

REGAL

WÖHRLE[®]
Stromversorgungssysteme

Power that drives

DC/AC power supplies for industry and customised solutions



Welcome



Uwe Wöhrle, Founder and Chief Executive Officer
of Wöhrle Stromversorgungssysteme GmbH

Your specialist for a reliable supply of power

This claim combines the corporate philosophy and the product portfolio of Wöhrle Stromversorgungssysteme GmbH in just one sentence.

For more than 30 years, Wöhrle Stromversorgungssysteme GmbH has developed, produced and marketed high-quality power supply systems for industrial applications as well as for the IT and computer centre sectors.

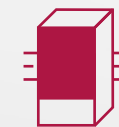
Our product portfolio covers UPS systems, DC UPS systems, switched-mode power supplies, innovative energy storage device technologies and transformers. We also provide professional service and support for our products.

Our many years of experience and our expertise enable us to develop individual and specialised solutions along with our powerful standard systems.

The continuous further development of our products and skills ensures that we will remain a strong, dependable partner for our customers, also in future. The numerous requirements on the optimal reliability of the supply of power are met by the latest technology and highest quality standards, as well as by our commitment.

Innovation has been a fixed element of the philosophy of our medium-sized business since it was founded and, in future, will also be key to how we meet challenges that arise.

"The perfect solution
for you – for every situation
and every environment.
We give our best every
day to provide you with
perfection."



DC power supplies

DC UPS solutions
Peripherals
Switched-mode power supplies
Customised DC solutions

4 – 33



Transformers

Single-phase transformers with EI or UI core, three-phase transformers with 3UI core as well as three-phase transformers for higher powers with self-supporting coils or strip-metal cores.

34 – 43



Custom UPS solutions

UPS systems for industrial and critical environments
Regenerative UPS systems
Modifications to design and appearance
Maintenance-free supercapacitors
UPS systems for higher ambient temperatures

44 – 51

DC power supplies

Safeguarding the supply of electrical power where it is needed

Control systems, drives, lasers – DC voltages are used from automation technology to machinery manufacture. Here, as in the AC area, even brief power failures can cause protracted restarts or extensive damage. A reliable DC power supply is therefore of crucial importance.



DC UPS systems

Solutions for industry, IT, power stations and treatment plants as well as demanding applications with special requirements

- o Planning individual solutions for 24V as well as special voltages with broad power spectrum
- o Maximum flexibility for optimal adaptation to your application
- o Low power consumption and tailor-made solutions ensure minimum operating costs
- o Integrated power supply units for maximum space saving in the switch cabinet



Switched-mode power supplies

- o Primary-switched power supply units
- o Output current from 1 to 80A
- o Output voltage: 24V
Special voltages: 30V, 48V, 72V, 96V, others upon request
- o Easy to mount: DIN rail mounting for switch cabinet installation or distribution board installation
- o Very slim design, compact dimensions and low weight
- o High efficiency
- o Wide-range input
- o International approvals such as UL, EN, CSA
- o Comprehensive protective functions
- o Depending on the unit, with relay contact, power boost and / or parallel connection option
- o ePlan macros for circuit diagram, 2D and 3D modelling



DC UPS systems

DC supply scenarios

6 – 7

DC UPS modules

8 – 11

- DC UPS module by charging current principle
- AC/DC UPS module with integrated power supply unit
- DC UPS module with DC/DC converter function
- DC UPS module with DC/DC converter function and integrated storage device

Peripherals

12 – 13

Switched-mode power supplies

EV series

14 – 15

Maximum efficiency with 45mm cut-out
single-phase, 36 to 100W, distribution board installation

E series

16 – 17

Robust design with basic functionality
single-phase, 75 to 480W, switch cabinet installation

EP series

18 – 19

High degree of functionality with outstanding efficiency
single-phase, 24 to 480W, switch cabinet installation

Z series / ZPNW series

20 – 21

For worldwide use, also in harsh ambient conditions
two-phase, 120 to 240W, switch cabinet installation

DPNSW series / D series

22 – 23

Mains-synchronous loading for reliable power
three-phase, 240 to 960W, switch cabinet installation

DP series

24 – 25

High-end switched-mode power supply series with comprehensive extras
three-phase, 240 to 960W, switch cabinet installation

EF series / DF series

26 – 27

Latest generation of switched-mode power supplies, spring-cage terminal technology

Power supply units for special applications

28 – 29

Variety of voltages, additional functions and designs

Customised solutions

30 – 33

DC supply scenarios

Scenario 1: Unprotected supply

The load is connected directly to the power supply unit.

Problem: If there is a mains power failure or the power supply unit fails, the load is no longer supplied with power, and as a result data may be lost or the machine damaged.
Application: Uncritical loads that do not need to be protected

Scenario 2: Difficult protection

An energy storage device is connected between the power supply unit and the load. If there is a mains power failure, the load is temporarily supplied with power from the energy storage device.

Problem: Due to the typical battery discharging curve, the power supply unit must be set to a higher value to be able to charge the battery. If it is not possible to operate the load with varying voltages, this scenario is not feasible. Also, this configuration is not supported by all power supply units.
Application: Loads that can be supplied with varying voltages and that should be protected. However, there are limitations regarding reliability and there is no battery monitoring.

Scenario 3: Protection with limitations

A DC UPS control unit with integrated charging current limiter is connected before the battery to control the battery's charging current and therefore to prevent the power supply unit from shutting down. In this scenario, the battery can also be monitored.

Problem: –
Application: Loads that can be supplied with various voltages and that must be protected. The battery can be monitored.

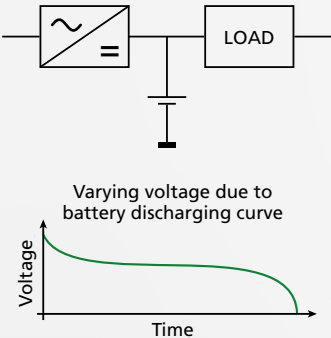
Scenario 4: Protection with constant voltage

A DC/DC converter is connected between the power supply unit and the load. This converter maintains the voltage constant and therefore compensates for the battery discharging curve. If the mains or the power supply unit fails, the load is supplied with constant voltage by the energy storage device connected to the DC/DC converter. Furthermore, it is also possible to monitor the battery in this scenario.

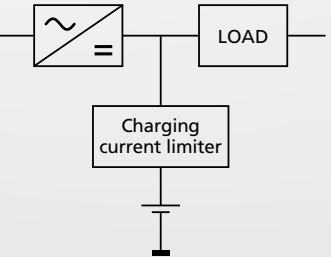
Problem: –
Application: Loads that must be supplied with constant voltage and that must be protected.



