



■ Control Solutions

Industrial Power Supplies

Delta Series Power Supplies

Compact Series Power Supplies

LOCC-Box – Intelligent DC Circuit Protection

Efficiency in Automation

Cable • Connectivity • Cabinet • Control



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Welcome to LÜTZE

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



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

For more information on our solutions, please visit www.luetze.com or 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 Supplies · Product Overview

DELTA Series



1-phase, 10 W



1-phase,
15/18 W



1-phase, 30 W



1-phase, 50 W



1-phase, 120 W



1-phase, 240 W

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COMPACT Series



1-phase 30 W



1-phase 70 W



1-phase 120 W



1-phase 240 W



1-phase 480 W



1-/2-phase 120 W

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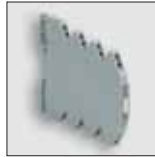
LOCC-Box DC24V Circuit Protection



Standard
DC 1 A -
DC 10 A



Network
DC 1 A -
DC 10 A



Gateway
CANopen



Gateway
ProfiNet



Gateway
Profibus



Gateway
Ethercat

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Varioprint Protection Modules



Fuse modules

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Power Supplies · Product Overview



1-phase, 480W

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3-phase, 120W

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3-phase, 240W

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3-phase, 480W

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3-phase, 960W

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Redundant Module

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1-/2-/3-phase
240 W

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3-phase 480 W

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3-phase 720 W

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3-phase 960 W

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50A Redundant
Module

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3-phase 2400 W

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Supply
Terminal

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0V Collective
Terminal

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Microcompact Constant Voltage Source



DC/DC Converter

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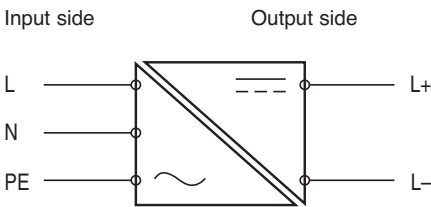
Power Supplies · Basics

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

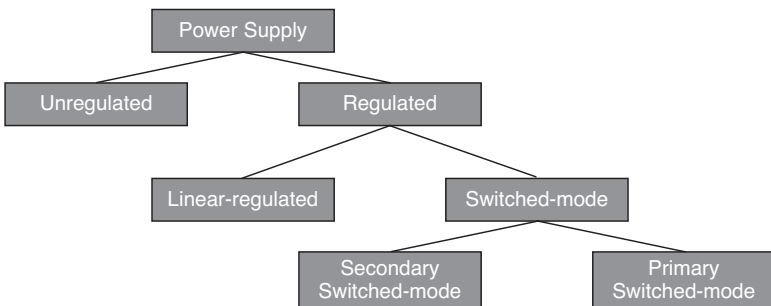
Regardless of the technology employed, power supplies are devices with an input side and an isolated output side.



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.

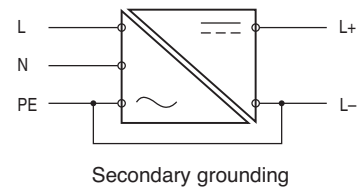
2.3 Safe isolation

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.

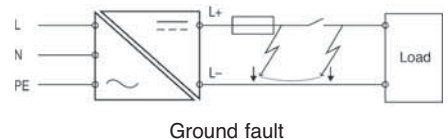
Safe isolation means that no current flow can occur from one electrical circuit to another. This isolation has to be implemented either by double or reinforced insulation or by means of protective shielding.

2.4 Secondary grounding

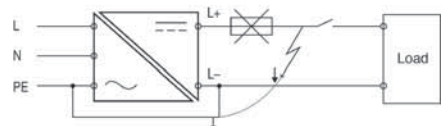
In case of secondary grounding, the output side of the power supply is connected to protective earth (PE) in order to prevent dangerous ground faults.



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.



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.

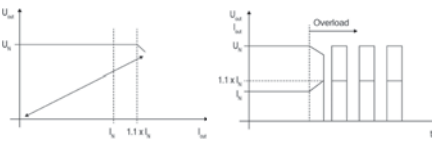
A short-circuit is a special form of overload. In this case, the outputs of the power supply are interconnected at very low resistance, as a result of which the output current may assume extremely high values.

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

Fold-back characteristic/Hiccup mode

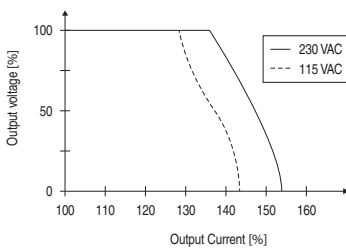
Lütze power supplies supply a current typically up to 1.2 times the nominal output current. They automatically switch off if the current consumption of the connected loads exceeds this value or if a short-circuit occurs. After a defined period of time, the power supply tries to restart the load. If the 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



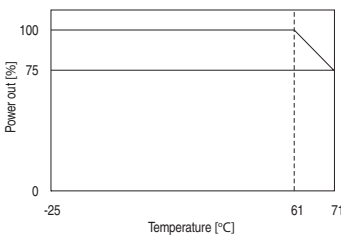
U/I characteristic

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

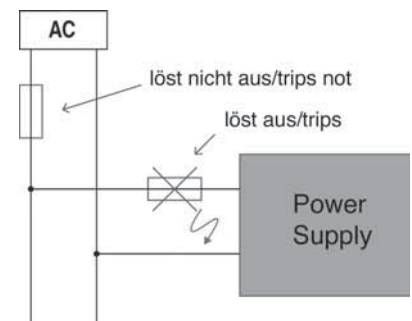
Alongside the output behaviour described in section 4, there is a U/I characteristic with an additional power reserve. However, all these output behaviour modes are ultimately not suitable for safe activation of standard line protection equipment. The reason lies in the technical design of the equipment. 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.

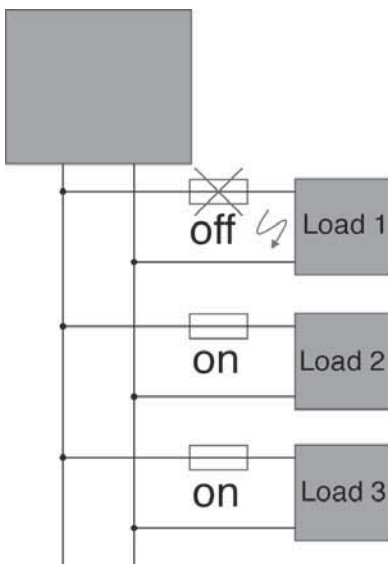


Rule of thumb:
The fuses must differ by two nominal quantities

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

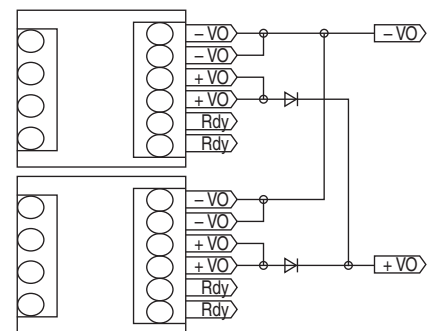
An increase of the output power can be obtained by connecting power supplies in parallel. This can be necessary if the current required by the load is higher than a single power supply can deliver, for example after the expansion of an existing installation. The following preconditions must be met when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

Current Control System · Basics

Reliable protection of DC 24V circuits

Intelligent safeguarding of selectivity

Primary switching controllers and automatic power units nowadays form the basis of the DC 24V supply level. Due to the operating behaviour of those devices, the specified selective protection of individual circuits, especially in case of overcurrent, is virtually unfeasible. A complete system shutdown is inevitable.

Operating behaviour of primary switching controllers

Switched-mode power supplies and their components are rated for a specific nominal value and run hot under higher load. To protect against self-destructing, they shut down at between 1.1 and 2.5 times the nominal current, according to type. Many devices feature Hiccup mode, which switches off in case of overload and automatically switches back on after a short time. If the overload persists, the process repeats until the fault is manually rectified. This means a fuse is never tripped. Using devices with a forward characteristic does not deliver success either. The power supply does not switch off, but supplies only a 1.1 to 1.2 times higher output current when the output voltage is reduced. This characteristic likewise does not trip an automatic circuit-breaker, or if it does, then only in the hours range. Furthermore, both output modes have the disadvantage that loads such as DC motors or capacitive consumers cannot be started. At additional cost, operation of heavy loads can be achieved in the simplest case by using a device with a higher output power or a device with integrated power boost.

In this, the device with power boost continuously supplies 1.2 to 1.3 times the nominal current in the temperature range up to +45°C. On reducing the output voltage, a maximum of 2.5 times the nominal current is reached which - dependent on the device itself and the characteristic of the automatic circuit-breaker - may be just enough to effect a shutdown.

Characteristics of automatic circuit-breakers

The trip curve of an automatic circuit-breaker with characteristic B (Figure 1) is considered by way of example. To record smaller overcurrents, a thermal trip in the minutes to hours range is used (hold >1h at $I = 1.13 \times I_{nom}$ and trip <1h at $I = 1.45 \times I_{nom}$). Switch-off in case of high overcurrents is effected by immediate magnetic tripping within 0.01 to 0.1 seconds. If such a device is used in conjunction with a 10A switched-mode power supply, the switch-off occurs at 1.2 times the nominal current only after 20 to 60 minutes. Even at 2.5 times nominal current (power boost) between 25 seconds and two minutes elapse until switch-off in the thermal range. In short: essential protection - in particular selective protection of connected devices - is not provided. The fuse essentially performs a dummy function. In the event of a short-circuit or faulty wire supply would be maintained at 2.5 times nominal current. System failure or even a cable fire may be the consequence.

Selective switch-off

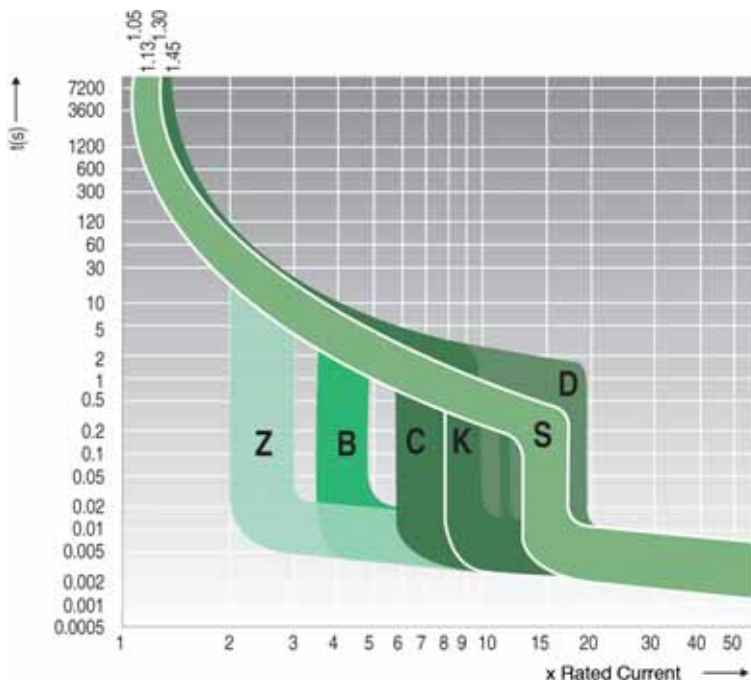
Selective load protection means that in case of overload or short-circuit only the faulty current path is switched off, with no reactive effect on the supply. The standards EN60204-1 (line protection and fire prevention) and EN 61131-1 and -2 (operating states and storage) are also applicable to the rating of the overcurrent protection device in DC 24V circuits. In concrete terms, this means withstanding a mains power failure lasting 10ms without functional impairment, which demands the deployment of large input capacities. Furthermore, hazardous overcurrents must be reduced to a safe level within 5s. Rating is made more difficult by the fact that nowadays many parallel consumers are supplied by way of one protection element.

LÜTZE LOCC-Box – the intelligent current monitoring system



Figure 2: LOCC-Box single module

The ideal solution would be one which is capable of optimally operating capacitive loads to start heavy loads and quickly detecting an overcurrent in operation and switching off only the affected path. Such a system should of course store the fault so as to prevent danger from switching back on and permit diagnosis. The Lütze LOCC-Box system meets those requirements in a modular design with additional intelligent functions. To meet the widely varying demands on switch-off response, the LOCC-Box system features the facility to program 10 different characteristics by way of a switch. Both standard automatic unit characteristics and in particular custom characteristics can be implemented. The nominal current range can additionally be selected with locking settings from 1A to 10A. The adjustable current range and characteristic is very important when retrofitting, as in such cases the device protection often has to be modified and adapted. As additional information, the capacity utilisation of the path is indicated by an LED. When 90% of the programmed current value is reached the status LED starts to flash. In the event of a switch-off due to overcurrent or short-circuit, in addition to the visual indication by a red LED.



Current Control System · Basics

A 24V signal is set as a collective fault warning. This eliminates the need to install and wire additional auxiliary contacts. A restart after clearing the fault is then effected either using the mechanical switch on the device or from the main system by remote control. This channel-based switching facility is of great importance in particular in the commissioning phase of a system, as it enables individual system components to be activated and checked specifically.

LOCC-Box Practical and efficient

The monitoring function itself is one side of the coin. The other in many other systems is the associated mechanism. Frequently multi-channel solutions are offered on the market which only make sense if exactly the

available channels are required. If that is not the case, or if only one channel has to be additionally implemented subsequently, money and space will be wasted. Another disadvantage of this solution is the looping of up to 40A via a printed circuit board. This entails an enormous load on the carrier material and interruption of the entire supply when a device is replaced. What in other areas of automation has been state of the art for over 10 years is also ideal here as the solution in a highly modular configuration!

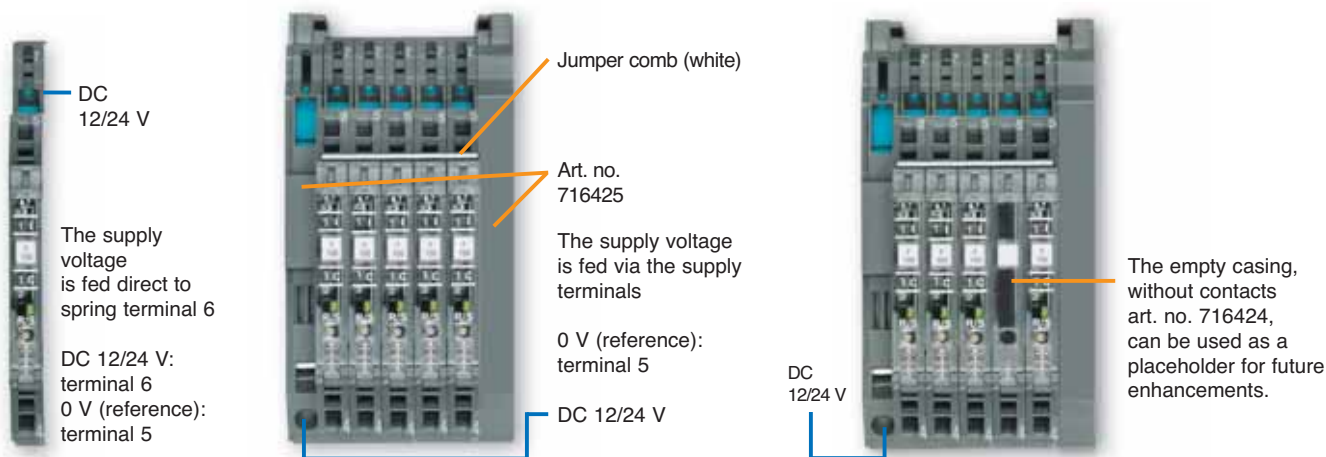
Here, too, the LOCC-Box system is setting new standards. The single-channel design with all the functionality described offers the highest possible flexibility. As shown below, customers can decide whether the supply is provided by each module individually or via the system supply (infeed terminal, copper

rail, end terminal). The particular advantage of this method of infeed is the screwless contact carriage, which permits exchanging of individual channels in operation without interrupting the entire supply. This additional provides functionality to switch off individual paths to perform essential work safely. The maximum supply current is dictated by the 6mm² terminal, and is DC 40A. The slim width of just 8.1mm results in an installed width of just 340mm even with a 40-channel configuration. The system housing is complemented by name plate labels, seals and a jumper system to loop signals.

