



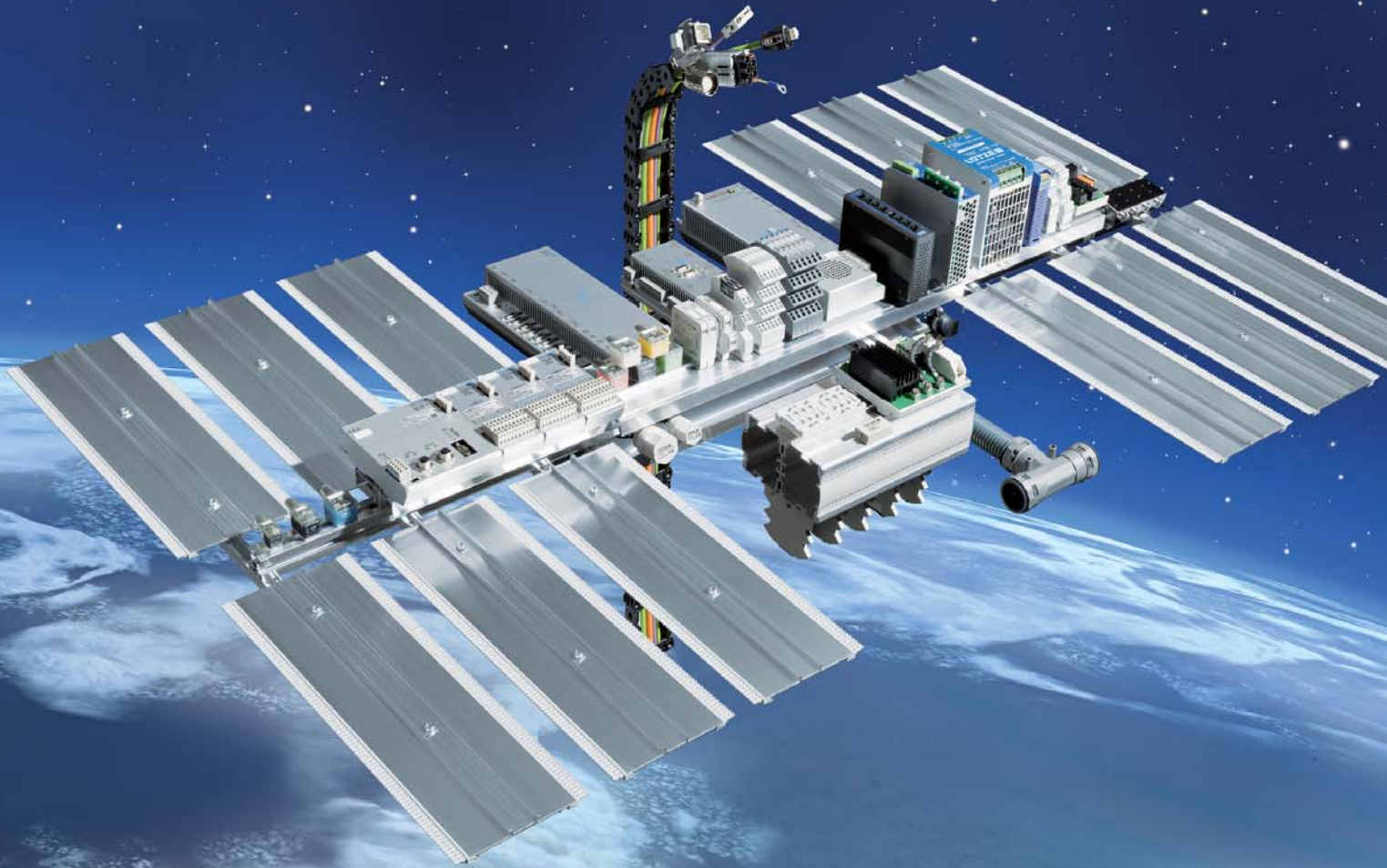
■ Control Solutions

Industrial Power Supplies

Delta Series Power Supplies
Compact Series Power Supplies

Efficiency in Automation

Cable • Connectivity • Cabinet • Control



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Welcome to LUTZE

Cable Solutions



Efficiency in Automation - A reflection of our company philosophy

As an experienced specialist in automation technology, with solutions for flexible and high flexing cables, cable assemblies, interfaces, current control and cabinet wiring, we have had a focus on efficiency for many years.

Connectivity Solutions



LUTZE defines Efficiency in Automation field as the use of sustainable products and solutions to further increase the performance of our products in our customers applications.

We realise this by using components for highly efficient control systems, products with above average life cycles and raising energy efficiency in control cabinets by means of the LSC wiring system.

Cabinet Solutions



Efficiency in Automation reflects our efforts in striving for efficient working relationships with our customers: in a medium sized family owned company we have short communication channels and a high level of manufacturing competence.

The value of a product or a solution from LUTZE is determined by its sustainable qualities. Every innovation will only be successful in the future if it has a long term positive effect. Therefore, we provide long lasting as well as highly efficient components.

Control Solutions



Thus LUTZE creates value through efficiency. LUTZE provides answers and demonstrates how to handle resources responsibly, with our environment and our future in mind. **LUTZE - Efficiency in Automation**

For more information on our solutions, please visit www.lutze.com

Transportation Solutions





Business Management: Sustainable and forw



The future is blue

Sustainable enterprise means thinking and planning ahead, understanding and embedding the belief that long lasting success is more important than short-term profit maximisation.

This is an attitude that has existed within LÜTZE for quite some time. Economic and environmental responsibilities complement each other well and are reflected in the sustainable management and

product policy - and from now in the **SkyBLUE** campaign.

We manufacture our products in a resourceful and energy-conscious manner. We use long lasting, environmentally-friendly materials.

And our products, in turn, help our customers save energy and resources.

Good for everyone: for us, for the environment, for our customers a win-win-win situation.

ard-looking

„The competitiveness of our industry and of its suppliers depends quite substantially on how we succeed in developing practical results. The results that we produce together today, are our competitive advantages in the future.“

*Udo Lütze,
Member of the Executive Committee of
the Green Carbody Innovation Alliance*



Goods with real value

The value of a product or a solution from LÜTZE is determined by its sustainable qualities as well. Every innovation is only as successful in the future if it has a long-term positive effect. Therefore, we provide long lasting as well as highly efficient components.

We are incorporating the necessary knowledge and manufacturing competence in numerous joint projects with the objective of improving energy efficiency and

sustainable technologies and industries. Thus, LÜTZE provides answers and demonstrates how to handle resources responsibly, with our environment and our future in mind.



RoHS

Power Supplies from LÜTZ

Energy efficient and space s

**Comprehensive range
of industrial power supplies**

High efficiency
through advanced digital technology
Efficiency up to >94 %

Extremely compact

Power Boost

Power range
from 10 W up to 2400 W

Output voltages
from DC 5 V up to DC 72 V.



E:
aving



Power Supply · Overview



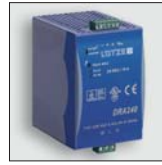
1-phase, 10 W



1-phase, 30 W



1-phase, 120 W



1-phase, 240 W



1-phase, 480 W



3-phase, 960 W

DELTA Series

Part number	Input Phase			Output Voltage					Rated Output Power										Connection			Type	Page		
	1-phase	2-phase	3-phase	5V	12V	15V	24V	48V	10W	15W	18W	30W	50W	60W	93W	120W	240W	480W	960W	Spring	Screw			Pluggable Screw	
728761	•			•					2A											•			DRA 10-05A	18	
722761	•			•					2A												•			DRA 10-05	19
728766	•				•				0.84A												•			DRA 10-12A	18
722766	•				•				0.84A												•			DRA 10-12	19
722773	•					•			0.67A												•			DRA 10-15	19
722751	•						•		0.42A												•			DRA 10-24	19
728762	•			•						3A											•			DRA 18-05A	20
722762	•			•						3A											•			DRA 18-05	20
722767	•				•					1.5A											•			DRA 18-12	21
722774	•					•				1.2A											•			DRA 18-15	21
722752	•						•			0.75A											•			DRA 18-24	21
722763	•			•							6A										•			DRA 30-05A	22
728763	•			•							6A										•			DRA 30-05	23
722768	•				•						2.5A										•			DRA 12-30A	22
728768	•				•						2.5A										•			DRA 12-30A	23
722753	•						•				1.25A										•			DRA 30-24A	22
728753	•						•				1.25A										•			DRA 30-24A	23
722775	•							•			0.625A										•			DRA 48-30A	22
728775	•							•			0.625A										•			DRA 48-30	23
722764	•			•								10A									•			DRA 60-05A	24
728764	•			•								10A									•			DRA 60-05	24
722769	•				•								5A								•			DRA 60-12A	26
728769	•				•								5A								•			DRA 60-12A	25
722754	•						•						2.5A								•			DRA 60-24A	26
728754	•						•						2.5A								•			DRA 60-24A	25
722776	•							•					1.25A								•			DRA 60-48A	26
728776	•							•					1.25A								•			DRA 60-48	25
722757	•													3.8A							•			DRAN 120-24AL	27
722770	•				•										10A						•			DRAN 120-12B	28
722758	•														5A						•			DRAN 120-24B	28
728758	•														5A						•			DRAN 120-24B	28
722777	•							•								2.5A					•			DRA 120-48B	28
722803		•														5A					•			WRA 120-24	29
722759	•																10A				•			DRA 240-24B	30
722781	•																10A				•			DRA 240-24A	30
722778	•																5A				•			DRA 240-48B	30
722781.1000	•																10A				•			DRE 240-24A	31
722804			•															10A			•			WRA 240-24	32
722808			•															5A			•			WRA 240-48	32
722782	•																				•			DRA 480-24A	33
722779	•																				•			DRA 480-48A	33
722805			•																		•			WRA 480-24	34
722809			•																		•			WRA 480-48	34
722806			•																		•			WRA 960-24	35
722810			•																		•			WRA 960-48	35
722987	•																	20A			•			DRP20-24	36

Power Supply · Overview



1-phase, 70 W



1-phase, 120 W



1-phase, 480 W



50A Redundant Module



3-phase, 2400 W



DC USV

COMPACT Series

Part number	Input Phase			Output Voltage							Rated Output Power							Connection			Type	Page			
	1-phase	2-phase	3-phase	5V	12V	15V	24V	48V	72V	40W	80W	120W	240W	480W	720W	960W	2400W	Redundant module	Spring	Screw			Pluggable Screw		
722787	•						•			1.2A									•			CPSF1-30-24	38		
722789	•						•				3A									•			CPSF1-70-24	39	
722783	•						•					5A									•		CPSB1-120-24R	40	
722784	•						•					2.5A										•		CPSB1-120-48R	40
722995	•	•					•						5A									•		CPSB2-120-24	41
722785	•						•						10A									•		CPSB1-240-24R	42
722786	•						•						5A									•		CPSB1-240-48R	42
722996	•	•	•				•						10A									•		CPSB2-123-240-24	43
722986	•						•							20A								•		CPSB1-480-24R	44
722989	•						•							10A								•		CPSB1-480-48R	44
722800			•				•							20A								•		CPSB3-500-24	46
722801	•	•	•				•							20A								•		CPSB-123-480-24	45
722815			•				•							10A								•		CPSB3-500-48	46
722802			•				•								30A							•		CPSB3-720-24	47
722807			•				•							15A								•		CPSB3-720-48	47
722811			•				•									40A						•		CPSB3-390-24	48
722812			•				•									20A						•		CPSB3-960-48	48
722813			•				•									13.3A						•		CPSB3-960-72	48
722814			•				•										100A					•		CPSB3-2400-24	50
722816			•				•									50A						•		CPSB3-2400-48	50
722999	•			•	•	•	•	•	•								50A					•		CPSRM50	49

ULTRACOMPACT LCOS Series

Part number	Input Phase			Output Voltage							Rated Output Power							Connection			Type	Page			
	1-phase	2-phase	3-phase	5V	12V	15V	24V	48V	72V	40W	80W	120W	240W	480W	720W	960W	2400W	Redundant module	Spring	Screw			Pluggable Screw		
779001.1413	•						•						5A									•		LCOS-PS-1-120-24	15
779101.1413	•						•						5A									•		LCOS-PS-1-120-25	15

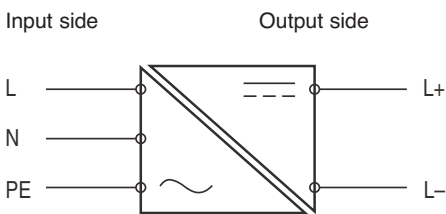
Power Supplies · Basics

A power supply has a decisive influence on the availability and operational reliability of electrical systems.

Consequently, the selection of the right power supply should be just as critically and carefully undertaken as that of the other system components.

1. General structure

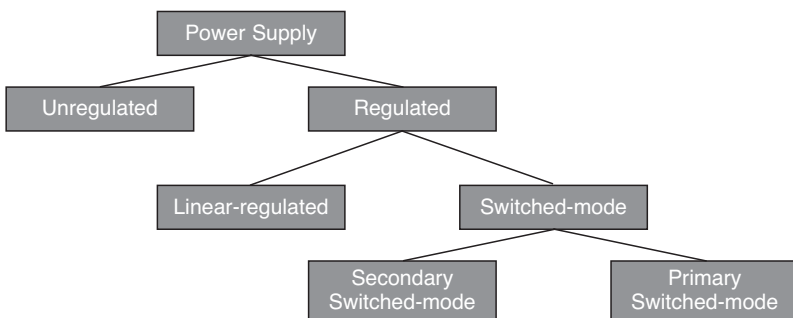
Regardless of the technology employed, power supplies are devices with an input side and an isolated output side.



In technology terms, however, there are two different basic designs:

Unregulated and regulated.

The regulated variants are subdivided into linear-regulated and switched-mode power supplies.



The key criteria in selection of a power supply are:

Input side:

- Input voltage
- Primary grounding
- Current consumption
- Inrush current
- Input fuse
- Frequency
- DC supply
- Power failure buffering
- Power Factor Correction (PFC)

Output side:

- Output voltage
- Secondary grounding
- Short-circuit current
- Residual ripple
- Output characteristics
- Output current

2. Safety

The safety of people and equipment is always the priority. Accordingly, power supplies must comply with unified regulations and standards.

2.1 Galvanic isolation

Galvanic isolation generally refers to the isolation between two conductive objects, such as metal plates or electrical circuits. In the case of electrical circuits it is consequently not possible for charge carriers to flow from one circuit into another, as there is no electrically conductive connection between the two.

In the case of power supplies this means that there is no electrical connection between the input and output sides.

2.2 Insulation

The different kinds of insulation are specified in IEC/EN 60950:

- Functional insulation
Insulation needed for the correct operation of the equipment.

- Basic insulation
Insulation to provide basic protection against hazardous structure-borne currents.
- Supplementary insulation
Protection against hazardous structure-borne currents if the basic insulation fails.
- Double insulation
Insulation comprising both basic insulation and supplementary insulation.
- Reinforced insulation
Unified insulation system. Provides equivalent protection to double insulation.

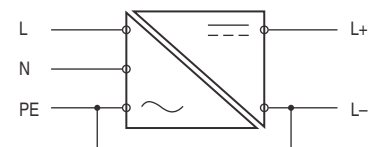
2.3 Safe isolation

Safe isolation according to EN 50178 is required for all interfaces between different electrical circuits, such as between a SELV circuit and a mains circuit.

Safe isolation means that no current flow can occur from one electrical circuit to another. This isolation has to be implemented either by double or reinforced insulation or by means of protective shielding.

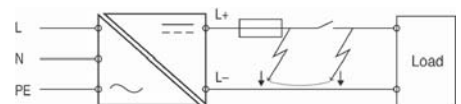
2.4 Secondary grounding

In case of secondary grounding, the output side of the power supply is connected to protective earth (PE) in order to prevent dangerous ground faults.



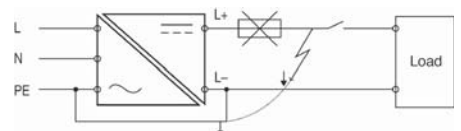
Secondary grounding

A ground fault occurs if a current-carrying line has contact to earth. In the worst case, two simultaneous ground faults can lead to a bridging of switches and thus can start equipment accidentally.



Ground fault

If secondary grounding is used, the occurrence of such a ground fault leads to a so-called short circuit to earth which causes the fuses in the secondary circuit to trip.



Power Supplies · Basics

2.5 SELV

SELV according to IEC/EN 60950 is a safety extra low voltage which thanks to its low level and insulation offers better protection against electric shock than higher-tension circuits.

Power supplies generating SELV, for example, must be designed to prevent shorting between the primary and secondary windings and their connections. The windings can only be overlaid if double or reinforced insulation is placed between them. This isolation is termed galvanic isolation. Grounding of the secondary side is not required but permitted.

The peak value must not exceed 42.4 V in case of AC voltages and 60 V in case of DC voltages.

2.6 PELV

PELV according to IEC/EN 60950 is a protective extra low voltage with safe isolation. In case of PELV, the electrical circuits are grounded and (like SELV) safely isolated from circuits of higher voltages. The voltage limits are identical to SELV.

PELV is used where active low-voltage conductors or the equipment structures have to be grounded for operational reasons. That is the case, for example, where potential equalisation is required to prevent sparking inside vessels and explosive rooms.

Thanks to the housing earth, hazardous leakage currents can be discharged via the structure independently of the low voltage when interference occurs on other equipment whose touchable conductive parts receive mains voltage.

2.7 Protection class

The standard IEC/EN 61140 defines protection classes for electrical equipment. The devices are classified according to the safety measures taken to prevent electric shock. The protection classes are divided into the classes 0, I, II and III.

• Protection class 0

Apart from the basic insulation there is no protection against electric shock. These devices cannot be connected to electrical installations with PE. Equipment of class 0 is not allowed in Germany. Protection class 0 will no longer be considered in future versions of the standard.

• Protection class I



In addition to the basic insulation, all electrically conductive parts of the housing are connected to PE. This guarantees that no electric shock can occur in the event of an insulation failure.

• Protection class II



Protection against electric shock is not only based on the basic insulation. The housing is equipped with reinforced or double insulation. If the housing is made of electrically conductive material, no direct contact between the housing and current-carrying parts is possible. The housings of class II devices are not equipped with a PE connection. It is important to note that the PE connection is not only used for the grounding of housings but also to connect filters for EMC measures (electromagnetic compatibility) to ground. This is why even devices of which the housings are completely made of plastic material can be equipped with a PE connection.

• Protection class III



The device is operated with safety extra-low voltage (SELV) and thus does not require any protection measures. Power supplies are usually class I or II equipment.

2.8 Degree of protection

According to DIN EN 60529, electrical equipment is classified using so-called IP codes. IP stands for "International Protection" or "Ingress Protection". The IP code consists of two figures: The first digit specifies the protection against accidental contact and against ingress of solid foreign bodies; the second digit specifies the protection against ingress of water.

Since power supplies are mostly installed inside cabinets, their typical degree of protection is IP 20.

3 Input voltage ranges

3.1 Wide-range input

Wide-range input means that the device can be operated with any voltage within the specified limits. Lütze devices operate in the single-phase range from AC 90V to AC 264V or DC 110V to DC 370V and in the three-phase range from AC 340V to AC 576V or DC 480V to DC 820V. There is no loss of power, i.e. the device is able to deliver the specified rated power over the entire input voltage range.

3.2 Autorange

Power supplies that are equipped with autorange behaviour perform an internal measurement of the applied supply voltage and automatically switch between the available input voltage ranges.

3.3 Manual range selection

In case of manual range selection, the housing of the device is equipped with a selector switch for manual input voltage range selection. Lütze offers devices permitting operation at AC 115V or 230V.

The operating voltage range is then AC 90 V to AC 132 V; AC 185 V to AC 264 V or DC 300 V to DC 370 V.

4 Self-protection

If motors or other large loads have to be started with high inrush currents, secondary branches selectively switched off, systems moved to a safe state in case of overload or the power supply switched off as quickly as possible in case of fault for the sake of process safety, the output behaviour of the power supplies play a key role.

There are basically two types outside of nominal operation. Overload, which can occur sporadically or continuously, and short-circuit.

Overload means that the current required by the loads exceeds the nominal current of the power supply.

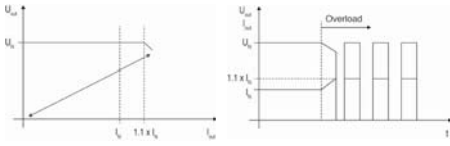
A short-circuit is a special form of overload. In this case, the outputs of the power supply are interconnected at very low resistance, as a result of which the output current may assume extremely high values.

State-of-the-art Lütze power supplies offer the following protective functions:

Fold-back characteristic/Hiccup mode

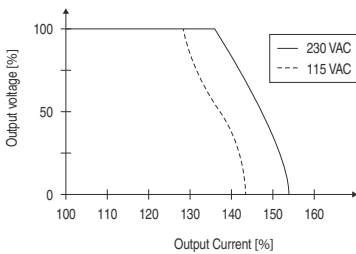
Lütze power supplies supply a current typically up to 1.2 times the nominal output current. They automatically switch off if the current consumption of the connected loads exceeds this value or if a short-circuit occurs. After a defined period of time, the power supply tries to restart the load. If the overload or the short-circuit still exists, it switches off again. This procedure repeats until the fault is cleared. The power supply has "hiccups". In applications requiring high starting currents, it must be ensured that the overload current capacity is higher than $1.2 I_n$. To do so, Lütze also offers devices with overload capacity of $1.5 I_n$ featuring Hiccup mode. Another aspect is response to short-circuit. The output voltage is cut very rapidly. Whereas the use of conventional line protection equipment in the secondary circuit is very critical in any case, the function under Hiccup mode is not. Electronic overload protection units such as the Lütze LOCC-Box should always be used in such cases. They provide safe protection in all circumstances.

Power Supplies · Basics



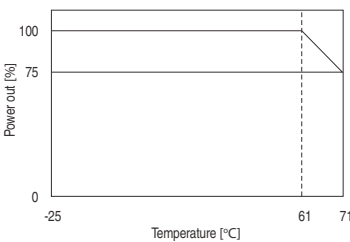
U/I characteristic

Lütze power supplies with a U/I characteristic perform current limiting to typically 1.2 times the nominal current at constant output voltage. This current is still available in case of an overload or a short circuit. The voltage is slowly lowered, while the output current may rise further (triangular current limiting). Since the current does not sag in case of an overload, this method enables reliable starting of high loads.



5 Influence of ambient temperature

The ambient temperature has a direct influence on the maximum possible output power of a power supply and so on its response to short-circuit or overload. Temperatures inside cabinets may be over 60 °C as a result of internal or external influences. Power supplies still have to operate reliably even at such high temperatures. Due to the components used, however, there is a point as from which the output power has to be reduced. That point is described by so-called derating. The Delta series from Lütze is rated for ambient temperatures up to 70°C for example, with derating beginning at 60°C. The reduction in output power is 2.5%/°C.



Example: Derating curve of Lütze of Delta series

6 Thermal protection

When operating a power supply under extreme conditions for a long duration, e.g. in case of permanent operation within the power limits or in case of very high ambient temperatures, the power supply can heat

up to a degree where safe operation is no longer guaranteed. There are a number of techniques for protecting the power supply against destruction due to overheating.

- The maximum output power is reduced, allowing the power supply to cool down.
- The device is switched off completely and cannot resume operation until a manual reset is performed. Depending on the manufacturer, the reset is done either using a corresponding switch or by disconnecting the supply voltage.
- The device only switches off the output and does not switch it on until the temperature falls below a certain limit value. This is the most frequently used method nowadays, and is the one used by LÜTZE.

7 General parameters

7.1 Open circuit resistance

Open circuit resistant power supplies require no minimum load in order to provide a stable output voltage. This is important, for example, in the case of time-critical applications in which a load is applied which has to be immediately supplied with voltage. Power supplies which are not open circuit resistant often require up to the seconds range until an actual supply takes place.

7.2 Resistance to reverse feed

The resistance to reverse feed specifies up to which voltage a power supply is immune against the feeding of voltages into the secondary side. Such a current flow can occur if power supplies are operated in parallel or inductive consumers are connected.

7.3 Overvoltage protection (secondary side)

In case of an internal error of the power supply, this protection mechanism prevents the occurrence of overvoltage on the secondary side that could possibly damage or even destroy a connected load or exceed the SELV voltage limit.