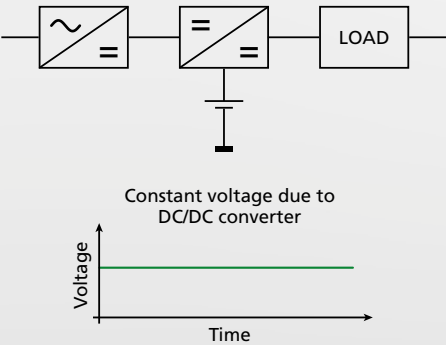
Scenario 1



Scenario 2



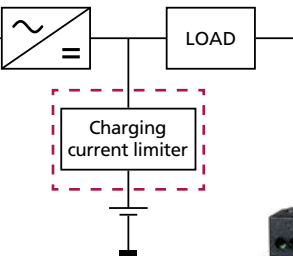
Scenario 3



Scenario 4

DC UPS modules

For various supply scenarios



DC UPS control unit with integrated charging controller (Scenario 3)

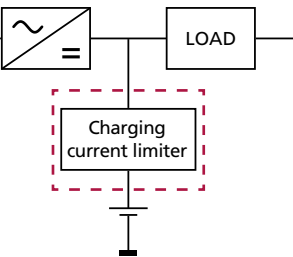
Our solution: EVU2410
24V DC UPS control unit for distribution boards / DIN rail mounting



Product name	Input voltage	Output voltage	Output current	Charging current
EVU2410	24–28V DC	23–28V DC	max. 10A	0.5A



technical
data
sheet



DC UPS module based on principle of charging current limiter (Scenario 3)

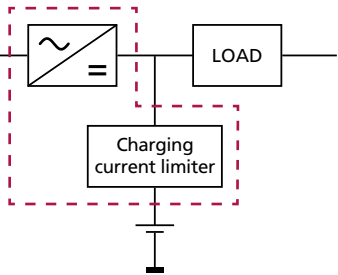
Our solution: USR2440-2 and USR2440
Monitoring and control assembly for 24V DC UPS systems with deep discharge protection



Product name	Input voltage	Output voltage	Output current	Charging current
USR2440-2	24–28V DC	23–28V DC	max. 40A	2A



technical
data
sheet



ALL in ONE – DC UPS with integrated power supply unit (Scenario 3)

Our solution: UNG24014, UNG24022, UNG2477-RS232 and UNG24154-RS232
Due to their modular design, the new Wöhrle ALL in ONE units are a flexible DC UPS system. Various requirements such as the rated power and backup time can be adapted to the application and the energy storage device, which is available separately. The units are used in combination with the appropriate energy storage device to protect systems and control processes against power failures.



Product name	Input voltage	Output voltage	Rated load	Charging current
UNG24014	90–264V AC	20–30V DC	max. 1.4A	0.75A
UNG24022	127–370V DC	depending on battery voltage	max. 2.25A	1.25A



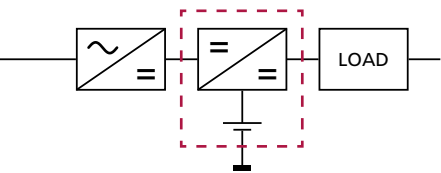
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Product name	Input voltage	Output voltage	Rated load	Charging current
UNG2477-RS232	90–305V AC	24–28.8V DC	10A	adjustable
UNG24154-RS232	127–431V DC	24–28.8V DC	20A	adjustable



technical
data
sheet



DC UPS module with DC/DC converter function and integrated storage device (capacitor) (Scenario 4)

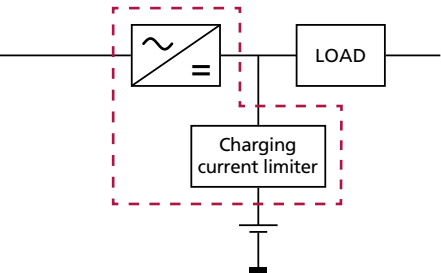
Our solution: UGVC2420NG and UGVC 2440
Maintenance-free for life as well as capacitors fully suited to use in industry, even in elevated ambient temperatures



Product name	Input voltage	Output voltage	Backup time	Output current
UGVC2420NG	22.8–28.8V DC	24V DC	5sec. (1A), 0.3ms (20A)	max. 20A
UGVC 2440	22.8–28.8V DC	24V DC	8sec. (1A), 0.6ms (20A), 0.2ms (40A)	max. 40A
UGVC2440-2	22–29V DC	22/24V DC	8sec. (1A), 500/320ms (20A), 250/160ms (40A)	max. 40A



technical data sheet



DC UPS components – control unit with integrated charging controller (Scenario 3)

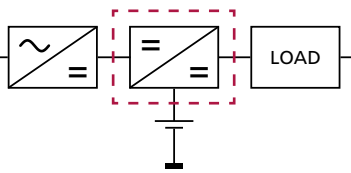
Our solution: UGS2420 and UGS2440
DC UPS modules of flexible application with individually adjustable settings and comprehensive extras



Product name	Input voltage	Output voltage	Rated load	Charging current
UGS2420	18–30V DC	17.5–29.5V DC	max. 20A max. 30A (7sec. typ.)	0.75–3A
UGS2440	18–30V DC	17.5–29.5V DC	max. 40A max. 60A (7sec. typ.)	1–4A



technical data sheet



DC UPS module with DC/DC converter function (Scenario 4)

Our solution: UGVNG 20
Programmable DC UPS module with comprehensive extras



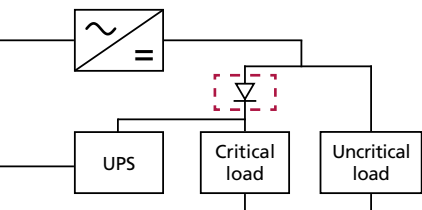
Product name	Input voltage	Output voltage	Output current	Supported storage device technology
UGVNG 20	12–48V DC	12–48V DC	max. 20A	Lead acid, NiMH, lithium rechargeable batteries, supercapacitors



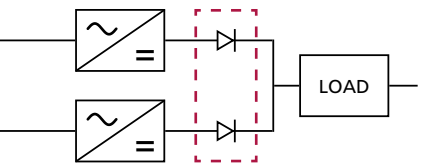
technical data sheet

Peripherals

Redundancy module, current limiter and energy storage devices



Application case 1: Decoupling of critical paths to maintain the function of important components for longer.



Application case 2: If a power source fails, the second power source automatically takes over the supply of power.

Redundancy module

Our solutions: EDI-RED20 and EDI-RED40

EDI-RED20: This redundancy module is used as a decoupling diode with separate monitoring of the input. The EDI-RED20 can be used as an accessory for uninterruptible 24V DC power supply systems. It also has a relay contact and a LED that indicates the state of the input.

EDI-RED40: With a broad range of input and output voltages from 22 to 60V DC, the EDI-RED40 is able to support the supply of power while connected in parallel. The module can be variably configured and has a relay contact. It can also be used in a broad temperature range from -40 to +80°C. For this reason it is also suitable for harsh industrial applications.



Product name	Input voltage	Output current
EDI-RED20	21–28V DC	max. 20A
EDI-RED40	22–60V DC	max. 40A



technical data sheet

Electronic current limiter ESB 10.2

Where the classic circuit breaker fails, the ESB 10.2 exploits its strengths.