Standard Application

without supply set, art. no. 716425 with supply set, art. no. 716425

Empty housing as placeholder

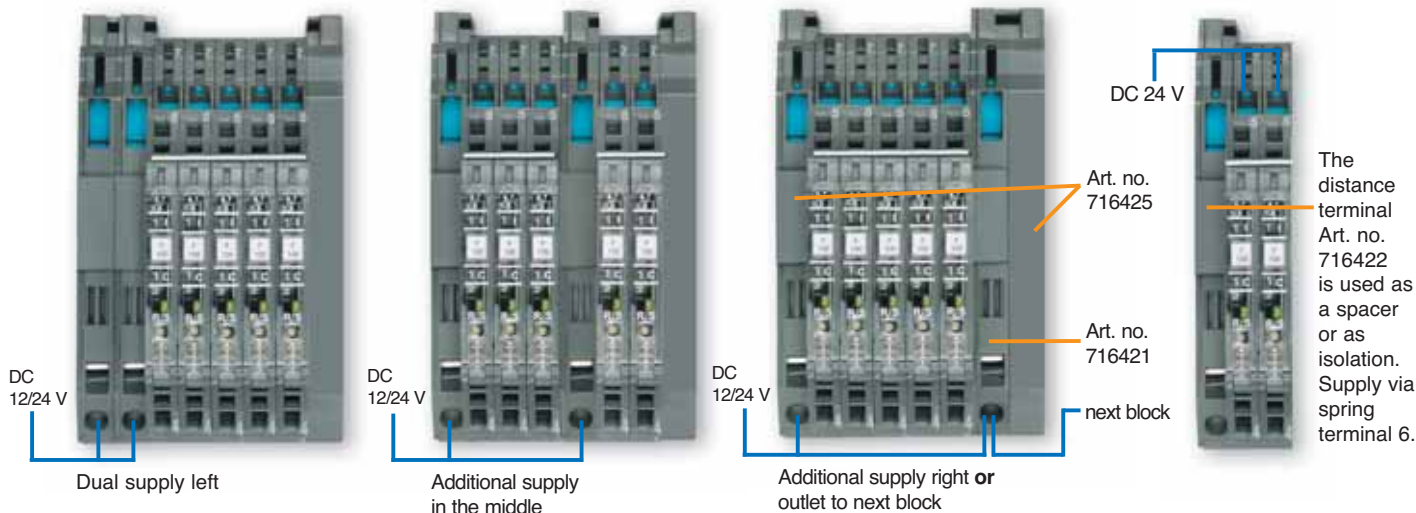


Use with additional supply terminals

Supply set, art. no. 716425 and supply terminal, art. no. 716421

The supply terminal is accessed via an aperture in the left hand side wall. This enables a variable positioning in the system construction. The maximum total current can thus be increased to 70 A.

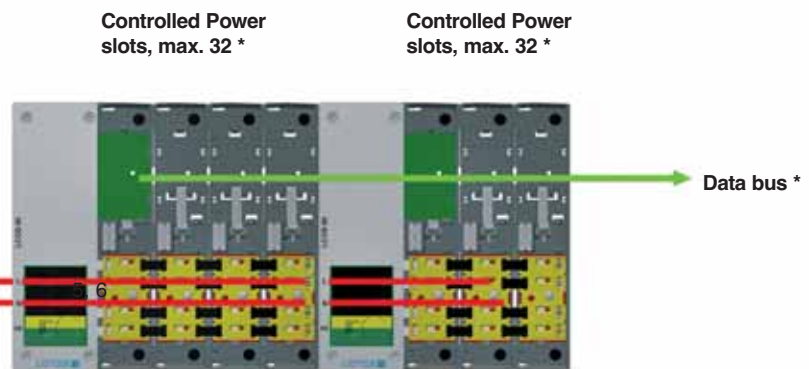
Individual construction with distance terminal



LCOS-CC • Application examples

e.g. Switching power supply 722814

DC 24 V, 100 A.



Intermediate supply



*Option with fieldbus – Design on request.

LOCC-Box / LOCC-Box-Net • Application examples

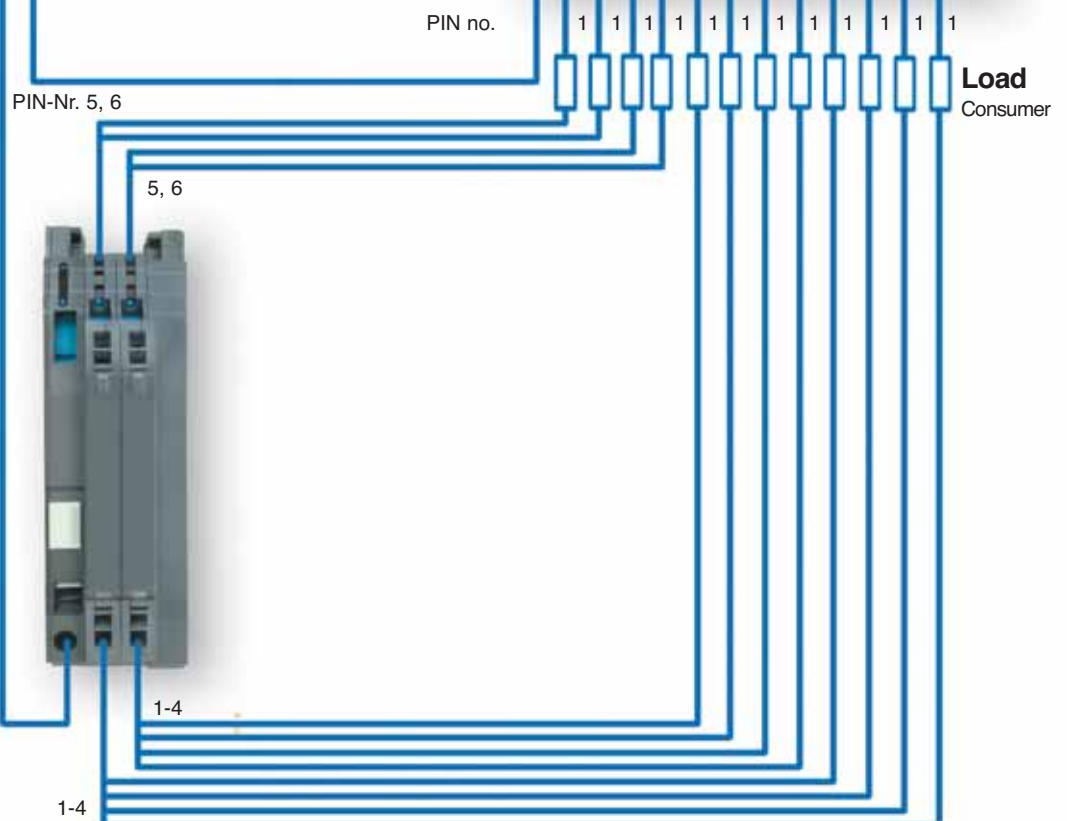
e.g. Switching power supply 722814

DC 24 V, 100 A.



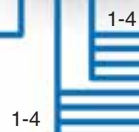
Standard Application

with supply set, art. no. 716425



Construction of the 0 V Collective terminal

with supply set
Art. no. 716425



Notes

DELTA Power Supplies



DELTA Series

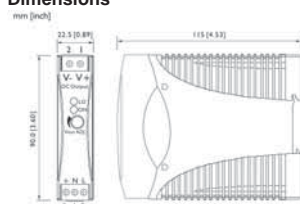
- One- and three-phase
- 10 W to 960 W
- Parallel operation
- Overload and short circuit protection
- Redundant operation with integrated diodes
- High efficiency
- Protection class IP20
- UL Listed
- Class 1 Div.2, A, B, C, D, T4
- Economical

Power supply - regulated, 10 W

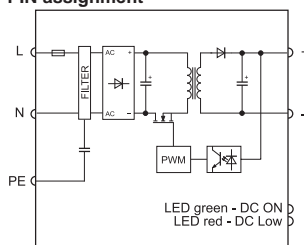
Primary switchmode power supply, Single-phase, Class 2
Input: wide-range input AC 90–265 V, DC 120–370 V
Output: 5 V / 12 V, adjustable



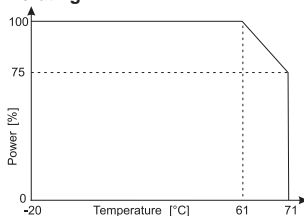
Dimensions



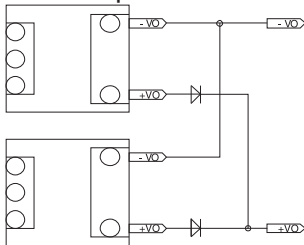
PIN assignment



Derating



Redundant operation



Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 5 V / 2 A	728761	DRA 10-05A	1
	DC 12 V / 0.84 A	728766	DRA 10-12A	1

Input	DRA 10-05A	DRA 10-12A
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	DRA 10-05A	DRA 10-12A
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	DRA 10-05A	DRA 10-12A
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
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	
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	

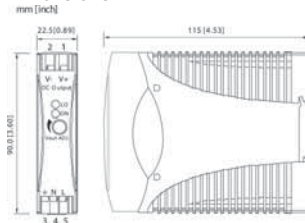
Monitoring	DRA 10-05A	DRA 10-12A
DC ON Control (Rdy)	LED green/red	
Switching voltage	–	
Switching current	–	
Switching capacity	–	
Insulation voltage	–	

Power supply - regulated, 10 W

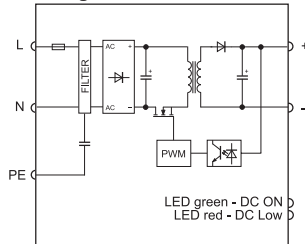
Primary switchmode power supply, Single-phase, Class 2
Input: wide-range input AC 90–265 V, DC 120–370 V
Output: 5 V / 12 V / 15 V / 24 V, adjustable



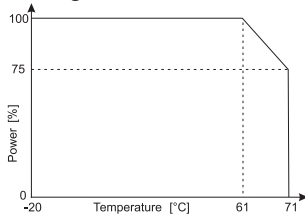
Dimensions



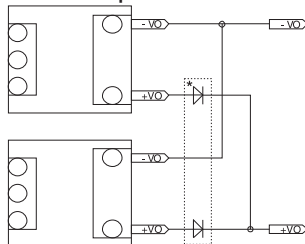
PIN assignment



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	DRA 10-05	1
	DC 12 V / 0.84 A	722766	DRA 10-12	1
	DC 15 V / 0.67 A	722773	DRA 10-15	1
	DC 24 V / 0.42 A	722751	DRA 10-24	1

Input	DRA 10-05	DRA 10-12	DRA 10-15	DRA 10-24
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	DRA 10-05	DRA 10-12	DRA 10-15	DRA 10-24
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

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			
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

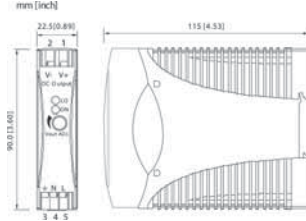
DC ON Control (Rdy)	LED green/red
Switching voltage	–
Switching current	–
Switching capacity	–
Insulation voltage	–

Power supply - regulated, 15 W

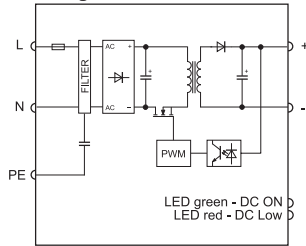
Primary switchmode power supply, Single-phase, Class 2
Input: wide-range input AC 90–265 V, DC 120–370 V
Output: 5 V, adjustable



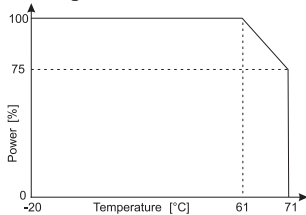
Dimensions



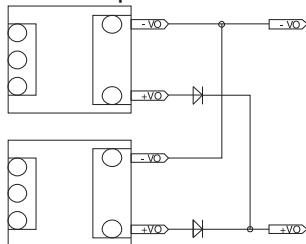
PIN assignment



Derating



Redundant operation



Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 5 V / 3 A	728762	DRA 18-05A	1
Spring terminal				
Output voltage/current	DC 5 V / 3 A	722762	DRA 18-05	1
Input				
	DRA 18-05A	DRA 18-05		
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			
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

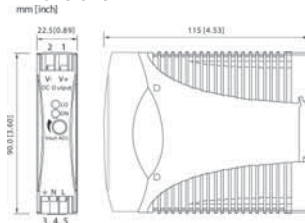
Primary switchmode power supply, Single-phase, Class 2

Input: wide-range input AC 90–265 V, DC 120–370 V

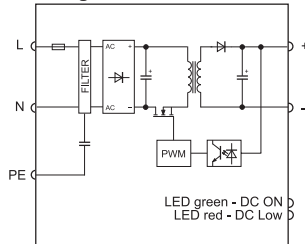
Output: 12 V / 15 V / 24 V, adjustable



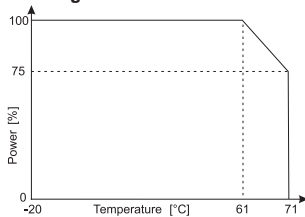
Dimensions



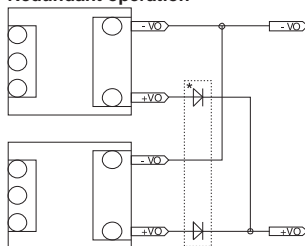
PIN assignment



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	DRA 18-12	1
	DC 15 V/ 1.2 A	722774	DRA 18-15	1
	DC 24 V/ 0.75 A	722752	DRA 18-24	1
Input				
	DRA 18-12	DRA 18-15	DRA 18-24	
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			
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

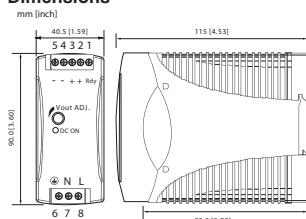
Primary switchmode power supply, Single-phase, Class 2

Input: wide-range input AC 85–264 V, DC 90–375 V

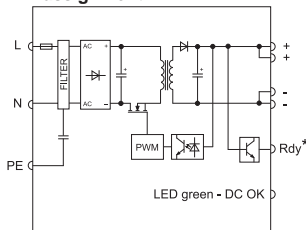
Output: 5 V / 12 V / 24 V / 48 V, adjustable



Dimensions

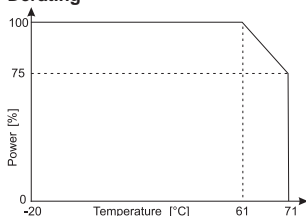


PIN assignment

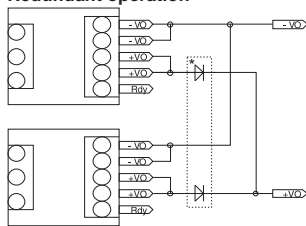


* for 24V version only

Derating



Redundant operation



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

Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 5 V / 6 A	722763	DRA 30-05A	1
	DC 12 V / 2.5 A	722768	DRA 30-12A	1
	DC 24 V / 1.25 A	722753	DRA 30-24A	1
	DC 48 V / 0.625 A	722775	DRA 30-48A	1

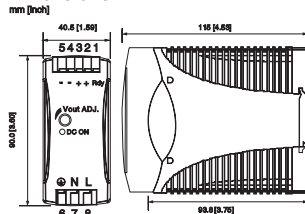
Input	DRA 30-05A	DRA 30-12A	DRA 30-24A	DRA 30-48A
Nominal voltage	AC 100–240 V			
Operation voltage range	AC 85–264 V / DC 90–375 V			
Line frequency	47 – 63 Hz			
Rated current	U _i = AC 115 V: 360 mA / U _i = AC 230 V: 190 mA			
Inrush current	U _i = AC 115 V: 20 A / U _i = AC 230 V: 40 A			
Internal fuse	T2 A / AC 250 V			
External fuse	Mini-circuit breaker: B 4 A			
Power Factor Correction P.F.C.	–			
Output				
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 %	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			
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

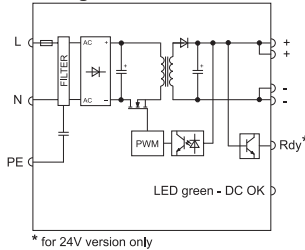
Primary switchmode power supply, Single-phase, Class 2
Input: wide-range input AC 85–264 V, DC 90–375 V
Output: 5 V / 12 V / 24 V / 48 V, adjustable



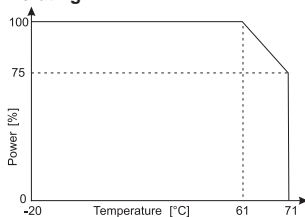
Dimensions



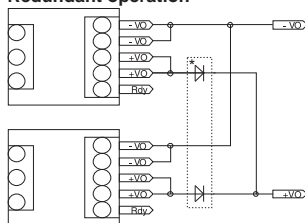
PIN assignment



Derating



Redundant operation



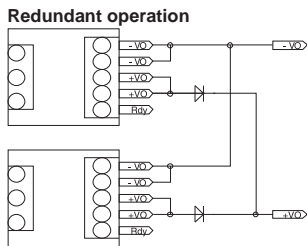
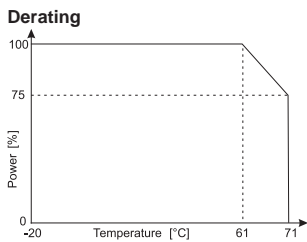
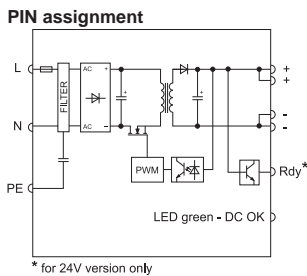
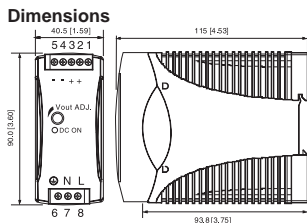
* Redundant Module 722987
 Only use together with 24 V version!

