachhochschule ..... Dortmund
Fachhochschule ..... Frankfurt
Fachhochschule ..... Mainz
Fachhochschule ..... Mannheim

Fachhochschule ..... Stuttgart
Techn. HS Mittelhessen .... Gießen

Authorities

Abfallbehandlung Nord ..... Bremen
AOK Brandenburg ..... Potsdam
Berliner Verkehrsbetriebe .. Berlin
Bezirksverwaltung Obb. ..... Munich
Botschaft der VAE ..... Berlin
Bundespolizeiamt ..... Stuttgart
Bundespräsidialamt ..... Berlin
Finanzamt ..... Schweinfurt
Friedrich-Löffler-Institut .... Insel Riems
FTZ ..... Eschborn
Kläranlage ..... Griesheim
Kläranlage ..... Langenhagen
Kreisverwaltung ..... Mansfeld
Landesvermessung ..... Dresden
Landesvermessung ..... Potsdam
Landeswohlfahrtsverb..... Kassel
Landratsamt ..... Friedrichshafen
Landratsamt ..... Mosbach
Landtag Sachsen-Anhalt ... Magdeburg
LVA ..... Karlsruhe
Max-Planck-Institut ..... Göttingen
Max-Planck-Institut ..... Golm
Max-Planck-Institut ..... Stuttgart
Messe AG ..... Hannover
Polizeipräsidium ..... Wiesbaden
Polizeipräsidium ..... Dortmund
Sancura BKK ..... Wetzlar
Stadtverwaltung ..... Frankfurt
Stadtverwaltung ..... Halle
Stadtverwaltung ..... Konstanz
Stadtverwaltung ..... Schwalbach
Stadtverwaltung ..... Stuttgart

Hospitals

Albklinik ..... Münsingen
Bundeswehrkrankenhaus . Amberg
Kliniken Landkreis ..... Sigmaringen
KH Bad Cannstatt ..... Stuttgart
KH St. Martin ..... Duderstadt
KH Stadt Chemnitz ..... Chemnitz
KH Sachsenhausen ..... Frankfurt
Städtisches KH ..... Friedrichshafen
Städtisches KH ..... Dresden

Telecommunications

Broadnet Mediascape ..... Hamburg
DeTe Mobil AG ..... Bonn
Deutsche Telekom AG ..... Weilheim
M"net GmbH ..... Munich
Nokia ..... Heilbronn
SCALTEL AG ..... Waltenhofen
TeleData GmbH ..... Friedrichshafen
T-Mobile ..... Leipzig

Sports facilities

Bayarena ..... Leverkusen
Nürburgring ..... Eifel
Stadion der Freundschaft . Cottbus
SAP Arena ..... Mannheim
Mercedes Benz Arena ..... Stuttgart

EFFEKTA® Austria

Allg. österr. Bezirks KA ..... St. Johann in Tirol
Breitenfeld Edelstahl AG ... Mitterdorf
BTV AG ..... Innsbruck
Bundespolizeidirektion ..... Vienna
CGM Österreich ..... St. Pölten
Donau-Universität Krems . Krems
Dornbirner Messe GmbH .. Dornbirn
Ebewe Pharma GesmH ..... Unterach
Energie Control GmbH ..... Vienna
ENI Austria AG ..... Vienna
FH JOANNEUM GmbH ..... Graz, Kapfenberg
Fiber Cable Technologie ... Gmünd
Gartner KG ..... Lambach

EFFEKTA®

Haus der Musik ..... Innsbruck
Hypo Bank ..... Vienna
IGM Robotersysteme ..... Vienna
IKB ..... Innsbruck
IMC FH Krems ..... Krems
Nordkettenbahnen GmbH . Innsbruck
Interwetten AG ..... Vienna
Isovolta AG ..... Werndorf
LG für Strafsachen ..... Vienna
LSZ Burgenland ..... Eisenstadt
Land Tirol ..... Tirol
Linz AG ..... Linz
Leopold-Franzens-Uni. ..... Innbruck
Linz AG ..... Linz
Louis Vuitton ..... Vienna
Medizinische Uni. Graz ..... Graz
Norske SKOG Bruck ..... Bruck a.d. Mur
Olympia Sport- & Veranst.-
zentrum Innsbruck ..... Innsbruck, Igls
Porsche Informatik GmbH .. Salzburg
Prillinger GmbH ..... Wels
Radio 88.6 ..... Burgenland
REWE Group Austria AG ... Austria
Schloss Schönbrunn ..... Vienna
Schönbrunner Tiergarten ... Vienna
Stora Enso Wood Products . Austria
TU-Wien Gebäude/Technik . Vienna
Veterinärmedizinische Uni. . Vienna
Technische Universität ..... Vienna
VOEST Alpine Stahl ..... Linz
VOEST Alpine Group IT ..... Linz, Böhlerwerk