The ESB 10.2 is a current limiter for DIN rail mounting for the selective shutdown of faulty current paths. Unlike classic circuit breakers, the current monitoring in the ESB 10.2 is completely electronic, and as a result even minor overloads can be detected and shut down.



Product name	Input voltage	Trigger current	Number of independent channels	Trigger characteristic
ESB 10.2	10–31V DC	2/4/6/10A per channel	2	ultrafast, fast, medium, slow



technical data sheet

Energy storage devices

Our solutions: BE lead gel energy storage device series, ESM energy storage device series and AKKU-SYS 24280S
A very wide range of storage device technologies for different applications with a maximum output current of up to 40A.

Product name	Backup time in minutes									Charging connection voltage	Charging current	Max. discharging current	Capacity
	1A	2A	3A	5A	10A	15A	20A	30A	40A				
BE24035	150	65	40	20	4	–	–	–	–	27–27.4V DC	0.35–1A	10A	3.5Ah
ESM-B	280	132	90	47	18	9	4	–	–	27.2–27.6V DC	0.5–2A	20A	6.0Ah
BE 2407 with additional BE 2407 rechargeable battery 24V 7.2Ah	320	150	100	50	22	10	6	2	–	27.2–27.6V DC	0.75–2.25A	30A	7.2Ah
	760	370	215	110	54	28	16	4	–				
BE 2407NG	320	150	100	50	22	10	6	2	–	27.2–27.6V DC	0.75–2.25A	30A	Suitable for lead rechargeable batteries 12V/7.2Ah connected in series inside the housing to produce 24V DC
AKKU-SYS 24180S	810	405	270	160	80	45	25	15	10	27.2–27.6V DC	1.5–2.25A	40A	17Ah

Capacity data at +20°C

Energy storage devices for customised applications



Product name	Technology & properties	Capacity	Dimensions W × H × D (in mm)	Weight (in kg)
ESM-H-25	Cyclone cells: large temperature range, suitable for high currents	2.5Ah	160 × 117 × 129.25	3.2
ESM-H-45		4.5Ah		4.3
ESM-C-30	Capacitors: thermally stable, short backup times	30F		1.9
ESM-C-40		40F		1.95
ESM-C-50		50F		2.1

NiMH and lithium energy storage devices upon request.



technical data sheet

EV series

Single-phase, distribution board installation, 30 to 100W high-end

Distribution board installation

The new EV series with optimal price-performance ratio from Wöhrle offers a broad selection of compact switched-mode power supplies for distribution board installation in 45mm panel cut-outs. The units can be mounted directly on DIN rails. The EV series offers the optimal price-performance ratio for this application area.

Compact housing

The only 91mm high and between 53 and 89.9mm wide design requires only little space in the switch cabinet. The units have a robust, sealed plastic housing with screw connections protected against touching. Therefore, they do not require an earth connection and have a low leakage current.

Universal application

The modern circuit design of the EV series meets the highest standards. Due to the broad input voltage range, both AC and DC, the switched-mode power supplies can be used universally for numerous applications. Furthermore, the units were developed for a broad range of operating temperatures between -25°C and +70°C.



PRODUCT HIGHLIGHTS

Distribution board installation

Power range from 1.25 to 3.8A / 30 to 91.2W

Output voltage 24V DC

High efficiency of up to 89%



technical data sheet

	EV series		
	EV2401	EV24025	EV2404
	✓	✓	✓
Input			
Input voltage range AC	90 – 264V	90 – 264V	90 – 264V
Input voltage range DC	125 – 375V	125 – 375V	125 – 375V
Input current @115V AC	< 0.8A	< 1.5A	< 2.2A
Input current @230V AC	< 0.6A	< 1A	< 1A
Output			
Rated output voltage DC	24V	24V	24V
Adjustment range of output voltage DC	23.52 – 24.48V	24 – 28V	22 – 24V
Rated output current	0–1.25A (max. 30W)	0–2.5A (max. 60W)	0–3.8A (max. 100W)
General data			
Temperature range	-25 to +70°C	-25 to +70°C	-25 to +70°C
Derating	from 55°C -2.5% / K	from 55°C -2.5% / K	from 55°C -2.5% / K
Overtemperature protection	yes	yes	yes
Efficiency (typ.)	87%	88%	89%
Dimensions (in mm)			
W	53	71	89.9
H	91	91	91
D	55.6	55.6	55.6
Weight (in kg)	0.14	0.22	0.35

E series

Single-phase, switch cabinet installation, 75 to 480W

Affordably priced with basic functionality

The units of the E series offer the latest power supply technology focussed on basic functionality. The high-quality switched-mode power supplies are a low-cost means of supplying sensitive loads without the need to make compromises. A stabilised 24V output voltage is provided in the power range from 75 to 480W. The series features high efficiencies of up to 93% and can be used in a very wide range of application areas thanks to a broad temperature range between -30 and +70°C.

Space saving due to ultra-slim design

The single-phase power supply units of the E series feature a very slim design. Value was placed on reducing the width as much as possible; depending on the unit, the width is between 27 and 56mm. The assemblies are integrated into an aluminium housing (E2403 in plastic housing) in a space-saving manner for DIN rail mounting. Compared to the previous slimmest series from Wöhrle, the EPNSB series, this successor series offers a significant space saving of 25%.



PRODUCT HIGHLIGHTS

- Ultra-slim design
- Latest power supply technology with basic functionality
- Power range from 3.125 to 20A / 75 to 480W
- Output voltage 24V DC
- High efficiency of up to 93%



technical data sheet

E series				
	E2403	E2405	E2410	E2420
	✓	✓	✓	✓
Input				
Input voltage range AC	90 – 264V	90 – 264V	90 – 264V	90 – 264V
Input current @115V AC	1.4A	2.1A	2.5A	4.6A
Input current @230V AC	0.9A	1.3A	1.3A	2.3A
Output				
Rated output voltage DC	24V	24V	24V	24V
Adjustment range of output voltage DC	21.6 – 26V	21.6 – 26.4V	21.6 – 26.4V	24 – 28V
Rated output current	3.125A	5A	10A	20A
General data				
Temperature range	-20 to +70°C	-30 to +70°C	-30 to +70°C	-30 to +70°C
Derating	from 50°C -2.5% / K	from 50°C -2.5% / K	from 50°C -2.5% / K	from 50°C -2.5% / K
Overtemperature protection	yes	yes	yes	yes
Efficiency (typ.)	89%	89%	90%	93%
Dimensions (in mm)				
W	27	30	40	56
H	123.6	123.6	123.6	123.6
D	102	117.2	117.2	116.8
Weight (in kg)	0.22	0.45	0.62	0.87

NEW

EP series

Single-phase, DIN rail mounting, 30 to 480W high-end

Modern and durable

The new EP series from Wöhrle offers numerous compact, durable switched-mode power supplies for DIN rail applications. Due to their modern circuit design, they can also meet the highest standards. For instance, the units were developed for a broad range of operating temperatures from -25 to +70°C. The EP series also impresses with a consistently slim design and high power density. All units of the series have UL approval and are excellently suited to all industrial applications in the area of automation, (custom) machinery and switch cabinet construction.