7.4 Power failure buffering

Power supplies must be able to maintain their output voltage for a certain time in case of supply voltage dips. Usually, a power failure buffering time of at least 20 ms is aspired in order to provide buffering for one complete cycle of the mains voltage. In the semiconductor industry longer time are required. The devices must then comply with the requirements of SEM F47. Most LÜTZE devices do so.

8 Line cross-section and protection

8.1 Input-side protection

If power supplies have their own input protection, such as a safety fuse, no further protective measures are necessary. However, standards stipulate that a power supply must be capable of being disconnected from the supply mains by external means. Line protection equipment can then be used. For the relevant characteristics refer to the LÜTZE data sheets.

8.2 Output-side protection

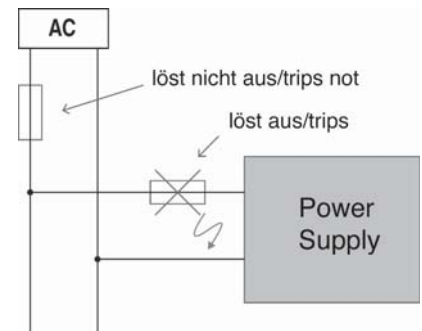
Alongside the output behaviour described in section 4, there is a U/I characteristic with an additional power reserve. However, all these output behaviour modes are ultimately not suitable for safe activation of standard line protection equipment. The reason lies in the technical design of the equipment. Only electronic protection devices capable of reacting fast enough to overload or short-circuit offer a solution. These devices also feature a high degree of repeat accuracy across the entire temperature range. With the LOCCBox LÜTZE offers intelligent DC protection modules which can also be integrated into field bus communications systems. (See also Electronic overload protection, page).

8.3 Selectivity

Selectivity means the tripping coordination. In electrical systems, distinction can be made between "series selectivity", which means that individual fuses connected in series are selective against each other, and "parallel selectivity", which means that electrical circuits connected in parallel are selective against each other.

Series selectivity

In case of series-connected fuses, the tripping coordination of fuses is considered as selective if only the fuse installed nearest to the fault trips. Fuses that are located nearer to the energy feeding point do not trip. This guarantees that as many system parts as possible remain operative in the event of one single fault, resulting in an increased availability of electrical systems.



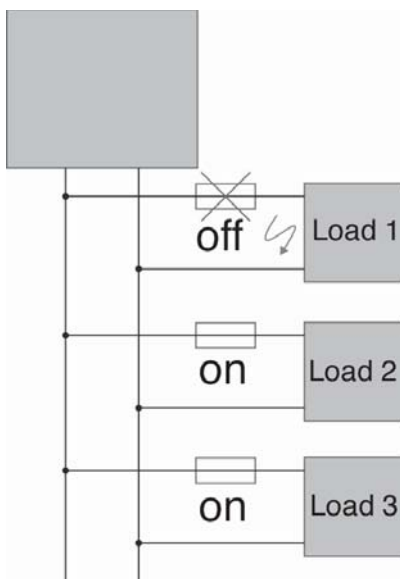
Rule of thumb:

The fuses must differ by two nominal quantities

Power Supplies · Basics

Parallel selectivity

Based on the self-protection, the output voltage is switched off or reduced in the event of a fault. If multiple loads are carried on one power supply, a voltage drop will occur throughout the entire application. To prevent this, protective devices are installed in the individual lines to the consumers. If a fault occurs, the protective device concerned must trip fast enough so as to disconnect the faulty consumer reliably from the rest of the system and such that the other consumers remain available.



8.4 Connection cross-sections

The line cross-sections are selected dependent on the maximum output current. The following table provides an overview of the current capacities of multi-core moveable copper cables with different conductor cross-sections at a temperature of 30 °C and up to a nominal voltage of 1000 V (to DIN 57100-523).

Cross-section in mm ²	A
0.75	12
1	15
1.5	18
2.5	26
4	34
6	44
10	61

9 PFC (Power Factor Correction)

Since 1 January 2001, the European standard regarding the limits for harmonic current emissions (IEC/EN 61000-3-2) is in force. This standard defines the maximum allowed intensity of harmonic currents fed back into the supplying mains system. It is applicable for consuming devices with an active power input between 75 and 100 W that are directly connected to the public electricity supply. Power supplies for industrial applications often do not require PFC, since large installations are equipped with a central PFC, installed between the internal electrical system and the public electricity supply.

9.1 Passive PFC

For passive PFC, a reactance coil is connected to the input circuit. This reactance coil buffers energy from the mains and thus reduces the current pulses. The lower the pulses, the less harmonics are produced. The advantage of this solution is its easy implementation into existing circuitry. However, the drawback is that it is not able to reduce all harmonics.

9.2 Active PFC

Active PFC is able to deliver considerably better results. In a very simplified consideration, one could say that the actual power supply is preceded by another power supply that performs a regulation of the current consumption from the mains. This consumption is oriented towards the sinusoidal supply voltage. Using this technology, it is possible to avoid the production of almost every kind of harmonics. However, the circuitry is much more complex than for passive PFC. LÜTZE power supplies are all equipped with active PFC.

10 Applications

10.1 Parallel connection of power supplies for increased capacity Operation

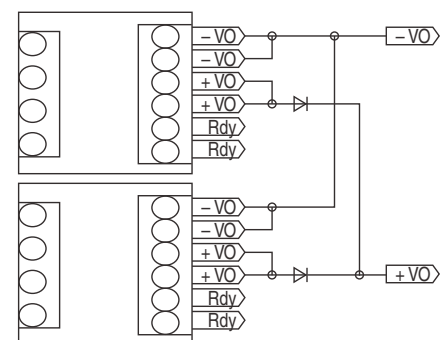
An increase of the output power can be obtained by connecting power supplies in parallel. This can be necessary if the current required by the load is higher than a single power supply can deliver, for example after the expansion of an existing installation. The following preconditions must be met when connecting power supplies in parallel for the purpose of increased capacity:

- Parallel connection is only allowed for identical power supplies.
- The power supplies have to be switched on simultaneously.
- The following points must be observed when connecting the power supplies in order to prevent different voltage drops on the supply lines or at the terminals which would lead to unbalanced load at the common connection point:

- Identical lengths of the supply lines
- Identical conductor cross-sections of the supply lines
- Terminal screws have to be fastened with the same torque to guarantee equal contact resistances.
- The output voltages of the power supplies should not differ by more than 50 mV in the open circuit state. Otherwise safe operation cannot be guaranteed.

10.2 Redundancy

The term redundancy generally denotes the existence of several objects that are identical in functionality, content or nature. In industrial automation, redundancy ensures that in the event of failure of a power supply another one takes over the supply, thereby maintaining operation of the system. For this the individual power supplies must be isolated from each other, as one faulty power supply might impact on the other one. In the worst case the failed power supply effects a secondary-side short-circuit, which would result in failure of the second power supply. To isolate the power supplies from each other, isolating diodes (so-called O-ring diodes) must be looped into the secondary outputs of the power supplies. They then prevent reciprocal loading. This ensures uninterrupted power supply. In the LÜTZE Delta series the isolating diodes are built-in to the output. In the Compact series the diodes must be installed externally as follows:



LÜTZE offers isolating diodes up to a nominal current of DC20A.

The new LCOS-PS Ultracompact switching power supply unit

LCOS-PS120 Ultracompact 120W DIN Rail switching power supply units

The LCOS power supply series is suitable for single unit installations or together with the modular LUTZE LCOS housing system. Unique technical features and benefits include:

Extremely compact: 35 x 100 x 110 mm

Very high efficiency: > 93 %

Improved overvoltage protection

Simple parallel operation via downslope characteristic curve

Remote on/off

Fault alarm output

Power boost 150 %

Energy bus (optional)

Active PFC

-25 °C to +50 °C without derating: maximum temperature 70°C

Optional:

- Analogue output 0-10 V or 4-20 mA equivalent
- Internal data bus
- Automatic voltage load sensing

Uniform housing structure in the range from 10 W to 120 W

Screw or spring type termination, plug-in

Applications: always whenever high reliability is imperative:

Machine and plant construction, process and system engineering, telecommunications, renewable energies

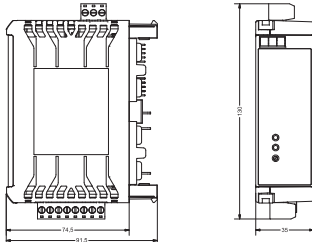


Power supply · LCOS-PS controlled, 120 Watt

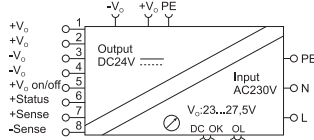
Switchmode power supply, PFC, Single-phase
 Input: Wide range input AC 88 - 264 V
 Output: 24 V, adjustable



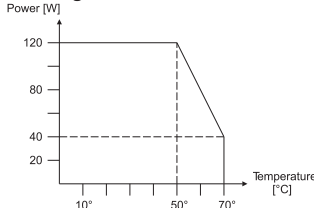
Dimensions



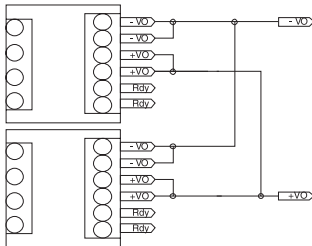
PIN assignment



Derating



Parallel mode



Description	Part No.	Type	PU	
Complete device with carrier base, screw terminal				
Output voltage/current	DC 24 V; 5 A	779001.1413	LCOS-PS-1-120-24	1
Device without carrier base, screw terminal				
Output voltage/current	DC 24 V; 5 A	779101.0413	LCOS-PS-1-120-24	1
Complete device with carrier base, push-in terminal				
Output voltage/current	DC 24 V; 5 A	779101.1413	LCOS-PS-1-120-24	1
Device without carrier base, push-in terminal				
Output voltage/current	DC 24 V; 5 A	779001.0413	LCOS-PS-1-120-24	1

Part No.	779001.1413	779101.0413	779101.1413	779001.0413
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Input	
Number of phases	1
Nominal voltage range	AC 88 V – 264 V
Line frequency	47 Hz – 63 Hz
Rated current I _N	0.70 A @ 230 V
Inrush current	<20 A @ 230 V
Internal fuse	T 4 A/AC 250 V
External fuse	Mini-circuit breaker B 6 A
Power Factor Correction P.F.C.	>0.96
Output	
Rated voltage U _N	DC 24.0 V
Rated current I _N	5.00 A
Max. output current	>7.5 A, 5 s @ U _{out} > 90 %
Short-circuit current	–
Setting range U _{out} min./U _{out} max.	DC 23 V – 27.5 V
Load regulation	downslope -2 % @ 5 A
Line regulation	0.5 %
Ripple and Noise	≤100 mV pp
Hold up time	>20 ms
Parallel / redundant mode	max. 4 devices, redundancy via decoupling diode
Efficiency	>93 %
Protection device	Over voltage protection
Over voltage protection	35 V
Power loss (nominal operations) max.	9 W @ 230 V
Short circuit	Current limit (overload), Hicc-Up (short-circuit)
Status indication	
Status display output	DC ON, green ≥21.6 V I _{out} > 110 % I _N
Monitoring	
Protection	DC ON, open collector
Switching voltage	DC 30 V
Switching current max.	0.100 A
Remote input	
control voltage	DC 24 V
Control current	DC 5 mA
ON/OFF	11 V – 30 V: OFF, DC 5 V: ON
General	
Insulation voltage output / ground	DC 0.5 kV _{eff}
Insulation voltage input / output	AC 3 kV _{eff}
Insulation voltage input / ground	AC 1.5 kV _{eff}
Operating temperature range	-25 °C ... 70 °C
Derating	>50 °C: -4 W/°C
Storage temperature range	-25 °C ... 85 °C
MTBF	>500.000 h: SN29500 / >150.000 h: MIL HDBK 217F
Relative air humidity	20 – 95 % RH, not condensing
Cooling	Air convection
Colour of the housing	pebble grey
Housing material	PA 6.6 (UL 94 V-0, NFF 12, F2)
Mounting	DIN rail mountable TS35 (EN 50022)
Application height	2000 m
Installation position	vertical
Protection class	IP20
Protection class	I (SELV, PELV)
Over voltage category	II(IEC 664-1)
Degree of pollution	2
Weight	0.350 kg/piece
Connection device	0.2 – 2.5 mm ² (AWG 24 – AWG 12), input: 3-pin, output: 8-pin
Dimensions (w × h × d)	35.0 × 100.0 × 110.0 mm
Approvals	UL cUL cULus in preparation
Standards	IEC 60950 IEC 950 EN 60950 EN 61000-6-2 (2005) EN 60100-6-4 (2007) EN 61000-4-2/3/4/5/6/11 EN 61000-5-5 EN 50178 EN 61558

DELTA Power Supplies



DELTA Series

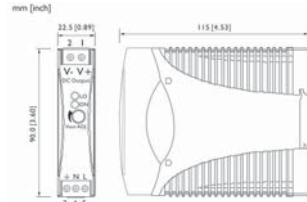
- One- and three-phase
- 10 W to 960 W
- Parallel operation
- Overload and short circuit protection
- Redundant operation with integrated diodes
- High efficiency
- Protection class IP20
- UL Listed
- Class 1 Div.2, A, B, C, D, T4
- Economical

Power supply · regulated, 10 W

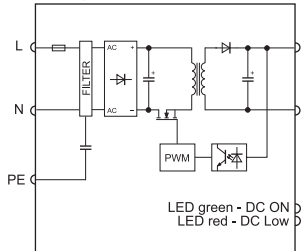
Switchmode power supply, Single-phase, Class 2
Input: wide-range input AC 90–265 V, DC 120–370 V
Output: 5 V / 12 V, adjustable



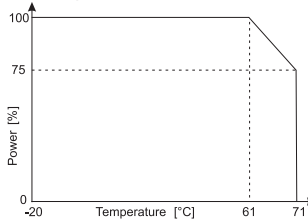
Dimensions



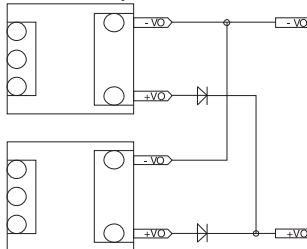
PIN assignment



Derating



Redundant operation



Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 5 V / 2 A	728761	DRA10-05A	1
	DC 12 V / 0.84 A	728766	DRA10-12A	1

Input	DRA10-05A	DRA10-12A
Nominal voltage	AC 100–240 V	
Operation voltage range	AC 90–265 V / DC 120–370 V	
Line frequency	47 – 63 Hz	
Rated current	U _i = AC 115 V: 120 mA / U _i = AC 230 V: 70 mA	
Inrush current	U _i = AC 115 V: 10 A / U _i = AC 230 V: 18 A	
Internal fuse	T2 A / AC 250 V	
External fuse	Mini-circuit breaker: B 4 A	
Power Factor Correction P.F.C.	–	

Output	DRA10-05A	DRA10-12A
Rated voltage output	DC 5 V	DC 12 V
Rated current output	2 A	0.84 A
Max. output current	–	
Short-circuit current	–	
Voltage trim range	4.5–5.75 V	10.8–13.8 V
Accuracy	±1 %	
Line regulation	±1 %	
Load regulation	±2 %	
Rise time	1 s	
Temperature coefficient	±0.03 % / °C	
Ripple & Noise	<50 mV	
Hold up time	V _{in} = 115 V: 25 ms / V _{in} = 230 V: 100 ms	
Status indication DC ON LED green	≥4.5 V	≥10.8 V
Status indication DC LOW LED red	<3.75–4.50 V	<9–10.8 V
Parallel/redundant operation	max. 2 devices / via external diodes	
Efficiency	73 %	75 %
Low power loss	4 W (AC 230 V)	3.4 W (AC 230 V)
Rated over load protection	110–135 %	
Over voltage protection	125–145 %	
Short circuit characteristics	Hiccup-mode	

General	
Switching frequency	approx. 100 kHz
Insulation voltage input/output	AC 3.0 kV _{eff}
Insulation voltage input / ground	AC 1.5 kV _{eff}
Insulation voltage output / ground	–
Insulation resistance at DC 500 V	100 MΩ
Operation temperature range	–20 °C – 70 °C (derating)
Derating	–3% / °C starting at 61° C
Storage temperature range	–25 °C – 85 °C
M.T.B.F.	801000 h
Relative humidity	20–95% RH, non-condensing
Dimensions (w × h × d) in mm	22.5 × 90.0 × 115.0

Cooling	Natural air cooling, 25 mm distance on all sides
Housing material	Plastic
Shock resistance	–
Vibration resistance	–
Field installation	rail TS 35 (EN 50022)
Application height	2000 m
Installation position	vertical
Protection class	IP 20
IP rating	II (SELV, PELV)
Overvoltage category	II
Pollution degree	2
Weight (kg/piece)	0.120
Termination	Screw terminal: 0.2–2.5 mm ² , max. 0.56 Nm
Approvals	UL: UL 508 listed; cUL: UL 60950-1, UL 1310 Class 2; TÜV: EN 60950-1, CE: EN 50081-1 / EN 55022 Class B, EN 61000-3-2, EN 601000-3-3, EN 50082-1 / EN 55024
	Class I, Division 2, Groups A, B, C and D

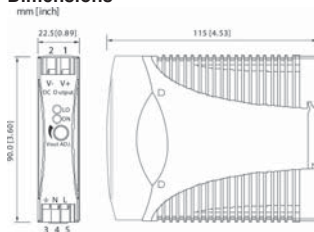
Monitoring	
DC ON Control (Rdy)	LED green/red
Switching voltage	–
Switching current	–
Switching capacity	–
Insulation voltage	–

Power supply · regulated, 10 W

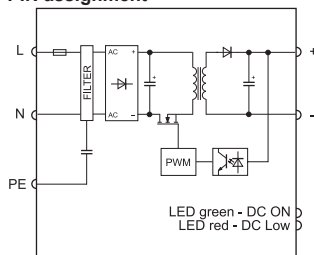
Switchmode power supply, Single-phase, Class 2
Input: wide-range input AC 90–265 V, DC 120–370 V
Output: 5 V / 12 V / 15 V / 24 V, adjustable



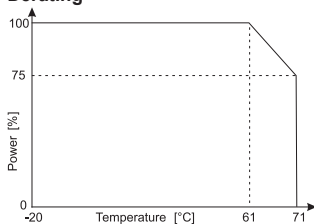
Dimensions



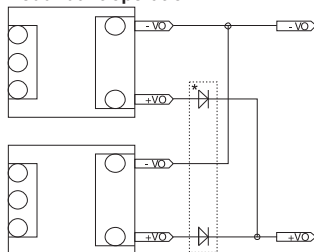
PIN assignment



Derating



Redundant operation



* Redundant Module 722987
 Only use together with 24 V version!

Description	Part-No.	Type	PU	
Spring terminal				
Output voltage/current	DC 5 V / 2 A	722761	DRA10-05	1
	DC 12 V / 0.84 A	722766	DRA10-12	1
	DC 15 V / 0.67 A	722773	DRA10-15	1
	DC 24 V / 0.42 A	722751	DRA10-24	1

Input	DRA10-05	DRA10-12	DRA10-15	DRA10-24
Nominal voltage		AC 100–240 V		
Operation voltage range	AC 90–265 V / DC 120–370 V			
Line frequency	47 – 63 Hz			
Rated current	U _I = AC 115 V: 120 mA / U _I = AC 230 V: 70 mA			
Inrush current	U _I = AC 115 V: 10 A / U _I = AC 230 V: 18 A			
Internal fuse	T2 A / AC 250 V			
External fuse	Mini-circuit breaker: B 4 A			
Power Factor Correction P.F.C.	–			

Output	DRA10-05	DRA10-12	DRA10-15	DRA10-24
Rated voltage output	DC 5 V	DC 12 V	DC 15 V	DC 24 V
Rated current output	2 A	0.84 A	0.67 A	0.42 A
Max. output current	–			
Short-circuit current	–			
Voltage trim range	4.5–5.75 V	10.8–13.8 V	13.5–17.25 V	21.6–28.8 V
Accuracy	±1 %			
Line regulation	±1 %			
Load regulation	±2 %			
Rise time	1 s			
Temperature coefficient	±0.03 % / °C			
Ripple & Noise	<50 mV			
Hold up time	V _{in} = 115 V: 25 ms / V _{in} = 230 V: 100 ms			
Status indication DC ON LED green	≥4.5 V	≥10.8 V	≥13.5 V	≥21.6 V
Status indication DC LOW LED red	<3.75–4.50 V	<9–10.8 V	<11.25–13.5 V	<18–21.6 V
Parallel/redundant operation	max. 2 devices / via external diodes			
Efficiency	73 %	75 %	76 %	77 %
Low power loss	4 W (AC 230 V)	3.4 W (AC 230 V)	3.3 W (AC 230 V)	2.8 W (AC 230 V)
Rated over load protection	110–135 %			
Over voltage protection	125–145 %			
Short circuit characteristics	Hiccup-mode			

General	DRA10-05	DRA10-12	DRA10-15	DRA10-24
Switching frequency	approx. 100 kHz			
Insulation voltage input/output	AC 3.0 kV _{eff}			
Insulation voltage input / ground	AC 1.5 kV _{eff}			
Insulation voltage output / ground	–			
Insulation resistance at DC 500 V	100 MΩ			
Operation temperature range	–20 °C – 70 °C (derating)			
Derating	–3% / °C starting at 61° C			
Storage temperature range	–25 °C – 85 °C			
M.T.B.F.	801000 h	803000 h	805000 h	808000 h
Relative humidity	20–95% RH, non-condensing			
Dimensions (w × h × d) in mm	22.5 × 90.0 × 115.0			
Cooling	Natural air cooling, 25 mm distance on all sides			
Housing material	Plastic			
Shock resistance	–			
Vibration resistance	–			
Field installation	rail TS 35 (EN 50022)			
Application height	2000 m			
Installation position	vertical			
Protection class	IP 20			
IP rating	II (SELV, PELV)			
Overvoltage category	II			
Pollution degree	2			
Weight (kg/piece)	0.120			
Termination	Spring terminal: 0.2–2.0 mm ²			

Approvals	UL: UL 508 listed; cUL: UL 60950-1, UL 1310 Class 2; TÜV: EN 60950-1, CE: EN 50081-1 / EN 55022 Class B, EN 61000-3-2, EN 601000-3-3, EN 50082-1 / EN 55024			
	Class I, Division 2, Groups A, B, C and D			

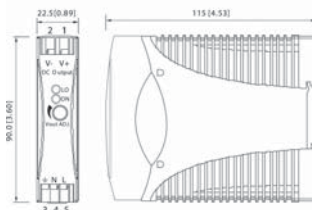
Monitoring	DRA10-05	DRA10-12	DRA10-15	DRA10-24
DC ON Control (Rdy)	LED green/red			
Switching voltage	–			
Switching current	–			
Switching capacity	–			
Insulation voltage	–			

Power supply · regulated, 15 W

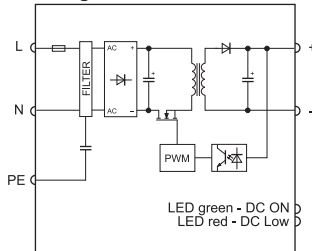
Switchmode power supply, Single-phase, Class 2
Input: wide-range input AC 90–265 V, DC 120–370 V
Output: 5 V, adjustable



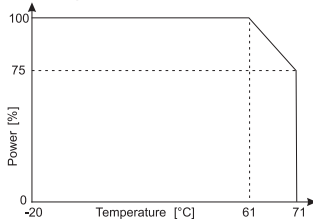
Dimensions



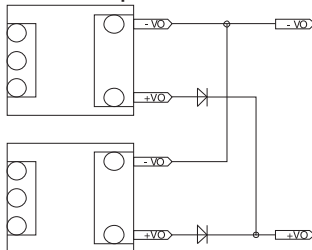
PIN assignment



Derating



Redundant operation



Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 5 V / 3 A	728762	DRA18-05A	1
Spring terminal				
Output voltage/current	DC 5 V / 3 A	722762	DRA18-05	1

Input	DRA18-05A	DRA18-05
Nominal voltage		AC 100–240 V
Operation voltage range		AC 90–265 V / DC 120–370 V
Line frequency		47 – 63 Hz
Rated current	U _i = AC 115 V: 170 mA / U _i = AC 230 V: 90 mA	
Inrush current	U _i = AC 115 V: 10 A / U _i = AC 230 V :18 A	
Internal fuse	T2 A / AC 250 V	
External fuse	Mini-circuit breaker: B 4 A	
Power Factor Correction P.F.C.	–	