Description	Part-No.	Type	PU	
Spring terminal				
Output voltage/current	DC 5 V/ 6 A	728763	DRA 30-05	1
	DC 12 V/ 2.5 A	728768	DRA 30-12	1
	DC 24 V/ 1.25 A	728753	DRA 30-24	1
	DC 48 V/ 0.625 A	728775	DRA 30-48	1

Input	DRA 30-05	DRA 30-12	DRA 30-24	DRA 30-48
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 %	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 × 115.0			
Cooling	Natural air cooling, 25 mm distance on all sides			
Housing material	Plastic			
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; 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, 50 W

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



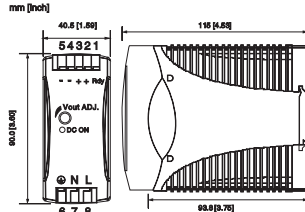
Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 5 V/ 10 A	722764	DRA 60-05A	1
Spring terminal				
Output voltage/current	DC 5 V/ 10 A	728764	DRA 60-05	1
Input				
	DRA 60-05A	DRA 60-05		
Nominal voltage	AC 100–240 V			
Operation voltage range	AC 85–264 V / DC 90–375 V			
Line 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			
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		Spring terminal 0.2–2.0 mm ²	
Approvals	UL: UL 508 listed; cUL: UL 60950-1; TÜV: EN 60950-1, CE: EN 61000-6-3 / EN 55022 Class B; EN 61000-3-2, EN 61000-3-4; 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

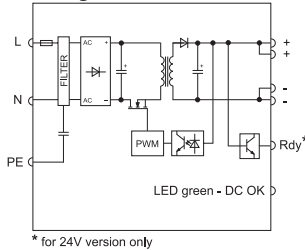
Primary switchmode power supply, Single-phase, Class 2
Input: wide-range input AC 85–264 V, DC 90–375 V
Output: 12 V / 24 V / 48 V, adjustable



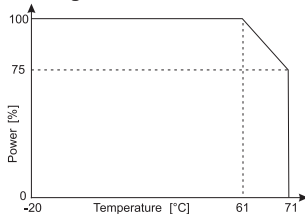
Dimensions



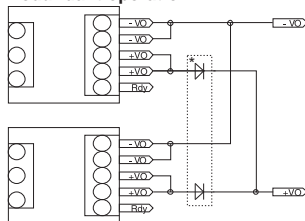
PIN assignment



Derating



Redundant operation



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

Description	Part-No.	Type	PU	
Spring terminal				
Output voltage/current	DC 12 V / 5 A	728769	DRA 60-12	1
	DC 24 V / 2.5 A	728754	DRA 60-24	1
	DC 48 V / 1,25 A	728776	DRA 60-48	1

	DRA 60-12	DRA 60-24	DRA 60-48
Input			
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			
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 %	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		
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 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, 60 W

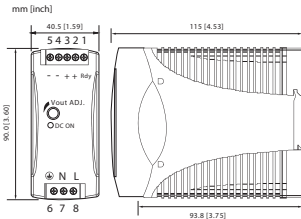
Primary switchmode power supply, Single-phase, Class 2

Input: wide-range input AC 85–264 V, DC 90–375 V

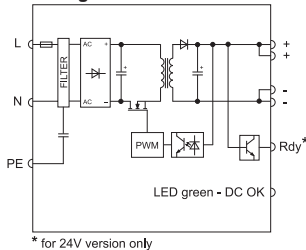
Output: 12 V / 24 V / 48 V, adjustable



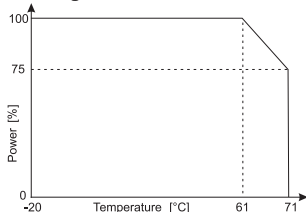
Dimensions



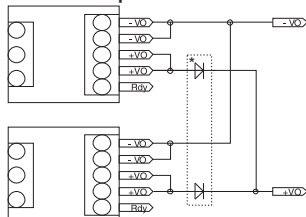
PIN assignment



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	DRA 60-12A	1
	DC 24 V / 2.5 A	722754	DRA 60-24A	1
	DC 48 V / 1,25 A	722776	DRA 60-48A	1

Input	DRA 60-12A	DRA 60-24A	DRA 60-48A
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	DRA 60-12A	DRA 60-24A	DRA 60-48A
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

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		
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

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

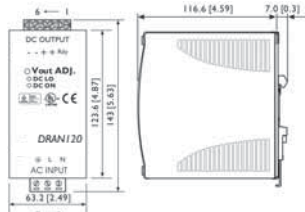
Power supply - regulated, 93 W, Class 2 compliant

Primary switched power supplies, PFC, one-phase, screw terminal
 Input: wide-range input AC 90–132 V, AC 186–264 V, DC 210–370 V
 Output: 24 V, adjustable

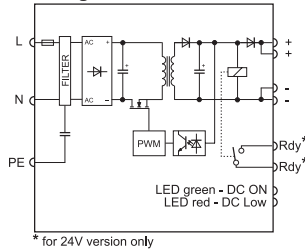
NEC Class 2



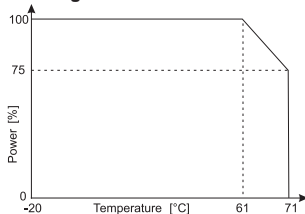
Dimensions



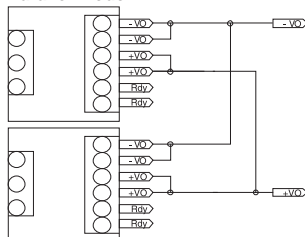
PIN assignment



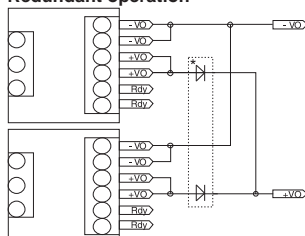
Derating



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, 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

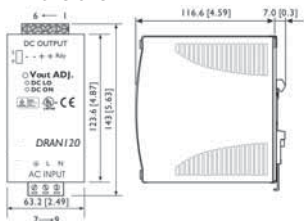
Primary switchmode power supply, PFC, Single-phase

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

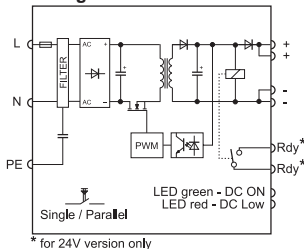
Output: 12 V / 24 V / 48 V, adjustable



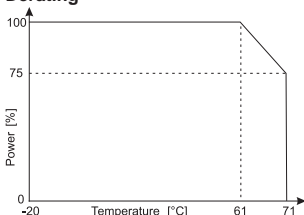
Dimensions



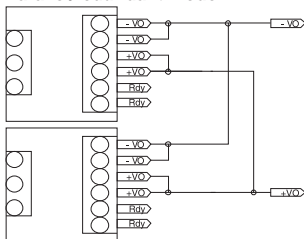
PIN assignment



Derating



Parallel/redundant mode



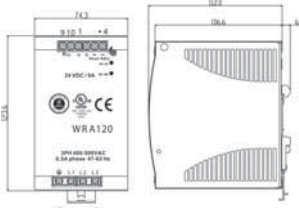
Description	Part-No.	Type	PU	
Screw terminal, pluggable				
Output voltage/current	DC 12 V/ 10 A	722770	DRAN 120-12B	1
	DC 24 V/ 5 A	722758	DRAN 120-24B	1
	DC 48 V/ 2.5 A	722777	DRAN 120-48B	1
Screw terminal				
Output voltage/current	DC 24 V/ 5 A	728758	DRAN 120-24A	1
Input				
	DRAN 120-12B	DRAN 120-24B	DRAN 120-48B	DRAN 120-24A
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			
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

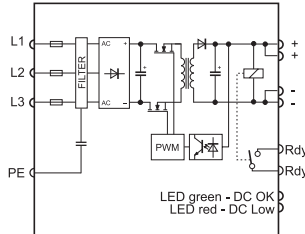
Primary switchmode power supply, PFC, 3-phase
Input: wide-range input AC 340–576 V, DC 480–820 V
Output: 24 V, adjustable



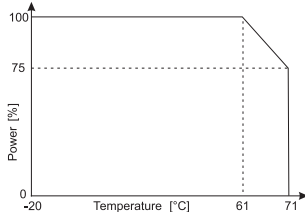
Dimensions



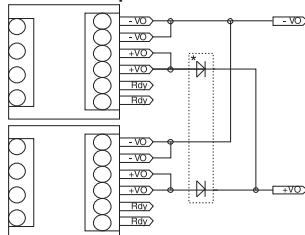
PIN assignment



Derating



Redundant operation



* Redundant Module 722987

Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 24 V/ 5 A	722803	WRA 120-24	1
Input				
WRA 120-24				
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			
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

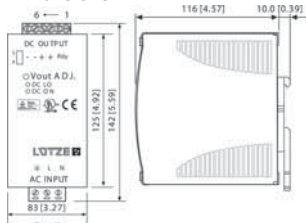
Primary switchmode power supply, PFC, Single-phase

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

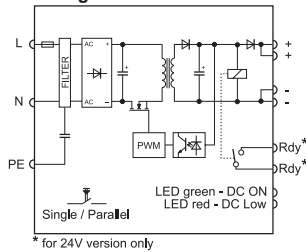
Output: 24 V / 48 V, adjustable



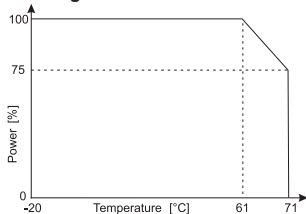
Dimensions



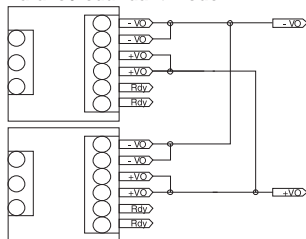
PIN assignment



Derating



Parallel/redundant mode



Description	Part-No.	Type	PU	
Screw terminal, pluggable				
Output voltage/current	DC 24 V / 10 A	722759	DRA 240-24B	1
	DC 48 V / 5 A	722778	DRA 240-48B	1
Screw terminal				
Output voltage/current	DC 24 V / 10 A	722781	DRA 240-24A	1

Input	DRA 240-24B	DRA 240-48B	DRA 240-24A
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	DRA 240-24B	DRA 240-48B	DRA 240-24A
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	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	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		

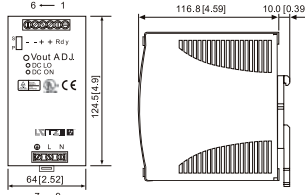
Monitoring			
DC ON Control (Rdy)	Normally open	–	Normally open
Switching voltage	DC 60 V	–	DC 60 V
Switching current	max. 300 mA	–	max. 300 mA
Switching capacity	–	–	–
Insulation voltage	DC 500 V	–	DC 500 V

Power supply - regulated, 240 W

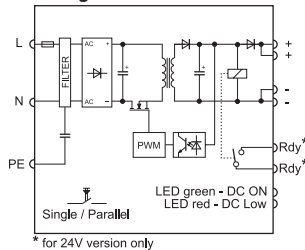
Primary switchmode power supply, PFC, Single-phase
Input: wide-range input AC 88–264 V, DC 120–375 V
Output: DC 24 V adjustable



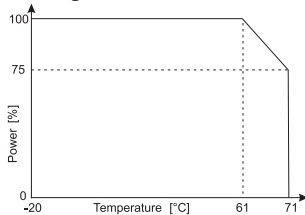
Dimensions



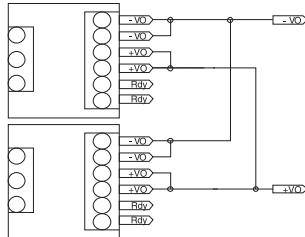
PIN assignment



Derating



Parallel/redundant mode



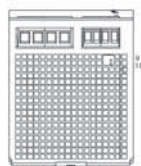
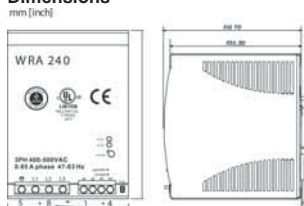
Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 24 V; 10 A	722781.1000	DRE240-24A	1
Input				
DRE240-24A				
Nominal voltage	AC 115 / 230 V (auto select)			
Operation voltage range	AC 88 V - 264 V / DC 120 V - 375 V			
Line frequency	47 – 63 Hz			
Rated current	U _I = AC 115 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

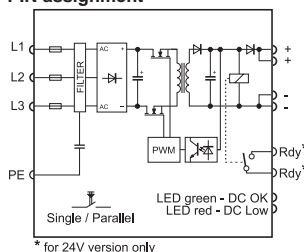
Primary switchmode power supply, PFC, 3-phase
 Input: wide-range input AC 340–576 V, DC 480–820 V
 Output: 24 / 48 V, adjustable



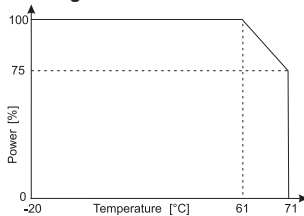
Dimensions



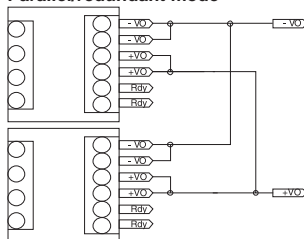
PIN assignment



Derating



Parallel/redundant mode



Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 24 V/ 10 A	722804	WRA 240-24	1
	DC 48 V/ 5 A	722808	WRA 240-48	1

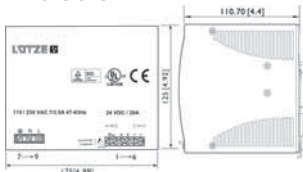
Input	WRA 240-24	WRA 240-48
Nominal voltage	3× AC 340–500 V	
Operation voltage range	3× AC 340–576 V; 3× DC 480–820 V	
Line frequency	47 – 63 Hz	
Rated current	U _I = AC 380 V: 0.85 A / U _I = AC 500 V: 0.7 A	
Inrush current	20 A	
Internal fuse	3×T2, 0 A / AC 600 V	
External fuse	Automatic: 3 × B 6 A	
Power Factor Correction P.F.C.	0.6	
Output		
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	
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