International

BGL Axento ..... Luxembourg
CCK ..... Luxembourg
CSSF ..... Luxembourg
Deutsche Babcock ..... Utd. Arab Emirates
Deutsche Botschaft ..... Nairobi
Eurocash ..... Poland
Euroforum Trade Center ... Luxembourg
Messer Hungarogaz ..... Hungary
Migros Markt ..... Switzerland/Zurich
Millicom ..... Luxembourg
Osram ..... China
PanTel Telecommunication . Hungary
Philips ..... Israel
Praktiker ..... Hungary
Stadtverwaltung ..... Schwalbach
Zollamt ..... Switzerland/Zurich

Othersiron city in Egypt, China, England, France, Latvia, the Netherlands, Saudi Arabia, Sweden, Switzerland, Spain, the Soviet Union, Sudan, Taiwan, the Czech Republic, Hungary, USA

EFFEKTA®

Terms & conditions

Preamble
The following terms and conditions for sales and delivery form the basis of the delivery and service contracts of the contractor (user) and supplement the applicable law.
They are only applicable to businesses where the contract is made in the course of their business, legal entities of the public law or special authorities under public law.

I. Application
1. Orders only become binding with regard to the type and scope of deliveries after the supplier confirms the order. Any changes and additions must be in writing.
2. Where ongoing business relationships subsist, these terms and conditions also apply to future transactions even where they are not expressly communicated to the orderer. The terms and conditions are deemed to be accepted at the latest when the order is placed or the delivery or service is accepted. If alternative provisions of the orderer or supplier are to apply instead of these terms and conditions, these must be expressly agreed by the partners.
3. Contrary or divergent sales terms of the orderer shall only be binding on the supplier if they have been expressly acknowledged by him in writing.

II. Prices
1. A binding price shall only be deemed to have been set after the supplier confirms the order in writing. This is subject to the proviso that the order details on which the order confirmation is based remain unchanged. The supplier's prices are in EUR exclusive of any VAT applicable at the time of the delivery, unless other information is specified.
2. If, in the course of a delivery period of more than four months, a change to the price basis occurs (increase in the price of raw materials, change of salary and wage rates), the supplier reserves the right to adjust the price accordingly.
3. Packaging, postage and other shipping costs are not included and will be invoiced additionally.
4. The orderer shall bear the costs of any changes to the product he requests after the order has been confirmed.
5. Partial deliveries may be invoiced separately.

III. Delivery quantity, delivery period
1. Production-related over- or underdeliveries of up to 10% of the order quantity are permitted.
2. The supplier is permitted to make partial deliveries.
3. The delivery periods commence with the date of order confirmation by EFFEKTA - Regeltechnik GmbH. The delivery periods specified by the supplier refer to the shipping date of the goods. They shall be deemed to have been observed if at this time the goods are dispatched from the factory or the orderer is informed that they are ready to be shipped.
4. The agreed delivery time is only applicable after all technical and commercial details have been settled.
Accordingly, all delivery times are provisional. Delivery times are only binding where they have been confirmed to the orderer as such in writing.
5. If action on the part of the orderer is necessary for the manufacture of an item or the execution of a delivery, the delivery period shall not commence until the orderer has fully completed this action.
6. In the event of a delay in delivery, the orderer may withdraw from the contract should a reasonable grace period expire without results. In the event of impossibility of performance on the part of the supplier, this right is available without the supplementary period.
Delay in delivery is deemed to amount to impossibility if delivery does not occur for more than one month.
Claims for damages (incl. any consequential loss) are excluded, without prejudice to clause 7; the same applies to reimbursement of expenses.
7. The exclusion of liability regulated by clause 6 shall not apply where an exclusion or limitation of liability for damages for death, personal injury or damage to health resulting from a wilful or negligent breach of duty by the user or vicarious agents of the supplier has been agreed; further, it shall not apply where an exclusion or limitation of liability for other loss resulting from a wilful or grossly negligent breach of duty by the supplier or a wilful or grossly negligent breach of duty by a legal representative or a vicarious agent of the supplier has been agreed.
Liability shall not be excluded where the supplier culpably breaches a fundamental contractual duty or a "cardinal duty", but instead limited to the foreseeable damages typical for the type of contract.
The above applies correspondingly in the event of reimbursement of expenses.
8. The limitations of liability stipulated in clauses 6 and 7 do not apply insofar as a commercial firm deal was agreed; the same also applies where the orderer can assert that he no longer has an interest in fulfilling the contract due to a delay for which the supplier is at fault.
9. In the event of forces majeures experienced by the supplier or his subsuppliers, the delivery time shall be prolonged by a corresponding amount. This shall also apply in the event of intervention by official bodies, difficulties with the supply of energy and raw materials, strikes, lockouts and unforeseen obstacles to delivery, insofar as these are not the fault of the supplier. The supplier shall inform the orderer of any such event without delay.