Output	
Rated voltage output	DC 5 V
Rated current output	3 A
Max. output current	–
Short-circuit current	–
Voltage trim range	4.5–5.75 V
Accuracy	±1 %
Line regulation	±1 %
Load regulation	±2 %
Rise time	1 s
Temperature coefficient	±0.03 % / °C
Ripple & Noise	<50 mV
Hold up time	U _i = 115 V: 20 ms / U _i = 230 V: 75 ms
Status indication DC ON LED green	≥4.5 V
Status indication DC LOW LED red	<3.75–4.50 V
Parallel/redundant operation	max. 2 devices / via external diodes
Efficiency	75 %
Low power loss	5 W (AC 230 V)
Rated over load protection	110–135 %
Over voltage protection	125–145 %
Short circuit characteristics	Hiccup-mode

General	
Switching frequency	approx. 100 kHz
Insulation voltage input/output	AC 3.0 kV _{eff}
Insulation voltage input / ground	AC 1.5 kV _{eff}
Insulation voltage output / ground	–
Insulation resistance at DC 500 V	100 MΩ
Operation temperature range	-20 °C – 70 °C (derating)
Derating	-3% / °C starting at 60 °C
Storage temperature range	-25 °C – 85 °C
M.T.B.F.	795000 h
Relative humidity	20–95% RH, non-condensing
Dimensions (w × h × d) in mm	22.5 × 90.0 × 115.0
Cooling	Natural air cooling, 25 mm distance on all sides
Housing material	Plastic
Shock resistance	–
Vibration resistance	–
Field installation	rail TS 35 (EN 50022)
Application height	2000 m
Installation position	vertical
Protection class	IP 20
IP rating	II (SELV, PELV)
Overvoltage category	II
Pollution degree	2
Weight (kg/piece)	0.150
Termination	Screw terminal: 0.2–2.5 mm ² , max. 0.56 Nm Spring terminal: 0.2–2.0 mm ²

Approvals	
	UL: UL 508 listed; cUL: UL 60950-1, UL 1310 Class 2; TÜV: EN 60950-1, CE: EN 50081-1 / EN 55022 Class B, EN 61000-3-2, EN 601000-3-3, EN 50082-1 / EN 55024 Class I, Division 2, Groups A, B, C and D

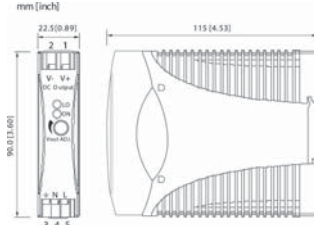
Monitoring	
DC ON Control (Rdy)	LED green/red
Switching voltage	–
Switching current	–
Switching capacity	–
Insulation voltage	–

Power supply · regulated, 18 W

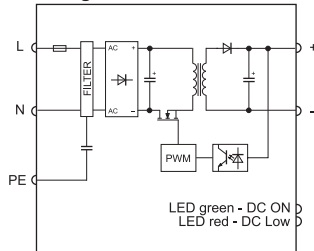
Switchmode power supply, Single-phase, Class 2
Input: wide-range input AC 90–265 V, DC 120–370 V
Output: 12 V / 15 V / 24 V, adjustable



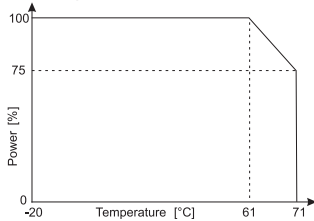
Dimensions



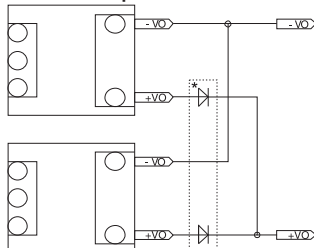
PIN assignment



Derating



Redundant operation



* Redundant Module 722987
 Only use together with 24 V version!

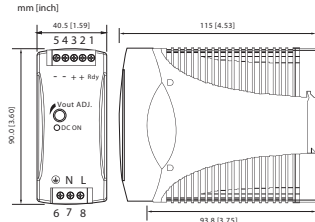
Description	Part-No.	Type	PU	
Spring terminal				
Output voltage/current	DC 12 V/ 1.5 A	722767	DRA18-12	1
	DC 15 V/ 1.2 A	722774	DRA18-15	1
	DC 24 V/ 0.75 A	722752	DRA18-24	1
Input				
	DRA18-12	DRA18-15	DRA18-24	
Nominal voltage	AC 100–240 V			
Operation voltage range	AC 90–265 V / DC 120–370 V			
Line frequency	47 – 63 Hz			
Rated current	U _i = AC 115 V: 200 mA / U _i = AC 230 V: 110 mA			
Inrush current	U _i = AC 115 V: 10 A / U _i = AC 230 V: 18 A			
Internal fuse	T2 A / AC 250 V			
External fuse	Mini-circuit breaker: B 4 A			
Power Factor Correction P.F.C.	–			
Output				
Rated voltage output	DC 12 V	DC 15 V	DC 24 V	
Rated current output	1.5 A	1.2 A	0.75 A	
Max. output current	–			
Short-circuit current	–			
Voltage trim range	10.8–13.8 V	13.5–17.25 V	21.6–28.8 V	
Accuracy	±1 %			
Line regulation	±1 %			
Load regulation	±2 %			
Rise time	1 s			
Temperature coefficient	±0.03 % / °C			
Ripple & Noise	<50 mV			
Hold up time	U _i = 115 V: 20 ms / U _i = 230 V: 75 ms			
Status indication DC ON LED green	≥10.8 V	≥13.5 V	≥21.6 V	
Status indication DC LOW LED red	<9–10.8 V	<11.25–13.5 V	<18–21.6 V	
Parallel/redundant operation	max. 2 devices / via external diodes			
Efficiency	77 %			
Low power loss	4.65 W (AC 230 V)	4.25 W (AC 230 V)	4.45 W (AC 230 V)	
Rated over load protection	110–135 %			
Over voltage protection	125–145 %			
Short circuit characteristics	Hiccup-mode			
General				
Switching frequency	approx. 100 kHz			
Insulation voltage input/output	AC 3.0 kV _{eff}			
Insulation voltage input / ground	AC 1.5 kV _{eff}			
Insulation voltage output / ground	–			
Insulation resistance at DC 500 V	100 MΩ			
Operation temperature range	-20 °C – 70 °C (derating)			
Derating	-3% / °C starting at 60 °C			
Storage temperature range	-25 °C – 85 °C			
M.T.B.F.	797000 h	796000 h	800000 h	
Relative humidity	20–95% RH, non-condensing			
Dimensions (w × h × d) in mm	22.5 × 90.0 × 115.0			
Cooling	Natural air cooling, 25 mm distance on all sides			
Housing material	Plastic			
Shock resistance	–			
Vibration resistance	–			
Field installation	rail TS 35 (EN 50022)			
Application height	2000 m			
Installation position	vertical			
Protection class	IP 20			
IP rating	II (SELV, PELV)			
Overvoltage category	II			
Pollution degree	2			
Weight (kg/piece)	0.150			
Termination	Spring terminal: 0.2–2.0 mm ²			
Approvals	UL: UL 508 listed; cUL: UL 60950-1, UL 1310 Class 2; TÜV: EN 60950-1, CE: EN 50081-1 / EN 55022 Class B, EN 61000-3-2, EN 601000-3-3, EN 50082-1 / EN 55024 Class I, Division 2, Groups A, B, C and D			
Monitoring				
DC ON Control (Rdy)	LED green/red			
Switching voltage	–			
Switching current	–			
Switching capacity	–			
Insulation voltage	–			

Power supply · regulated, 30 W

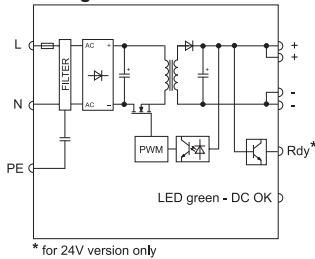
Switchmode power supply, Single-phase, Class 2
Input: wide-range input AC 85–264 V, DC 90–375 V
Output: 5 V / 12 V / 24 V / 48 V, adjustable



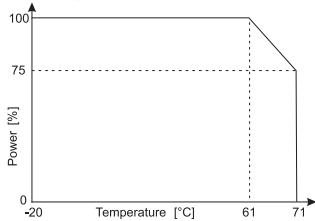
Dimensions



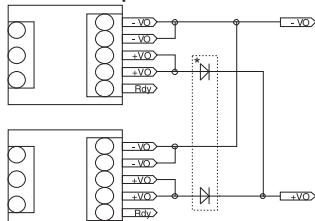
PIN assignment



Derating



Redundant operation



* Redundant Module 722987
 Only use together with 24 V version!

Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 5 V / 6 A	722763	DRA30-5A	1
	DC 12 V / 2.5 A	722768	DRA30-12A	1
	DC 24 V / 1.25 A	722753	DRA30-24A	1
	DC 48 V / 0.625 A	722775	DRA30-48A	1

Input	DRA30-5A	DRA30-12A	DRA30-24A	DRA30-48A
Nominal voltage	AC 100–240 V			
Operation voltage range	AC 85–264 V / DC 90–375 V			
Line frequency	47 – 63 Hz			
Rated current	U _i = AC 115 V: 360 mA / U _i = AC 230 V: 190 mA			
Inrush current	U _i = AC 115 V: 20 A / U _i = AC 230 V: 40 A			
Internal fuse	T2 A / AC 250 V			
External fuse	Mini-circuit breaker: B 4 A			
Power Factor Correction P.F.C.	–			

Output	DRA30-5A	DRA30-12A	DRA30-24A	DRA30-48A
Rated voltage output	DC 5 V	DC 12 V	DC 24 V	DC 48 V
Rated current output	6 A	2.5 A	1.25 A	0.625
Max. output current	–			
Short-circuit current	–			
Voltage trim range	5–5.5 V	12/14 V	24/28 V	48/55 V
Accuracy	±1 %			
Line regulation	±0.5 %			
Load regulation	±0.5 %			
Rise time	1 s			
Temperature coefficient	±0.03 % / °C			
Ripple & Noise	<50 mV			
Hold up time	V _{in} = 115 V: 20 ms / V _{in} = 230 V: 30 ms			
Status indication DC ON LED green	≥4 V	≥9.6 V	≥19.2 V	≥37 V
Status indication DC LOW LED red	–			
Parallel/redundant operation	max. 2 devices / via external diodes			
Efficiency	79 %	84 %	86 %	
Low power loss	8.5 W (AC 230 V)	5.6 W (AC 230 V)	5.5 W (AC 230 V)	4.9 W (AC 230 V)
Rated over load protection	120 – 136 %	110 – 140 %		
Over voltage protection	125–137 %			
Short circuit characteristics	Hiccup-mode			
General				
Switching frequency	approx. 80 kHz			
Insulation voltage input/output	AC 3.0 kV _{eff}			
Insulation voltage input / ground	AC 1.5 kV _{eff}			
Insulation voltage output / ground	–			
Insulation resistance at DC 500 V	100 MΩ			
Operation temperature range	–25 °C – 70 °C (derating)			
Derating	–2.5% / °C starting at 60 °C			
Storage temperature range	–25 °C – 85 °C			
M.T.B.F.	551000 h	582000 h	588000 h	609000 h
Relative humidity	20–90% RH, non-condensing			
Dimensions (w × h × d) in mm	40.5 × 90.0 × 115.0			
Cooling	Natural air cooling, 25 mm distance on all sides			
Housing material	Plastic			
Shock resistance	–			
Vibration resistance	–			
Field installation	rail TS 35 (EN 50022)			
Application height	2000 m			
Installation position	vertical			
Protection class	IP 20			
IP rating	II (SELV, PELV)			
Overvoltage category	II			
Pollution degree	2			
Weight (kg/piece)	0.290			
Termination	Screw terminal: 0.2–2.5 mm ² , max. 0.56 Nm			

Approvals
 UL: UL 508 listed; cUL: UL 60950-1, UL 1310 Class 2; TÜV: EN 60950-1, CE: EN 61000-6-3 / EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 55024, EN 61000-6-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11

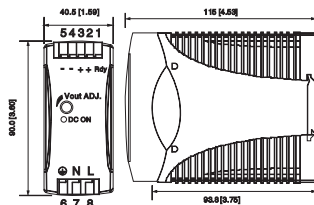
Monitoring			
DC ON Control (Rdy)	–	Open Collector	–
Switching voltage	–	DC 24 V	–
Switching current	–	≤ 35 mA	–
Switching capacity	–	–	–
Insulation voltage	–	none	–

Power supply · regulated, 30 W

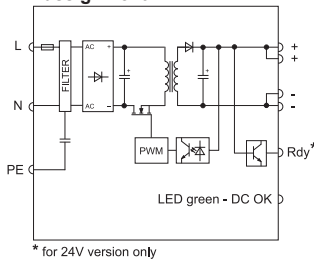
Switchmode power supply, Single-phase, Class 2
Input: wide-range input AC 85–264 V, DC 90–375 V
Output: 5 V / 12 V / 24 V / 48 V, adjustable



Dimensions

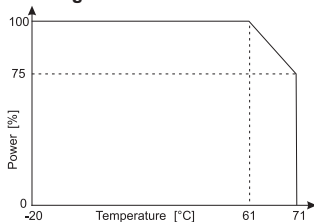


PIN assignment

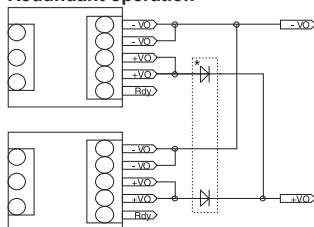


* for 24V version only

Derating



Redundant operation



* Redundant Module 722987
 Only use together with 24 V version!

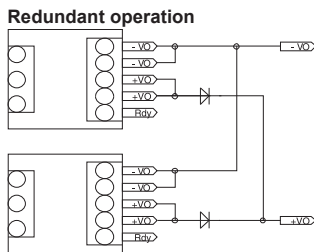
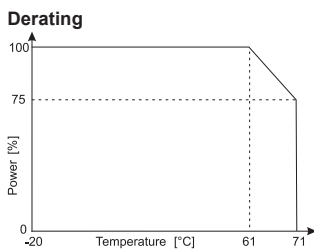
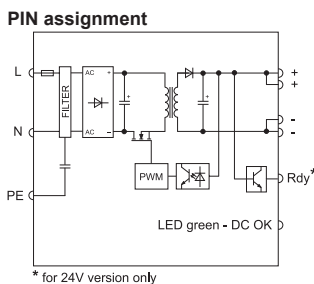
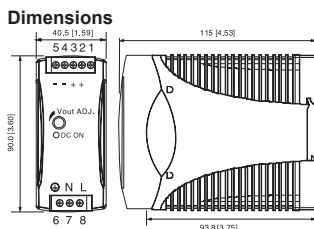
Description	Part-No.	Type	PU	
Spring terminal				
Output voltage/current	DC 5 V/ 6 A	728763	DRA30-05	1
	DC 12 V/ 2.5 A	728768	DRA30-12	1
	DC 24 V/ 1.25 A	728753	DRA30-24	1
	DC 48 V/ 0.625 A	728775	DRA30-48	1

Input	DRA30-05	DRA30-12	DRA30-24	DRA30-48
Nominal voltage	AC 100–240 V			
Operation voltage range	AC 85–264 V / DC 90–375 V			
Line frequency	47 – 63 Hz			
Rated current	U _i = AC 115 V: 360 mA / U _i = AC 230 V: 190 mA			
Inrush current	U _i = AC 115 V: 20 A / U _i = AC 230 V: 40 A			
Internal fuse	T2 A / AC 250 V			
External fuse	Mini-circuit breaker: B 4 A			
Power Factor Correction P.F.C.	–			
Output				
Rated voltage output	DC 5 V	DC 12 V	DC 24 V	DC 48 V
Rated current output	6 A	2.5 A	1.25 A	0.625
Max. output current	–			
Short-circuit current	–			
Voltage trim range	5–5.5 V	12/14 V	24/28 V	48/55 V
Accuracy	±1 %			
Line regulation	±0.5 %			
Load regulation	±0.5 %			
Rise time	1 s			
Temperature coefficient	±0.03 % / °C			
Ripple & Noise	<50 mV			
Hold up time	V _{in} = 115 V: 20 ms / V _{in} = 230 V: 30 ms			
Status indication DC ON LED green	≥4 V	≥9.6 V	≥19.2 V	≥37 V
Status indication DC LOW LED red	–			
Parallel/redundant operation	max. 2 devices / via external diodes			
Efficiency	79 %	84 %	86 %	
Low power loss	8.5 W (AC 230 V)	5.6 W (AC 230 V)	5.5 W (AC 230 V)	4.9 W (AC 230 V)
Rated over load protection	110–140 %			
Over voltage protection	120–136 %	125–137 %		
Short circuit characteristics	Hiccup-mode			
General				
Switching frequency	approx. 80 kHz			
Insulation voltage input/output	AC 3.0 kV _{eff}			
Insulation voltage input / ground	AC 1.5 kV _{eff}			
Insulation voltage output / ground	–			
Insulation resistance at DC 500 V	100 MΩ			
Operation temperature range	–25 °C – 70 °C (derating)			
Derating	–2.5 % / °C starting at 60 °C			
Storage temperature range	–25 °C – 85 °C			
M.T.B.F.	551000 h	582000 h	588000 h	609000 h
Relative humidity	20–90% RH, non-condensing			
Dimensions (w × h × d) in mm	40.5 × 90.0 × 116.0			
Cooling	Natural air cooling, 25 mm distance on all sides			
Housing material	Plastic			
Shock resistance	–			
Vibration resistance	–			
Field installation	rail TS 35 (EN 50022)			
Application height	2000 m			
Installation position	vertical			
Protection class	IP 20			
IP rating	II (SELV, PELV)			
Overvoltage category	II			
Pollution degree	2			
Weight (kg/piece)	0.290			
Termination	Spring terminal: 0.2–2.0 mm ²			
Approvals	UL: UL 508 listed; cUL: UL 60950-1, UL 1310 Class 2; TÜV: EN 60950-1, CE: EN 61000-6-3 / EN 55022 Class B; EN 61000-3-2, EN 601000-3-3; EN 55024; EN 61000-6-2; EN 61000-4-2; EN 61000-4-3, EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-4-8; EN 61000-4-11			

Monitoring			
DC ON Control (Rdy)	–	Open Collector	–
Switching voltage	–	DC 24 V	–
Switching current	–	≤ 35 mA	–
Switching capacity	–	–	–
Insulation voltage	–	none	–

Power supply - regulated, 50 W

Switchmode power supply, Single-phase, Class 2
Input: wide-range input AC 85–264 V, DC 90–375 V
Output: 5 V, adjustable



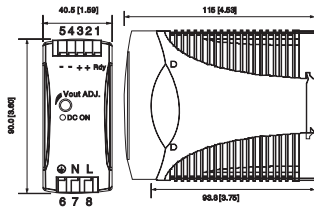
Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 5 V / 10 A	722764	DRA60-05A	1
Spring terminal				
Output voltage/current	DC 5 V / 10 A	728764	DRA60-05	1
Input				
	DRA60-05A	DRA60-05		
Nominal voltage	AC 100–240 V			
Operation voltage range	AC 85–264 V / DC 90–375 V			
Line frequency	47 – 63 Hz			
Rated current	U _i = AC 115 V, AC: 550 mA / U _i = 230 V; U _i = AC 115 V, AC: 550 mA / U _i = 230 V, AC: 280 mA			
Inrush current	U _i = AC 115 V: 20 A / U _i = AC 230 V: 40 A			
Internal fuse	T2 A / AC 250 V			
External fuse	Mini-circuit breaker: B 4 A, C 2 A			
Power Factor Correction P.F.C.	–			
Output				
Rated voltage output	DC 5 V			
Rated current output	10 A			
Max. output current	–			
Short-circuit current	–			
Voltage trim range	5.0/5.5 V			
Accuracy	±1 %			
Line regulation	±0.5 %			
Load regulation	±0.5 %			
Rise time	1 s			
Temperature coefficient	±0.03 % / °C			
Ripple & Noise	50 mV			
Hold up time	V _{in} = 115 V: 20 ms / V _{in} = 230 V: 30 ms			
Status indication DC ON LED green	≥4 V			
Status indication DC LOW LED red	–			
Parallel/redundant operation	max. 2 devices / via external diodes			
Efficiency	79 %			
Low power loss	12.5 W (AC 230 V)			
Rated over load protection	110–150 %			
Over voltage protection	120–136 %			
Short circuit characteristics	Hiccup-mode			
General				
Switching frequency	approx. 80 kHz			
Insulation voltage input/output	AC 3.0 kV _{eff}			
Insulation voltage input / ground	AC 1.5 kV _{eff}			
Insulation voltage output / ground	–			
Insulation resistance at DC 500 V	100 MΩ			
Operation temperature range	–25 °C – 70 °C (derating)			
Derating	–2.5 % / °C starting at 60 °C			
Storage temperature range	–25 °C – 85 °C			
M.T.B.F.	498000 h			
Relative humidity	20–90% RH, non-condensing			
Dimensions (w × h × d) in mm	40.5 × 90.0 × 115.0			
Cooling	Natural air cooling, 25 mm distance on all sides			
Housing material	Plastic			
Shock resistance	–			
Vibration resistance	–			
Field installation	rail TS 35 (EN 50022)			
Application height	2000 m			
Installation postition	vertical			
Protection class	IP 20			
IP rating	II (SELV, PELV)			
Overvoltage category	II			
Pollution degree	2			
Weight (kg/piece)	0.340			
Termination	Screw terminal: 0.2–2.5 mm ² , max. 0.56 Nm		Spring terminal 0.2–2.0 mm ²	
Approvals	UL: UL 508 listed; cUL: UL 60950-1, UL 1310 Class 2; TÜV: EN 60950-1, CE: EN 61000-6-3 / EN 55022 Class B; EN 61000-3-2, EN 601000-3-4; EN 55024; EN 61000-6-2; EN 61000-4-2; EN 61000-4-3, EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-4-8; EN 61000-4-11			
Monitoring				
DC ON Control (Rdy)	–			
Switching voltage	–			
Switching current	–			
Switching capacity	–			
Insulation voltage	–			

Power supply · regulated, 60 W

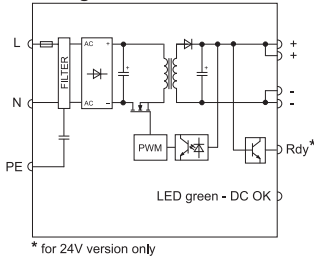
Switchmode power supply, Single-phase, Class 2
Input: wide-range input AC 85–264 V, DC 90–375 V
Output: 12 V / 24 V / 48 V, adjustable



Dimensions

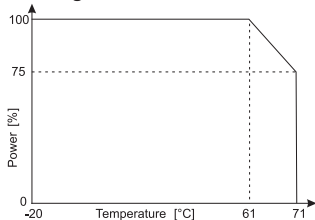


PIN assignment

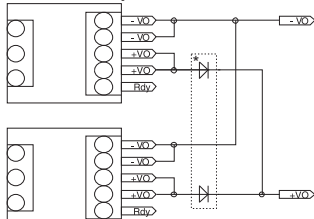


* for 24V version only

Derating



Redundant operation



* Redundant Module 722987
 Only use together with 24 V version!