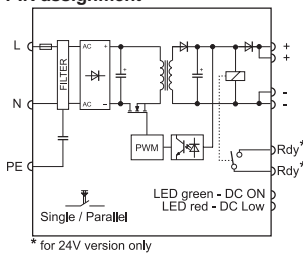
Primary switchmode power supply, PFC, Single-phase
Input: wide-range input AC 90–264 V, DC 120–370 V
Output: 24 V / 48 V, adjustable



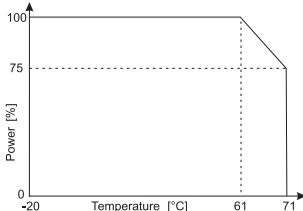
Dimensions



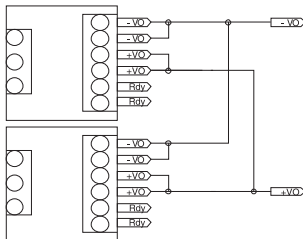
PIN assignment



Derating



Parallel/redundant mode



Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 24 V / 20 A	722782	DRA 480-24A	1
	DC 48 V / 10 A	722779	DRA 480-48A	1

Input	DRA 480-24A	DRA 480-48A
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	DC 24 V	DC 48 V
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 %	119–131 %
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	
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	

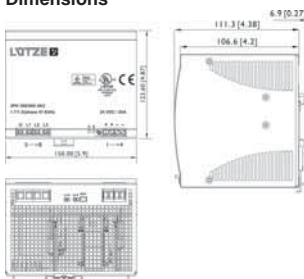
Monitoring		
DC ON Control (Rdy)	Normally open	–
Switching voltage	DC 60 V	–
Switching current	max. 300 mA	–
Switching capacity	–	–
Insulation voltage	DC 500 V	–

Power supply - regulated, 480 W, 3-phase

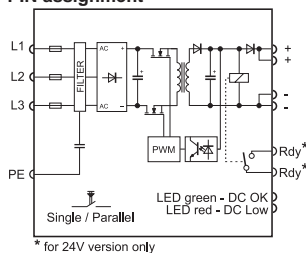
Primary switchmode power supply, PFC, 3-phase
Input: wide-range input AC 340–576 V, DC 480–820 V
Output: 24 V / 48 V, adjustable



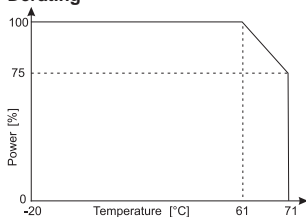
Dimensions



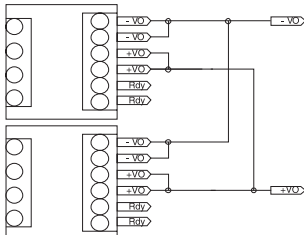
PIN assignment



Derating



Parallel/redundant mode



Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 24 V/ 20 A	722805	WRA 480-24	1
	DC 48 V/ 10 A	722809	WRA 480-48	1

Input	WRA 480-24	WRA 480-48
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	WRA 480-24	WRA 480-48
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 %, Paralle ±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); switching with switch C/D Hiccup-Mode: deactivation within 3s and restart after 30s	

General	WRA 480-24	WRA 480-48
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	
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	

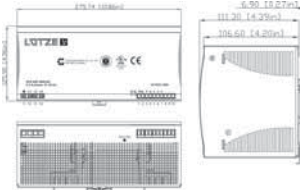
Monitoring	WRA 480-24	WRA 480-48
DC ON Control (Rdy)	Normally open	–
Switching voltage	DC 60 V	–
Switching current	max. 300 mA	–
Switching capacity	–	–
Insulation voltage	DC 500 V	–

Power supply - regulated, 960 W, 3-phase

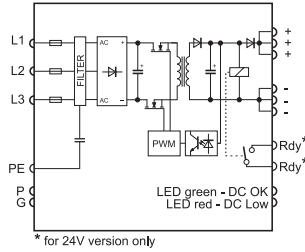
Primary switchmode power supply, PFC, 3-phase
Input: wide-range input AC 340–576 V, DC 480–820 V
Output: 24 V / 48 V, adjustable



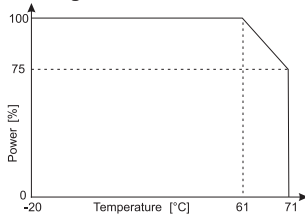
Dimensions



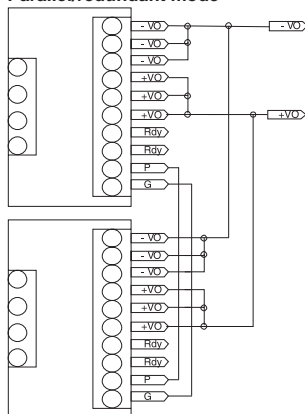
PIN assignment



Derating



Parallel/redundant mode



Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 24 V/ 40 A	722806	WRA 960-24	1
	DC 48 V/ 20 A	722810	WRA 960-48	1

Input	WRA 960-24	WRA 960-48
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	DC 24 V	DC 48 V
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	
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	

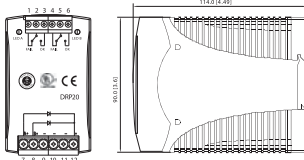
Approvals	UL: UL 508 listed, cUL: UL 60950-1 accepted, TÜV: EN 60950-1; CE: EN 61000-6-3 / EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2, EN 55024 Class I, Division 2, Groups A, B, C and D	
Monitoring		
DC ON Control (Rdy)	Normally open	–
Switching voltage	DC 60 V	–
Switching current	max.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

Power supply - Redundant module

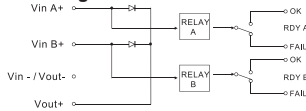
Redundant module 20 A with 2 inputs Potential-free signalling contact and Status LED per input Over- and undervoltage control



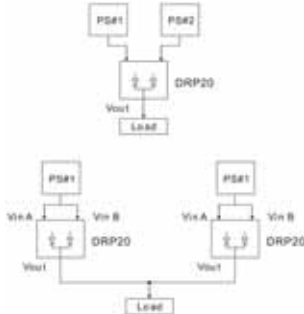
Dimensions



PIN assignment



Use



Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 24 V/ 20 A	722987	DRP 20-24	1
Input				
		DRP 20-24		
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

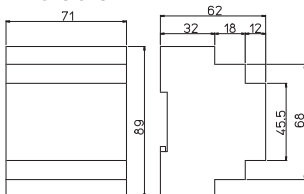
- One-, two- and three-phase
- 30 W to 2400 W
- Overload current 150 %, 5 sec
- Extremely compact
- Parallel operation
- Overload and short circuit protection
- Redundant operation
- Up to 95% efficiency
- Protection class 1
- UL Listed
- SEMI F47

Power supply - regulated, 40 W

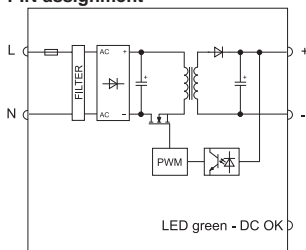
Primary switchmode power supply, PFC, Single-phase, Class 2
Input: wide-range input AC 90–264 V, DC 120–370 V
Output: DC 24 V



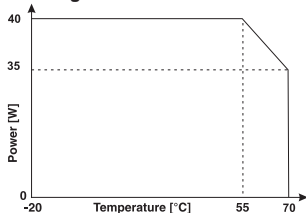
Dimensions



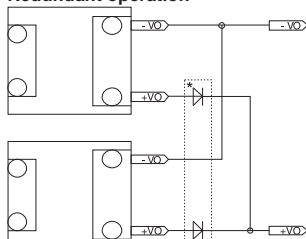
PIN assignment



Derating



Redundant operation



* Redundant Module 722987

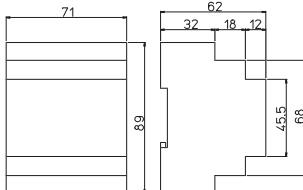
Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 24 V/ 1.2 A	722787	CPSF1-30-24	1
Input				
CPSF1-30-24				
Nominal voltage	AC 115 / 230 V			
Operation voltage range	AC 90–264 V / DC 120–370 V (DC 300 V, UL508)			
Line frequency	47 – 63 Hz			
Rated current	U _I = AC 100 V: 0.90 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			
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 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, 80 W

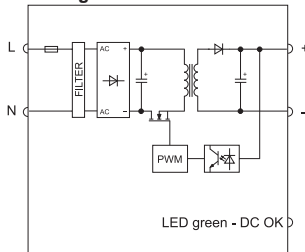
Primary switchmode power supply, PFC, Single-phase, Class 2
Input: wide-range input AC 90–264 V, DC 100–345 V
Output: DC 24 V, adjustable



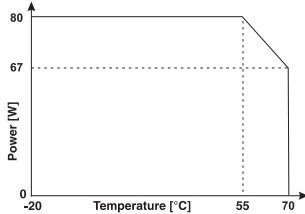
Dimensions



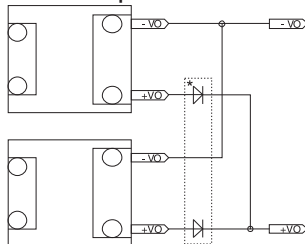
PIN assignment



Derating



Redundant operation

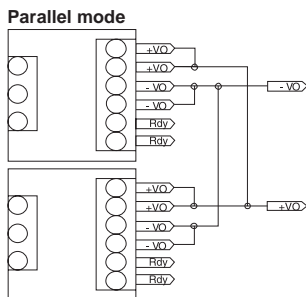
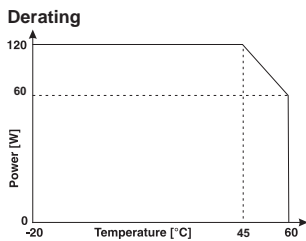
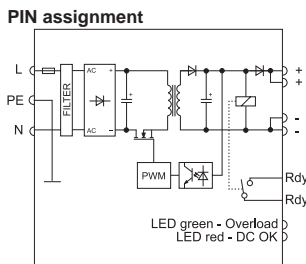
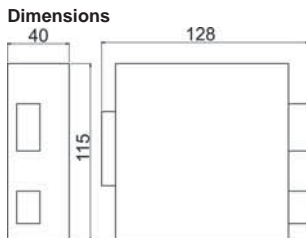


* Redundant Module 722987

Description	Part-No.	Type	PU	
Screw terminal				
Output voltage/current	DC 24 V / 3 A	722789	CPSF1-70-24	1
Input				
CPSF1-70-24				
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			
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

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



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	DC 24 V	DC 48 V
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	Aluminium
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

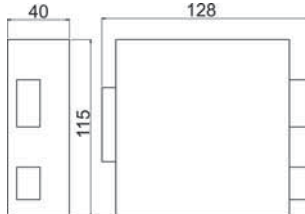
Monitoring	
DC ON Control (Rdy)	Normally open
Switching voltage	AC 300 V / DC 150 V
Switching current	AC/DC 1 A
Switching capacity	300 VA / 30 W
Insulation voltage	AC 500 V

Power supply - regulated, 120 W

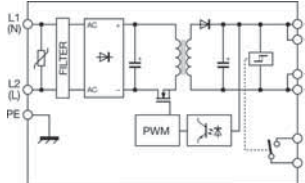
Primary switched power supplies, PFC, 1/2-phase
Input: wide-range input AC 187–550 V, DC 270–725 V
Output: 24 V, adjustable



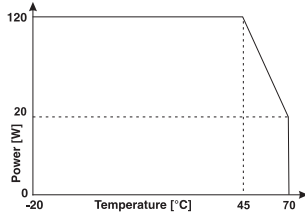
Dimensions



PIN assignment

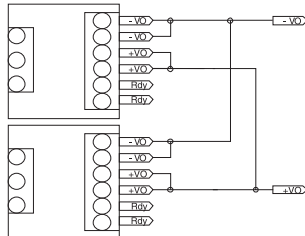


Derating

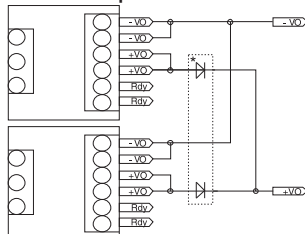


Output characteristics

Parallel mode



Redundant operation



* Redundant Module 722987

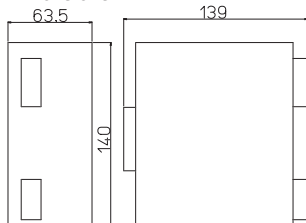
Description	Part-No.	Type	PU	
Screw terminal, pluggable				
Output voltage/current	DC 24 V / 5 A	722995	CPSB2-120-24	1
Input				
CPSB2-120-24				
Nominal voltage	AC 200–500 V			
Operation voltage range	AC 187–550 V / DC 270–725 V			
Line frequency	47 – 63 Hz			
Rated current	U _I = AC 200 V: 1.4 A / 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/with 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	Aluminium			
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

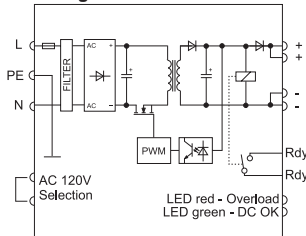
Primary switchmode power supply, PFC, Single-phase
 Input: AC 90–132 V, AC 187–264 V, DC 270–345 V
 Output: 24 V, adjustable



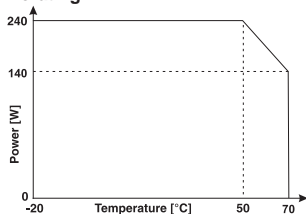
Dimensions



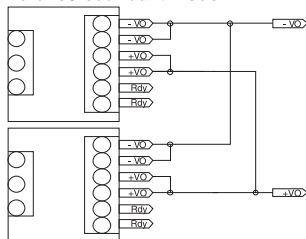
PIN assignment



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	Aluminium
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

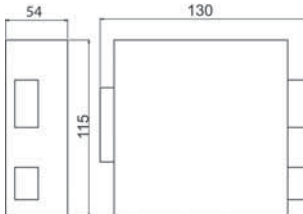
Primary switched power supplies, PFC, 1/2/3-phase

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

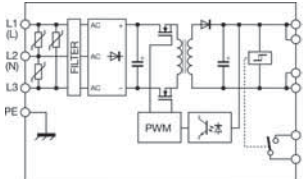
Output: 24 V, adjustable



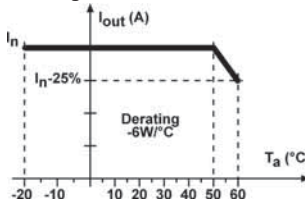
Dimensions



PIN assignment

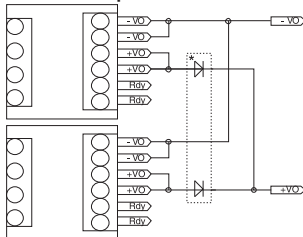


Derating



Output characteristics

Redundant operation



* Redundant Module 722987

Description	Part-No.	Type	PU	
Screw terminal, pluggable				
Output voltage/current	DC 24 V/ 10 A	722996	CPSB2-123-240-24	1
Input				
CPSB2-123-240-24				
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-/2-phase @ AC 220 V: 2.2 A, 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	Aluminium			
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)	0.650			
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

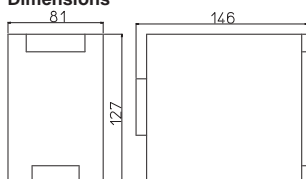
Primary switchmode power supply, PFC, Single-phase