Premium switched-mode power supply series

Due to the latest, powerful switched-mode power supply technology, the units can be categorised as high-end. For instance, they have very high-quality connection terminals. With their broad range of AC and DC input voltages, the switched-mode power supplies can be used for numerous applications. The models from a rated power of 120W include comprehensive extras such as a powerful long-lasting power boost as well as a relay contact.



PRODUCT HIGHLIGHTS

Broad AC and DC input voltage range

Units from 120W

Powerful, long-lasting power boost

High-quality connection terminals

UL approval

Slim-line design



technical data sheet

	EP series					
	EP2401	EP2402	EP2404	EP2405	EP2410	EP2420
	✓	✓	✓	✓	✓	✓
Input						
Input voltage range AC	85–264V	85–264V	85–264V	88–264V	88–264V	88–264V
Input voltage range DC	120–375V	120–375V	120–375V	100–375V	100–375V	100–375V
Input current @115V AC	< 0.8A	< 0.95A	< 1.2A	< 1.18A	< 2.6A	< 5A
Input current @230V AC	< 0.4A	< 0.55A	< 0.6A	< 0.61A	< 1.3A	< 2.5A
Output						
Rated output voltage DC	24V	24V	24V	24V	24V	24V
Adjustment range of output voltage DC	21.6–26.4V	24–28V	24–28V	24–28V	24–28V	24–28V
Rated output current	1.25A / 30W	2.1A / 50W	4A / 96W	5A / 120W	10A / 240W	20A / 480W
Power boost	–	–	–	150% / 5sec.	150% / 5sec.	150% / 5sec.
DC-OK / relay contact	–	yes	yes	yes	yes	yes
General data						
Temperature range	-20 to +70°C	-20 to +70°C	-20 to +70°C	-25 to +70°C	-25 to +70°C	-25 to +70°C
Derating	from 55°C -3.3% / K	from 55°C -3.3% / K	from 55°C -3.3% / K	from 60°C -2.5% / K	from 60°C -2.5% / K	from 60°C -2.5% / K
Overtemperature protection	yes	yes	yes	yes	yes	yes
Efficiency (typ.)	88%	89%	89%	91%	94%	94%
Dimensions (in mm)						
W	21	30	45	40	60	82
H	75	75	75	124	124	124
D	89.5	89.5	100	117	117	127
Weight (in kg)	0.1	0.18	0.325	0.58	0.84	1.2

Z series / ZPNW series

Two-phase, 60 to 480W
extremely wide-range input for worldwide use

Universal and powerful

The two-phase power supply units of the Z and ZPNW series from Wöhrle were designed for single- and two-phase connection and can be used worldwide without problems due to their very wide input voltage range from 180 to 550V AC. In addition, the Z series power supply units can provide up to 120% of the rated load for 3 seconds and are specified for operation with an earthed negative (PELV). As such even demanding applications can be supplied reliably.

Compact and resilient

The compact DIN rail units are mounted in corrosion-resistant aluminium housings. The electronics of the Z series are designed for harsh ambient conditions with printed circuit boards with conformal coatings. As such the units withstand higher levels of pollution and moisture without problems (pollution degree 2). The temperature range of the Z and ZPNW series also meets higher standards. The units can be operated from -30 to +70°C. Should these or other limits be exceeded, the units offer comprehensive protective functions for overtemperature, overload and overvoltage.



PRODUCT HIGHLIGHTS

Large input voltage range
180–550V AC

Worldwide use possible due to
single- or two-phase connection

Power range from
2.5 to 20A / 60 to 480W

Output voltage 24V DC

High efficiency
of up to 90%

Reliable solution even in harsh
industrial environments due to a
"special coating process"

Suitable for SELV
and PELV applications



technical
data sheet
Z series



technical
data sheet
ZPNW series

Input

	Z series	ZPNW series			
	Z2405	Z2410	ZPNW 24025	ZPNW 2405	ZPNW 2420
	✓	✓	✓	✓	✓
Input voltage range AC	180–550V	180–550V	180–550V	180–550V	180–550V
Input voltage range DC	254–780V	254–780V	254–780V	254–780V	254–780V
Input current @230V AC	< 1.2A	< 2A	0.7A	1.2A	4A
Input current @400V AC	< 0.8A	< 1A	0.4A	0.7A	1.6A

Output

Rated output voltage DC	24V	24V	24V	24V	24V
Adjustment range of output voltage DC	24–28V	24–28V	24–29V	24–29V	24–28V
Rated output current	5A	10A	2.5A	5A	20A
Overload	Power boost 120% for 3sec.	Power boost 120% for 3sec.	Constant current limiting	Constant current limiting	Constant current limiting

General data

Temperature range	-30 to +70°C	-30 to +70°C	-30 to +85°C	-25 to +70°C	-30 to +70°C
Derating	from 60°C -4% / K	from 60°C -2.25% / K	from 60°C -5% / K	from 60°C -4% / K	from 50°C -2% / K
Overtemperature protection	yes	yes	yes	yes	yes
Efficiency (typ.)	> 90%	> 90%	89%	91%	92%
Dimensions (in mm)					
W	40	60	32	40	85.5
H	124	124	125.2	125.2	125.2
D	117	117	102	113.5	128.5
Weight (in kg)	0.62	0.81	0.45	0.65	1.7

DPNSW series / D series

Three-phase, switch cabinet installation, 240 to 960W

Synchronous mains load and phase redundancy

If a synchronous mains load is required or a neutral conductor is not available, the units in the DPNSW series are the right choice. The three-phase supply also provides phase redundancy within the power supply unit: If a phase fails, the output voltage of 24V remains available with reduced power.

Energy efficient

The Wöhrle DPNSW series of power supply units ensures reliable power of the range 240 to 960W. The particularly slim units also offer a large space saving and very high efficiencies to further optimise the effectiveness of your systems.

Parallel connection possible

The DPNSW 2440 can also be connected in parallel to be able to supply applications that require a current of more than 40A. This feature makes it possible to increase power simple and uncomplicated up to several kW without complications. As such even higher powers are available on a DIN rail with passive cooling.