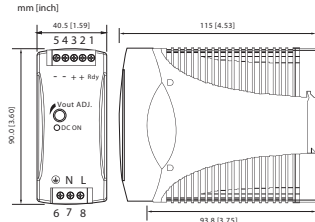
Description	Part-No.	Type	PU	
Spring terminal				
Output voltage/current	DC 12 V / 5 A	728769	DRA60-12	1
	DC 24 V / 2.5 A	728754	DRA60-24	1
	DC 48 V / 1.25 A	728776	DRA60-48	1
Input				
Nominal voltage	DRA60-12	DRA60-24	DRA60-48	
		AC 100–240 V		
Operation voltage range		AC 85–264 V / DC 90–375 V		
Line frequency		47 – 63 Hz		
Rated current		U _i = AC 115 V: 690 mA / U _i = AC 230 V: 360 mA		
Inrush current		U _i = AC 115 V: 20 A / U _i = AC 230 V: 40 A		
Internal fuse		T2 A / AC 250 V		
External fuse		Mini-circuit breaker: B 6 A		
Power Factor Correction P.F.C.		–		
Output				
Rated voltage output	DC 12 V	DC 24 V	DC 48 V	
Rated current output	5 A	2.5 A	1.25 A	
Max. output current		–		
Short-circuit current		–		
Voltage trim range	12/14 V	24/28 V	48/55 V	
Accuracy		±1 %		
Line regulation		±0.5 %		
Load regulation		±0.5 %		
Rise time		1 s		
Temperature coefficient		±0.03 % / °C		
Ripple & Noise		50 mV		
Hold up time		V _{in} = 115 V: 20 ms / V _{in} = 230 V: 30 ms		
Status indication DC ON LED green	≥9.6 V	≥19.2 V	≥37 V	
Status indication DC LOW LED red		–		
Parallel/redundant operation		max. 2 devices / via external diodes		
Efficiency	86 %	89 %		
Low power loss	9.0 W (AC 230 V)	8.8 W (AC 230 V)	7.8 W (AC 230 V)	
Rated over load protection		110–150 %		
Over voltage protection		125–138 %		
Short circuit characteristics		Hiccup-mode		
General				
Switching frequency		approx. 80 kHz		
Insulation voltage input/output		AC 3.0 kV _{eff}		
Insulation voltage input / ground		AC 1.5 kV _{eff}		
Insulation voltage output / ground		–		
Insulation resistance at DC 500 V		100 MΩ		
Operation temperature range		-25 °C – 70 °C (derating)		
Derating		-2.5% / °C starting at 60 °C		
Storage temperature range		-25 °C – 85 °C		
M.T.B.F.	504000 h	520000 h	531000 h	
Relative humidity		20–90% RH, non-condensing		
Dimensions (w × h × d) in mm		40.5 × 90.0 × 115.0		
Cooling		Natural air cooling, 25 mm distance on all sides		
Housing material		Plastic		
Shock resistance		–		
Vibration resistance		–		
Field installation		rail TS 35 (EN 50022)		
Application height		2000 m		
Installation position		vertical		
Protection class		IP 20		
IP rating		II (SELV, PELV)		
Overvoltage category		II		
Pollution degree		2		
Weight (kg/piece)		0.340		
Termination		Spring terminal 0.2–2.0 mm ²		
Approvals	UL: UL 508 listed; cUL: UL 60950-1, UL 1310 Class 2 (not 12 V) recognised; TÜV: EN 60950-1, EN 61558-1, EN 61558-2-17 CE: EN 61000-6-3 / EN 55022 Class B; EN 61000-3-2 EN 61000-3-3; EN 55024; EN 61000-6-2; EN 61000-4-2; EN 61000-4-3 EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-4-8; EN 61000-4-11			
Monitoring				
DC ON Control (Rdy)	–	Open Collector	–	
Switching voltage	–	DC 24 V	–	
Switching current	–	≤ 35 mA	–	
Switching capacity	–	–	–	
Insulation voltage	–	none	–	

Power supply · regulated, 60 W

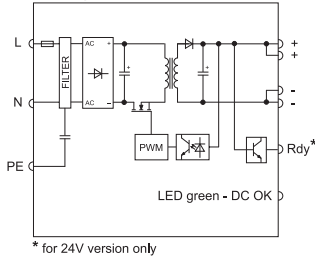
Switchmode power supply, Single-phase, Class 2
Input: wide-range input AC 85–264 V, DC 90–375 V
Output: 12 V / 24 V / 48 V, adjustable



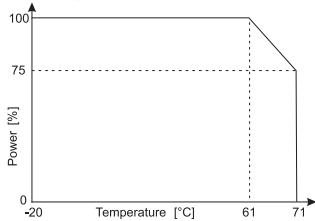
Dimensions



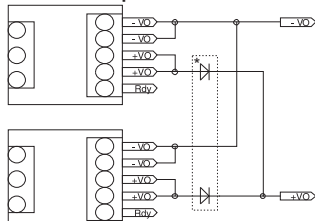
PIN assignment



Derating



Redundant operation



* Redundant Module 722987
 Only use together with 24 V version!

Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 12 V / 5 A	722769	DRA60-12A	1
	DC 24 V / 2.5 A	722754	DRA60-24A	1
	DC 48 V / 1,25 A	722776	DRA60-48A	1

Input	DRA60-12A	DRA60-24A	DRA60-48A
Nominal voltage		AC 100–240 V	
Operation voltage range		AC 85–264 V / DC 90–375 V	
Line frequency		47 – 63 Hz	
Rated current		U _i = AC 115 V: 690 mA / U _i = AC 230 V: 360 mA	
Inrush current		U _i = AC 115 V: 20 A / U _i = AC 230 V: 40 A	
Internal fuse		T2 A / AC 250 V	
External fuse		Mini-circuit breaker: B 6 A	
Power Factor Correction P.F.C.		–	

Output	DRA60-12A	DRA60-24A	DRA60-48A
Rated voltage output	DC 12 V	DC 24 V	DC 48 V
Rated current output	5 A	2.5 A	1.25 A
Max. output current		–	–
Short-circuit current		–	–
Voltage trim range	12/14 V	24/28 V	48/55 V
Accuracy		±1 %	–
Line regulation		±0.5 %	–
Load regulation		±0.5 %	–
Rise time		1 s	
Temperature coefficient		±0.03 % / °C	
Ripple & Noise		50 mV	
Hold up time		V _{in} = 115 V: 20 ms / V _{in} = 230 V: 30 ms	
Status indication DC ON LED green	≥9.6 V	≥19.2 V	≥37 V
Status indication DC LOW LED red		–	–
Parallel/redundant operation		max. 2 devices / via external diodes	
Efficiency	86 %		89 %
Low power loss	9.0 W (AC 230 V)	8.8 W (AC 230 V)	7.8 W (AC 230 V)
Rated over load protection		110–150 %	
Over voltage protection		125–138 %	
Short circuit characteristics		Hiccup-mode	

General	DRA60-12A	DRA60-24A	DRA60-48A
Switching frequency		approx. 80 kHz	
Insulation voltage input/output		AC 3.0 kV _{eff}	
Insulation voltage input / ground		AC 1.5 kV _{eff}	
Insulation voltage output / ground		–	
Insulation resistance at DC 500 V		100 MΩ	
Operation temperature range		-25 °C – 70 °C (derating)	
Derating		-2.5% / °C starting at 60 °C	
Storage temperature range		-25 °C – 85 °C	
M.T.B.F.	504000 h	520000 h	531000 h
Relative humidity		20–90% RH, non-condensing	
Dimensions (w × h × d) in mm		40.5 × 90.0 × 115.0	
Cooling		Natural air cooling, 25 mm distance on all sides	
Housing material		Plastic	
Shock resistance		–	
Vibration resistance		–	
Field installation		rail TS 35 (EN 50022)	
Application height		2000 m	
Installation position		vertical	
Protection class		IP 20	
IP rating		II (SELV, PELV)	
Overvoltage category		II	
Pollution degree		2	
Weight (kg/piece)		0.340	
Termination		Screw terminal: 0.2–2.5 mm ² , max. 0.56 Nm	
Approvals		UL: UL 508 listed; cUL: UL 60950-1, UL 1310 Class 2 (not 12 V) recognised; TÜV: EN 60950-1, EN 61558-1, EN 61558-2-17 CE: EN 61000-6-3 / EN 55022 Class B; EN 61000-3-2 EN 61000-3-3; EN 55024; EN 61000-6-2; EN 61000-4-2; EN 61000-4-3 EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-4-8; EN 61000-4-11	

Monitoring	DRA60-12A	DRA60-24A	DRA60-48A
DC ON Control (Rdy)	–	Open Collector	–
Switching voltage	–	DC 24 V	–
Switching current	–	≤ 35 mA	–
Switching capacity	–	–	–
Insulation voltage	–	none	–

Power supply · regulated, 93 W

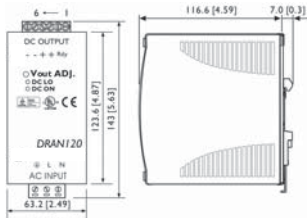
Switchmode power supplies, PFC, Single-phase, Class 2

Input: wide-range input AC 90–132 V, AC 186–264 V, DC 210–370 V

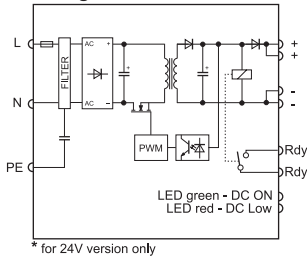
Output: 24 V, adjustable



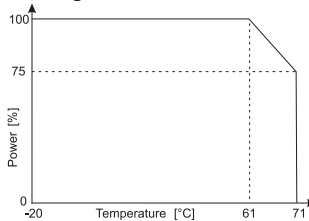
Dimensions



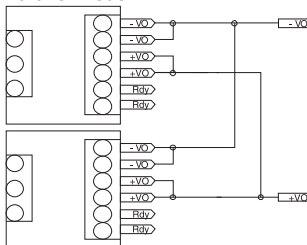
PIN assignment



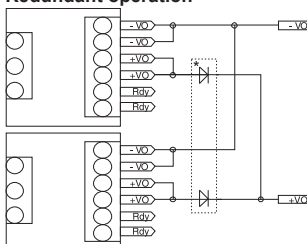
Derating



Parallel mode



Redundant operation



* Redundant Module 722987

Description	Part-No.	Type	PU
Screw terminal, pluggable			
Output voltage/current	DC 24 V/ 3.8 A	722757	DRAN 120-24AL
			1
Input			
DRAN 120-24AL			
Nominal voltage	AC 115 / 230 V (auto select)		
Operation voltage range	AC 90–132 V; AC 186–264 V / DC 210–370 V		
Line frequency	47 – 63 Hz		
Rated current	U _i = AC 115 V: 1.1 A / U _i = AC 230 V: 0.55 A		
Inrush current	U _i = AC 115 V: 24 A / U _i = AC 230 V: 48 A		
Internal fuse	T3, 15 A / AC 250 V		
External fuse	Mini-circuit breaker: B 6 A		
Power Factor Correction P.F.C.	0.7		
Output			
Rated voltage output	DC 24 V		
Rated current output	3.8 A		
Max. output current	–		
Short-circuit current	–		
Voltage trim range	22.5–28.5 V		
Accuracy	±1 %		
Line regulation	±0.5 %		
Load regulation	Single ±1 %, Parallel ±5 %		
Rise time	1 s		
Temperature coefficient	±0.03 % / °C		
Ripple & Noise	50 mV		
Hold up time	V _{in} = 115 V: 25 ms / V _{in} = 230 V: 30 ms		
Status indication DC ON LED green	≥17.6–19.4 V		
Status indication DC LOW LED red	≤17.6–19.4 V		
Parallel/redundant operation	max 2 devices with 90 % load current each / via external diodes		
Efficiency	86 %		
Low power loss	16 W (AC 230 V)		
Rated over load protection	105–125 %		
Over voltage protection	125–145 %		
Short circuit characteristics	Current limit		
General			
Switching frequency	approx. 80 kHz		
Insulation voltage input/output	AC 3.0 kV _{eff}		
Insulation voltage input / ground	AC 1.5 kV _{eff}		
Insulation voltage output / ground	–		
Insulation resistance at DC 500 V	100 MΩ		
Operation temperature range	-25 °C – 70 °C (derating)		
Derating	-2.5% / °C starting at 60 °C		
Storage temperature range	-25 °C – 85 °C		
M.T.B.F.	486000 h		
Relative humidity	20–90% RH, non-condensing		
Dimensions (w × h × d) in mm	63.5 × 142.0 × 116.0		
Cooling	Natural air cooling, 25 mm distance on all sides		
Housing material	metal		
Field installation	rail TS 35 (EN 50022)		
Application height	2000 m		
Installation position	vertical		
Protection class	IP 20		
IP rating	I (SELV, PELV)		
Overvoltage category	II		
Pollution degree	2		
Weight (kg/piece)	0.920		
Termination	Screw terminal: 0.2–2.5 mm ² , max. 0.56 Nm		
Approvals	UL: UL 508 listed, cUL: UL 60950-1, UL 1310 Class 2; TÜV: EN 60950, EN 55022 Class B, EN 55024 Class 2, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 61000-6-3		
	Class I, Division 2, Groups A, B, C and D		
Monitoring			
DC ON Control (Rdy)	Normally open		
Switching voltage	DC 60 V		
Switching current	max. 300 mA		
Switching capacity	–		
Insulation voltage	DC 500 V		

Power supply · regulated, 120 W

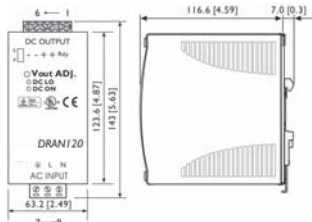
Switchmode power supply, PFC, Single-phase

Input: wide-range input AC 90–132 V, AC 186–264 V, DC 210–370 V

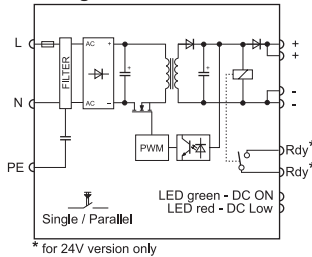
Output: 12 V / 24 V / 48 V, adjustable



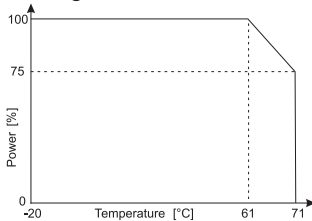
Dimensions



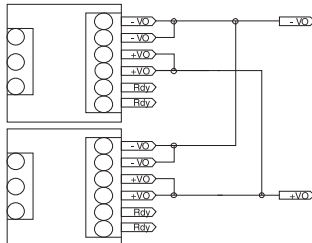
PIN assignment



Derating



Parallel/redundant mode



Description	Part-No.	Type	PU	
Screw terminal, pluggable				
Output voltage/current	DC 12 V/ 10 A	722770	DRAN120-12B	1
	DC 24 V/ 5 A	722758	DRAN120-24B	1
	DC 48 V/ 2.5 A	722777	DRAN120-48B	1
Screw terminal				
Output voltage/current	DC 24 V/ 5 A	728758	DRAN120-24A	1
Input				
	DRAN120-12B	DRAN120-24B	DRAN120-48B	DRAN120-24A
Nominal voltage	AC 115 / 230 V (auto select)			
Operation voltage range	AC 90–132 V; AC 186–264 V / DC 210–370 V			
Line frequency	47 – 63 Hz			
Rated current	U _i = AC 115 V: 1.25 A / U _i = AC 230 V: 0.63 A			
Inrush current	U _i = AC 115 V: 24 A / U _i = AC 230 V: 48 A			
Internal fuse	T3, 15 A / AC 250 V			
External fuse	Mini-circuit breaker: B 6 A			
Power Factor Correction P.F.C.	0.7			
Output				
Rated voltage output	DC 12 V	DC 24 V	DC 48 V	DC 24 V
Rated current output	10 A	5 A	2.5 A	5 A
Max. output current	–			
Short-circuit current	–			
Voltage trim range	11.4–14.5 V	22.5–28.5 V	45/55 V	22.5–28.5 V
Accuracy	±1 %			
Line regulation	±0.5 %			
Load regulation	Single ±1 %, Parallel ±5 %			
Rise time	1 s			
Temperature coefficient	±0.03 % / °C			
Ripple & Noise	50 mV			
Hold up time	V _{in} = 115 V: 25 ms / V _{in} = 230 V: 30 ms			
Status indication DC ON LED green	≥10–11.2 V	≥17.6–19.4 V	≥37–43 V	≥17.6–19.4 V
Status indication DC LOW LED red	≤10–11.2 V	≤17.6–19.4 V	≤37–43 V	≤17.6–19.4 V
Parallel/redundant operation	max. 3 units at 90% load current, manual switch			
Efficiency	84 %	86 %	87 %	86 %
Low power loss	24 W (AC 230 V)	20 W (AC 230 V)	19 W (AC 230 V)	20 W (AC 230 V)
Rated over load protection	105–125 %			
Over voltage protection	125–145 %			
Short circuit characteristics	Current limit			
General				
Switching frequency	approx. 80 kHz			
Insulation voltage input/output	AC 3.0 kV _{eff}			
Insulation voltage input / ground	AC 1.5 kV _{eff}			
Insulation voltage output / ground	–			
Insulation resistance at DC 500 V	100 MΩ			
Operation temperature range	-25 °C – 70 °C (derating)			
Derating	-2.5% / °C starting at 60 °C			
Storage temperature range	-25 °C – 85 °C			
M.T.B.F.	440000 h	450000 h	482000 h	450000 h
Relative humidity	20–90% RH, non-condensing			
Dimensions (w × h × d) in mm	63.5 × 142.0 × 116.0			
Cooling	Natural air cooling, 25 mm distance on all sides			
Housing material	metal			
Shock resistance	–			
Vibration resistance	–			
Field installation	rail TS 35 (EN 50022)			
Application height	2000 m			
Installation position	vertical			
Protection class	IP 20			
IP rating	I (SELV, PELV)			
Overvoltage category	II			
Pollution degree	2			
Weight (kg/piece)	0.920			
Termination	Screw terminal: 0.2–2.5 mm ² - pluggable,max. 0.56 Nm			Screw terminal: 0.2–4.0 mm ² , max. 0.62 Nm
Approvals	UL: UL 508 listed; cUL: UL 60950-1; TÜV: EN 60950, CE: EN 61000-6-3, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 55024 Class I, Division 2, Groups A, B, C and D			
Monitoring				
DC ON Control (Rdy)	–	Normally open	–	Normally open
Switching voltage	–	DC 60 V	–	DC 60 V
Switching current	–	max. 300 mA	–	max. 300 mA
Switching capacity	–	–	–	–
Insulation voltage	–	DC 500 V	–	DC 500 V

Power supply · regulated, 120 W, 3-phase

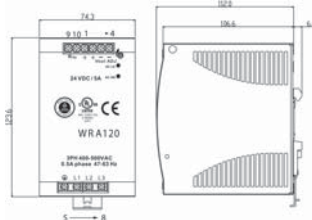
Switchmode power supply, PFC, 3-phase

Input: wide-range input AC 340–576 V, DC 480–820 V

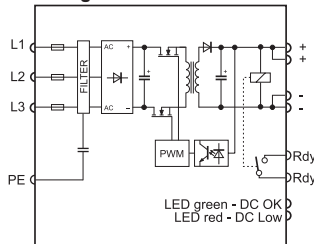
Output: 24 V, adjustable



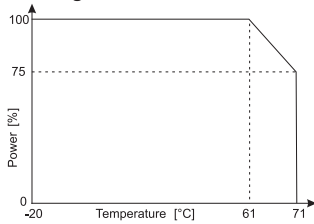
Dimensions



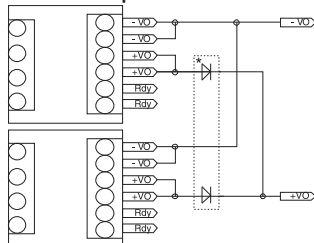
PIN assignment



Derating



Redundant operation



* Redundant Module 722987

Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 24 V/ 5 A	722803	WRA120-24	1
Input				
WRA120-24				
Nominal voltage	3× AC 380–480 V			
Operation voltage range	3× AC 340–575 V, 3× DC 480–820 V			
Line frequency	47 – 63 Hz			
Rated current	U _i = AC 380 V: 0.5 A / U _i = AC 500 V: 0.35 A			
Inrush current	10 A			
Internal fuse	3×T2, 0 A / AC 600 V			
External fuse	Automatic: 3 × B 6 A			
Power Factor Correction P.F.C.	0.6			
Output				
Rated voltage output	DC 24 V			
Rated current output	5 A			
Max. output current	–			
Short-circuit current	–			
Voltage trim range	22.5/28.5 V			
Accuracy	1 %			
Line regulation	±1 %			
Load regulation	±1 %			
Rise time	1 s			
Temperature coefficient	±0.03 % / °C			
Ripple & Noise	100 mV			
Hold up time	min. 20 ms			
Status indication DC ON LED green	≥17.6–19.4 V			
Status indication DC LOW LED red	≤17.6–19.4 V			
Parallel/redundant operation	max. 2 devices / via external diodes			
Efficiency	89 %			
Low power loss	16 W (AC 380 V)			
Rated over load protection	115 - 135 %, temperature: disconnection at 100–110°C and automatic activation when cool off			
Over voltage protection	125–137 %			
Short circuit characteristics	Hiccup-mode			
General				
Switching frequency	approx. 70 kHz			
Insulation voltage input/output	AC 3.0 kV _{eff}			
Insulation voltage input / ground	AC 1.5 kV _{eff}			
Insulation voltage output / ground	–			
Insulation resistance at DC 500 V	100 MΩ			
Operation temperature range	-25 °C – 71 °C (derating)			
Derating	Capacity: -2.5% / °C starting at +61 °C			
Storage temperature range	-25 °C – 85 °C			
M.T.B.F.	559000 h			
Relative humidity	20–90% RH, non-condensing			
Dimensions (w × h × d) in mm	74.3 × 123.6 × 118.8			
Cooling	Natural air cooling, 25 mm distance on all sides			
Housing material	Metal			
Shock resistance	–			
Vibration resistance	–			
Field installation	rail TS 35 (EN 50022)			
Application height	3000 m			
Installation position	vertical			
Protection class	IP 20			
IP rating	I (SELV, PELV)			
Overvoltage category	II			
Pollution degree	2			
Weight (kg/piece)	0.800			
Termination	Screw terminal: 0.2–4.0 mm ² , max. 0.62 Nm			
Approvals	UL: UL 508 listed, cUL: UL 60950-1 accepted, TÜV: EN 60950-1; CE: EN 61000-6-3 / EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 55024 Class I, Division 2, Groups A, B, C and D			
Monitoring				
DC ON Control (Rdy)	Normally open			
Switching voltage	DC 60 V			
Switching current	max. 300 mA			
Switching capacity	–			
Insulation voltage	DC 500 V			

Power supply · regulated, 240 W

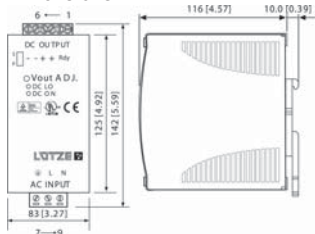
Switchmode power supply, PFC, Single-phase

Input: wide-range input AC 93–132 V, AC 186–264 V, DC 210–370 V

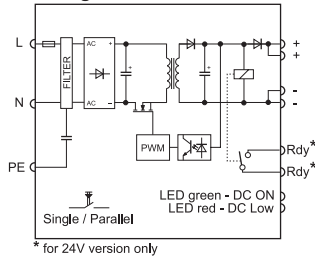
Output: 24 V / 48 V, adjustable



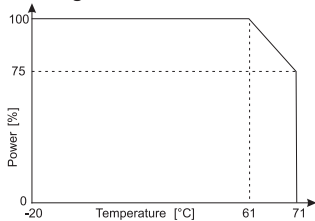
Dimensions



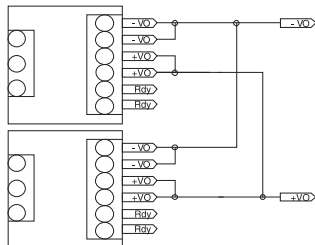
PIN assignment



Derating



Parallel/redundant mode



Description	Part-No.	Type	PU	
Screw terminal, pluggable				
Output voltage/current	DC 24 V / 10 A	722759	DRA240-24B	1
	DC 48 V / 5 A	722778	DRA240-48B	1
Screw terminal				
Output voltage/current	DC 24 V / 10 A	722781	DRA240-24A	1

Input	DRA240-24B	DRA240-48B	DRA240-24A
Nominal voltage	AC 115 / 230 V (auto select)		
Operation voltage range	AC 88 V - 264 V / DC 120 V - 375 V		
Line frequency	47 – 63 Hz		
Rated current	U _i = AC 115 V: 2.4 A / U _i = AC 230 V: 1.2 A		
Inrush current	U _i = AC 115 V: 30 A / U _i = AC 230 V: 60 A		
Internal fuse	T6, 3 A / AC 250 V		
External fuse	Mini-circuit breaker: B 10 A, C 6 A		
Power Factor Correction P.F.C.	0.7		