Input: AC 90–132 V, AC 187–264 V

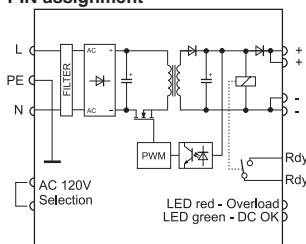
Output: 24 V, adjustable



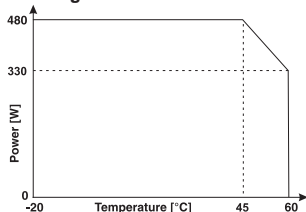
Dimensions



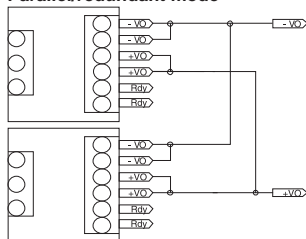
PIN assignment



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	$U_i = AC 120 V: 7.2 A / U_i = AC 230 V: 4.3 A$	
Inrush current	<35 A	
Internal fuse	–	
External fuse	Automatic: C 16 A (required)	
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	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	≥21.6 V	≥43.2 V
Status indication DC LOW LED red	≤21.6 V	≤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	Aluminium
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, 3-phase

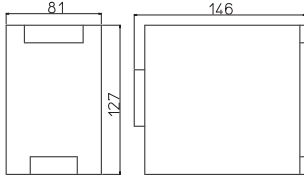
Primary switchmode power supply, PFC, 3-phase

Input: Wide range input AC 340 - 550 V

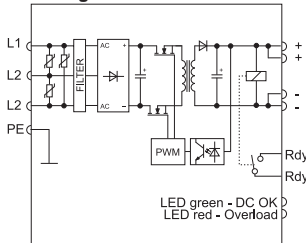
Output: 24 V, adjustable



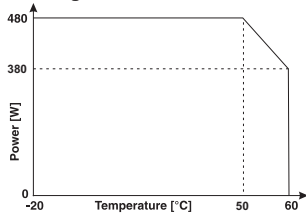
Dimensions



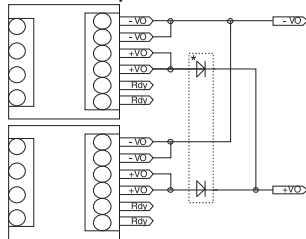
PIN assignment



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 Geräte / über externe Dioden	max. 4 Geräte / über externe Dioden
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	Luftselbstkühlung, 20 mm Abstand rechts/links, 50 mm Abstand oben/unten
Housing material	Aluminium
Field installation	aufrastbar auf TS 35 (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 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, 720 W, 3-phase

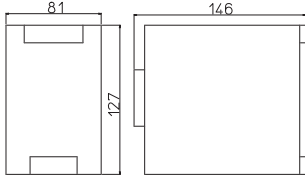
Primary switchmode power supply, PFC, 3-phase

Input: Wide range input AC 340 - 550 V

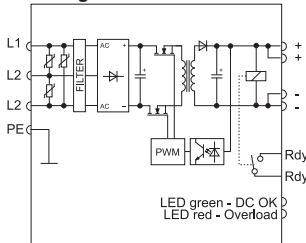
Output: 24 V, adjustable



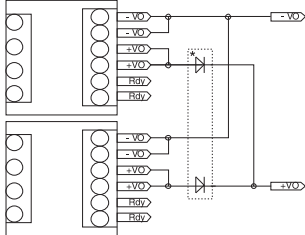
Dimensions



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	Aluminium	
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

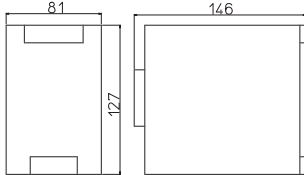
Primary switchmode power supply, PFC, 3-phase

Input: Wide range input AC 340 - 550 V

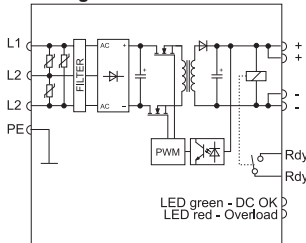
Output: 24 V / 48 V / 72 V



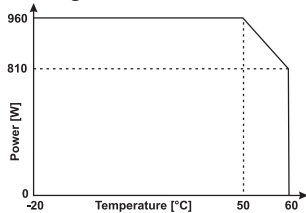
Dimensions



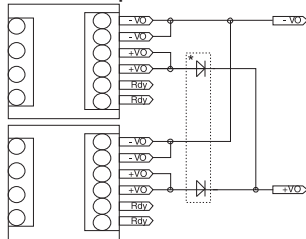
PIN assignment



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				
	CPSB3-960-24	CPSB3-960-48	CPSB3-960-72	
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: 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	Aluminium			
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 - regulated, 240 W, 3-phase

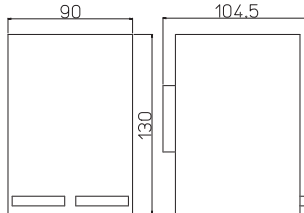
Primary switchmode power supply, PFC, 3-phase

Input: Wide range input AC 400 - 500 V

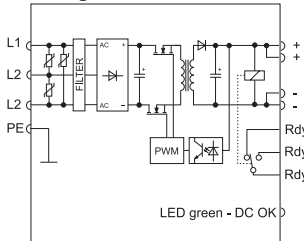
Output: 24 V - adjustable



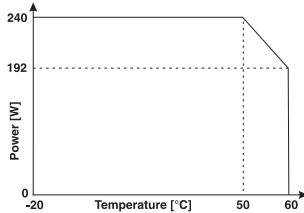
Dimensions



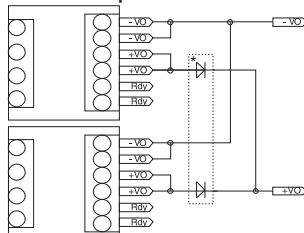
PIN assignment



Derating



Redundant operation



* Redundant Module 722987

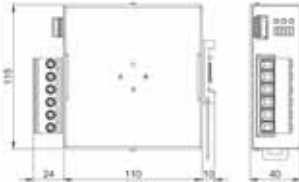
Description	Part-No.	Type	PU
Screw terminal			
Output voltage/current	DC 24 V; 10 A	722799	CPSB3-240-24
Input			
CPSB3-240-24			
Nominal voltage	3× AC 400–500 V		
Operation voltage range	3× AC 340–550 V; 3× DC 507–770 V		
Line frequency	47 – 63 Hz		
Rated current	U _I = AC 400 V: 1.3 A / U _I = AC 500 V: 1.1 A		
Inrush current	<AC 30 A		
Internal fuse	–		
External fuse	Automatic: 3 × B 10 A, C 6 A		
Power Factor Correction P.F.C.	>0.6		
Output			
Rated voltage output	DC 24 V		
Rated current output	10 A @ 45 °C (UL508)		
Max. output current	14 A, @ 24 V		
Short-circuit current	20 A		
Voltage trim range	24/28 V		
Accuracy	–		
Line regulation	–		
Load regulation	<1 %		
Rise time	–		
Temperature coefficient	–		
Ripple & Noise	50 mV pp		
Hold up time	>11 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	max. 2 devices / via external diodes		
Efficiency	>90 % (AC 400 V)		
Low power loss	27 W (AC 380 V)		
Rated over load protection	yes		
Over voltage protection	yes		
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 (derating)		
Derating	>50°C: -4.8 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	90.0 × 130.0 × 104.5		
Cooling	Natural air cooling, 10 mm distance right/left, 50 mm distance above/below		
Housing material	Aluminium		
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)	0.700		
Termination	Screw terminal: 0.2–4.0 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)	Changeover contact		
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

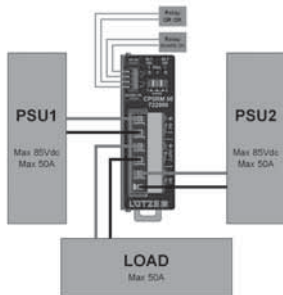
Redundant module 12 to 85 V, 50 A
Potential-free signalling contact
Status LED per input



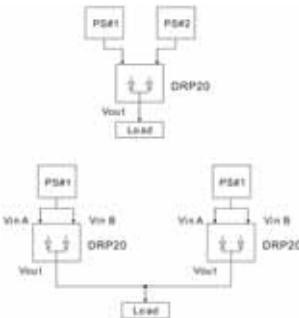
Dimensions



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	Aluminium		
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

Primary 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	Automat: 3 × C 10 A (mandatory)	
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	DC 24 V	DC 48 V
Rated voltage output	DC 24 V	DC 48 V
Rated current output	100 A	50 A
Max. output current	>150 A, 5 s, mit $U_{out} > 90\%$	>75 A, 5 s, mit $U_{out} > 90\%$
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
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/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 Overtemperature 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)

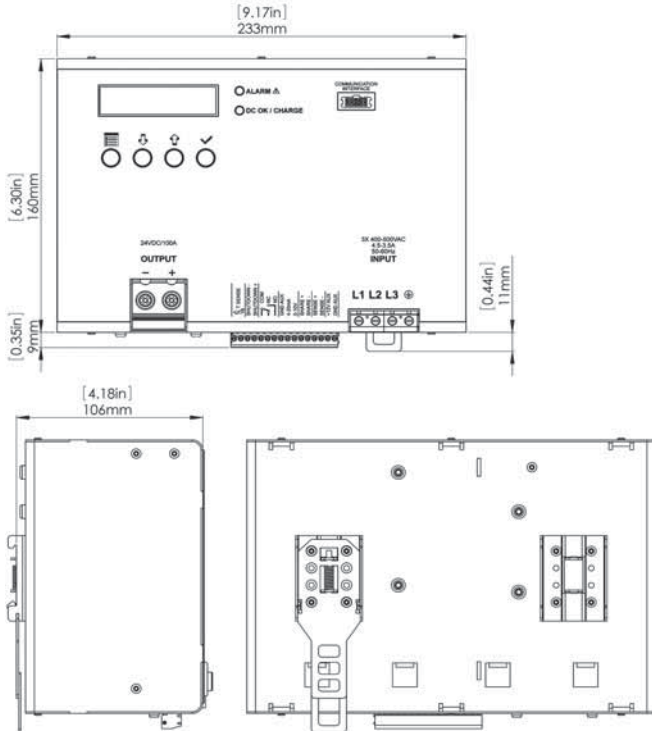
Power supply - regulated, 2400 W

Primary switchmode power supply, PFC, 3-phase

Input: Wide range input AC 340 - 550 V

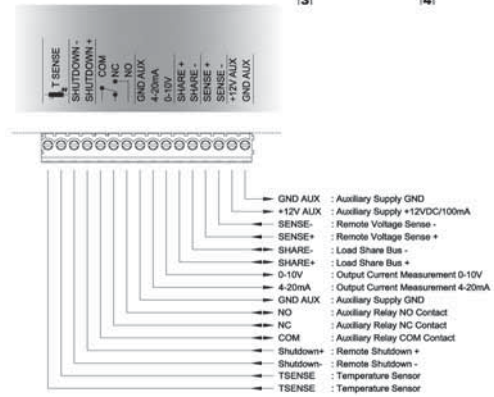
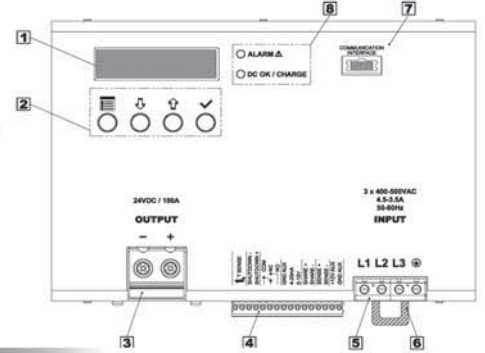
Output: DC 24 V, 100 A / DC 48 V, 50 A

Dimensions

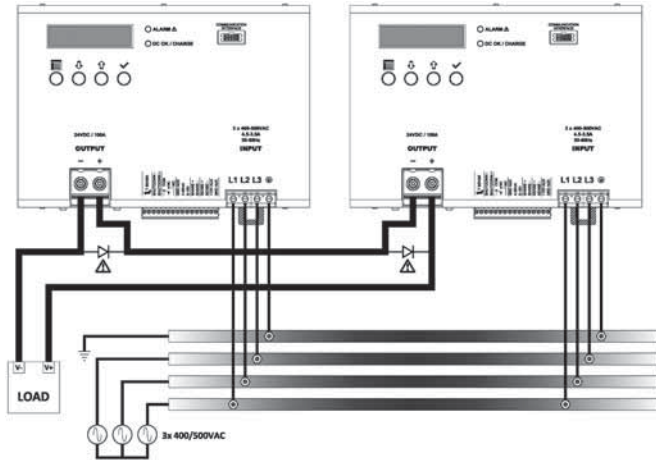


PIN assignment

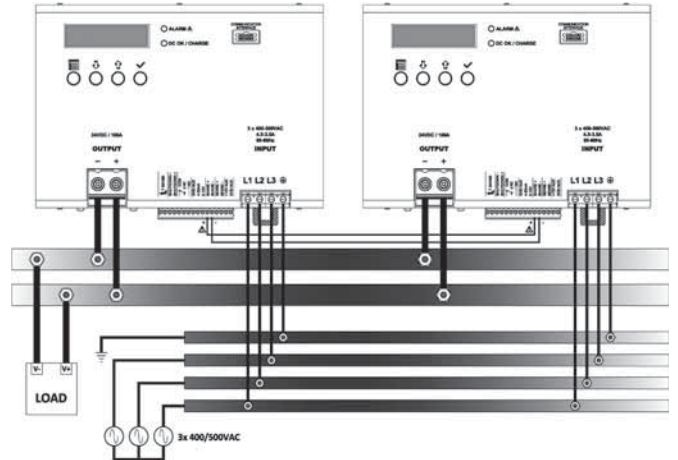
- 1 Display
- 2 Control Keys
- 3 Output Connector
- 4 Auxiliary Connector
- 5 Input Connector
- 6 DIN Rail Fixing Clamp
- 7 Communication Interface
- 8 Status LEDs
- 9 Buzzer (Internal)



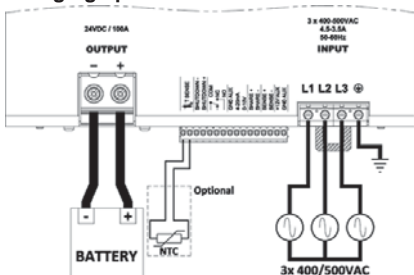
Serial operation



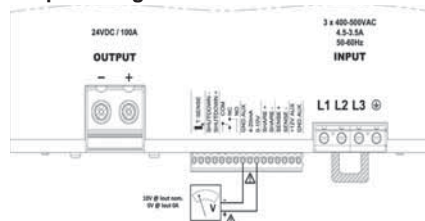
Parallel/redundant mode



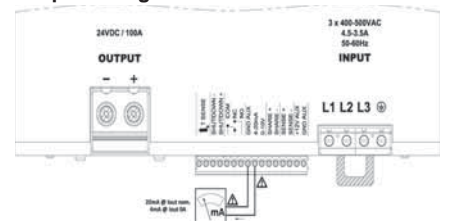
Charging operation



Output voltage in 0-10 V



Output voltage in 4-20 mA



Modular, flexible and safe: LOC

The intelligent LÜTZE Overload

Adjustable rated current
(1 A...10 A in 1 A Steps)

Adjustable characteristic
(fast- ... slow acting)

“Power-ON”-effect
to switch on capacitive loads

Single or centralized fault indication

Last status memorization

Spring terminals

Small device – width 8,1mm

**Response time independent
of temperature**

**Contact slots for each potential usable
for jumper combs**

**Solid state relay with current control
switching frequency up to 1 kHz**

**Contact slots for each potential usable for
jumper combs**



C-Box / LOCC-Box-Net

Current Control System

*Sky***BLUE**

Remote ON / OFF

Manual ON / OFF

Status indication “operation”, “fault”,
“90 % load” and “100 % load”