IV. Transfer of risk, packaging and shipping
1. Where the orderer collects the goods from the supplier's premises, risk passes with transfer of the goods to the orderer. Where the goods are shipped, risk passes on transfer of the goods to the carrier. Where the goods are delivered, risk passes when the goods leave the supplier's premises.
2. In the event of delays to dispatch that are the fault of the orderer, risk passes on communication of readiness for shipping.
3. Insofar as nothing else has been agreed, the supplier shall select the packaging and shipping type to the best of his judgment. Where requested in writing by the orderer, the goods may be insured against breakage, transport and fire damage at the orderer's expense.

V. Retention of title
1. The supplier shall retain title to the deliveries until all current and future amounts due from the business relationship have been settled, even where the purchase price of specifically designated amounts due has been paid. In the case of rolling invoices, the retained title of the deliveries (goods subject to retention of title) counts as a security for the payment of amounts due on the supplier's account.
2. In the event of conduct constituting a breach of contract on the part of the orderer, in particular late payment, the supplier is entitled to reclaim the goods. The orderer hereby agrees to the goods being reclaimed under these circumstances. Reclaiming the goods only represents a withdrawal from the contract where the supplier expressly declares this to be such. Any costs incurred by the supplier in reclaiming the goods (in particular transport costs) shall be borne by the orderer. Further, the supplier is authorised to prevent the orderer from selling on or processing the goods subject to retention of title and to revoke any direct debit authorisation that may have been issued. Once the purchase price and all costs have been paid, the orderer can require any goods reclaimed without an express declaration of withdrawal to be despatched.
3. The orderer undertakes to handle the goods with care.
4. The orderer may neither mortgage, pledge as security nor assign the goods delivered and corresponding amounts due. In the case of seizure or other third-party intervention, the orderer shall immediately inform the supplier in writing in order for him to file a claim in accordance with section 771 of the Civil Procedure Code. Any remaining costs outstanding to the supplier despite successful litigation as per section 771 of the Civil Procedure Code shall be borne by the orderer.
5. The orderer is permitted to sell on, process or mix the goods in the normal course of business. In doing so he hereby assigns to the supplier all amounts due from selling on, processing, mixing or other legal grounds (in particular from insurance or non-permitted actions) to the extent of the final invoice amount agreed with the supplier (incl. VAT).
The orderer remains authorised to collect these amounts due even after assignment, without prejudice to the authorisation of the supplier to collect the amounts due himself. However, the supplier undertakes not to collect the amounts due for such time as the orderer fulfils his payment obligations from the revenue received, is not in default of payment and no application to instigate insolvency proceedings has been made and no suspension of payment is in force.
If this is the case, the orderer is required to notify the supplier on request of the assigned amounts due and debtors, to provide all information required for collection, to deliver up the associated documents and to notify the debtor (third party) of the assignment.
The direct debit authorisation may be revoked by the supplier in the event of breaches of contract (in particular payment default) by the orderer.
6. The retention of title also extends to the products arising as a result of processing, mixing or combination of the delivered goods to the extent of their full value, whereby these processes shall be deemed by the supplier to constitute manufacture. In the event of processing, mixing or combination

of the goods with goods to which a third party retains title, the supplier obtains co-ownership in proportion to the objective values of these goods.
7. For the purpose of securing the amounts due against the supplier, the orderer also assigns to the supplier the amounts due which arise in favour of a third party through the combination of the delivered goods with land.
8. The securities owing to the supplier are not included where the value of his securities exceeds the value of the secured claims by more than 30%.
9. The enforceability of the retention of title in the event of default on payment or exposure to loss and seizure of the delivered goods by the supplier represents withdrawal from the contract.