Output	DRA240-24B	DRA240-48B	DRA240-24A
Rated voltage output	DC 24 V	DC 48 V	DC 24 V
Rated current output	10 A	5 A	10 A
Max. output current	–		
Short-circuit current	–		
Voltage trim range	22.5–28.5	47/56 V	22.5–28.5 V
Accuracy	±1 %		
Line regulation	±0.5 %		
Load regulation	Single ±1 %, Parallel ±5 %		
Rise time	1 s		
Temperature coefficient	±0.03 % / °C		
Ripple & Noise	100 mV		
Hold up time	V _{in} = 115 V: 25 ms / V _{in} = 230 V: 30 ms		
Status indication DC ON LED green	≥17.6–19.4 V	≥37–43 V	≥17.6–19.4 V
Status indication DC LOW LED red	≤17.6–19.4 V	≤37–43 V	≤17.6–19.4 V
Parallel/redundant operation	max 3 devices with 90 % load current each, switching with switch S/P		
Efficiency	89 %	90 %	89 %
Low power loss	35 W (AC 230 V)	32 W (AC 230 V)	35 W (AC 230 V)
Rated over load protection	105–145 %		
Over voltage protection	120–145 %		
Short circuit characteristics	Current limit		

General			
Switching frequency	approx. 40 kHz		
Insulation voltage input/output	AC 3.0 kV _{eff}		
Insulation voltage input / ground	AC 1.5 kV _{eff}		
Insulation voltage output / ground	–		
Insulation resistance at DC 500 V	100 MΩ		
Operation temperature range	–40 °C – 71 °C (derating)		
Derating	–2.5% / °C starting at 61 °C		
Storage temperature range	–25 °C – 85 °C		
M.T.B.F.	423000 h	437000 h	423000 h
Relative humidity	20–90% RH, non-condensing		

Dimensions (w × h × d) in mm	83.0 × 126 × 116		
Cooling	Natural air cooling, 25 mm distance on all sides		
Housing material	metal		
Shock resistance	–		
Vibration resistance	–		
Field installation	rail TS 35 (EN 50022)		
Application height	4850 m		
Installation position	vertical		
Protection class	IP 20		
IP rating	I (SELV, PELV)		
Overvoltage category	II		
Pollution degree	2		
Weight (kg/piece)	1.000		
Termination	Screw terminal: 0.2–2.5 mm ² - pluggable, max. 0.56 Nm		Screw terminal: 0.2–4.0 mm ² , max. 0.62 Nm

Approvals	UL: UL 508 listed; cUL: UL 60950-1; TÜV: EN 60950, CE: EN 61000-6-3, EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 55024 Class I, Division 2, Groups A, B, C and D		
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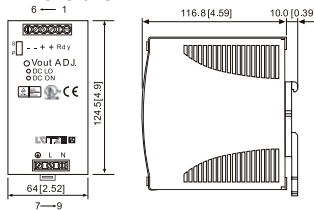
Monitoring			
DC ON Control (Rdy)	Normally open	–	Normally open
Switching voltage	DC 60 V	–	DC 60 V
Switching current	max. 300 mA	–	max. 300 mA
Switching capacity	–	–	–
Insulation voltage	DC 500 V	–	DC 500 V

Power supply - regulated, 240 W

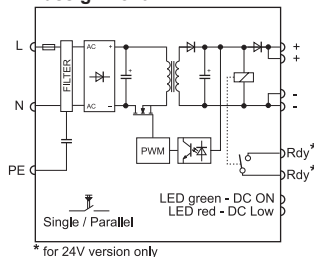
Switchmode power supply, PFC, Single-phase
Input: wide-range input AC 88–264 V, DC 120–375 V
Output: DC 24 V adjustable



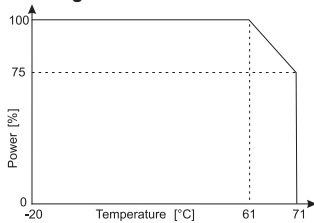
Dimensions



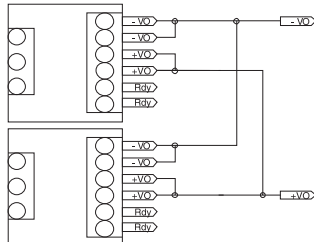
PIN assignment



Derating



Parallel/redundant mode



Description	Part-No.	Type	PU
Screw terminal			
Output voltage/current	DC 24 V; 10 A	722781.1000 DRE240-24A	1
Input			
DRE240-24A			
Nominal voltage	AC 115 / 230 V (auto select)		
Operation voltage range	AC 88 V - 264 V / DC 120 V - 375 V		
Line frequency	47 - 63 Hz		
Rated current	U _i = AC 115 V: 2.3 A / U _i = AC 230 V: 1.15 A		
Inrush current	U _i = AC 115 V: 24 A / U _i = AC 230 V: 48 A		
Internal fuse	T5.0 A / AC 250 V		
External fuse	Mini-circuit breaker: B 10 A, C 6 A		
Power Factor Correction P.F.C.	0.97		
Output			
Rated voltage output	DC 24 V		
Rated current output	10 A		
Max. output current	15 A, 3 s, @ 24 V		
Short-circuit current	-		
Voltage trim range	22.5–28.5 V		
Accuracy	±1 %		
Line regulation	±0.1%		
Load regulation	Single ±1 %, Parallel ±5 %		
Rise time	1 s		
Temperature coefficient	±0.03 % / °C		
Ripple & Noise	100 mV		
Hold up time	V _{in} = 115 V: 25 ms / V _{in} = 230 V: 30 ms		
Status indication DC ON LED green	≥17.6–19.4 V		
Status indication DC LOW LED red	≤17.6–19.4 V		
Parallel/redundant operation	max 3 devices with 90 % load current each, switching with switch S/P		
Efficiency	93 %		
Rated over load protection	120–150 %		
Over voltage protection	125–138 %		
Short circuit characteristics	Hiccup-mode		
General			
Switching frequency	approx. 90 kHz		
Insulation voltage input/output	AC 3.0 kV _{eff}		
Insulation voltage input / ground	AC 1.5 kV _{eff}		
Insulation voltage output / ground	AC 0.5 kV _{eff}		
Insulation resistance at DC 500 V	100 MΩ		
Operation temperature range	-40 °C – 71 °C (derating)		
Derating	-2.5% / °C starting at 61 °C		
Storage temperature range	-40 °C – 85 °C		
M.T.B.F.	410000 h		
Relative humidity	20–90% RH, non-condensing		
Dimensions (w × h × d) in mm	64.0 × 124.5 × 116.6		
Cooling	Natural air cooling, 25 mm distance on all sides		
Housing material	metal		
Field installation	rail TS 35 (EN 50022)		
Application height	4850 m		
Installation position	vertical		
Protection class	IP 20		
IP rating	-		
Overvoltage category	II		
Pollution degree	2		
Weight (kg/piece)	1.000		
Termination	Screw terminal: 0.2–4.0 mm ²		
Approvals	UL: UL 508 listed; cUL: UL 60950-1; TÜV: EN 60950 CE: EN 61000-6-3, EN 55022 Class B EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 55024 EN 61000-4-2 Level 4, EN 61000-4-3 Level 3, EN 61000-4-4 Level 4, EN 61000-4-5 L-N Level 3, L / N-FG Level 4, EN 61000-4-6 Level 3, EN 61000-4-8 Level 4, EN 61000-4-11, ENV 50204 Level 2, EN 61204-3		
Monitoring			
DC ON Control (Rdy)	Normally open		
Switching voltage	DC 60 V		
Switching current	max. 300 mA		
Switching capacity	-		
Insulation voltage	DC 500 V		

Power supply · regulated, 240 W, 3-phase

Switchmode power supply, PFC, 3-phase

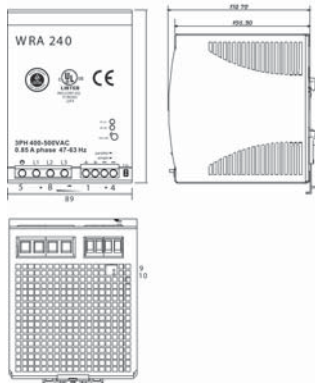
Input: wide-range input AC 340–576 V, DC 480–820 V

Output: 24 / 48 V, adjustable

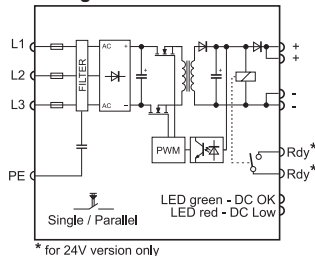


Dimensions

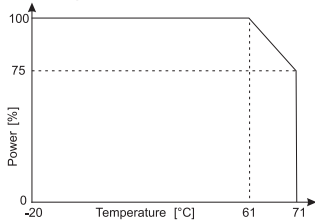
mm [inch]



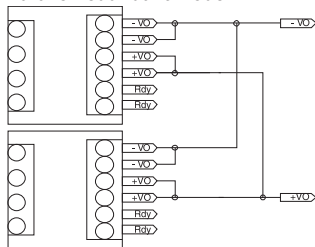
PIN assignment



Derating



Parallel/redundant mode



Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 24 V/ 10 A	722804	WRA240-24	1
	DC 48 V/ 5 A	722808	WRA240-48	1

Input	WRA240-24	WRA240-48
Nominal voltage	3× AC 340–500 V	
Operation voltage range	3× AC 340–575 V; 3× DC 480–820 V	
Line frequency	47 – 63 Hz	
Rated current	U _I = AC 380 V: 0.85 A / U _I = AC 500 V: 0.7 A	
Inrush current	20 A	
Internal fuse	3×T2, 0 A / AC 600 V	
External fuse	Automatic: 3 × B 6 A	
Power Factor Correction P.F.C.	0.6	

Output	DC 24 V	DC 48 V
Rated voltage output	DC 24 V	DC 48 V
Rated current output	10 A	5 A
Max. output current	–	
Short-circuit current	–	
Voltage trim range	22.5/28.5 V	47/56 V
Accuracy	1 %	
Line regulation	±1 %	
Load regulation	Single ±1 %, Parallel ±5 %	
Rise time	1 s	
Temperature coefficient	±0.03 % / °C	
Ripple & Noise	100 mV	
Hold up time	min. 20 ms	
Status indication DC ON LED green	≥17.6–19.4 V	≥37–43 V
Status indication DC LOW LED red	≤17.6–19.4 V	≤37–43 V
Parallel/redundant operation	max 2 devices with 90 % load current each, switching with switch S/P	
Efficiency	90 %	91 %
Low power loss	30 W (AC 380 V)	24 W (AC 380 V)
Rated over load protection	Temperature: Deactivation at 100–110°C and automatic activation after cooling off	
Over voltage protection	125–137 %	125–142 %
Short circuit characteristics	Hiccup-mode	

General		
Switching frequency	approx. 25 kHz	
Insulation voltage input/output	AC 3.0 kV _{eff}	
Insulation voltage input / ground	AC 1.5 kV _{eff}	
Insulation voltage output / ground	–	
Insulation resistance at DC 500 V	100 MΩ	
Operation temperature range	–25 °C – 71 °C (derating)	
Derating	Capacity: –2.5% / °C starting at +61 °C	
Storage temperature range	–25 °C – 85 °C	
M.T.B.F.	488000 h	519000 h
Relative humidity	20–90% RH, non-condensing	
Dimensions (w × h × d) in mm	89.0 × 123.6 × 117.5	
Cooling	Natural air cooling, 25 mm distance on all sides	
Housing material	Metal	
Shock resistance	–	
Vibration resistance	–	
Field installation	rail TS 35 (EN 50022)	
Application height	3000 m	
Installation position	vertical	
Protection class	IP 20	
IP rating	I (SELV, PELV)	
Overvoltage category	II	
Pollution degree	2	
Weight (kg/piece)	1.100	
Termination	Screw terminal: 0.2–4.0 mm ² , max. 0.62 Nm	
Approvals	UL: UL 508 listed, cUL: UL 60950-1 accepted, TÜV: EN 60950-1; CE: EN 61000-6-3 / EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 55024 Class I, Division 2, Groups A, B, C and D	

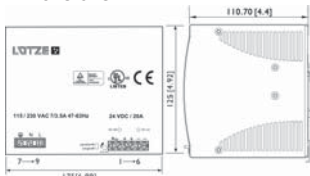
Monitoring		
DC ON Control (Rdy)	Normally open	–
Switching voltage	DC 60 V	–
Switching current	max. 300 mA	–
Switching capacity	–	–
Insulation voltage	DC 500 V	–

Power supply · regulated, 480 W

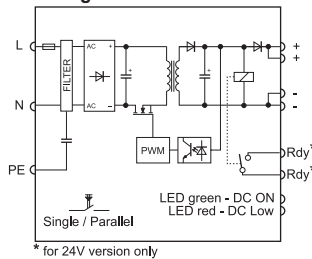
Switchmode power supply, PFC, Single-phase
Input: wide-range input AC 90–264 V, DC 120–370 V
Output: 24 V / 48 V, adjustable



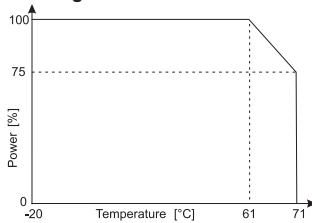
Dimensions



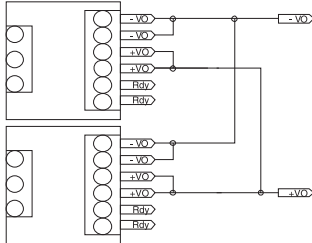
PIN assignment



Derating



Parallel/redundant mode



Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 24 V / 20 A	722782	DRA480-24A	1
	DC 48 V / 10 A	722779	DRA480-48A	1

Input	DRA480-24A	DRA480-48A
Nominal voltage	AC 115 / 230 V (auto select)	
Operation voltage range	AC 90–264 V; DC 120–370 V	
Line frequency	47 – 63 Hz	
Rated current	U _i = AC 115 V: 4.8 A / U _i = AC 230 V: 2.45 A	
Inrush current	U _i = AC 115 V: 25 A / U _i = AC 230 V: 50 A	
Internal fuse	T10 A / AC 250 V	
External fuse	Mini-circuit breaker: B 16 A	
Power Factor Correction P.F.C.	0.99	

Output	DRA480-24A	DRA480-48A
Rated voltage output	DC 24 V	DC 48 V
Rated current output	20 A	10 A
Max. output current	–	
Short-circuit current	–	
Voltage trim range	22.5–28.5 V	47/56 V
Accuracy	±1 %	
Line regulation	±0.5 %	
Load regulation	Single ±0.5 %, Parallel ±5 %	
Rise time	1 s	
Temperature coefficient	±0.03 % / °C	
Ripple & Noise	100 mV	
Hold up time	min. 30 ms	
Status indication DC ON LED green	≥17.6–19.4 V	≥37–40 V
Status indication DC LOW LED red	≤17.6–19.4 V	≤37–43 V
Parallel/redundant operation	max 3 devices with 90 % load current each, switching with switch S/P	
Efficiency	89 %	90 %
Low power loss	63 W (AC 230 V)	60 W (AC 230 V)
Rated over load protection	120–140 %	
Over voltage protection	125–137 %	119–131 %
Short circuit characteristics	Current limit	

General			
Switching frequency	approx. 60 kHz		
Insulation voltage input/output	AC 3.0 kV _{eff}		
Insulation voltage input / ground	AC 1.5 kV _{eff}		
Insulation voltage output / ground	–		
Insulation resistance at DC 500 V	100 MΩ		
Operation temperature range	-25 °C – 71 °C (derating)		
Derating	-4% / °C starting at 61 °C		
Storage temperature range	-25 °C – 85 °C		
M.T.B.F.	403000 h		416000 h
Relative humidity	20–90% RH, non-condensing		
Dimensions (w × h × d) in mm	175.0 × 125.0 × 116.0		
Cooling	Natural air cooling, 25 mm distance on all sides		
Housing material	metal		
Shock resistance	–		
Vibration resistance	–		
Field installation	rail TS 35 (EN 50022)		
Application height	2000 m		
Installation position	vertical		
Protection class	IP 20		
IP rating	I (SELV, PELV)		
Overvoltage category	II		
Pollution degree	2		
Weight (kg/piece)	1.920		
Termination	Screw terminal: 0.2–4.0 mm ² , max. 0.62 Nm		
Approvals	UL: UL 508 listed; cUL: UL 60950-1 accepted; TÜV: EN 60950-1, CE: EN 61000-6-3 / EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 55024		

Monitoring			
DC ON Control (Rdy)	Normally open		–
Switching voltage	DC 60 V		–
Switching current	max. 300 mA		–
Switching capacity			–
Insulation voltage	DC 500 V		–

Power supply · regulated, 480 W, 3-phase

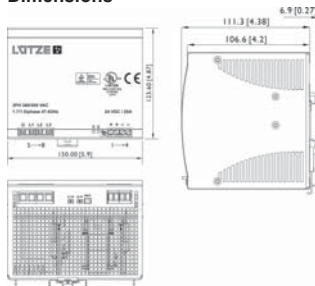
Switchmode power supply, PFC, 3-phase

Input: wide-range input AC 340–576 V, DC 480–820 V

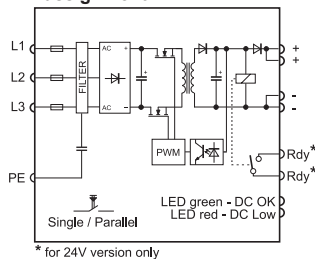
Output: 24 V / 48 V, adjustable



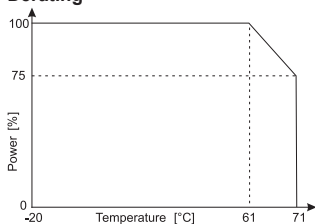
Dimensions



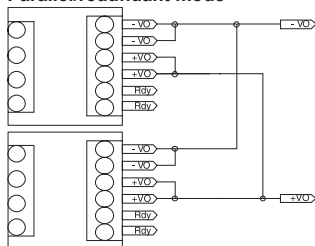
PIN assignment



Derating



Parallel/redundant mode



Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 24 V/ 20 A	722805	WRA480-24	1
	DC 48 V/ 10 A	722809	WRA480-48	1

Input	WRA480-24	WRA480-48
Nominal voltage	3× AC 380–500 V	
Operation voltage range	3× AC 340–576 V; 3× DC 480–820 V	
Line frequency	47 – 63 Hz	
Rated current	U _I = AC 400 V: 1.5 A / U _I = AC 480 V: 1.2 A	
Inrush current	20 A	
Internal fuse	T3, 15 A / per phase	
External fuse	Automatic: 3 × B 10 A, C 6 A	
Power Factor Correction P.F.C.	0.7	

Output	WRA480-24	WRA480-48
Rated voltage output	DC 24 V	DC 48 V
Rated current output	20 A	10 A
Max. output current	–	
Short-circuit current	–	
Voltage trim range	22.5 – 28.5 V	47/56 V
Accuracy	1 %	
Line regulation	±1 %	
Load regulation	Single ±1 %, Parallel ±5 %	
Rise time	–	
Temperature coefficient	±0.03 % / °C	
Ripple & Noise	100 mV	
Hold up time	min. 20 ms	
Status indication DC ON LED green	≥17.6–19.4 V	≥37–43 V
Status indication DC LOW LED red	≤17.6–19.4 V	≤37–43 V
Parallel/redundant operation	max 3 devices with 90 % load current each, switching with switch S/P	
Efficiency	90 %	
Low power loss	58 W (AC 380 V)	55 W (AC 380 V)
Rated over load protection	115–135 %	
Over voltage protection	125–137 %	125–142 %
Short circuit characteristics	Current limit (C) / Hiccup-Mode (D); selectable with switch C/D Hiccup-Mode: deactivation within 3s and restart after 30s	

General		
Switching frequency	approx. 80 kHz	
Insulation voltage input/output	AC 3.0 kV _{eff}	
Insulation voltage input / ground	AC 1.5 kV _{eff}	
Insulation voltage output / ground	–	
Insulation resistance at DC 500 V	100 MΩ	
Operation temperature range	-25 °C – 71 °C (derating)	
Derating	-2.5% / °C starting at 61 °C	
Storage temperature range	-25 °C – 85 °C	
M.T.B.F.	411000 h	423000 h
Relative humidity	20–90% RH, non-condensing	
Dimensions (w × h × d) in mm	150.0 × 125.0 × 116.0	
Cooling	Natural air cooling, 25 mm distance on all sides	
Housing material	metal	
Shock resistance	–	
Vibration resistance	–	
Field installation	rail TS 35 (EN 50022)	
Application height	3000 m	
Installation position	vertical	
Protection class	IP 20	
IP rating	I (SELV, PELV)	
Overvoltage category	II	
Pollution degree	2	
Weight (kg/piece)	1.750	
Termination	Screw terminal: 0.2–4.0 mm ² , max. 0.62 Nm	
Approvals	UL: UL 508 listed; cUL: UL 60950-1 accepted; TÜV: EN 60950-1; CE: EN 61000-6-3 / EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 55024	

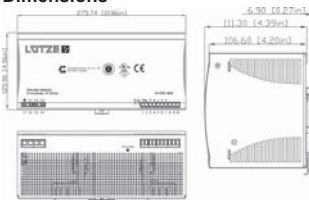
Monitoring		
DC ON Control (Rdy)	Normally open	–
Switching voltage	DC 60 V	–
Switching current	max. 300 mA	–
Switching capacity	–	–
Insulation voltage	DC 500 V	–

Power supply · regulated, 960 W, 3-phase

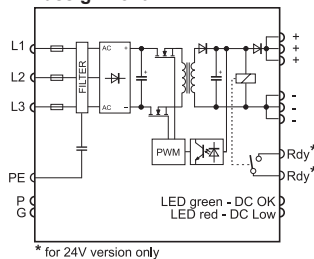
Switchmode power supply, PFC, 3-phase
 Input: wide-range input AC 340–576 V, DC 480–820 V
 Output: 24 V / 48 V, adjustable



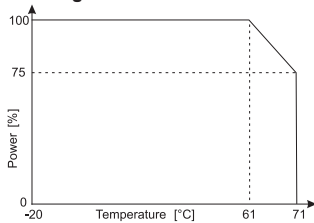
Dimensions



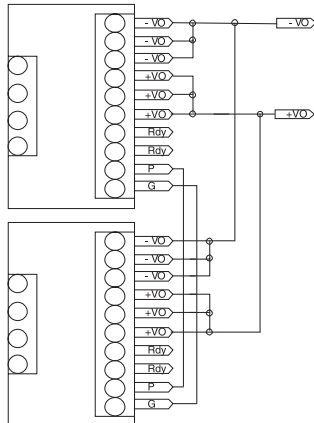
PIN assignment



Derating



Parallel/redundant mode



Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 24 V / 40 A	722806	WRA960-24	1
	DC 48 V / 20 A	722810	WRA960-48	1

Input	WRA960-24	WRA960-48
Nominal voltage	3× AC 400–500 V	
Operation voltage range	3× AC 340–575 V; 3× DC 480–820 V	
Line frequency	47 – 63 Hz	
Rated current	U _i = AC 400 V: 2.4 A / U _i = AC 480 V: 1.6 A	
Inrush current	30 A	
Internal fuse	T6, 3 A / per phase	
External fuse	Automatic: 3 × B 16 A, C 10 A	
Power Factor Correction P.F.C.	0.7	

Output	WRA960-24	WRA960-48
Rated voltage output	DC 24 V	DC 48 V
Rated current output	40 A	20 A
Max. output current	–	
Short-circuit current	–	
Voltage trim range	22.5–28.5 V	47/56 V
Accuracy	1 %	
Line regulation	±1 %	
Load regulation	Single ±1 %, Parallel ±5 %	
Rise time	1 s	
Temperature coefficient	±0.03 % / °C	
Ripple & Noise	80 mV	
Hold up time	15 ms	
Status indication DC ON LED green	≥17.6–19.4 V	≥37–43 V
Status indication DC LOW LED red	≤17.6–19.4 V	≤37–43 V
Parallel/redundant operation	max 2 devices with 92 % load current each, connection P and G for distributed current	

Efficiency	92 %	93 %
Low power loss	–	
Rated over load protection	Rated over load protection: 110 % –130 %	
Over voltage protection	125–137 %	125–142 %
Short circuit characteristics	Hiccup-mode	