Adjustment cover accommodates
lock out tags

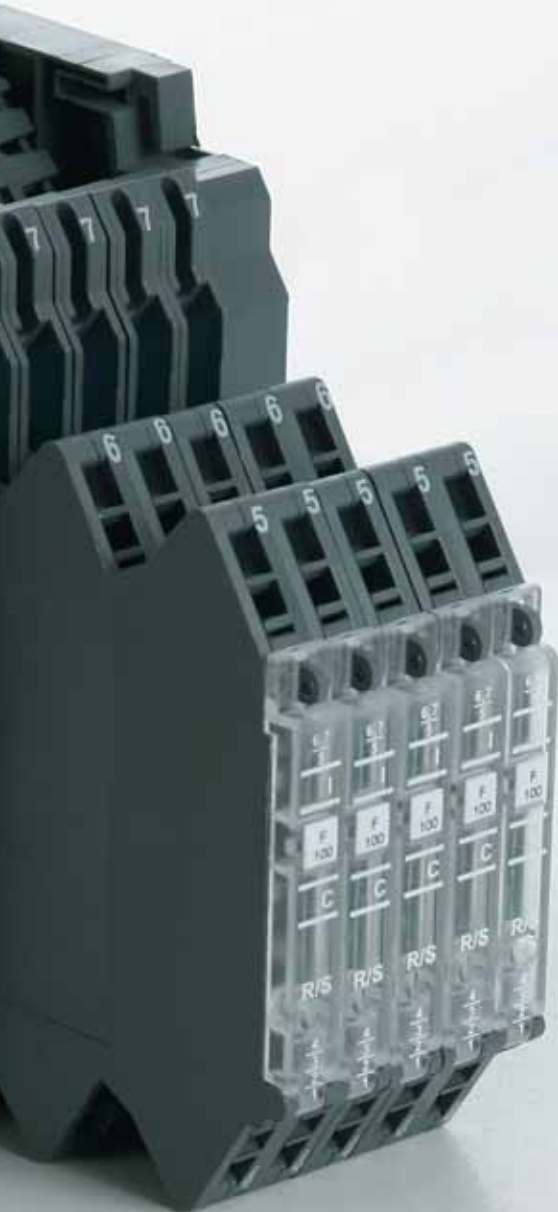
Flammability class
UL-94-V0; NFF I2,F2

Power distribution via direct
supply or supply set

Optional remote Gateway interface

UL 508 Listed

The picture shows 5 x LOCC-Box incl. supply set



Intelligent current monitoring management system: LCOS-C

Flammability class

UL 94-V0

Bus coupler for all conventional systems

Adjustable characteristics

Adjustable rated current

Manual On /Off

2-channel design

2-pole disconnection

"Power ON" effect

Saving of the last status

Temperature-independent response time

Supply - also with galvanic insulation

Clear labelling



and energy C



SkyBLUE

Intermediate in-feed option

Status output operation
failure, manual switch-off, 90 % capacity

Remote On/Off

**Modular expandable
data bus**

**Modular expandable
power bus**

**Integrated protection
against alignment**

**UL508,
GL approvals**

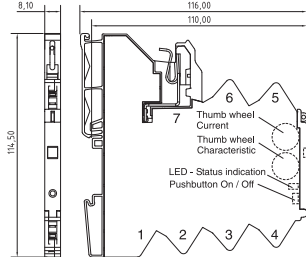
**Plug-in functional
assemblies**

Load monitoring - Microcompact LOCC-Box

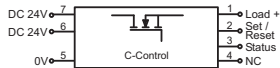
Electronic load monitoring up to DC 10 A
 Single-channel design, Adjustable current range: DC 1 A – 10 A
 Adjustable characteristics, fast, medium-speed, slow 1, -2, -3



Dimensions

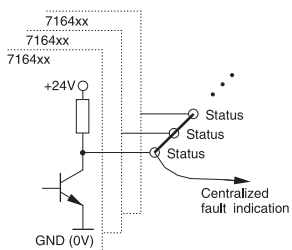
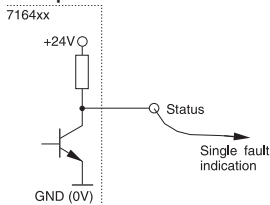


PIN assignment



- 1: + Output
- 2: Control input (Set/Reset)
- 3: Status output
- 4: NC
- 5: 0V
- 6: + Supply (alternative)
- 7: + Supply

Signal output



Description	Part-No.	Type	PU	
Spring terminal				
Nominal voltage	DC 12 / 24 V	716400	LOCC-Box-FB 7-6400	1
	DC 12 / 24 V	716401	LOCC-Box-FB 7-6401	1
	DC 12 / 24 V	716401.0050	LOCC-Box-FB 7-6401	50

Input	LOCC-Box-FB 7-6400	LOCC-Box-FB 7-6401
Nominal voltage		DC 12 / 24 V
Operation voltage range		DC 10 V – 32 V
Rated current		DC 10 A
Supply current		DC 40 A over Cu-rails 10 × 3 mm
Reverse voltage protection		internal electronics
Termination		screwless disconnect slide
Control input (Set / Reset)		
Signal level		DC 12 / 24 V (EN 61131)
OFF		Pulse with falling edge >100 ms, <800 ms
ON		Pulse with falling edge > 1 s
Output		
Switching element		MosFet
Output current		max. DC 10 A
Voltage drop		<170 mV (10 A)
Status Indication		LED green: Operating voltage present, no error LED red: Error in load circuit
Switch-on capacity		10000 µF
Current range		1 A – 10 A (adjustable via switch in 1 A steps)
Characteristic		fast-acting (1), medium-slow (2), slow 1 (3), slow 2 (4), slow 3 (5)

Signal output	DC 12/24 V: operating voltage on standby, no error, DC 0 V: error, output switched off	DC 12/24 V: operating voltage present, no error, DC 0 V: error, output switched off and manual "OFF"
Signal level		

Switching element	Transistor, collector with pull-up resistance
General	
Housing material	PA 6.6 (UL 94-V0; NFF I2, F2)
Field installation	rail TS 35 (EN 50022)
Protection class	IP 20
Installation position	Optional
Termination	Spring terminal 0.25–2.5 mm ²
Operation temperature range	-25 °C – 50 °C
Storage temperature range	-40 – 85 °C
Dimensions (w × h × d) in mm	8.1 × 114.5 × 116.0
Weight (kg/piece)	0.120
Approvals	cULus
Standards	EN 60950-1; EN 61131-1,2; EN 61000; EN 60947-4-1; EN 55022

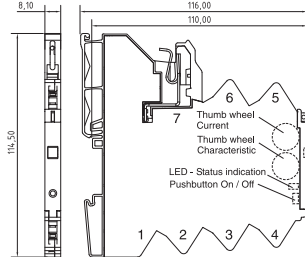
Accessories	Color	Article number	Type	PU
0 V collective terminal		716420	LOCC Box-SK 7-6420	2
Supply terminal with cutout for copper rail to increase current		716421	LOCC Box-EKL 7-6421	2
Distance terminal without contact		716422	LOCC Box-DKL 7-6422	2
LOCC Box empty housing without terminal		716424	LOCC Box-DY 7-6424	2
Supply kit (supply and end terminals)		716425	LOCC Box ES 7-6425	1
Jumper comb, 8-pin, 6 A	white	716428	LOCC Box BKW 7-6428	5
Jumper comb, 8-pin, 6 A	red	716429	LOCC Box BKR 7-6429	5
Jumper comb, 8-pin, 6 A	blue	716430	LOCC Box BKB 7-6430	5
Jumper comb, 16-pin, 6 A	white	716438	LOCC Box BKW 7-6438	5
Jumper comb, 16-pin, 6 A	red	716439	LOCC Box BKB 7-6440	5
Jumper comb, 16-pin, 6 A	blue	716440	LOCC Box BKR 7-6439	5
Tag holder (quantity 200)	white (5×5 mm)	716431	LOCC Box BZW 7-6431	1
Tag holder (quantity 200)	red (5×5 mm)	716432	LOCC Box BZR 7-6432	1
Tag holder (quantity 200)	blue (5×5 mm)	716433	LOCC Box BZB 7-6433	1
Tag holder (quantity 200)	yellow (5×5 mm)	716434	LOCC Box BZG 7-6434	1
Tag holder (quantity 120)	white (12×6 mm)	716441	LOCC Box BZW 7-6441	1
Tag holder	white (39.3×5 mm)	716443	LOCC Box BZW 7-6443	20
Cover for tag holder 716443	transparent	716444	LOCC Box-BAD 7-6444	20
A4 label sheets (quantity 240)	white	716445	LOCC Box-LEB 7-6445	10
Tag holder (quantity 50), printing 1–50	white	716446	LOCC Box BZW 7-6446	1
Copper rail, 1 m		716426	LOCC Box CU 7-6426	1
CU rail cover, 1 m		716427	LOCC Box AD 7-6427	1

Load monitoring - Microcompact LOCC-Box-Net

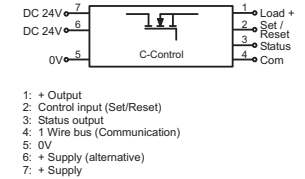
Electronic load monitoring up to DC 10 A, with communication
 Single-channel design, programmable, Adjustable current range: DC 1 A – 10 A
 Adjustable characteristics, fast, medium-speed, slow 1, -2, -3



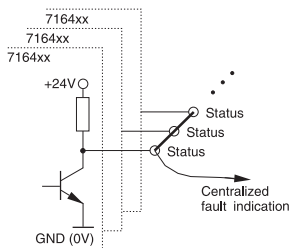
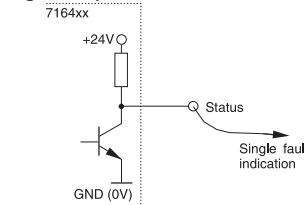
Dimensions



PIN assignment



Signal output



Description	Part-No.	Type	PU	
Spring terminal				
Nominal voltage	DC 12 / 24 V	716410	LOCC-Box-Net 7-6410	1
	DC 12 / 24 V	716410.0050	LOCC-Box-Net 7-6410	50

Input			
LOCC-Box-Net 7-6410			
Nominal voltage	DC 12 / 24 V		
Operation voltage range	DC 10 V – 32 V		
Rated current	DC 10 A		
Supply current	DC 40 A over Cu rail 10 × 3 mm		
Reverse voltage protection	internal electronics		
Termination	screwless disconnect slide		

Control input (Set / Reset)			
Signal level	DC 12 / 24 V (EN 61131)		
OFF	Pulse with falling edge >100 ms, <800 ms		
ON	Pulse with falling edge > 1 s		

Output			
Switching element	MosFet		
Output current	max. DC 10 A		
Voltage drop	<170 mV (10 A)		
Status Indication	LED green: Operating voltage present, no error LED red: Error in load circuit		

Switch-on capacity	10000 µF		
Current range	1 A – 10 A (adjustable via switch in 1 A steps)		
Characteristic	fast-acting (1), medium-slow (2), slow 1 (3), slow 2 (4), slow 3 (5), programmable (10)		

Signal output			
Signal level	DC 12/24 V: Operating voltage present, no error; DC 0 V: error, output switched off, programmable		
Switching element	Transistor, collector with pull-up resistance		

General			
Housing material	PA 6.6 (UL 94-V0; NFF I2, F2)		
Field installation	rail TS 35 (EN 50022)		
Protection class	IP 20		
Installation position	Optional		
Termination	Spring terminal 0.25–2.5 mm ²		
Operation temperature range	-25 °C – 50 °C		
Storage temperature range	-40 – 85 °C		
Dimensions (w × h × d) in mm	8.1 × 114.5 × 116.0		
Weight (kg/piece)	0.120		
Approvals	cULus		
Standards	EN 60950-1; EN 61131-1,2; EN 61000; EN 60947-4-1; EN 55022		

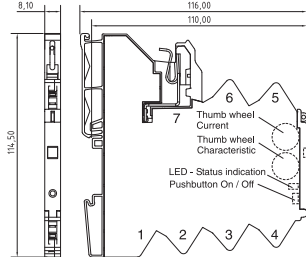
Accessories	Color	Article number	Type	PU
0 V collective terminal		716420	LOCC Box-SK 7-6420	2
Supply terminal with cutout for copper rail to increase current		716421	LOCC Box-EKL 7-6421	2
Distance terminal without contact		716422	LOCC Box-DKL 7-6422	2
LOCC Box empty housing without terminal		716424	LOCC Box-DY 7-6424	2
Supply kit (supply and end terminals)		716425	LOCC Box ES 7-6425	1
Jumper comb, 8-pin, 6 A	white	716428	LOCC Box BKW 7-6428	5
Jumper comb, 8-pin, 6 A	red	716429	LOCC Box BKR 7-6429	5
Jumper comb, 8-pin, 6 A	blue	716430	LOCC Box BKB 7-6430	5
Jumper comb, 16-pin, 6 A	white	716438	LOCC Box BKW 7-6438	5
Jumper comb, 16-pin, 6 A	red	716439	LOCC Box BKB 7-6440	5
Jumper comb, 16-pin, 6 A	blue	716440	LOCC Box BKR 7-6439	5
Tag holder (quantity 200)	white (5×5 mm)	716431	LOCC Box BZW 7-6431	1
Tag holder (quantity 200)	red (5×5 mm)	716432	LOCC Box BZR 7-6432	1
Tag holder (quantity 200)	blue (5×5 mm)	716433	LOCC Box BZB 7-6433	1
Tag holder (quantity 200)	yellow (5×5 mm)	716434	LOCC Box BZG 7-6434	1
Tag holder (quantity 120)	white (12×6 mm)	716441	LOCC Box BZW 7-6441	1
Tag holder	white (39.3×5 mm)	716443	LOCC Box BZW 7-6443	20
Cover for tag holder 716443	transparent	716444	LOCC Box-BAD 7-6444	20
A4 label sheets (quantity 240)	white	716445	LOCC Box-LEB 7-6445	10
Tag holder (quantity 50), printing 1–50	white	716446	LOCC Box BZW 7-6446	1
Copper rail, 1 m		716426	LOCC Box CU 7-6426	1
CU rail cover, 1 m		716427	LOCC Box AD 7-6427	1

Load monitoring - Microcompact LOCC-Box

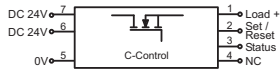
Electronic load monitoring up to DC 5 A
 Single-channel design, Adjustable current range: DC 1 A – 5 A
 Adjustable characteristics, fast, medium-speed, slow 1, -2, -3



Dimensions

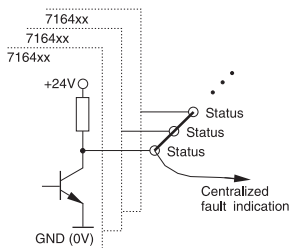
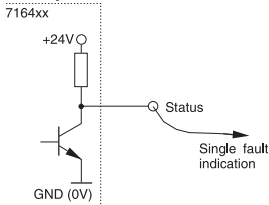


PIN assignment



- 1: + Output
- 2: Control input (Set/Reset)
- 3: Status output
- 4: NC
- 5: 0V
- 6: + Supply (alternative)
- 7: + Supply