VI. Terms of payment
1. All payments must be made in Euros exclusively to the supplier.
2. Insofar as nothing else has been agreed, the purchase price must be paid via cash on delivery or advance cheque. In the latter case delivery shall proceed once the cheque has cleared. In exceptional cases payment terms of 14 days strictly net may apply.
3. If the orderer defaults on payment, the supplier is permitted to demand default interest at eight percentage points above the base interest rate. The supplier may at any time produce evidence of higher interest damages and charge for these.
4. Failure to observe the terms of payment, default or circumstances that pose a risk of reducing the orderer's creditworthiness will result in all of the supplier's claims becoming due for payment immediately. Further, the supplier is permitted after a reasonable grace period to withdraw from the contract or demand damages instead of performance.
5. The orderer may only exercise offsetting rights if his counterclaims have been legally established, are indisputable or have been acknowledged by the supplier.
6. The orderer is permitted to exercise a right of retention insofar as his counterclaim is based on the same contractual relationship.
7. The supplier is under no obligation whatever to accept cheques and bills of exchange. Credit of this type is in all cases subject to redeemability (on account of payment, not on account of performance) and is deemed to be redeemed on the day that redemption value is available to the supplier. In the case of bills of exchange, any discount on presentation, stamp duty, bank charges and any direct debit charges shall be passed on by the supplier.
8. The right to pursue any further contractual or statutory claims in the event of default is reserved.

VII. Responsibility for defects
If the orderer fulfils the duty of inspection, notification and rejection required of him in accordance with section 377 of the Commercial Code, the supplier is liable for defects of the delivery to the following extent:

1. In the event of a not inconsiderable defect of the purchased goods, the supplier may choose either to correct the defect or supply a defect-free product (supplementary performance). In the event of failure of the supplementary performance, the supplier is authorised to undertake a further act of supplementary performance. Further, in the event of repeated supplementary performance, the supplier decides between re-supply or correction of the defect. Should one or both of these methods of supplementary performance be impossible or not proportionate, the supplier is permitted to refuse them. The supplier may also refuse supplementary performance for such time as the orderer does not fulfil his payment obligations towards him proportionate to the defect-free part of the performance.
2. If supplementary performance as per clause 1 is impossible or fails, the orderer has the right either to reduce the purchase price accordingly or withdraw from the contract in accordance with the statutory provisions. These rights are open to the purchaser particularly where the supplier culpably delays or refuses the supplementary performance or if it fails for a second time. Insofar as the following (clause 4) does not provide otherwise, further claims of the orderer, regardless of their legal ground (in particular claims arising from the breach of contractual conditions and warranties, reimbursement of expenses with the exception of that provided for in section 439 subsection 2 of the German Civil Code, unlawful acts and other tortious liability) are excluded. This applies in particular to claims for damages beyond the thing purchased and for claims for the reimbursement of lost profits. This also covers claims that do not result from the defectiveness of the thing purchased.
3. The above provisions also apply to the delivery of a different item or a lesser quantity.
4. The exclusion of liability under clause 2 does not apply where an exclusion or limitation of liability for damages for death, personal injury or damage to health caused as a result of a wilful or negligent breach of duty by the user or wilful or negligent breach of duty by a legal representative or vicarious agent of the user has been agreed. It also does not apply where an exclusion or limitation of liability for other damages caused as a result of a wilful or negligent breach of duty by the user or wilful or negligent breach of duty by a legal representative or vicarious agent of the user has been agreed. Liability shall not be excluded where the supplier breaches a fundamental contractual duty or a "cardinal duty", but instead limited to the foreseeable damages typical for the type of contract. It is further excluded under clause 2.
The exclusion of liability shall not apply if liability for personal injury or material damage to privately used items in the event of defects to the thing supplied applies under the Product Liability Act.
Further, this also applies in cases covered by a guarantee by the supplier or where assurances were made as to specific properties of the goods purchased. Here a defect in this regard triggers the supplier's liability.
The above applies correspondingly in the event of reimbursement of expenses.
5. Claims for supplementary performance, damages and replacement goods/services are subject to a time limit of one year after delivery of the goods.
This does not apply to goods which have been deployed in a building in accordance with their standard application and have caused this to become defective. The time limit here is five years.
Claims for abatement and the exercise of the right to withdraw from the contract are excluded where the time limit for a claim for supplementary performance has been exceeded.
In the case of clause 3 the purchaser may refuse to pay the purchase price to the extent that he would be entitled in the event of withdrawal or abatement. In the case of an exclusion of withdrawal and subsequent refusal to pay, the supplier is permitted to withdraw from the contract.
6. Claims resulting from right of recourse to the producer are not affected by this section.
7. No liability is accepted for damage resulting from unsuitable or improper use, defective installation by the orderer or a third party, defective or negligent handling or natural wear. Further, the supplier bears no liability for any damages caused by unsuitable equipment, defective building work, replacement materials, chemical and electrochemical or electrical influences (insofar as these are not the fault of the supplier) and improper alterations or maintenance work made without prior approval of the manufacturer on the part of the orderer or third parties. The same applies to unauthorised re-working or improper handling.
8. Transport damages must be reported immediately to the delivering transport company. The carrier's instructions on subsequent procedure must be followed in all cases. Never should goods damaged in transit be sent to us either through us or the transport company without such instructions.