PRODUCT HIGHLIGHTS

Three-phase with synchronous mains load

Power range from 10 to 40A / 240 to 960W

Output voltage 24V DC

High efficiency of up to 94%



technical data sheet
DPNSW series



technical data sheet
D2440

	DPNSW series			D series
	DPNSW 2410	DPNSW 2420	DPNSW 2440	D2440
	✓	✓	✓	✓
Input				
Input voltage range AC	340 – 550V	340 – 550V	340 – 550V	320 – 575V
Input voltage range DC	480 – 780V	480 – 780V	480 – 780V	480 – 800V
Input current @400V AC	0.69A	0.85A	2.0A	< 1.65A
Input current @500V AC	0.6A	0.7A	1.4A	< 1.35A
Output				
Rated output voltage DC	24V	24V	24V	24V
Adjustment range of output voltage DC	24 – 28V	24 – 28V	24 – 28V	24 – 28V
Rated output current	10A	20A	40A	40A
Output current limiting (% of I _{rated})	105 – 130%	105 – 130%	105 – 130%	110 – 150%
General data				
Temperature range	-30 to +70°C	-30 to +70°C	-30 to +70°C	-25 to +70°C
Derating	from 60°C -5% / K	from 50°C -2.5% / K	from 50°C -2% / K	from 55°C -3.33% / K
Overtemperature protection	yes	yes	yes	yes
Efficiency (typ.)	92%	92.5%	94%	95%
Dimensions (in mm)				
W	63	85.5	110	110
H	125.2	125.2	125.2	124
D	113.5	128.5	150	128.7
Weight (in kg)	1	1.51	2.47	2.26

NEW

DP series

Three-phase, DIN rail mounting, 240 to 960W high-end

Reliable and efficient

The new high-end three-phase switched-mode power supplies of the DP series from Wöhrle were developed to the highest standards to ensure reliability and efficiency in the application. Particular value was placed on durability and a high level of protection against failure to save servicing costs. The high efficiency of up to 95.75% also reduces the power consumption and at the same time optimises the efficiency of the systems. The units are therefore very cost-effective in the face of constantly increasing energy costs.

High-quality additional functions

The units of the DP series are designed for continuous operation and can be used universally for all industrial applications. Due to their very compact design, they also save space in the switch cabinet. Along with the high-current capacity of these switched-mode power supplies with the long-lasting power boost, the size of the connection terminals has also been increased correspondingly. All units of this product series are equipped with a DIN rail clip, and some even offer additional features such as a remote contact and a relay contact.



PRODUCT HIGHLIGHTS

Power range from
10 to 40A / 240 to 960W

Output voltage
24V DC (adjustable)

High efficiency up to 95.75%

Modern circuit design

High-quality connection terminals

Slim-line design



technical data sheet

	DP series		
	DP2410	DP2420	DP2440
	✓	✓	✓
Input			
Input voltage range AC	320–600V	320–575V	320–575V
Input voltage range DC	450–800V	450–800V	450–800V
Input current @400V AC	< 0.75A	< 0.79A	< 1.65A
Input current @500V AC	< 0.65A	< 0.68	< 1.35A
Output			
Rated output voltage DC	24V	24V	24V
Adjustment range of output voltage DC	24–28V	24–28V	24–28V
Rated output current	10A	20A	40A
General data			
Temperature range	-25 to +80°C	-25 to +70°C	-25 to +70°C
Derating	from 50°C -2.5% / K	from 60°C -2.5% / K	from 60°C -2.5% / K
Overtemperature protection	yes	yes	yes
Power boost	150% / 3sec.	150% / 7sec.	150% / 7sec.
Efficiency (typ.)	91%	95.23%	95.75%
Dimensions (in mm)			
W	70	65	110
H	121	124	124
D	117.3	127.1	128.6
Weight (in kg)	0.89	1.18	2.3

EF series

available
SOON

Single-phase, latest generation,
spring-cage terminal technology

Compact and powerful

The new, powerful single-phase switched-mode power supplies of the EF series from Wöhrle are characterised by their functionality as well as the latest technical and mechanical product properties.

Along with a modern circuit board layout, equipped with durable SMD technology, high-quality spring connection terminals are integrated into the very compact slim-line design housing. In addition to the broad range of the adjustable DC output voltage from 24 to 28V, a DC-OK LED indicator, with additional relay contact rounds, off the extras. All the new products have a very high efficiency.

The new switched-mode power supplies of the EF series are available with a rated power from 120 to 480W and can be pre-ordered from approximately Q2 2024.



PRODUCT HIGHLIGHTS

- High-end technology
- Output voltage 24V DC
- Spring-cage terminals
- Ultra-slim design

DF series

available
SOON

Three-phase, latest generation,
spring-cage terminal technology

Stable under load and efficient

The new, powerful three-phase switched-mode power supplies of the DF series from Wöhrle are particularly stable under load, so that mains symmetry is always ensured.

Along with a modern circuit board layout, the PCB is equipped with durable, high-quality SMD technology. High-quality spring terminals are integrated into the compact housing of slim-line design. In addition to the broad range of the adjustable DC output voltage from 24 to 28V, a DC-OK LED indicator with additional relay contact is possible as an extra. All the new products have a high efficiency and are therefore very energy efficient.

The new switched-mode power supplies of the DF series are available with a rated power from 120 to 480W and can be pre-ordered from approximately Q2 2024.



PRODUCT HIGHLIGHTS

- High-end technology
- Output voltage 24V DC
- Spring-cage terminals
- Ultra-slim design

Power supply units

for special applications

48V with variety of functional extras

The single-, two- and three-phase switched-mode power supplies in the special 48 category impress with a broad power range and a stabilised output voltage of 48V DC as well as proven technology.

Whether basic functionality or all the extras, Wöhrle power supply units cover all the necessary features and offer, in addition to variations in the power rating, a rich variety of additional functions, input voltages, number of phases and sizes. The most important protective functions are provided by all units.



PRODUCT HIGHLIGHTS

- Power range from 13.5 to 80A
- Output voltages 24V, 30V, 48V and 72V
- High efficiency of up to 94.5%
- Units with integrated high-performance fans available

Units in particularly slim housing

It is possible to realise powers of 960W in the extraordinarily slim design. Several units can also be connected in parallel to increase the power.



Temperature-controlled high-performance fans

The integrated, temperature-controlled high-performance fans ensure even cooling and enable the units to be installed in any orientation.

Suitable for IT and delta systems
Due to the special circuit design, the power supply units can adapt to a very wide range of requirements such that they can also be used in IT and delta systems.



Reliable, remotely controllable 48V DC power supply

Due to the broad spectrum of standard components, even buffered 48V DC power supplies with remote monitoring and control can be realised at low cost and in a short time.

Advantages at a glance

- Remote monitoring and control possible via SNMP adapter
- Depending on ambient conditions, also equipped with high-temperature rechargeable batteries, IP65 housing
- Storage device technology, output voltage and output current can also be adapted flexibly at a later date



**FAR AWAY
AND YET
SO CLOSE**

Development of customised DC solutions

If the buffering of critical loads is not enough:

We can draw on many years of know-how in the area of customised solutions.