Signal output



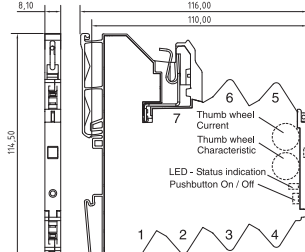
Description	Part-No.	Type	PU
Spring terminal			
Nominal voltage	DC 12 / 24 V	716408	LOCC-Box-SC 7-6408
1			
Input			
LOCC-Box-SC 7-6408			
Nominal voltage	DC 12 / 24 V		
Operation voltage range	DC 10 V – 32 V		
Rated current	DC 5 A		
Supply current	DC 40 A over Cu-rails 10 × 3 mm		
Reverse voltage protection	internal electronics		
Termination	screwless disconnect slide		
Control input (Set / Reset)			
Signal level	DC 12 / 24 V (EN 61131)		
OFF	Pulse with falling edge >100 ms, <800 ms		
ON	Pulse with falling edge > 1 s		
Output			
Switching element	MosFet		
Output current	max. DC 5 A		
Voltage drop	<85 mV (5 A)		
Status Indication	LED green: Operating voltage present, no error LED red: Error in load circuit		
Switch-on capacity	10000 µF		
Current range	1 A – 5 A (adjustable via switch in 1 A steps)		
Characteristic	fast-acting (1), medium-slow (2), slow 1 (3)		
Signal output			
Signal level	DC 12/24 V: operating voltage on standby, no error, DC 0 V: error, output switched off and manual "OFF"		
Switching element	Transistor, collector with pull-up resistance		
General			
Housing material	PA 6.6 (UL 94-V0; NFF I2, F2)		
Field installation	rail TS 35 (EN 50022)		
Protection class	IP 20		
Installation position	Optional		
Termination	Spring terminal 0.25–2.5 mm ²		
Operation temperature range	-25 °C – 50 °C		
Storage temperature range	-40 – 85 °C		
Dimensions (w × h × d) in mm	8.1 × 114.5 × 116.0		
Weight (kg/piece)	0.120		
Approvals	cULus		
Standards	EN 60950-1; EN 61131-1,2; EN 61000; EN 60947-4-1; EN 55022		
Accessories			
	Color	Article number	Type
0 V collective terminal		716420	LOCC Box-SK 7-6420
Supply terminal with cutout for copper rail to increase current		716421	LOCC Box-EKL 7-6421
Distance terminal without contact		716422	LOCC Box-DKL 7-6422
LOCC Box empty housing without terminal		716424	LOCC Box-DY 7-6424
Supply kit (supply and end terminals)		716425	LOCC Box ES 7-6425
Jumper comb, 8-pin, 6 A	white	716428	LOCC Box BKW 7-6428
Jumper comb, 8-pin, 6 A	red	716429	LOCC Box BKR 7-6429
Jumper comb, 8-pin, 6 A	blue	716430	LOCC Box BKB 7-6430
Jumper comb, 16-pin, 6 A	white	716438	LOCC Box BKW 7-6438
Jumper comb, 16-pin, 6 A	red	716439	LOCC Box BKB 7-6440
Jumper comb, 16-pin, 6 A	blue	716440	LOCC Box BKR 7-6439
Tag holder (quantity 200)	white (5×5 mm)	716431	LOCC Box BZW 7-6431
Tag holder (quantity 200)	red (5×5 mm)	716432	LOCC Box BZR 7-6432
Tag holder (quantity 200)	blue (5×5 mm)	716433	LOCC Box BZB 7-6433
Tag holder (quantity 200)	yellow (5×5 mm)	716434	LOCC Box BZG 7-6434
Tag holder (quantity 120)	white (12×6 mm)	716441	LOCC Box BZW 7-6441
Tag holder	white (39.3×5 mm)	716443	LOCC Box BZW 7-6443
Cover for tag holder 716443	transparent	716444	LOCC Box-BAD 7-6444
A4 label sheets (quantity 240)	white	716445	LOCC Box-LEB 7-6445
Tag holder (quantity 50), printing 1–50	white	716446	LOCC Box BZW 7-6446
Copper rail, 1 m		716426	LOCC Box CU 7-6426
Cu rail cover, 1 m		716427	LOCC Box AD 7-6427

Load monitoring - Microcompact LOCC-Box

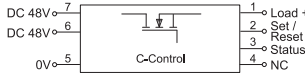
Electronic load monitoring up DC 48 V to DC 6 A
 Single-channel design, Adjustable current range: DC 1 A – 6 A
 Adjustable characteristics, fast, medium-speed, slow 1, -2, -3



Dimensions

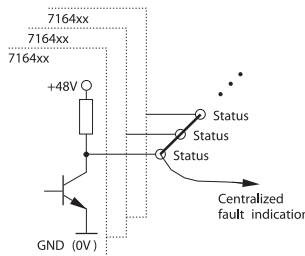
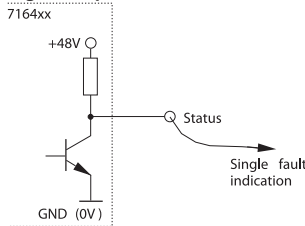


PIN assignment



- 1: Output
- 2: Control input (Set/Reset)
- 3: Status output
- 4: not used
- 5: 0V
- 6: + Supply (alternative)
- 7: Supply

Signal output



Description	Part-No.	Type	PU
Spring terminal			
Nominal voltage	DC 48 V	716406	LOCC-Box-FB48 7-6406
Input			
LOCC-Box-FB48 7-6406			
Nominal voltage	DC 48 V		
Operation voltage range	DC 39 V – 58 V		
Rated current	DC 6 A		
Supply current	DC 40 A over Cu-rails 10 × 3 mm		
Reverse voltage protection	internal electronics		
Termination	screwless disconnect slide		
Control input (Set / Reset)			
Signal level	DC 48 V (EN 61131)		
OFF	Pulse with falling edge >100 ms, <800 ms		
ON	Pulse with falling edge > 1 s		
Output			
Switching element	MosFet		
Output current	max. DC 6 A		
Voltage drop	<85 mV (6 A)		
Status Indication	LED green: Operating voltage present, no error LED red: Error in load circuit		
Switch-on capacity	1000 µF		
Current range	1 A – 6 A (adjustable via switch in 1 A steps)		
Characteristic	fast-acting (1), medium-slow (2), slow 1 (3), slow 2 (4), slow 3 (5)		
Current limitation	13,75 A		
Signal output			
Signal level	DC 48 V: operating voltage on standby, no error, DC 0 V: error, output switched off and manual "OFF"		
Switching element	Transistor, collector with pull-up resistance		
General			
Housing material	PA 6.6 (UL 94-V0; NFF I2, F2)		
Field installation	rail TS 35 (EN 50022)		
Protection class	IP 20		
Installation position	Optional		
Termination	Spring terminal 0.25–2.5 mm ²		
Operation temperature range	-25 °C – 50 °C		
Storage temperature range	-40 – 75 °C		
Dimensions (w × h × d) in mm	8.1 × 114.5 × 116.0		
Weight (kg/piece)	0.120		
Approvals	cULus in preparation		
Standards	EN 60950-1; EN 61131-1,2; EN 61000; EN 60947-4-1; EN 55022		
Accessories			
0 V collective terminal	Color	Article number	Type
Supply terminal with cutout for copper rail to increase current		716420	LOCC Box-SK 7-6420
Distance terminal without contact		716421	LOCC Box-EKL 7-6421
LOCC Box empty housing without terminal		716422	LOCC Box-DKL 7-6422
LOCC Box empty housing without terminal		716424	LOCC Box-DY 7-6424
Supply kit (supply and end terminals)		716425	LOCC Box ES 7-6425
Jumper comb, 8-pin, 6 A	white	716428	LOCC Box BKW 7-6428
Jumper comb, 8-pin, 6 A	red	716429	LOCC Box BKR 7-6429
Jumper comb, 8-pin, 6 A	blue	716430	LOCC Box BKB 7-6430
Jumper comb, 16-pin, 6 A	white	716438	LOCC Box BKW 7-6438
Jumper comb, 16-pin, 6 A	red	716439	LOCC Box BKB 7-6440
Jumper comb, 16-pin, 6 A	blue	716440	LOCC Box BKR 7-6439
Tag holder (quantity 200)	white (5×5 mm)	716431	LOCC Box BZW 7-6431
Tag holder (quantity 200)	red (5×5 mm)	716432	LOCC Box BZR 7-6432
Tag holder (quantity 200)	blue (5×5 mm)	716433	LOCC Box BZB 7-6433
Tag holder (quantity 200)	yellow (5×5 mm)	716434	LOCC Box BZG 7-6434
Tag holder (quantity 120)	white (12×6 mm)	716441	LOCC Box BZW 7-6441
Tag holder	white (39.3×5 mm)	716443	LOCC Box BZW 7-6443
Cover for tag holder 716443	transparent	716444	LOCC Box-BAD 7-6444
A4 label sheets (quantity 240)	white	716445	LOCC Box-LEB 7-6445
Tag holder (quantity 50), printing 1–50	white	716446	LOCC Box BZW 7-6446
Copper rail, 1 m		716426	LOCC Box CU 7-6426
CU rail cover, 1 m		716427	LOCC Box AD 7-6427

Load monitoring - Microcompact LOCC Box

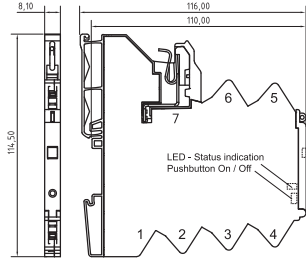
Electronic load monitoring up to DC 10 A

Single channel version, fixed current range: DC 1 A - 10 A (see order code)

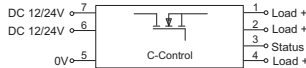
Fixed characteristic: fast-acting, medium-slow, slow 1, -2, -3 (see order code)



Dimensions

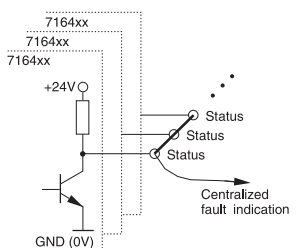
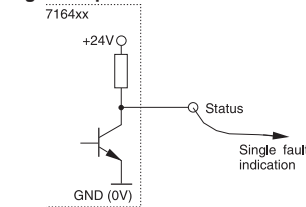


PIN assignment



- 1: + Output
- 2: + Output
- 3: Status output
- 4: + Output
- 5: 0V
- 6: + Supply (alternative)
- 7: + Supply

Signal output



Order code

716407. 2 3 50	
Type	PU
	00 1 pc.
	50 50 pcs.
Current range	Characteristic
1 1A	1 fast
2 2A	2 medium
3 3A	3 slow-1
⋮	4 slow-2
0 10A	5 slow-3

Description	Part-No.	Type	PU
Spring terminal			
Nominal voltage	DC 12 / 24 V	716407.xxxx	LOCC-Box-EC-I-C
			1

Input		LOCC-Box-EC-I-C	
Nominal voltage		DC 12 / 24 V	
Operation voltage range		DC 10 V – 32 V	
Rated current		DC 10 A	
Supply current		DC 40 A over Cu-rails 10 × 3 mm	
Reverse voltage protection		internal electronics	
Termination		screwless disconnect slide	

Control input (Set / Reset)			
Signal level		-	
OFF		-	
ON		-	

Output			
Switching element		MosFet	
Output current		max. DC 10 A	
Voltage drop		<170 mV (10 A)	
Status Indication		LED green: Operating voltage present, no error LED red: Error in load circuit	
Switch-on capacity		10000 µF	
Current range		1 A – 10 A (see order code)	
Characteristic		fast acting (1), medium (2), slow 1 (3), slow 2 (4), slow 3 (5) (see order code)	

Signal output			
Signal level		DC 12/24 V: operating voltage on standby, no error, DC 0 V: error, output switched off and manual "OFF"	

Switching element	Transistor, collector with pull-up resistance		
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General			
Housing material	PA 6.6 (UL 94-V0; NFF I2, F2)		
Field installation	rail TS 35 (EN 50022)		
Protection class	IP 20		
Installation position	Optional		
Termination	Spring terminal 0.25–2.5 mm ²		
Operation temperature range	-25 °C – 50 °C		
Storage temperature range	-40 – 85 °C		
Dimensions (w × h × d) in mm	8.1 × 114.5 × 116.0		
Weight (kg/piece)	0.120		
Approvals	cULus		
Standards	EN 60950-1; EN 61131-1,2; EN 61000; EN 60947-4-1; EN 55022		

Accessories	Color	Article number	Type	PU
0 V collective terminal		716420	LOCC Box-SK 7-6420	2
Supply terminal with cutout for copper rail to increase current		716421	LOCC Box-EKL 7-6421	2
Distance terminal without contact		716422	LOCC Box-DKL 7-6422	2
LOCC Box empty housing without terminal		716424	LOCC Box-DY 7-6424	2
Supply kit (supply and end terminals)		716425	LOCC Box ES 7-6425	1
Jumper comb, 8-pin, 6 A	white	716428	LOCC Box BKW 7-6428	5
Jumper comb, 8-pin, 6 A	red	716429	LOCC Box BKR 7-6429	5
Jumper comb, 8-pin, 6 A	blue	716430	LOCC Box BKB 7-6430	5
Jumper comb, 16-pin, 6 A	white	716438	LOCC Box BKW 7-6438	5
Jumper comb, 16-pin, 6 A	red	716439	LOCC Box BKB 7-6440	5
Jumper comb, 16-pin, 6 A	blue	716440	LOCC Box BKR 7-6439	5
Tag holder (quantity 200)	white (5×5 mm)	716431	LOCC Box BZW 7-6431	1
Tag holder (quantity 200)	red (5×5 mm)	716432	LOCC Box BZR 7-6432	1
Tag holder (quantity 200)	blue (5×5 mm)	716433	LOCC Box BZB 7-6433	1
Tag holder (quantity 200)	yellow (5×5 mm)	716434	LOCC Box BZG 7-6434	1
Tag holder (quantity 120)	white (12×6 mm)	716441	LOCC Box BZW 7-6441	1
Tag holder	white (39.3×5 mm)	716443	LOCC Box BZW 7-6443	20
Cover for tag holder 716443	transparent	716444	LOCC Box-BAD 7-6444	20
A4 label sheets (quantity 240)	white	716445	LOCC Box-LEB 7-6445	10
Tag holder (quantity 50), printing 1–50	white	716446	LOCC Box BZW 7-6446	1
Copper rail, 1 m		716426	LOCC Box CU 7-6426	1
CU rail cover, 1 m		716427	LOCC Box AD 7-6427	1

Load monitoring - Microcompact LOCC Box

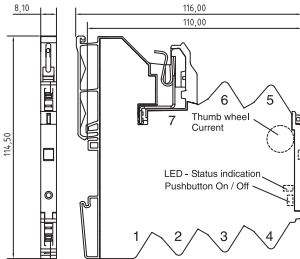
Electronic load monitoring up to DC 10 A

Single-channel design, Adjustable current range: DC 1 A – 10 A

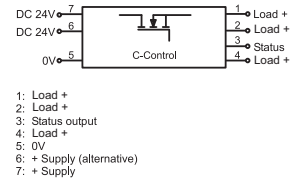
Fixed characteristic: fast-acting, medium-slow, slow 1, -2, -3 (see order code)



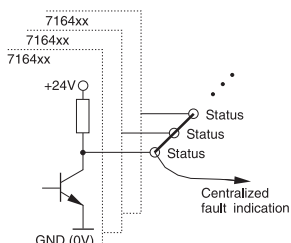
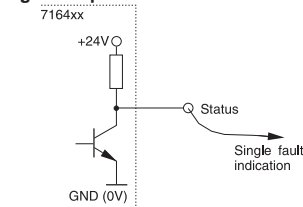
Dimensions



PIN assignment



Signal output



Order code

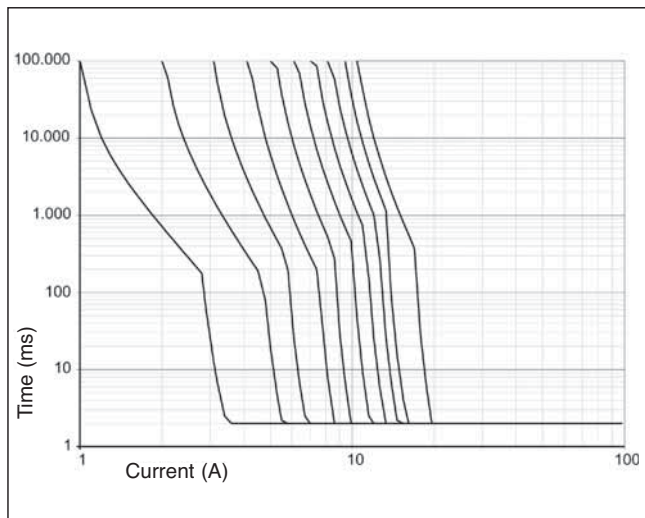
716412.03.50	
Type	PU
	00 1 pc.
	50 50 pcs.
Characteristic	
01	fast
02	medium
03	slow-1
04	slow-2
05	slow-3