VIII. Breaches of duty
1. The supplier's liability for breach of duty is limited to grossly negligent or wilful breaches of duty.
2. Any liability for the infringement of intellectual property rights of third parties is excluded, in particular when performing production tasks in accordance with the orderer's specifications. The supplier is not subject to a duty of scrutiny in regard to the intellectual property rights of third parties.

IX. Software
Insofar as programs are part of the scope of delivery, the orderer obtains individual unlimited usage rights, that is he may not copy them or use them for any other purpose. Multiple usage rights shall be subject to written agreement. In the event of an infringement of these usage rights, the purchaser shall be liable for the full extent of any resultant loss.

X. Place of performance, jurisdiction and applicable law
1. The place of performance is Rottweil.
2. The court of jurisdiction is Rottweil, insofar as the orderer is trading in the course of a business. The supplier is permitted to bring an action against the orderer in other permissible jurisdictions.
3. The law of the Federal Republic of Germany applies with regard to all claims and rights resulting from this contract. The application of UN sale of goods law (CISG) is expressly excluded.

XI. Closing provisions
1. Any changes to the contract or supplementary agreements are only effective if they have been approved in writing by the supplier.
2. Rights of the orderer arising from the legal transaction with the supplier are not transferable.
3. Should any individual provisions of these terms and conditions become partially or wholly ineffective or invalid, this shall not affect the validity of the remaining provisions. The parties to the contract undertake to agree to a ruling by means of which the purpose intended by the ineffective or invalid provision is largely achieved.

EFFEKTA®

Notes

EFFEKTA®
innovating power.

Germany | headquarter
EFFEKTA® Regeltechnik GmbH
Rheinwaldstraße 34
D-78628 Rottweil
Phone: +49 741 17451-0
Fax: +49 741 17451-22
Email: info@effekta.com

Austria | distribution, service Austria
EFFEKTA® Regeltechnik GmbH
Franz Eigl-Straße 14
A-3910 Zwettl / Austria
Phone: +43 2822 20018-10
Fax: +43 2822 20018-20
Email: sales@effekta.at

Spain | distribution, service Spain
EFFEKTA® SPAIN S.L.
C/.Larrondo Beheko Etorbidea
Edifi cio 3, Nave P-9
48180 Loiu (Vizcaya)
Phone: +34 94 45380-06
Email: comercial@effekta.es

Hungary | Production, Sales, Service Hungary
EFFEKTA® Kft.
Dorozsmai ut 35
H-6728 Szeged / Hungary
Phone: +36 62 542-030
Fax: +36 62 548-541
Email: office@effekta.hu

EFFEKTA.Kat.EN V.1.1

effekta.com/en