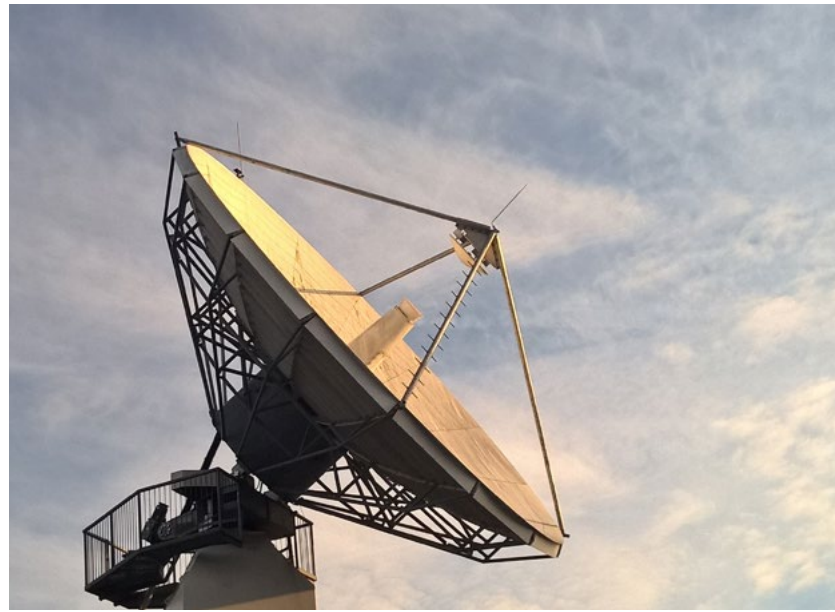
If your requirements cannot be met from our standard portfolio, we would be pleased to develop a tailor-made solution for you. In this way we regularly meet even unusual requirements from our renowned German and international partners in the industry.

If you also would like to profit from this knowledge in the area of the DC power supply, contact us.



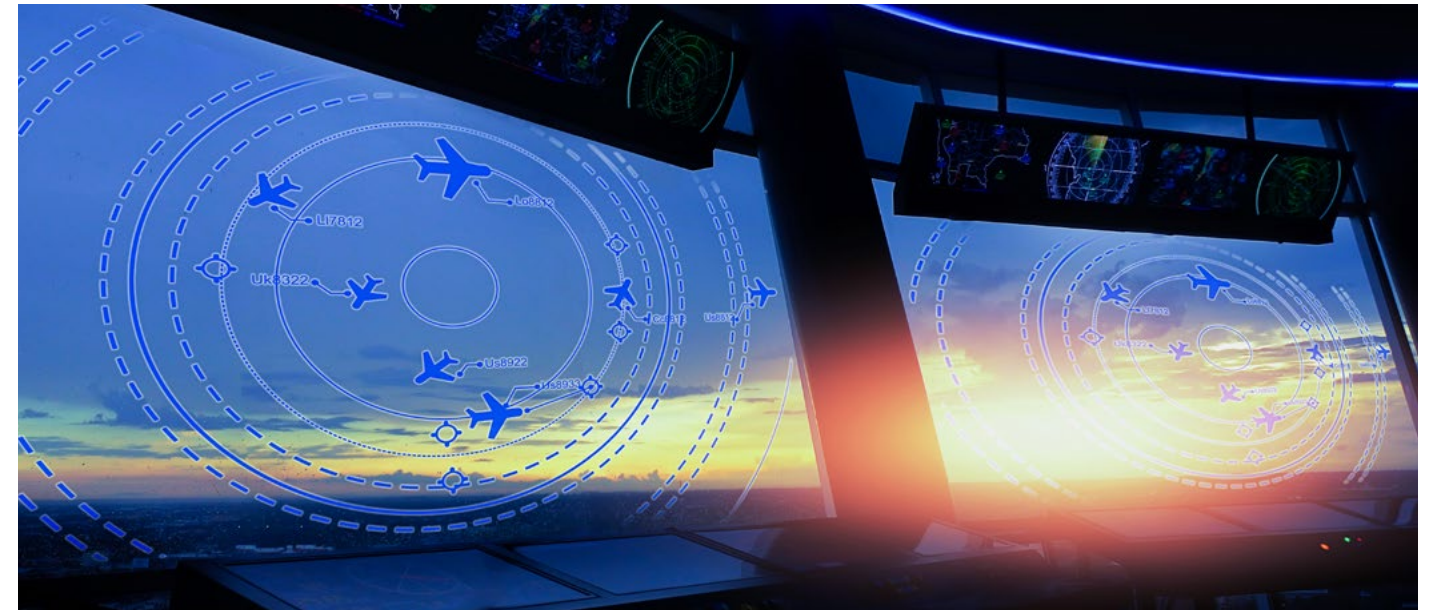
**YOUR WISHES SPUR
US ON TO
PEAK PERFORMANCE**

+ TYPISCH WÖHRLE POWER THAT DRIVES



WÖHRLE

INDUSTRIAL APPLICATIONS



Transformers

Standard and special solutions
for every requirement

The product portfolio of Wöhrle Stromversorgungssysteme GmbH includes single-phase transformers with EI or UI core, three-phase transformers with 3UI core as well as three-phase transformers for higher powers with self-supporting coils or strip-metal cores.

Alongside standard products, our range also includes customer-specific solutions.



- o Design as mains, isolating, safety, control or auto-transformer
- o Design according to UL and CSA standards possible
- o Degree of protection IP00 or IP23–IP54
- o Various vector groups are available
- o Various frequencies
- o Insulation classes E, B and F
- o Protection class I and II
- o Suitable for use in machine and plant manufacture, in renewable energy, as well as in building automation



Standard control transformers EI core, 50–3,000VA

36 – 37

Suitable for installation up to IP23
Insulation class E, vector group li0, 100% duty cycle, 50/60Hz

Standard control transformers UI core, 1,000–8,000VA

38 – 39

Upright or horizontal design
Suitable for installation up to IP23
Insulation class E, vector group li0, 100% duty cycle, 50/60Hz

Three-phase isolating transformers 3UI core, 3,200–30,000VA

40 – 41

Suitable for installation up to IP23
Insulation class E, vector group Dyn5, 100% duty cycle, 50/60Hz

Special solutions & higher powers

42 – 43

Customer-specific solutions for every application

Standard control transformers

EI core, 50–3,000VA

EI core	Primary voltage*	Secondary voltage	Dimensions W × H × D	Weight	Fastening C × D	Size
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Suitable for installation up to IP23, insulation class E, vector group li0, 100% duty cycle, 50/60Hz

C-WST 50	>	230 or 400V	24 or 230V	78 × 90 × 71mm	1.3kg	56 × 45mm	EI78 / 27
C-WST 100	>	230 or 400V	24 or 230V	85 × 95 × 75mm	2.1kg	64 × 61mm	EI84 / 43
C-WST 160	>	230 or 400V	24 or 230V	96 × 114 × 87mm	2.9kg	84 × 70mm	EI96 / 45
C-WST 200	>	230 or 400V	24 or 230V	96 × 114 × 87mm	3.0kg	84 × 70mm	EI96 / 45
C-WST 250	>	230 or 400V	24 or 230V	96 × 114 × 100mm	3.6kg	84 × 84mm	EI96 / 59
C-WST 400	>	230 or 400V	24 or 230V	120 × 120 × 103mm	5.2kg	90 × 82mm	EI120 / 53
C-WST 500	>	230 or 400V	24 or 230V	120 × 120 × 121mm	6.2kg	90 × 103mm	EI120 / 73.7

Suitable for installation up to IP23, insulation class E, vector group li0, 100% duty cycle, 50/60Hz