General		
Switching frequency	approx. 52 kHz	
Insulation voltage input/output	AC 3.0 kV _{eff}	
Insulation voltage input / ground	AC 1.5 kV _{eff}	
Insulation voltage output / ground	–	
Insulation resistance at DC 500 V	100 MΩ	
Operation temperature range	-25 °C – 71 °C (derating)	
Derating	-3.5 % / °C starting at 61 °C	
Storage temperature range	-25 °C – 85 °C	

M.T.B.F.	352000 h	390000 h
Relative humidity	20–90% RH, non-condensing	
Dimensions (w × h × d) in mm	276.0 × 125.0 × 118.0	
Cooling	Natural air cooling, 25 mm distance on all sides	
Housing material	metal	
Shock resistance	–	
Vibration resistance	–	
Field installation	rail TS 35 (EN 50022)	
Application height	3000 m	
Installation position	vertical	
Protection class	IP 20	
IP rating	I (SELV, PELV)	
Overvoltage category	II	
Pollution degree	2	
Weight (kg/piece)	3.200	
Termination	Screw terminal: 0.5–10.0 mm ² , max. 0.62 Nm	
Approvals	UL: UL 508 listed, cUL: UL 60950-1 accepted, TÜV: EN 60950-1; CE: EN 61000-6-3 / EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 55024 Class I, Division 2, Groups A, B, C and D	

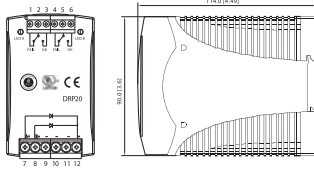
Monitoring		
DC ON Control (Rdy)	Normally open	–
Switching voltage	DC 60 V	–
Switching current	max. 300 mA	–
Switching capacity	–	–
Insulation voltage	DC 500 V	–

Power supply - Redundant module

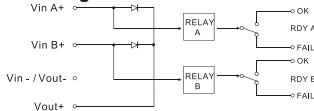
Redundant module 20 A with 2 inputs Potential-free signalling contact and Status LED per input Over- and undervoltage control



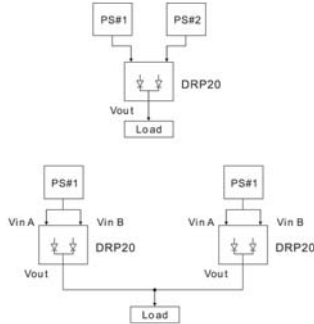
Dimensions



PIN assignment



Use



Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 24 V/ 20 A	722987	DRP20-24	1
Input				
DRP20-24				
Nominal voltage	DC 24 V			
Operation voltage range	DC 21–28 V			
Inputs	2			
Rated current	max. 20 A in total			
Internal fuse	–			
External fuse	–			
Output				
Rated voltage output	DC 24 V			
Rated current output	20 A			
Max. output current	30 A, 5 s, @ 24 V			
Voltage drop	0.5 V			
Inverse voltage	30 V			
Low power loss	Max. 10 W			
Status indication DC ON LED green	ON: DC input A or B OK / OFF: Error			
Rated over load protection	No			
Over voltage protection	No			
General				
Operation temperature range	-5 °C – 70 °C			
Derating	–			
Storage temperature range	-25 °C – 85 °C			
M.T.B.F.	659000 h			
Dimensions (w × h × d) in mm	54.0 × 90.0 × 114.0			
Cooling	Air convection			
Housing material	Plastic			
Field installation	rail TS 35 (EN 50022)			
Application height	4850 m			
Installation position	vertical			
Protection class	IP 20 (IEC529, EN60529)			
Overvoltage category	II			
Pollution degree	2			
Weight (kg/piece)	0.210			
Termination	Input: screw terminal: 0.2-4.0 mm ² Output: screw terminal: 0.2-6.0 mm ² Relay: screw terminal: 0.2–2.5 mm ²			
Approvals	UL, cUL: UL 508 listed, UL 60950-1 recognised CE: EN 55022 Class B, EN 55024 CE: EN 61000-4-2/3/4/6/8, EN 61204-3			
Monitoring				
DC ON Control (Rdy)	Changeover contact per input No error: input voltage >20 V or <30 V, connection 2(5) - 3(6) closed Error: input voltage <20 V or >30 V, connection 2(5) - 1(4) closed			
Switching voltage	AC 300 V / DC 150 V			
Switching current	AC/DC 1 A			
Switching capacity	300 VA / 30 W			
Insulation voltage	AC 100 V			

COMPACT Power Supplies



COMPACT Series

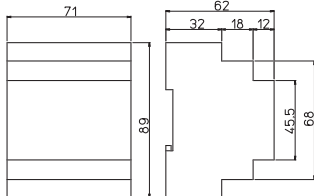
- One-, two- and three-phase
- 30 W to 2400 W
- Overload current 150 %, 5 sec
- Extremely compact
- Parallel operation
- Overload and short circuit protection
- Redundant operation
- Up to 95% efficiency
- Protection class 1
- UL Listed
- SEMI F47

Power supply · regulated, 40 W

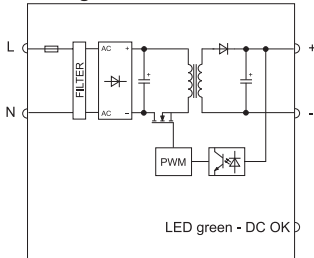
Switchmode power supply, PFC, Single-phase
Input: wide-range input AC 90–264 V, DC 120–370 V
Output: DC 24 V



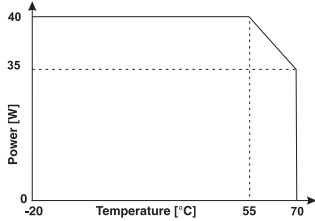
Dimensions



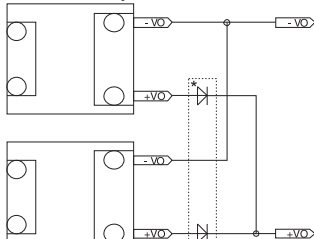
PIN assignment



Derating



Redundant operation



* Redundant Module 722987

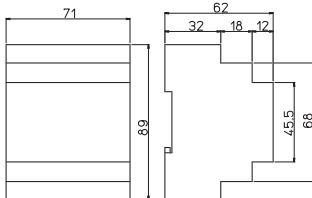
Description	Part-No.	Type	PU
Screw terminal			
Output voltage/current	DC 24 V/ 1.2 A	722787	CPSF-1-40-24
			1
Input			
CPSF-1-40-24			
Nominal voltage		AC 115 / 230 V	
Operation voltage range		AC 90–264 V / DC 120–370 V (DC 300 V, UL508)	
Line frequency		47 – 63 Hz	
Rated current		U _i = AC 100 V: 0.90 A / U _i = AC 240 V: 0.50 A	
Inrush current		<30 A	
Internal fuse		T2 A / AC 250 V	
External fuse		Automatic: <4 A	
Power Factor Correction P.F.C.		>0.6	
Output			
Rated voltage output		DC 24 V	
Rated current output		2 A	
Max. output current		3.5 A @ 24 V	
Short-circuit current		–	
Voltage trim range		–	
Accuracy		±1%	
Line regulation		–	
Load regulation		<5 %	
Rise time		–	
Temperature coefficient		–	
Ripple & Noise		<50 mV pp	
Hold up time		>20 ms (AC 120 V); >60 ms (AC 240 V)	
Status indication DC ON LED green		yes	
Status indication DC LOW LED red		No	
Parallel/redundant operation		max. 2 devices / via external diodes	
Efficiency		>85 % (AC 120 V); > 87 % (AC 240 V)	
Low power loss		<6 W	
Rated over load protection		yes	
Over voltage protection		yes	
Short circuit characteristics		Hiccup-mode	
General			
Switching frequency		approx. 110 kHz	
Insulation voltage input/output		AC 3.0 kV _{eff}	
Insulation voltage input / ground		class 2, without PE	
Insulation voltage output / ground		class 2, without PE	
Insulation resistance at DC 500 V		– MΩ	
Operation temperature range		-20 °C – 70 °C (derating)	
Derating		>55°C: -0.35 W / °C	
Storage temperature range		-25 °C – 85 °C	
M.T.B.F.		750000 h to SN29500 / 250000 h to MIL Standard HDBK 217F	
Relative humidity		20–90% RH, non-condensing	
Dimensions (w × h × d) in mm		71.0 × 89.0 × 62.0	
Cooling		Natural air cooling, 10 mm distance right/left, 20 mm distance above/below	
Housing material		Noryl UL 94-0	
Shock resistance		–	
Vibration resistance		–	
Field installation		rail TS 35 (EN 50022)	
Application height		– m	
Installation position		vertical	
Protection class		IP 20 (IEC529, EN60529)	
IP rating		II (SELV, PELV)	
Overvoltage category		II	
Pollution degree		2	
Weight (kg/piece)		0.200	
Termination		Screw terminal: 0.2–2.5 mm ² , max. 0.56 Nm	
Approvals		UL, cUL: UL 508, IEC 950, EN 60950, UL 60950 CE: EN 61000-4-2/3/4/5/6/11, EN 61000-6-2, EN 61000-6-4, EN 50178, EN 61558, EN 61000-3-2, EN 50081-1, EN 50082-2, EN 55022 Class B, EN 55011B	
Monitoring			
DC ON Control (Rdy)		–	
Switching voltage		–	
Switching current		–	
Switching capacity		–	
Insulation voltage		–	

Power supply · regulated, 80 W

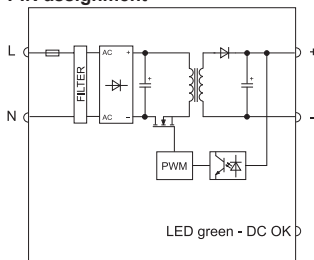
Switchmode power supply, PFC, Single-phase
Input: wide-range input AC 90–264 V, DC 100–345 V
Output: DC 24 V, adjustable



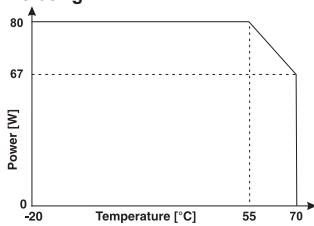
Dimensions



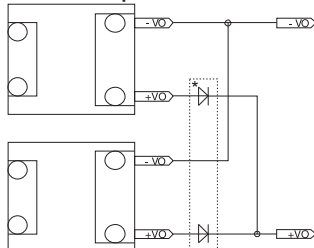
PIN assignment



Derating



Redundant operation



* Redundant Module 722987

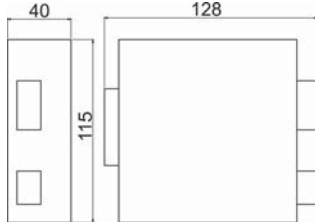
Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 24 V / 3 A	722789	CPSF-1-80-24	1
Input				
CPSF-1-80-24				
Nominal voltage	AC 115 / 230 V			
Operation voltage range	AC 90–264 V / DC 100–345 V (DC 300 V, UL508)			
Line frequency	47 – 63 Hz			
Rated current	U _I = AC 100 V: 1.40 A / U _I = AC 240 V: 0.85 A			
Inrush current	<30 A			
Internal fuse	T2 A / AC 250 V			
External fuse	Mini-circuit breaker: C 4 A			
Power Factor Correction P.F.C.	>0.6			
Output				
Rated voltage output	DC 24 V			
Rated current output	3.3 A			
Max. output current	4 A @ 24 V			
Short-circuit current	20 A			
Voltage trim range	23.5/27.5 V			
Accuracy	–			
Line regulation	–			
Load regulation	<1 %			
Rise time	–			
Temperature coefficient	–			
Ripple & Noise	<50 mV pp			
Hold up time	>10 ms (AC 120 V); >30 ms (AC 240 V)			
Status indication DC ON LED green	yes			
Status indication DC LOW LED red	No			
Parallel/redundant operation	max. 2 devices / via external diodes			
Efficiency	>87 % (AC 120 V); > 89 % (AC 240 V)			
Low power loss	–			
Rated over load protection	yes			
Over voltage protection	yes			
Short circuit characteristics	Hiccup-mode			
General				
Switching frequency	approx. 70 kHz			
Insulation voltage input/output	AC 3.0 kV _{eff}			
Insulation voltage input / ground	class 2, without PE			
Insulation voltage output / ground	class 2, without PE			
Insulation resistance at DC 500 V	– MΩ			
Operation temperature range	–20 °C – 70 °C (derating) (55°C UL508)			
Derating	>55 °C: –0.9 W / °C			
Storage temperature range	–25 °C – 85 °C			
M.T.B.F.	750000 h to SN29500 / 250000 h to MIL Standard HDBK 217F			
Relative humidity	20–90% RH, non-condensing			
Dimensions (w × h × d) in mm	71.0 × 89.0 × 62.0			
Cooling	Natural air cooling, 10 mm distance right/left, 20 mm distance above/below			
Housing material	Noryl UL 94-0			
Shock resistance	–			
Vibration resistance	–			
Field installation	rail TS 35 (EN 50022)			
Application height	– m			
Installation position	vertical			
Protection class	IP 20 (IEC529, EN60529)			
IP rating	II (SELV, PELV)			
Overvoltage category	II			
Pollution degree	2			
Weight (kg/piece)	0.250			
Termination	Screw terminal: 0.2–2.5 mm ² , max. 0.56 Nm			
Approvals	UL, cUL: UL 508, IEC 950, EN 60950, UL 60950 CE: EN 61000-4-2/3/4/5/6/11, EN 61000-6-2, EN 601000-6-4, EN 50178, EN 61558, EN 61000-3-2, EN 50081-1, EN 50082-2, EN 55022 Class B, EN 55011B			
Monitoring				
DC ON Control (Rdy)	–			
Switching voltage	–			
Switching current	–			
Switching capacity	–			
Insulation voltage	–			

Power supply · regulated, 120 W

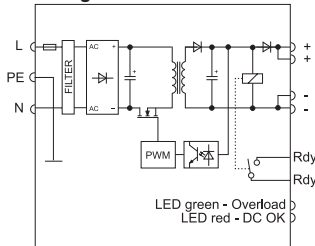
Switchmode power supply, PFC, Single-phase
Input: wide-range input AC 90–264 V, DC 110–345 V
Output: 24 V, adjustable



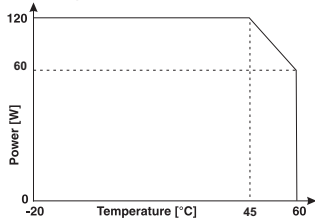
Dimensions



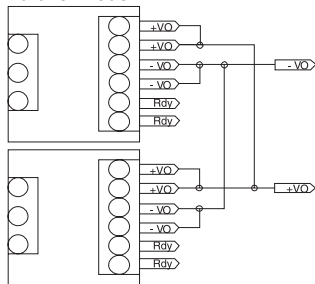
PIN assignment



Derating



Parallel mode



Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 24 V / 5 A	722783	CPSB1-120-24R	1
	DC 48 V / 2.5 A	722784	CPSB1-120-48R	1

Input	CPSB1-120-24R	CPSB1-120-48R
Nominal voltage	AC 120 V / 230 V	
Operation voltage range	AC 90–264 V / DC 110–345 V	
Line frequency	47 – 63 Hz	
Rated current	$U_i = AC 115 V: 1.9 A / U_i = AC 230 V: 1.1 A$	
Inrush current	<20 A	
Internal fuse	T3, 15 A / AC 250 V	
External fuse	Mini-circuit breaker: B 6 A, C 4 A	
Power Factor Correction P.F.C.	>0.65	

Output	CPSB1-120-24R	CPSB1-120-48R
Rated voltage output	DC 24 V	DC 48 V
Rated current output	5 A	2.5 A
Max. output current	9 A, 30 s, @ 24 V	4 A, 30 s, @ 24 V
Short-circuit current	15 A, 50 ms	
Voltage trim range	DC 23–27.5 V	DC 45–55 V

Accuracy	–	
Line regulation	–	
Load regulation	<1 %	
Rise time	–	
Temperature coefficient	–	
Ripple & Noise	<30 mV	
Hold up time	>16 ms (AC 120 V), >81 ms (AC 230 V)	
Status indication DC ON LED green	≥21.6 V	≥43.2 V
Status indication DC LOW LED red	≤21.6 V	≤43.2 V
Parallel/redundant operation	max. 2 devices / via internal diodes	
Efficiency	>86 %	
Low power loss	<20 W	
Rated over load protection	yes	
Over voltage protection	yes	
Short circuit characteristics	Hiccup-mode	

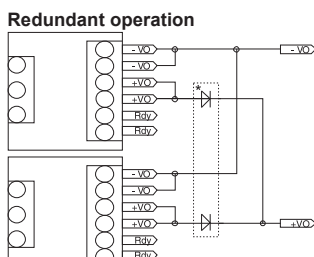
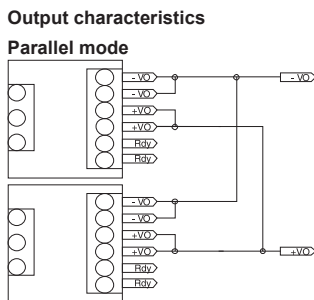
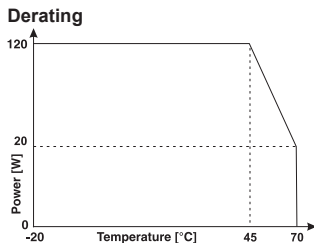
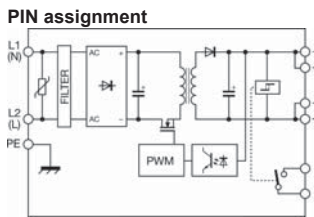
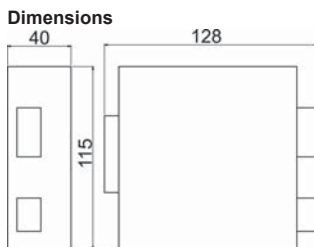
General	
Switching frequency	approx. 110 kHz
Insulation voltage input/output	AC 3.0 kV _{eff}
Insulation voltage input / ground	AC 1.5 kV _{eff}
Insulation voltage output / ground	AC 0.5 kV _{eff}
Insulation resistance at DC 500 V	– MΩ
Operation temperature range	–20 °C – 60 °C (derating)
Derating	>45 °C: –4 W / °C
Storage temperature range	–25 °C – 85 °C
M.T.B.F.	>500000 h to SN29500 / >150000 h to MIL standard HDBK 217F
Relative humidity	20–90% RH, non-condensing
Dimensions (w × h × d) in mm	40.0 × 115.0 × 128.0

Cooling	Natural air cooling, 10 mm distance right/left, 50 mm distance above/below
Housing material	Aluminum
Shock resistance	30 g 6 ms, 20 g 11 ms, 3 shocks / direction, 18 shocks in total, IEC60068-2-27:2008
Vibration resistance	5 – 17.8 Hz: ±1.6 mm, 17.8 – 500 Hz: 2 g 2 hours / axes X,Y,Z, IEC 60068-2-6:2007
Field installation	rail TS 35 (EN 50022)
Application height	– m
Installation position	vertical
Protection class	IP 20 (IEC529, EN60529)
IP rating	I (SELV, PELV)
Overvoltage category	II
Pollution degree	2
Weight (kg/piece)	0.400
Termination	Screw terminal: 0.2–2.5 mm ² - pluggable,max. 0.56 Nm
Approvals	UL, cUL: UL 508, IEC 950, EN 60950, UL 60950 CE: EN 61000-4-2/3/4/5/6/11, EN 61000-6-2, EN 601000-6-4, EN 50178, EN 61558, EN 50081-1, EN 50082-2, EN 55022 Class B

Monitoring	
DC ON Control (Rdy)	Normally open
Switching voltage	AC 300 V / DC 150 V
Switching current	AC/DC 1 A
Switching capacity	300 VA / 30 W
Insulation voltage	AC 500 V

Power supply · regulated, 120 W

Switchmode power supplies, PFC, 1/2-phase
Input: wide-range input AC 187–550 V, DC 270–725 V
Output: 24 V, adjustable



* Redundant Module 722987

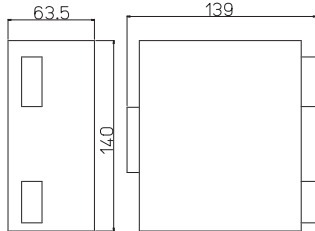
Description	Part-No.	Type	PU
Screw terminal, pluggable			
Output voltage/current	DC 24 V / 5 A	722995	CPSB2-120-24
			1
Input			
CPSB2-120-24			
Nominal voltage	AC 200–500 V		
Operation voltage range	AC 187–550 V / DC 270–725 V		
Line frequency	47 – 63 Hz		
Rated current	U _i = AC 200 V: 1.4 A / U _i = AC 500 V: 0.7 A		
Inrush current	<20 A (AC 230 V), <40 A (AC 500 V)		
Internal fuse	–		
External fuse	Automatic: D 6 A, C 6 A / safety fuse: T 4 A (required)		
Power Factor Correction P.F.C.	>0.55		
Output			
Rated voltage output	DC 24 V		
Rated current output	5 A @ 45 °C		
Max. output current	>7.5 A, >30 sec		
Short-circuit current	>14 A, 400 ms		
Voltage trim range	23-27,5 V		
Accuracy	–		
Line regulation	–		
Load regulation	<1 %		
Rise time	9 ms (5–95 %) @ 400 V		
Temperature coefficient	–		
Ripple & Noise	<100 mV pp		
Hold up time	>20 ms (AC 120 V), >80 ms (AC 230 V)		
Status indication DC ON LED green	≥21.6 V		
Status indication DC LOW LED red	I _{out} > 110 % I _N		
Parallel/redundant operation	yes/via external decoupling diode		
Efficiency	>86 %		
Low power loss	<18 W		
Rated over load protection	yes		
Over voltage protection	U _{out} >36 V		
Short circuit characteristics	Hiccup-mode		
General			
Switching frequency	–		
Insulation voltage input/output	AC 3.0 kV _{eff}		
Insulation voltage input / ground	AC 2.0 kV _{eff}		
Insulation voltage output / ground	AC 0.5 kV _{eff}		
Insulation resistance at DC 500 V	– MΩ		
Operation temperature range	-20 °C – 70 °C (overtemperature protection)		
Derating	>45 °C: -4 W / °C		
Storage temperature range	-25 °C – 85 °C		
M.T.B.F.	>500000 h to SN29500 / >150000 h to MIL standard HDBK 217F		
Relative humidity	20–90% RH, non-condensing		
Dimensions (w × h × d) in mm	40.0 × 130.0 × 115.0		
Cooling	Air convection		
Housing material	Aluminum		
Shock resistance	30 g 6 ms, 20 g 11 ms, 3 shocks / direction, 18 shocks in total, IEC60068-2-27:2008		
Vibration resistance	5 – 17.8 Hz: ±1.6 mm, 17.8 – 500 Hz: 2 g 2 hours / axes X,Y,Z, IEC 60068-2-6:2007		
Field installation	rail TS 35 (EN 50022)		
Application height	2000 m		
Installation position	vertical		
Protection class	IP 20 (IEC529, EN60529)		
IP rating	I (SELV, PELV)		
Overvoltage category	II (IEC 664-1)		
Pollution degree	2		
Weight (kg/piece)	0.400		
Termination	Screw terminal: 0.2–2.5 mm ² (AWG 24–12) - pluggable		
Approvals	UL, cUL: UL 508, IEC 60950 CE: EN 60950, EN 61000-6-2 (2005), EN 60100-6-4 (2007), EN 61000-4-2/3/4/5/6/11, EN 61000-5-5		
Monitoring			
DC ON Control (Rdy)	yes		
Switching voltage	AC/DC 300 V / DC 150 V		
Switching current	AC/DC 1 A		
Switching capacity	300 VA / 30 W		
Insulation voltage	AC 500 V		

Power supply · regulated, 240 W

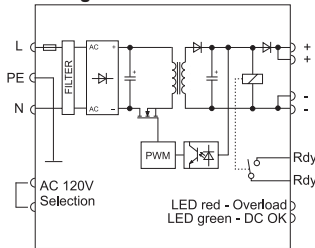
Switchmode power supply, PFC, Single-phase
Input: AC 90–132 V, AC 187–264 V, DC 270–345 V
Output: 24 V, adjustable