C-WST 630	>	230 or 400V	24 or 230V	150 × 147 × 108mm	7.7kg	122 × 83mm	EI150N / 49
C-WST 800	>	230 or 400V	24 or 230V	150 × 147 × 125mm	9.7kg	122 × 101mm	EI150N / 66
C-WST 1000	>	230 or 400V	24 or 230V	150 × 147 × 151mm	12.5kg	122 × 127mm	EI150N / 92
C-WST 1600	>	230 or 400V	24 or 230V	174 × 154 × 149mm	16.8kg	135 × 116mm	EI174 / 82
C-WST 2000	>	230 or 400V	24 or 230V	195 × 175 × 156mm	22.7kg	150 × 125mm	EI192 / 82
C-WST 2500	>	230 or 400V	24 or 230V	195 × 175 × 172mm	24.3kg	150 × 146mm	EI192 / 104
C-WST 3000	>	230 or 400V	24 or 230V	195 × 175 × 184mm	26.8kg	150 × 152mm	EI192 / 110

*Primary taps for ± 5%



Standard control transformers

UI core, 1,000–8,000VA

UI core	Primary voltage*	Secondary voltage	Dimensions W × H × D	Weight	Fastening C × D	Size
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Upright design

Suitable for installation up to IP23, insulation class E, vector group li0, 100% duty cycle, 50/60Hz

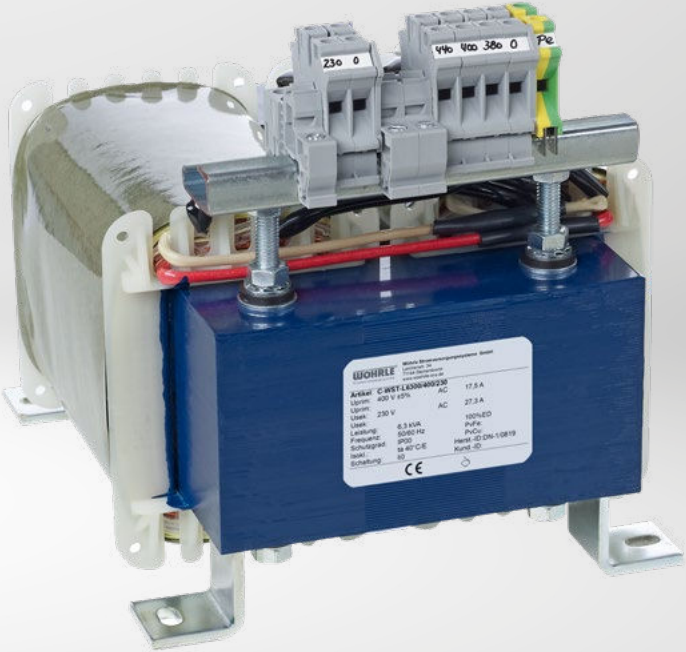
C-WST-S 1000 >	230 or 400V	230V	160 × 215 × 95mm	9.3kg	100 × 69mm	UI120/41
C-WST-S 1500 >	230 or 400V	230V	160 × 215 × 115mm	12.8kg	100 × 89mm	UI120/61
C-WST-S 2000 >	230 or 400V	230V	200 × 262 × 122mm	14.6kg	124 × 94mm	UI150/52
C-WST-S 2500 >	230 or 400V	230V	200 × 262 × 135mm	24kg	124 × 107mm	UI150/65
C-WST-S 3000 >	230 or 400V	230V	200 × 262 × 147mm	27kg	124 × 119mm	UI150/77
C-WST-S 4000 >	230 or 400V	230V	200 × 262 × 162mm	30kg	124 × 134mm	UI150/92
C-WST-S 5000 >	230 or 400V	230V	200 × 262 × 173mm	39kg	124 × 145mm	UI150/103
C-WST-S 6300 >	230 or 400V	230V	240 × 360 × 168mm	48.5kg	144 × 140mm	UI180/78
C-WST-S 8000 >	230 or 400V	230V	240 × 360 × 183mm	58kg	144 × 155mm	UI180/92

Horizontal design

Suitable for installation up to IP23, insulation class E, vector group li0, 100% duty cycle, 50/60Hz

C-WST-L 1000 >	230 or 400V	230V	166 × 230 × 133mm	9.3kg	146 × 160mm	UI120/41
C-WST-L 1500 >	230 or 400V	230V	166 × 230 × 153mm	12.8kg	146 × 160mm	UI120/61
C-WST-L 2000 >	230 or 400V	230V	200 × 285 × 147mm	14.6kg	174 × 200mm	UI150/52
C-WST-L 2500 >	230 or 400V	230V	200 × 285 × 160mm	24kg	174 × 200mm	UI150/65
C-WST-L 3000 >	230 or 400V	230V	200 × 285 × 172mm	27kg	174 × 200mm	UI150/77
C-WST-L 4000 >	230 or 400V	230V	200 × 285 × 187mm	30kg	174 × 200mm	UI150/92
C-WST-L 5000 >	230 or 400V	230V	200 × 285 × 200mm	39kg	174 × 200mm	UI150/103
C-WST-L 6300 >	230 or 400V	230V	240 × 340 × 185mm	48.5kg	204 × 240mm	UI180/78

*Primary taps for voltages varying by ± 5% upon request



Three-phase isolating transformers

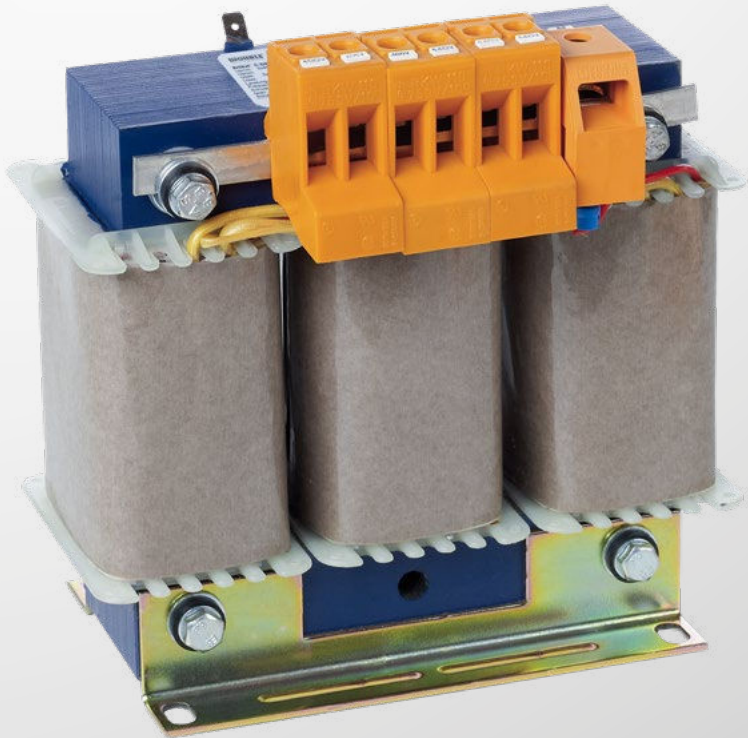
3UI core, 3,200–30,000VA

3UI core	Primary voltage*	Secondary voltage	Dimensions W × H × D	Weight	Fastening C × D	Size
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Suitable for installation up to IP23, insulation class E, vector group Dyn5, 100% duty cycle, 50/60Hz

C-DST 3200	>	3 × 400V	3 × 400V + N	265 × 230 × 152mm	29.2kg	200 × 102mm	3UI132/72
C-DST 4400	>	3 × 400V	3 × 400V + N	300 × 310 × 153mm	36.6kg	224 × 108mm	3UI150/65
C-DST 5000	>	3 × 400V	3 × 400V + N	300 × 310 × 165mm	41.1kg	224 × 120mm	3UI150/77
C-DST 6300	>	3 × 400V	3 × 400V + N	360 × 320 × 165mm	53.8kg	264 × 125mm	3UI180/63
C-DST 8000	>	3 × 400V	3 × 400V + N	360 × 365 × 180mm	65.7kg	264 × 140mm	3UI180/78
C-DST 10000	>	3 × 400V	3 × 400V + N	360 × 365 × 195mm	76kg	264 × 155mm	3UI180/93
C-DST 13000	>	3 × 400V	3 × 400V + N	420 × 370 × 180mm	90kg	316 × 143mm	3UI210/73
C-DST 16000	>	3 × 400V	3 × 400V + N	420 × 370 × 195mm	110kg	316 × 158mm	3UI210/88
C-DST 20000	>	3 × 400V	3 × 400V + N	420 × 420 × 240mm	144kg	316 × 203mm	3UI210/133
C-DST 25000	>	3 × 400V	3 × 400V + N	420 × 420 × 240mm	149kg	316 × 203mm	3UI210/133
C-DST 30000	>	3 × 400V	3 × 400V + N	480 × 480 × 240mm	181kg	356 × 184mm	3UI240/110

* Additional voltages available: 3 × 230V, 3 × 380V, 3 × 415V, 3 × 420V, 3 × 440V, 3 × 460V, 3 × 480V, 3 × 500V
Powers from 160–2,500VA as well as from 40,000VA upon request



Special solutions & higher powers

to suit customer requirements

Alongside standard products, our range also includes customised products such that we can offer solutions for every requirement. The designs range from mains and isolating transformers, through safety and control transformers, to auto-transformers.

Upon customer request, the transformers are also installed in a housing and meet the degree of protection IP23 to IP54. In addition, the transformers can be equipped with PTC thermistors, fuse terminals, circuit breakers, NH isolators, screen windings between primary and secondary, cable clamp rails and cable entries.

Irrespective of whether standard or special solution – we place value on designing transformers with few losses.

Our many years of experience and our know-how enable us to provide competent advice for your individual solutions such that we can supply transformers that are optimal for your application.



Customised UPS solutions for every situation

Individual requirements need individual systems

As a specialist for special power supply requirements, we tackle every challenge. With expert know-how, decades of experience and a broad spectrum of specifically assembled components, we offer you the perfect solution tailored to your requirements.

From standard systems to highly bespoke solutions – one thing always remains constant with us: our unlimited aspirations related to technology, quality and architecture. With the highest reliability of supply, we make sure you never lose power in any situation.

Customised solutions for every requirement

- o Modular UPS architecture for maximum flexibility featuring scalability and redundancy (UPS + battery)
- o Low power consumption, maximum energy efficiency
- o High power with minimum operating costs (TCO)
- o Optimum ease of service
- o Maximum efficiency
- o Compact architecture and high power density
- o Power spectrum into the MVA range
- o Customised solutions for AC and DC applications



UPS systems for industrial and critical environments

46 – 47

Regenerative UPS systems

48

Constructive and visual modifications

49

Maintenance-free supercapacitors

50

UPS systems for higher ambient temperatures

51

UPS systems for industrial and critical environments

Industrial environments place special requirements on high-performance UPS systems.

Entirely unlike applications in IT infrastructure, industrial UPS systems must respond to the special challenges of "harsh" industrial environments.

It is especially important to protect the UPS system against critical overvoltages. However, Wöhrle also meets the challenge of higher ambient temperatures and the requirements for extraordinarily robust systems with special industrial-grade solutions.



TOUGH AS NAILS



Regenerative UPS systems

When special industrial systems (for example grinding machines) are braked, energy is produced which "flows back" into the electrical circuit of the UPS system.

This flow of energy not only interferes with the function of every UPS system, but also renders the system inoperable. There is even a risk of damage in the inverter and rectifier circuit.

By using special regeneration units combined with matching UPS systems, regenerative energy "flowing back" is converted ensuring the full functionality of the UPS.



**SO "FLOW BACK"
IS NOT
A PROBLEM**

Constructive and visual modifications

Along with the technical components installed, upon request we will also adapt the design and the architecture of the cabinet to suit your overall system.

Advantages at a glance

- UPS architecture in stainless steel cabinet systems
- Special UPS cabinet architecture for robust applications in industrial environments
- Cabinets with degree of protection IP54 for the most comprehensive protection against splashed water
- Air-conditioned UPS systems



**AS INDIVIDUAL AS
YOUR
REQUIREMENTS**

Maintenance-free supercapacitors

Maintenance-free supercapacitors feature an extremely long service life of up to one million charging cycles, a high power density, as well as a broad thermal tolerance. As such, the benefit for the customer in industrial applications is particularly high.

- Advantages at a glance**
- Maintenance-free energy storage device
 - High energy density
 - Independent of ambient temperatures
 - Very long energy storage device service life
 - Energy storage device features extremely compact design

LONG LIVE THE ENERGY STORAGE DEVICE



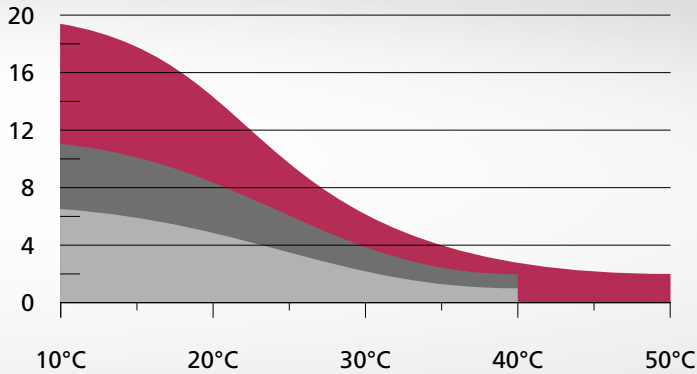
UPS systems for higher ambient temperatures

If necessary, we also equip our UPS systems with high-performance energy storage devices for a considerably longer service life at higher ambient temperatures.

- Advantages at a glance**
- Storage for up to two years without recharging is possible at a storage temperature of +25°C due to the low rate of discharge of the battery system
 - Service life of the battery system up to three times longer compared to conventional technology
 - Drastically lower recharging times and higher useable battery capacity possible due to very low internal resistance



WITHSTANDS EVERY HOT PHASE



Cyclone cells compared to maintenance-free batteries with 10-year and 6-year life expectancy



WÖHRLE®

Stromversorgungssysteme

REGAL

UPS system

DC power supplies

Transformers

Customised solutions

Energy storage device solutions

Service & support

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