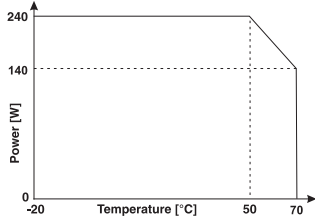
Dimensions



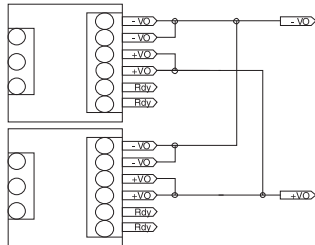
PIN assignment



Derating



Parallel/redundant mode



Description	Part-No.	Type	PU	
Screw terminal, pluggable				
Output voltage/current	DC 24 V; 10 A	722785	CPSB1-240-24R	1
	DC 48 V; 5 A	722786	CPSB1-240-48R	1

Input	CPSB1-240-24R	CPSB1-240-48R
Nominal voltage	AC 120 / 230 V (manual)	
Operation voltage range	AC 90–132 V, AC 187–264 V, DC 270–345 V	
Line frequency	47 – 63 Hz	
Rated current	U _i = AC 115 V: 4 A / U _i = AC 230 V: 2 A	
Inrush current	U _i = AC 115 V: 30 A / U _i = AC 230 V: 35 A	
Internal fuse	T6, 3 A / AC 250 V	
External fuse	Mini-circuit breaker: C 10 A	
Power Factor Correction P.F.C.	>0.6	

Output	CPSB1-240-24R	CPSB1-240-48R
Rated voltage output	DC 24 V	DC 48 V
Rated current output	10 A	5 A
Max. output current	13.5 A, 30 s, @ 24 V	6.9 A, 30 s, @ 24 V
Short-circuit current	35 A, 150 ms	20 A, 160 ms
Voltage trim range	23/27.5 V	45/55 V
Accuracy	–	
Line regulation	–	
Load regulation	1 %	
Rise time	–	
Temperature coefficient	–	
Ripple & Noise	100 mV	
Hold up time	>80 ms (120 V), >90 ms (230 V)	
Status indication DC ON LED green	≥21.6 V	≥43.2 V
Status indication DC LOW LED red	≤21.6 V	≤43.2 V
Parallel/redundant operation	max. 2 devices / via internal diodes	
Efficiency	89 %	90 %
Low power loss	<35 W	<34 W
Rated over load protection	yes	
Over voltage protection	yes	
Short circuit characteristics	Hiccup-mode	

General		
Switching frequency	approx. 110 kHz	
Insulation voltage input/output	AC 3.0 kV _{eff}	
Insulation voltage input / ground	AC 1.5 kV _{eff}	
Insulation voltage output / ground	AC 0.5 kV _{eff}	
Insulation resistance at DC 500 V	– MΩ	
Operation temperature range	–20 °C – 70 °C (derating)	
Derating	>50 °C: –5 W / °C	
Storage temperature range	–25 °C – 85 °C	
M.T.B.F.	>500000 h to SN29500 / >150000 h to MIL standard HDBK 217F	
Relative humidity	20–90% RH, non-condensing	
Dimensions (w × h × d) in mm	63.5 × 140.0 × 139.0	
Cooling	Natural air cooling, 20 mm distance right/left, 100 mm distance above/below	
Housing material	Aluminum	
Shock resistance	30 g 6 ms, 20 g 11 ms, 3 shocks / direction, 18 shocks in total, IEC60068-2-27:2008	
Vibration resistance	5 – 17.8 Hz: ±1.6 mm, 17.8 – 500 Hz: 2 g 2 hours / axes X,Y,Z, IEC 60068-2-6:2007	
Field installation	rail TS 35 (EN 50022)	
Application height	– m	
Installation position	vertical	
Protection class	IP 20 (IEC529, EN60529)	
IP rating	I (SELV, PELV)	
Overvoltage category	III	
Pollution degree	2	
Weight (kg/piece)	0.720	
Termination	Screw terminal: 0.2–2.5 mm ² - pluggable,max. 0.56 Nm	
Approvals	UL, cUL: UL 508, IEC 950, EN 60950, UL 60950 CE: EN 61000-4-2/3/4/5/6/11, EN 61000-6-2, EN 601000-6-4, EN 50178, EN 61558, EN 50081-1, EN 50082-2, EN 55022 Class B	

Monitoring		
DC ON Control (Rdy)	Normally open	
Switching voltage	AC 300 V / DC 150 V	
Switching current	AC/DC 1 A	
Switching capacity	300 VA / 30 W	
Insulation voltage	AC 500 V	

Power supply · regulated, 240 W

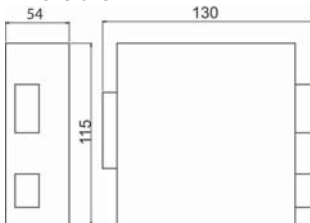
Switchmode power supplies, PFC, 1/2/3-phase

Input: wide-range input AC 187–550 V, DC 250–725 V (UL: DC 300–500 V)

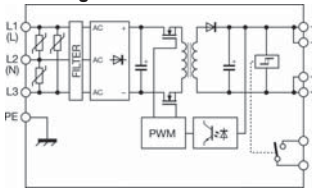
Output: 24 V, adjustable



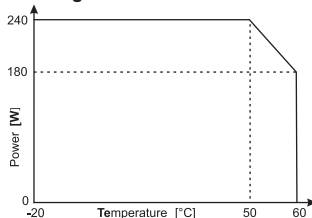
Dimensions



PIN assignment

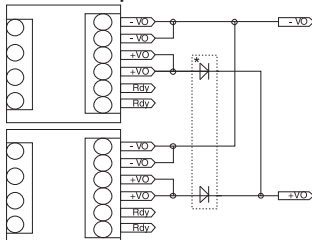


Derating



Output characteristics

Redundant operation



* Redundant Module 722987

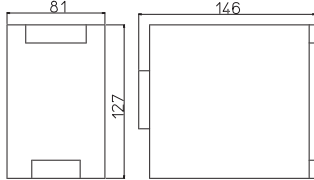
Description	Part-No.	Type	PU	
Screw terminal, pluggable				
Output voltage/current	DC 24 V/ 10 A	722996	CPSB-123-240-24	1
Input				
CPSB-123-240-24				
Nominal voltage	AC 200–500 V			
Operation voltage range	AC 187–550 V / DC 250–725 V (UL: DC 300–500 V)			
Line frequency	47 – 63 Hz			
Rated current	1-1/2-phase @ AC 220 V: 2.2 A, 1-1/2-phase @ AC 500 V: 1.1 A 3-phase @ AC 220 V: 1.5 A, 3-phase @ AC 500 V: 0.8 A			
Inrush current	<20 A (AC 230 V), <40 A (AC 500 V)			
Internal fuse	–			
External fuse	Automatic: D 4 A, C 6 A / safety fuse: T 6.3 A (required)			
Power Factor Correction P.F.C.	>0.60 @ AC 230 V, >0.5 @ AC 400 V			
Output				
Rated voltage output	DC 24 V			
Rated current output	10 A			
Max. output current	>15 A, 5 s			
Short-circuit current	38 A, 5 s			
Voltage trim range	23-27,5 V			
Accuracy	–			
Line regulation	–			
Load regulation	<1 %			
Rise time	14 ms (5–95 %) @ 400 V			
Temperature coefficient	–			
Ripple & Noise	<100 mV pp			
Hold up time	>15 ms (AC 230 V), >100 ms (AC 500 V)			
Status indication DC ON LED green	≥21.6 V			
Status indication DC LOW LED red	≤21.6 V			
Parallel/redundant operation	yes/with external decoupling diode			
Efficiency	>91 % @ AC 230 V, >92% @ AC 400 V			
Low power loss	<24 W @ AC 230 V, <21 W @ AC 400 V			
Rated over load protection	yes			
Over voltage protection	> DC 33 V			
Short circuit characteristics	Hiccup-mode			
General				
Switching frequency	–			
Insulation voltage input/output	AC 3.0 kV _{eff}			
Insulation voltage input / ground	AC 2.0 kV _{eff}			
Insulation voltage output / ground	AC 0.5 kV _{eff}			
Insulation resistance at DC 500 V	– MΩ			
Operation temperature range	-20 °C – 60 °C (overtemperature protection)			
Derating	-6 W/°C from +50 °C			
Storage temperature range	-25 °C – 85 °C			
M.T.B.F.	>500000 h to SN29500 / >150000 h to MIL standard HDBK 217F			
Relative humidity	20–90% RH, non-condensing			
Dimensions (w × h × d) in mm	54.0 × 130.0 × 115.0			
Cooling	Air convection 20 mm clearance right/left, 50 mm clearance up/down			
Housing material	Aluminum			
Shock resistance	30 g 6 ms, 20 g 11 ms, 3 shocks / direction, 18 shocks in total, IEC60068-2-27:2008			
Vibration resistance	5 – 17.8 Hz: ±1.6 mm, 17.8 – 500 Hz: 2 g 2 hours / axes X,Y,Z, IEC 60068-2-6:2007			
Field installation	rail TS 35 (EN 50022)			
Application height	2000 m			
Installation position	vertical			
Protection class	IP 20 (IEC529, EN60529)			
IP rating	I (SELV, PELV)			
Overtoltage category	II (IEC 664-1)			
Pollution degree	2			
Weight (kg/piece)	0.650			
Termination	Screw terminal: 0.2–2.5 mm ² (AWG 30–12) - pluggable			
Approvals	UL, cUL: UL 508, IEC 60950 CE: EN 60950, EN 61000-6-2 (2005), EN 60100-6-4 (2007), EN 61000-4-2/3/4/5/6/11, EN 61000-5-5 EN 55011 (conducted emission class B, radiated emission class A)			
Monitoring				
DC ON Control (Rdy)	Change over contact			
Switching voltage	DC 30 V			
Switching current	DC 1 A			
Switching capacity	30 W			
Insulation voltage	AC 500 V			

Power supply · regulated, 480 W

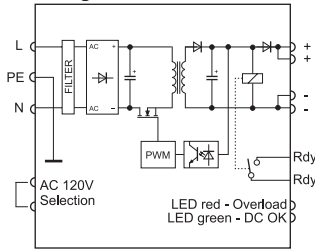
Switchmode power supply, PFC, Single-phase
 Input: AC 90–132 V, AC 187–264 V
 Output: 24 V, adjustable



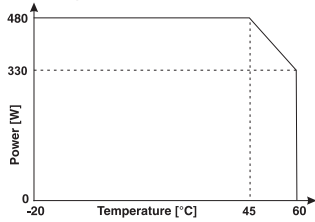
Dimensions



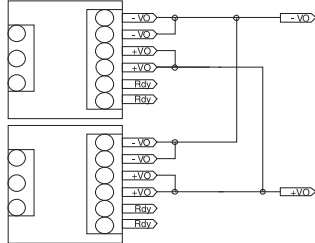
PIN assignment



Derating



Parallel/redundant mode



Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 24 V / 20 A	722986	CPSB1-480-24R	1
	DC 48 V / 10 A	722989	CPSB1-480-48R	1

Input	CPSB1-480-24R	CPSB1-480-48R
Nominal voltage	AC 120 V / AC 240 V	
Operation voltage range	AC 90–132 V / AC 187–264 V	
Line frequency	47 – 63 Hz	
Rated current	$U_1 = AC 120 V: 7.2 A / U_1 = AC 230 V: 4.3 A$	
Inrush current	<13 A	
Internal fuse	–	
External fuse	Automatic: C 16 A (required)	
Power Factor Correction P.F.C.	>0.6	

Output	CPSB1-480-24R	CPSB1-480-48R
Rated voltage output	DC 24 V	DC 48 V
Rated current output	20 A	10 A
Max. output current	30 A, 5 s, @ 24 V	15 A, 5 s, @ 48 V
Short-circuit current	30 A (>50 A Hiccup)	15 A (>40 A Hiccup)
Voltage trim range	23/28 V	45/55 V
Accuracy	–	
Line regulation	–	
Load regulation	<1 %	
Rise time	–	
Temperature coefficient	–	
Ripple & Noise	100 mV pp	
Hold up time	>35 ms (AC 240 V)	
Status indication DC ON LED green	$\geq 21.6 V$	$\geq 43.2 V$
Status indication DC LOW LED red	$\leq 21.6 V$	$\leq 43.2 V$
Parallel/redundant operation	max. 4 devices / via internal diodes	
Efficiency	>92 % (AC 240 V)	
Low power loss	<45 W (AC 230 V)	
Rated over load protection	yes	
Over voltage protection	yes	
Short circuit characteristics	Hiccup–mode / Constant current	

General	
Switching frequency	approx. 70 – 110 kHz
Insulation voltage input/output	AC 3.0 kV _{eff}
Insulation voltage input / ground	AC 2.0 kV _{eff}
Insulation voltage output / ground	AC 0.7 kV _{eff}
Insulation resistance at DC 500 V	– MΩ
Operation temperature range	–20 °C – 60 °C (derating)
Derating	>45 °C: –10 W / °C
Storage temperature range	–25 °C – 85 °C
M.T.B.F.	750000 h to SN29500 / 250000 h to MIL Standard HDBK 217F
Relative humidity	20–90% RH, non-condensing
Dimensions (w × h × d) in mm	81.0 × 127.0 × 146.0
Cooling	Natural air cooling, 10 mm distance right/left, 50 mm distance above/below
Housing material	Aluminum
Shock resistance	30 g 6 ms, 20 g 11 ms, 3 shocks / direction, 18 shocks in total, IEC60068-2-27:2008
Vibration resistance	5 – 17.8 Hz: ±1.6 mm, 17.8 – 500 Hz: 2 g 2 hours / axes X,Y,Z, IEC 60068-2-6:2007
Field installation	rail TS 35 (EN 50022)
Application height	– m
Installation position	vertical
Protection class	IP 20 (IEC529, EN60529)
IP rating	I (SELV, PELV)
Overvoltage category	II
Pollution degree	2
Weight (kg/piece)	1.100
Termination	Screw terminal: 0.2–6.0 mm ² , max. 0.62 Nm
Approvals	UL, cUL: UL 508, IEC 950, EN 60950 CE: EN 61000-4-2/3/4/5/6/11, EN 61000-6-2, EN 61000-6-4, EN 50178, EN 61558, EN 50081-1, EN 50082-2, EN 55022 Class B

Monitoring	
DC ON Control (Rdy)	Normally open
Switching voltage	AC 300 V / DC 150 V
Switching current	AC/DC 1 A
Switching capacity	300 VA / 30 W
Insulation voltage	AC 500 V

Power supply · regulated, 480 W

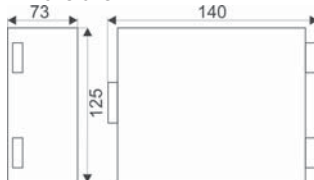
Switchmode power supplies, PFC, 1/2/3-phase

Input: wide-range input AC 187–550 V, DC 250–725 V (UL: DC 300–500 V)

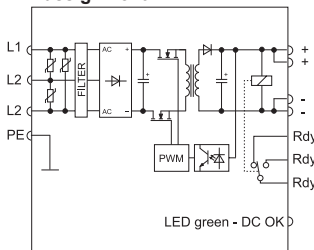
Output: 24 V, adjustable



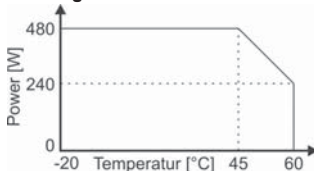
Dimensions



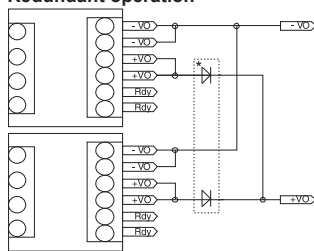
PIN assignment



Derating



Redundant operation



* Redundant Module 722987

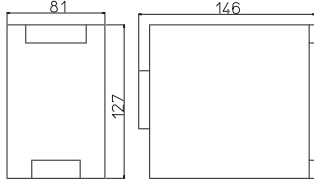
Description	Part-No.	Type	PU	
Screw terminal, pluggable				
Output voltage/current	DC 24 V; 20 A	722801	CPSB-123-480-24	1
Input				
CPSB-123-480-24				
Nominal voltage	One-, two- and three-phase AC 200-500 V			
Operation voltage range	AC 187–550 V / DC 250–725 V (UL: DC 300–500 V)			
Line frequency	47 – 63 Hz			
Rated current	1-,2-phase @ AC 200 V: 2,9 A / 1-,2-phase @ AC 500 V: 1,3 A 3-phase @ AC 200 V: 1,8 A / 3-phase @ AC 500 V: 0,8 A			
Inrush current	U _i = AC 230 V: <20 A / U _i = AC 400 V: <40 A			
Internal fuse	–			
External fuse	Automatic: C 6 A, oder D 4 A (required)			
Power Factor Correction P.F.C.	U _i = AC 230 V: <0.95 A / U _i = AC 400 V: <0.92 A			
Output				
Rated voltage output	DC 24 V			
Rated current output	20 A			
Max. output current	28 A, 5 s			
Short-circuit current	50 A			
Voltage trim range	23-27,5 V			
Load regulation	<1 %			
Rise time	–			
Temperature coefficient	–			
Ripple & Noise	≤100 mV pp			
Hold up time	>20 ms			
Status indication DC ON LED green	≥21.6 V			
Status indication DC LOW LED red	I _{out} > 1.1 I _N			
Parallel/redundant operation	yes/via external decoupling diode			
Efficiency	>92 %			
Low power loss	<21 W			
Over voltage protection	<DC 33 V			
Overtemperature protection	yes			
Short circuit characteristics	Hiccup-mode			
General				
Insulation voltage input/output	DC 4,2 kV			
Insulation voltage input / ground	DC 2.2 kV			
Insulation voltage output / ground	DC 0.75 kV			
Operation temperature range	-20 °C – 60 °C (derating)			
Derating	<45 °C: -16 W/°C			
Storage temperature range	-25 °C – 85 °C			
M.T.B.F.	>500000 h to SN29500 / >150000 h to MIL standard HDBK 217F			
Dimensions (w × h × d) in mm	73.0 × 125.0 × 140.0			
Cooling	Natural air cooling			
Housing material	Aluminum			
Shock resistance	30 g 6 ms, 20 g 11 ms, 3 shocks / direction, 18 shocks in total, IEC60068-2-27:2008			
Vibration resistance	5 – 17.8 Hz: ±1.6 mm, 17.8 – 500 Hz: 2 g 2 hours / axes X,Y,Z, IEC 60068-2-6:2007			
Field installation	rail TS 35 (EN 50022)			
Installation position	vertical			
Protection class	IP 20 (IEC529, EN60529)			
Overtoltage category	II			
Pollution degree	2			
Weight (kg/piece)	1.000			
Termination	Screw terminal: 0.2–2.5 mm ² (AWG 24–12) - pluggable			
Approvals	UL, cUL: UL 508C, IEC 950, EN 60950 CE: EN 61000-6-2, EN 61000-6-4, EN 55011, EN 6100-4-2 CE: EN 61000-4-3/4/5/6/11			
Monitoring				
DC ON Control (Rdy)	Normally open			
Switching voltage	AC/DC 30 V			
Switching current	AC/DC 1 A			
Switching capacity	30 VA / 30 W			
Insulation voltage	AC 500 V			

Power supply · regulated, 480 W, 3-phase

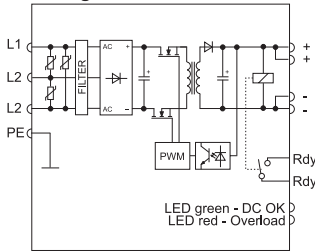
Switchmode power supply, PFC, 3-phase
Input: Wide range input AC 340 - 550 V
Output: 24 V, adjustable



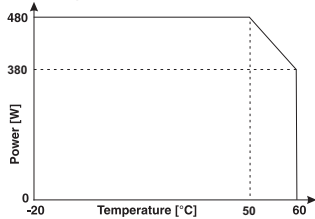
Dimensions



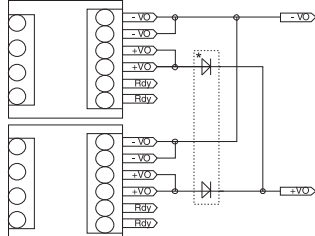
PIN assignment



Derating



Redundant operation



* Redundant Module 722987

Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 24 V / 20 A	722800	CPSB3-500-24	1
	DC 48 V / 10 A	722815	CPSB3-500-48	1

Input	CPSB3-500-24	CPSB3-500-48
Nominal voltage	3× AC 400–500 V	
Operation voltage range	3× AC 340–550 V	
Line frequency	47 – 63 Hz	
Rated current	U _I = AC 400 V: 1.3 A / U _I = AC 500 V: 1.1 A	
Inrush current	<50 A	
Internal fuse	–	
External fuse	Automatic: 3 × B 16 A, C 10 A (required)	
Power Factor Correction P.F.C.	>0.6	

Output	CPSB3-500-24	CPSB3-500-48
Rated voltage output	DC 24 V	DC 48 V
Rated current output	20 A	10 A
Max. output current	–	
Short-circuit current	30 A (>60 A Hiccup)	15 A
Voltage trim range	24/28 V	45-55 V
Accuracy	–	
Line regulation	–	
Load regulation	<1 %	
Rise time	–	
Temperature coefficient	–	
Ripple & Noise	100 mV pp	<100 mV pp
Hold up time	>20 ms (AC 400 V)	
Status indication DC ON LED green	≥21.6 V	
Status indication DC LOW LED red	≤21.6 V	
Parallel/redundant operation	max. 2 devices / via external diodes	max. 4 devices / via external diodes
Efficiency	>94 % (AC 400 V)	
Low power loss	<30 W (AC 380 V)	<15 W (AC 380 V)
Rated over load protection	yes	
Over voltage protection	yes	
Short circuit characteristics	Hiccup–mode / Constant current	

General		
Switching frequency	approx. 70 – 110 kHz	
Insulation voltage input/output	AC 3.0 kV _{eff}	
Insulation voltage input / ground	AC 2.0 kV _{eff}	
Insulation voltage output / ground	AC 1.0 kV _{eff}	
Insulation resistance at DC 500 V	– MΩ	
Operation temperature range	–20 °C – 60 °C (derating)	
Derating	>50 °C: –10 W / °C	
Storage temperature range	–25 °C – 85 °C	
M.T.B.F.	>500000 h to SN29500 / >150000 h to MIL standard HDBK 217F	
Relative humidity	20–90% RH, non-condensing	
Dimensions (w × h × d) in mm	81.0 × 127.0 × 146.0	
Cooling	Air convection 20 mm clearance right/left, 50 mm clearance up/down	
Housing material	Aluminum	
Shock resistance	30 g 6 ms, 20 g 11 ms, 3 shocks / direction, 18 shocks in total, IEC60068-2-27:2008	
Vibration resistance	5 – 17.8 Hz: ±1.6 mm, 17.8 – 500 Hz: 2 g 2 hours / axes X,Y,Z, IEC 60068-2-6:2007	
Field installation	Snaps on to TS 35 rail (EN 60175)	
Application height	– m	
Installation position	vertical	
Protection class	IP 20 (IEC529, EN60529)	
IP rating	I (SELV, PELV)	
Overvoltage category	II	
Pollution degree	2	
Weight (kg/piece)	1.200	
Termination	Screw terminal: 0.2–6.0 mm ² , max. 0.62 Nm	
Approvals	UL, cUL: UL 508, IEC 950, EN 60950 CE: EN 61000-4-2/3/4/5/6/11, EN 61000-6-2, EN 61000-6-4, EN 50178, EN 61558, EN 50081-1, EN 50082-2, EN 55022 Class B	

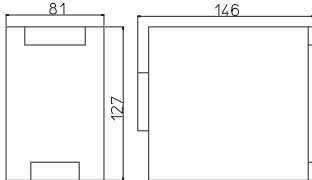
Monitoring	
DC ON Control (Rdy)	Normally open
Switching voltage	AC 300 V / DC 150 V
Switching current	AC/DC 1 A
Switching capacity	300 VA / 30 W
Insulation voltage	AC 500 V

Power supply · regulated, 720 W, 3-phase

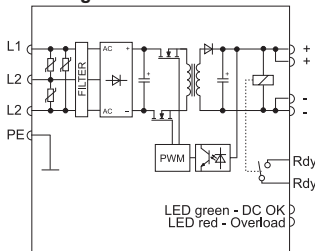
Switchmode power supply, PFC, 3-phase
 Input: Wide range input AC 340 - 550 V
 Output: 24 V, adjustable



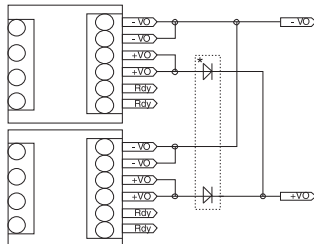
Dimensions



PIN assignment



Parallel/redundant mode



* Redundant Module 722999

Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 24 V/ 30 A	722802	CPSB3-720-24	1
	DC 48 V/ 15 A	722807	CPSB3-720-48	1

Input	CPSB3-720-24	CPSB3-720-48
Nominal voltage	3× AC 400–500 V	
Operation voltage range	3× AC 340–550 V	
Line frequency	47 – 63 Hz	
Rated current	U _i = AC 400 V: 1.9 A / U _i = AC 500 V: 1.7 A	
Inrush current	<50 A	
Internal fuse	–	
External fuse	Automatic: 3 × B 16 A, C 10 A (required)	
Power Factor Correction P.F.C.	>0.65	

Output	CPSB3-720-24	CPSB3-720-48
Rated voltage output	DC 24 V	DC 48 V
Rated current output	30 A	15 A
Max. output current	32 A	16.5 A
Short-circuit current	45 A (>80 A Hiccup)	22.5 A (>45 A Hiccup)
Voltage trim range	24/28 V	45/55 V
Accuracy	–	
Line regulation	–	
Load regulation	<1 %	
Rise time	–	
Temperature coefficient	–	
Ripple & Noise	<150 mV pp	<100 mV pp
Hold up time	>15 ms (AC 400 V)	
Status indication DC ON LED green	≥21.6 V	≥43.2 V
Status indication DC LOW LED red	≤21.6 V	≤43.2 V
Parallel/redundant operation	max. 2 devices / via external diodes	
Efficiency	>92 %	>94 %
Low power loss	<63 W	<46 W
Rated over load protection	> 90°C, auto-reset	
Over voltage protection	<33 V	<60 V
Short circuit characteristics	Hiccup-mode / Constant current	

General	
Switching frequency	approx. 70 – 110 kHz
Insulation voltage input/output	AC 3.0 kV _{eff}
Insulation voltage input / ground	AC 2.0 kV _{eff}
Insulation voltage output / ground	AC 1.0 kV _{eff}
Insulation resistance at DC 500 V	– MΩ
Operation temperature range	–20 °C – 60 °C
Derating	–
Storage temperature range	–25 °C – 85 °C
M.T.B.F.	>500000 h to SN29500 / >150000 h to MIL standard HDBK 217F
Relative humidity	20–90% RH, non-condensing
Dimensions (w × h × d) in mm	81.0 × 127.0 × 146.0
Cooling	Natural air cooling, forced cooling >50°C, 50 mm distance above/below
Housing material	Aluminum
Shock resistance	30 g 6 ms, 20 g 11 ms, 3 shocks / direction, 18 shocks in total, IEC60068-2-27:2008
Vibration resistance	5 – 17.8 Hz: ±1.6 mm, 17.8 – 500 Hz: 2 g 2 hours / axes X,Y,Z, IEC 60068-2-6:2007
Field installation	rail TS 35 (EN 50022)
Application height	– m
Installation position	vertical
Protection class	IP 20 (IEC529, EN60529)
IP rating	I (SELV, PELV)
Overvoltage category	II
Pollution degree	2
Weight (kg/piece)	1.200
Termination	Screw terminal: 0.2–6.0 mm ² , max. 0.62 Nm
Approvals	UL, cUL: UL 508, IEC 950, EN 60950 CE: EN 61000-4-2/3/4/5/6/11, EN 61000-6-2, EN 601000-6-4, EN 50178, EN 61558, EN 50081-1, EN 50082-2, EN 55022 Class B

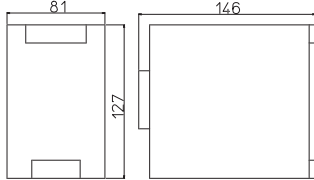
Monitoring	
DC ON Control (Rdy)	Normally open
Switching voltage	AC 300 V / DC 150 V
Switching current	AC/DC 1 A
Switching capacity	300 VA / 30 W
Insulation voltage	AC 500 V

Power supply · regulated, 960 W, 3-phase

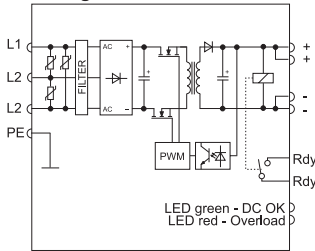
Switchmode power supply, PFC, 3-phase
Input: Wide range input AC 340 - 550 V
Output: 24 V / 48 V / 72 V



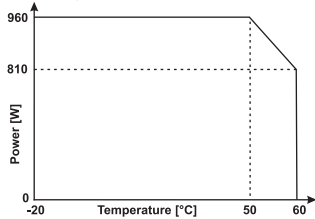
Dimensions



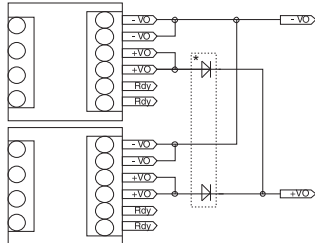
PIN assignment



Derating



Redundant operation



* Redundant Module 722999

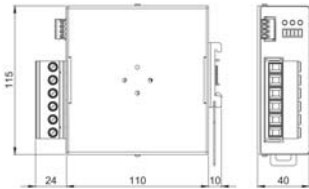
Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 24 V / 40 A	722811	CPSB3-960-24	1
	DC 48 V / 20 A	722812	CPSB3-960-48	1
	DC 72 V / 13.3 A	722813	CPSB3-960-72	1
Input				
Nominal voltage	CPSB3-960-24	CPSB3-960-48	CPSB3-960-72	
Operation voltage range		3× AC 400–500 V		
Line frequency		3× AC 340–550 V		
		47 – 63 Hz		
Rated current		U _i = AC 400 V: 2.8 A / U _i = AC 500 V: 2.2 A		
Inrush current		<50 A		
Internal fuse		–		
External fuse		Automatic: 3 × B 16 A, C 10 A (required)		
Power Factor Correction P.F.C.		>0.7		
Output				
Rated voltage output	DC 24 V	DC 48 V	DC 72 V	
Rated current output	40 A	20 A	13.3 A	
Max. output current	44 A	21.5 A	14 A	
Short-circuit current	60 A (>90 A Hiccup)	30 A (>70 A Hiccup)	20 A (>30 A Hiccup)	
Voltage trim range	24/28 V	45/55 V	72/84 V	
Accuracy		–		
Line regulation		–		
Load regulation		<1 %		
Rise time		–		
Temperature coefficient		–		
Ripple & Noise		<100 mV	<300 mV	
Hold up time		>10 ms (AC 400 V); >15 ms (AC 500 V)		
Status indication DC ON LED green	≥21.6 V	≥43.2 V	≥64.8 V	
Status indication DC LOW LED red	≤21.6 V	≤43.2 V	≤64.8 V	
Parallel/redundant operation		max. 2 devices / via external diodes		
Efficiency	>91 %	>93 %	>94 %	
Low power loss	<95 W	<72 W	<62 W	
Rated over load protection		> 90°C, auto-reset		
Over voltage protection	<33 V	<60 V	<94 V	
Short circuit characteristics		Hiccup-mode / Constant current		
General				
Switching frequency		approx. 70 – 110 kHz		
Insulation voltage input/output		AC 3.0 kV _{eff}		
Insulation voltage input / ground		AC 2.0 kV _{eff}		
Insulation voltage output / ground		AC 1.0 kV _{eff}		
Insulation resistance at DC 500 V		– MΩ		
Operation temperature range		-20 °C – 60 °C (derating)		
Derating		>50 °C: -15 W / °C, UL 508: >45 °C: -15 W / °C		
Storage temperature range		-25 °C – 85 °C		
M.T.B.F.		>500000 h to SN29500 / >150000 h to MIL standard HDBK 217F		
Relative humidity		20–90% RH, non-condensing		
Dimensions (w × h × d) in mm		81.0 × 127.0 × 146.0		
Cooling		Natural air cooling, forced cooling >50°C, 50 mm distance above/below		
Housing material		Aluminum		
Shock resistance		30 g 6 ms, 20 g 11 ms, 3 shocks / direction, 18 shocks in total, IEC60068-2-27:2008		
Vibration resistance		5 – 17.8 Hz: ±1.6 mm, 17.8 – 500 Hz: 2 g 2 hours / axes X,Y,Z, IEC 60068-2-6:2007		
Field installation		rail TS 35 (EN 50022)		
Application height		– m		
Installation position		vertical		
Protection class		IP 20 (IEC529, EN60529)		
IP rating		I (SELV, PELV)		
Overvoltage category		II		
Pollution degree		2		
Weight (kg/piece)		1.200		
Termination	Screw terminal: 0.2–10.0 mm ² , max. 0.62 Nm	Screw terminal: 0.2–6.0 mm ² , max. 0.62 Nm		
Approvals	UL, cUL: UL 508, IEC 950, EN 60950 CE: EN 61000-4-2/3/4/5/6/11, EN 61000-6-2, EN 601000-6-4, EN 50178, EN 61558, EN 50081-1, EN 50082-2, EN 55022 Class B			
Monitoring				
DC ON Control (Rdy)		Normally open		
Switching voltage		AC 300 V / DC 150 V		
Switching current		AC/DC 1 A		
Switching capacity		300 VA / 30 W		
Insulation voltage		AC 500 V		

Power supply - Redundancy module

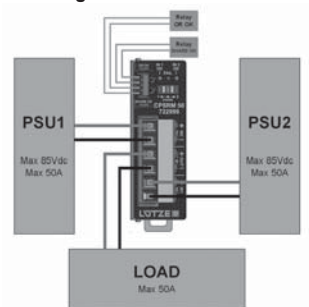
Redundant module 12 to 85 V, 50 A
Potential-free signalling contact
Status LED per input



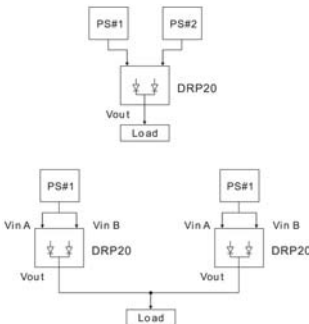
Dimensions



PIN assignment



Use



Description	Part-No.	Type	PU
Screw terminal			
Output voltage/current	DC 12 V–85 V/50 A	722999	CPSRM50
			1
Input		CPSRM50	
Nominal voltage		–	
Operation voltage range		DC 12–85 V	
Inputs		2	
Rated current		max. 50 A per input	
Internal fuse		–	
External fuse		–	
Output			
Rated voltage output		–	
Rated current output		–	
Max. output current		300 A	
Voltage drop		<0.2 V	
Inverse voltage		–	
Low power loss		Max. 10 W	
No-load power		<1.5 W	
Status indication DC ON LED green		IN1, IN2 OK	
Status indication DC ON LED red		Redundancy error	
Overtemperature protection		No	
Over voltage protection		No	
General			
Operation temperature range		-20 °C – 50 °C	
Derating		–	
Storage temperature range		-25 °C – 85 °C	
M.T.B.F.		–	
Dimensions (w × h × d) in mm		40.0 × 115.0 × 110.0	
Cooling		Air convection	
Housing material		Aluminum	
Shock resistance		30 g 6 ms, 20 g 11 ms, 3 shocks / direction, 18 shocks in total, IEC60068-2-27:2008	
Vibration resistance		5 – 17.8 Hz: ±1.6 mm, 17.8 – 500 Hz: 2 g 2 hours / axes X,Y,Z, IEC 60068-2-6:2007	
Field installation		rail TS 35 (EN 50022)	
Application height		– m	
Installation position		vertical	
Protection class		IP 20 (IEC529, EN60529)	
Overvoltage category		II	
Pollution degree		2	
Weight (kg/piece)		0.200	
Termination		Input: pluggable screw connection: 0,2–16 mm ² Output: pluggable screw connection: 0,2–16 mm ² Relay: pluggable screw connection: 0,2–1,5 mm ²	
Approvals		UL, cUL: UL 508 listed, UL 60950-1 recognised CE: EN 55022 Class B, EN 55024 CE: EN 61000-4-2/3/4/6/8, EN 61204-3	
Monitoring			
DC ON Control (Rdy)		N/O contact	
Switching voltage		Ac 300 V/DC 24 V	
Switching current		AC/DC 1 A	
Switching capacity		300 VA / 30 W	
Insulation voltage		DC 100 V	

Power supply · regulated, 2400 W

Switchmode power supply, PFC, 3-phase

Input: Wide range input AC 340 - 550 V

Output: DC 24 V, 100 A / DC 48 V, 50 A



Range of functions

The new power compact series provides a number of additional adjustment options via function keys. The selected functions are shown on a display. In addition, the current output voltage and current are displayed for normal operation.

Input protection

- Active Surge suppressor and inrush limiter (ASSIL) as protection against overvoltages according to VDE 0160
- PFC error monitoring
- Phase monitoring with automatic reduction of the output power
- Automatic start/restart system for over- and undervoltages

Output protection

- Adjustable current limiting between $0.1 I_N$ and I_N
- Hiccup autoreset based on current limiting or maximum output voltage (150%)

Status display and signal

- In addition to an LED for "DC OK" and error displays, the devices have the following analog outputs 0–10 V and 4–20 mA as direct function of the load current
- Programmable relay contact with the functions
 - Output voltage/current,
 - Overload,
 - Overtemperature

Additional functions

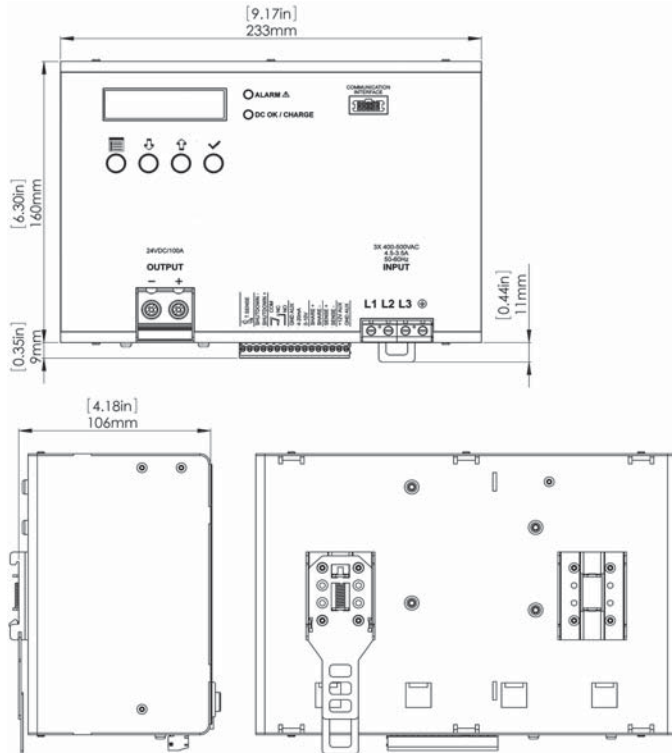
- Temperature-compensated battery charging function
- Display and compensation of the voltage drop for long cables
- Remote On/Off of the output voltage
- DC 12 V auxiliary voltage
- Monitoring and control interface based on RS232 (optional)
- Integrated O-ring diode
- Load sharing in parallel operation
- Load current sharing

Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 24 V/100 A	722814	CPSB3-2400-24	1
	DC 48 V/50 A	722816	CPSB3-2400-48	1
Input				
	DC 24 V/100 A		DC 48 V/50 A	
Nominal voltage	3× AC 400–500 V			
Operation voltage range	AC 340 V–550 V/DC 520 V–750 V			
Line frequency	47 – 63 Hz			
Rated current	$U_i = AC 400 V: 4.5 A / U_i = AC 500 V: 3.5 A$			
Inrush current	<AC 10 A (active inrush current limitation)			
Internal fuse	–			
External fuse	Automatic: 3 × C 10 A (required)			
Power Factor Correction P.F.C.	>0.92			
Input protection	Surge protection according to VDE 0160, over/undervoltage (auto restart) Phase monitoring (reduced output power): PFC error			
Output				
Rated voltage output	DC 24 V		DC 48 V	
Rated current output	100 A		50 A	
Max. output current	>150 A, 5 s, with $U_{out} > 90\%$		>75 A, 5 s, with $U_{out} > 90\%$	
Short-circuit current	150 A, 5 s		75 A, 5 s	
Voltage trim range	DC 11.5–29 V		DC 23–56 V	
Load regulation	<1 %			
Rise time	< 4.5 S			
Temperature coefficient	–			
Ripple & Noise	<200 mV			
Hold up time	>10 ms (AC 400 V); >10 ms (AC 500 V)			
Status indication DC ON LED green	alphanumeric display			
Status indication DC LOW LED red	alphanumeric display			
Parallel/redundant operation	max. 4 devices			
Efficiency	>92 %			
Low power loss	<200 W			
Over voltage protection	>30 V			
Short circuit characteristics	adjustable: Hiccup, current limiting			
General				
Insulation voltage input/output	AC 3.0 kV _{eff}			
Insulation voltage input / ground	AC 1.5 kV _{eff}			
Insulation voltage output / ground	AC 0.5 kV _{eff}			
Operation temperature range	-20 °C – 60 °C (derating)			
Derating	>45 °C: -40 W/°C			
Storage temperature range	-25 °C – 85 °C			
M.T.B.F.	>500000 h to SN29500 / >150000 h to MIL standard HDBK 217F			
Dimensions (w × h × d) in mm	233.0 × 158.0 × 102.0			
Cooling	Natural air cooling, forced cooling >45 °C, 80 mm distance top/bottom, 10 mm side			
Housing material	Aluminium			
Shock resistance	30 g			
Vibration resistance	5 – 17,8 Hz: ±1,6 mm, 17,8 – 500 Hz: 2 g 2 Hours / Achsen X,Y,Z, IEC 60068-2-6:2007			
Field installation	rail TS 35 (EN 50022)			
Installation position	vertical			
Protection class	IP 20 (IEC529, EN60529)			
IP rating	I (SELV, PELV)			
Overvoltage category	II			
Pollution degree	2			
Weight (kg/piece)	2.800			
Termination	Screw connection: input 0.2–4.0 mm ² /output 0.2–35 mm ² /auxiliary 0.2–1.5 mm ²			
Approvals	Standards: UL 508, IEC 950, EN 60950, EN 55011 CE: EN 61000-4-5, Surge immunity level IV, VDE 0160 CE: EN 61000-4-2/3/4/5/6/11			
Monitoring				
DC ON Control (Rdy)	Relay, N/O contact active, adjustable, DCok: 90–110 % Uset, ACok: acc. input voltage range, overload Overttemperature range, charging complete			
Switching capacity	AC/DC 30 V, 1 A, 30 W			
Insulation voltage	AC 500 V			
Output current	galvanically isolated: 0–10 V and 4–20 mA			
Interface				
User Interface	LCD display 16 × 2 character, multi language, 4 keys (command and navigation)			
Auxiliary voltage output	galvanically isolated DC 12 V, 100 mA			
NTC	Temperature-controlled battery charging (mandatory)			

Power supply · regulated, 2400 W

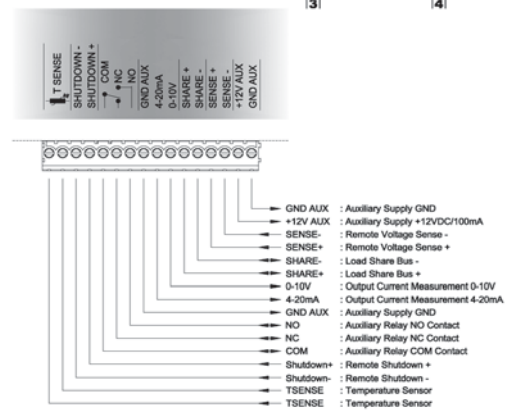
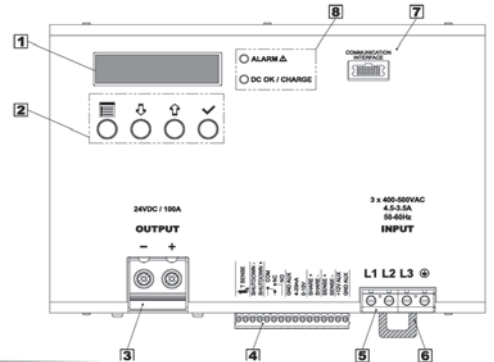
Switchmode power supply, PFC, 3-phase
 Input: Wide range input AC 340 - 550 V
 Output: DC 24 V, 100 A / DC 48 V, 50 A

Dimensions

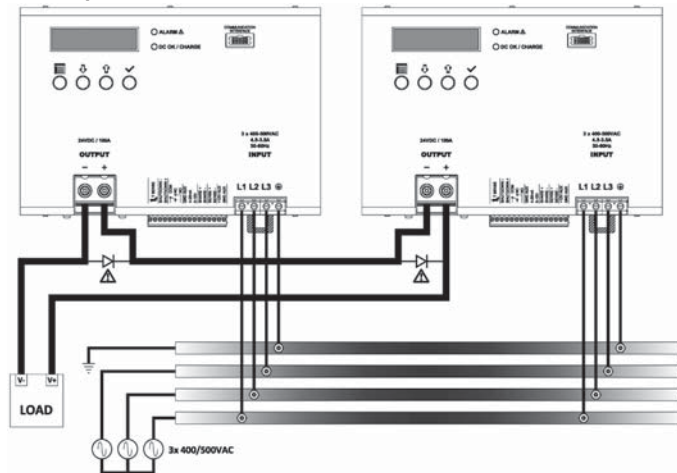


PIN assignment

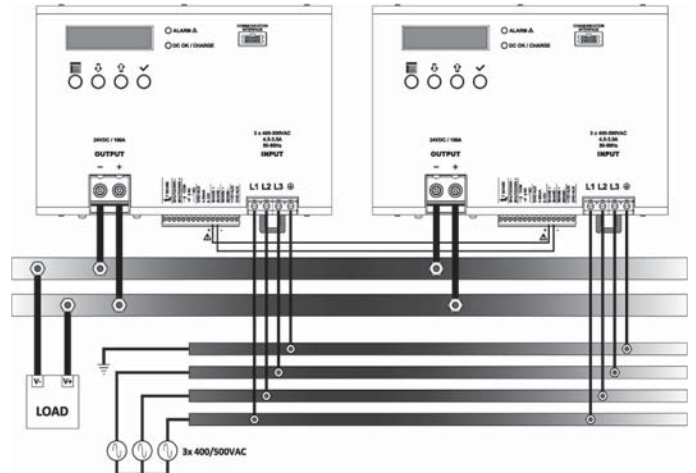
- 1 Display
- 2 Control Keys
- 3 Output Connector
- 4 Auxiliary Connector
- 5 Input Connector
- 6 DIN Rail Fixing Clamp
- 7 Communication Interface
- 8 Status LEDs
- 9 Buzzer (Internal)



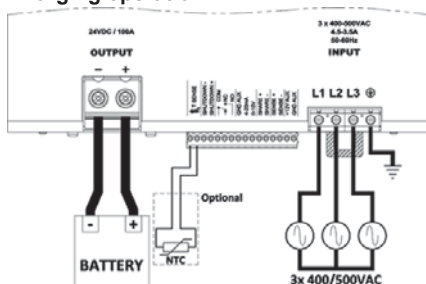
Serial operation



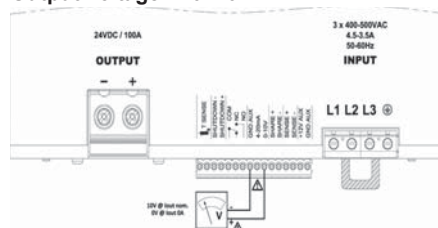
Parallel/redundant mode



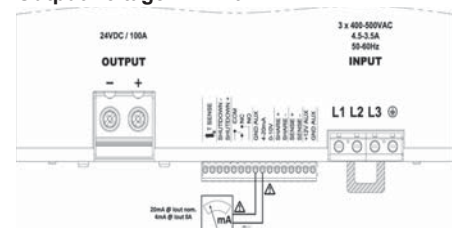
Charging operation



Output voltage in 0-10 V



Output voltage in 4-20 mA





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