Description	Part-No.	Type	PU
Spring terminal			
Nominal voltage	DC 12 / 24 V	716412.xxxx	LOCC-Box-EC-I-C
Input			
LOCC-Box-EC-I-C			
Nominal voltage	DC 12 / 24 V		
Operation voltage range	DC 10 V – 30 V		
Rated current	DC 10 A		
Supply current	DC 40 A over Cu-rails 10 × 3 mm		
Reverse voltage protection	internal electronics		
Termination	screwless disconnect slide		
Control input (Set / Reset)			
Signal level	-		
OFF	-		
ON	-		
Output			
Switching element	MosFet		
Output current	max. DC 10 A		
Voltage drop	<170 mV (10 A)		
Status Indication	LED green: Operating voltage present, no error LED red: Error in load circuit		
Switch-on capacity	10000 µF		
Current range	1 A – 10 A (adjustable via switch in 1 A steps)		
Characteristic	fast acting (1), medium (2), slow 1 (3), slow 2 (4), slow 3 (5) (see order code)		
Signal output			
Signal level	DC 12/24 V: operating voltage on standby, no error, DC 0 V: error, output switched off and manual "OFF"		
Switching element	Transistor, collector with pull-up resistance		
General			
Housing material	PA 6.6 (UL 94-V0; NFF I2, F2)		
Field installation	rail TS 35 (EN 60715)		
Protection class	IP 20		
Installation position	Optional		
Termination	Spring terminal 0.25–2.5 mm ²		
Operation temperature range	-25 °C – 50 °C		
Storage temperature range	-40 – 85 °C		
Dimensions (w × h × d) in mm	8.1 × 114.5 × 116.0		
Weight (kg/piece)	0.120		
Approvals	cULus in preparation		
Standards	EN 60950-1; EN 61131-1,2; EN 61000; EN 60947-4-1; EN 55022		
Accessories			
0 V collective terminal	Color	Article number	Type
Supply terminal with cutout for copper rail to increase current		716420	LOCC Box-SK 7-6420
Distance terminal without contact		716421	LOCC Box-EKL 7-6421
LOCC Box empty housing without terminal		716422	LOCC Box-DKL 7-6422
LOCC Box empty housing without terminal		716424	LOCC Box-DY 7-6424
Supply kit (supply and end terminals)		716425	LOCC Box ES 7-6425
Jumper comb, 8-pin, 6 A	white	716428	LOCC Box BKW 7-6428
Jumper comb, 8-pin, 6 A	red	716429	LOCC Box BKR 7-6429
Jumper comb, 8-pin, 6 A	blue	716430	LOCC Box BKB 7-6430
Jumper comb, 16-pin, 6 A	white	716438	LOCC Box BKW 7-6438
Jumper comb, 16-pin, 6 A	red	716439	LOCC Box BKB 7-6440
Jumper comb, 16-pin, 6 A	blue	716440	LOCC Box BKR 7-6439
Tag holder (quantity 200)	white (5×5 mm)	716431	LOCC Box BZW 7-6431
Tag holder (quantity 200)	red (5×5 mm)	716432	LOCC Box BZR 7-6432
Tag holder (quantity 200)	blue (5×5 mm)	716433	LOCC Box BZB 7-6433
Tag holder (quantity 200)	yellow (5×5 mm)	716434	LOCC Box BZG 7-6434
Tag holder (quantity 120)	white (12×6 mm)	716441	LOCC Box BZW 7-6441
Tag holder	white (39.3×5 mm)	716443	LOCC Box BZW 7-6443
Cover for tag holder 716443	transparent	716444	LOCC Box-BAD 7-6444
A4 label sheets (quantity 240)	white	716445	LOCC Box-LEB 7-6445
Tag holder (quantity 50), printing 1–50	white	716446	LOCC Box BZW 7-6446
Copper rail, 1 m		716426	LOCC Box CU 7-6426
CU rail cover, 1 m		716427	LOCC Box AD 7-6427

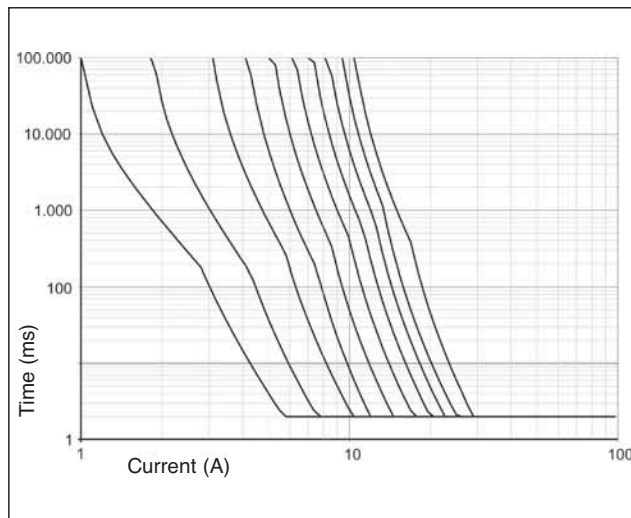
LOCC-Box / LOCC-Box-Net • Characteristic Curves

All device variants incorporate the same characteristics

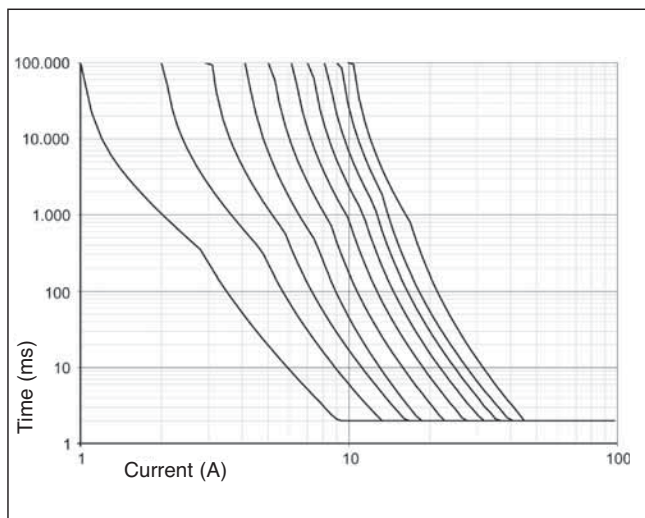
Switch position 1: Characteristic fast



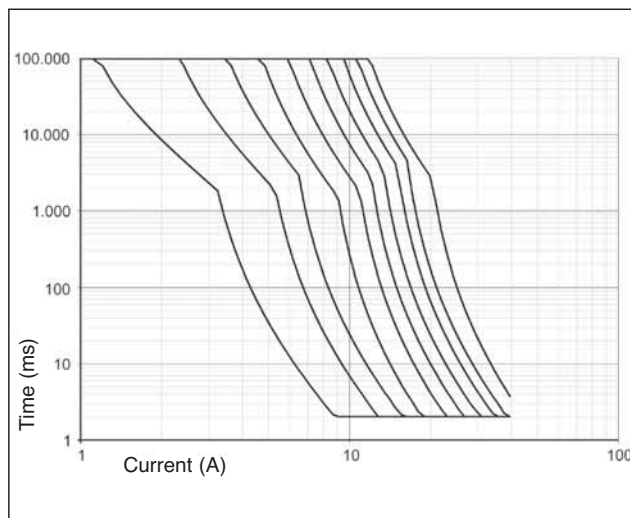
Switch position 2: Characteristic medium



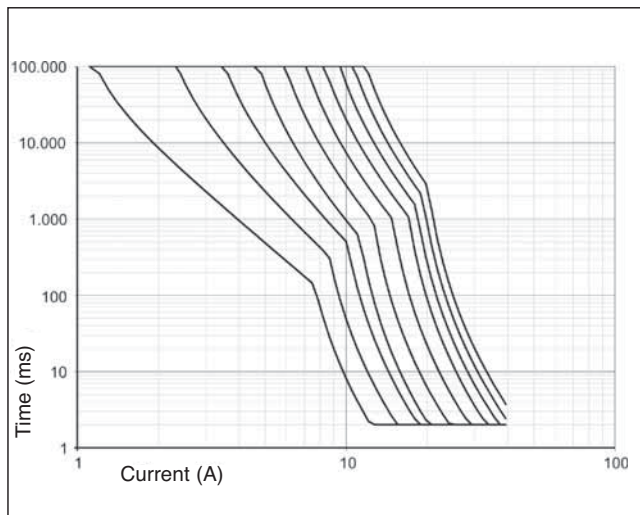
Switch position 3: Characteristic slow-1



Switch position 4: Characteristic slow-2



Switch position 5: Characteristic slow-3



Load monitoring - Microcompact gateway

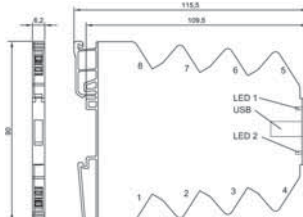
Gateway for LOCC-Box-Net (716410)

Input: LOCCbus (LIN)

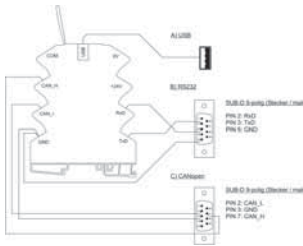
Output: USB, RS 232, CANopen



Dimensions



PIN assignment



Description	Part-No.	Type	PU	
Spring terminal				
Nominal voltage	DC 12 / 24 V	716459	LOCC-Box-GW 7-6459	
			1	
Input		LOCC-Box-GW 7-6459		
Bus system	LOCCbus, basic LIN			
Access method	Single-Master - Multiple Slave			
Bus technology	Line			
Physical level	1-wire			
Participants	40, max. 254			
Bus length	max. 40 m			
Transfer rate	9600 Baud			
Data rate	8 Bit + fixed parity			
Transfer protocol	Modified multi-drop			
Output		USB	RS232	CANopen
Bus system	USB 2.0 Full-Speed	RS232	CANopen	
Transfer rate	12 Mbit/s	600 – 11500 bit/s	10 – 1000 kbit/s	
General				
Nominal voltage	DC 12 / 24 V			
Operation voltage range	DC 10 V – 26.4 V			
Rated current	max. 50 mA			
Reverse voltage protection	Yes			
Status Indication	LED 1 green/red: USB, RS232, Firmware; LED 2 green/red: CANopen			
Insulation voltage	1.0 kV			
Housing material	PA 6.6 (UL 94-V0; NFF I2, F2)			
Field installation	rail TS 35 (EN 50022)			
Protection class	IP 20			
Installation position	Optional			
Termination	Spring terminal : 0.14 - 2.5 mm ² (with AE 1.5 mm ²)			
Operation temperature range	-20 °C – 60 °C			
Storage temperature range	-40 – 85 °C			
Dimensions (w × h × d) in mm	6.2 × 90.0 × 115.0			
Weight (kg/piece)	0.060			
Approvals	CE			
Standards	EN 60950-1, EN 61131-1, -2, EN 60898, EN 60947-4-1, EN 50081			
Accessories	Color	Article number	Type	PU
Tag holder 4×11 mm	white	681313	BZT 0411	100
Isolation plate		760809	TP 7-0809	5
Labels for laser printer A4 unpunched		681031	LEB - A4	1

Load monitoring - Gateway

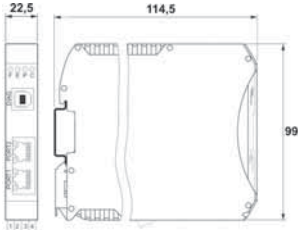
Gateway for LOCC-Box-Net (716410)

Input: LOCCbus (LIN)

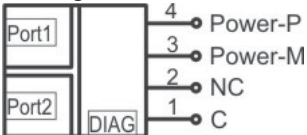
Output: USB, PROFINET-IO



Dimensions

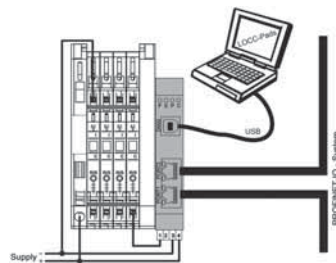


PIN assignment



Description	Part-No.	Type	PU	
Spring terminal				
Nominal voltage	DC 12 / 24 V	716457	LOCC-Box-GWPN 0-6457	1
Input				
Bus system	LOCCbus, basic LIN			
Access method	Single-Master - Multiple Slave			
Bus technology	Line			
Physical level	1-wire			
Participants	typ. 40, max. 100			
Bus length	max. 40 m			
Transfer rate	9600 Baud			
Data rate	8 Bit + fixed parity (Bit 9)			
Transfer protocol	Modified multi-drop			
Output				
		USB	PROFINET-IO	
Bus system	USB 2.0 Full-Speed	PROFINET-IO		
Transfer rate	12 Mbit/s	100 bit/s (IEE 802.3)		
Interface	USB connector, Type B	Port_1, Port_2, 2 × RJ-45 female with galvanic isolation and LEDs		
General				
Nominal voltage	DC 12 / 24 V			
Operation voltage range	10 – 32 V			
Rated current	120 mA @ 24 V			
Reverse voltage protection	Yes			
Status Indication	LED F, yellow - flashing: identification prompt (PROFINET) LED E, red - flashing: no connection (PROFINET) LED P, green - flashing: operating voltage is connected (POWER) LED C, green - flashing: data traffic with LOCC Box Net modules (LOCCbus) Link: yellow - 100Base/T-connection Activity green - valid connection, blanking: data traffic			
Insulation voltage	1.5 kV			
Housing material	PA			
Field installation	Snaps on to TS 35 rail (EN 50022)			
Protection class	IP 20			
Installation position	Optional			
Termination	Spring terminal : 0.14 - 2.5 mm ² (with AE 1.5 mm ²)			
Relative humidity	max. 90 % non-condensed			
Operation temperature range	-20 °C – 60 °C			
Storage temperature range	-40 – 85 °C			
Dimensions (w × h × d) in mm	22.5 × 99.0 × 114.5			
Weight (kg/piece)	0.130			
Approvals	CE			
Standards	EN 60950-1, EN 61131-1, -2, EN 60898, EN 60947-4-1, EN 50081			
Comments				
Screw terminal on request				

Use



Load monitoring - Gateway

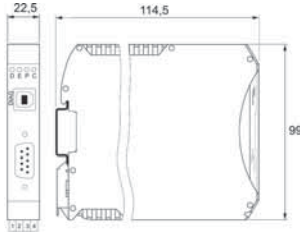
Gateway for LOCC-Box-Net (716410)

Input: LOCCbus (LIN)

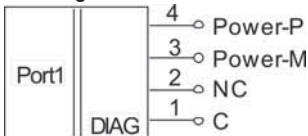
Output: USB, PROFIBUS-DP



Dimensions

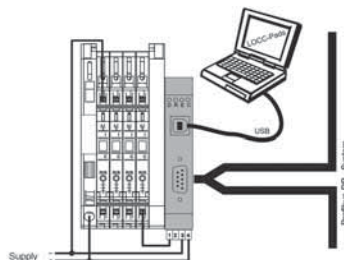


PIN assignment



Description	Part-No.	Type	PU
Spring terminal			
Nominal voltage	DC 12 / 24 V	716458	LOCC-Box-GW/PB 0-6458
Input			
Bus system	LOCCbus, basic LIN		
Access method	Single-Master - Multiple Slave		
Bus technology	Line		
Physical level	1-wire		
Participants	typ. 40, max. 84		
Bus length	max. 40 m		
Transfer rate	9600 Baud		
Data rate	8 Bit + fixed parity (Bit 9)		
Transfer protocol	Modified multi-drop		
Output			
	USB	PROFIBUS-DP	
Bus system	USB 2.0 Full-Speed	PROFIBUS-DP	
Transfer rate	12 Mbit/s	max. 12 Mbit/s	
Interface	USB connector, Type B	Port_1, SUB-D 9pin with galvanic isolation	
General			
Nominal voltage	DC 12 / 24 V		
Operation voltage range	10 – 32 V		
Rated current	120 mA @ 24 V		
Reverse voltage protection	Yes		
Status Indication	LED D, green - on: data exchange via PROFIBUS-DP LED E, red - different flash codes for diagnosis of PROFIBUS-DP faults LED P, green - on: operating voltage is supplied (POWER) LED C, green - flashing: data traffic with LOCC-Box-Net modules (LOCCbus)		
Insulation voltage	1.5 kV		
Housing material	PA 6.6 (UL 94 V0)		
Field installation	Snaps on to TS 35 rail (EN 50022)		
Protection class	IP 20		
Installation position	Optional		
Termination	Spring terminal : 0.14 - 2.5 mm ² (with AE 1.5 mm ²)		
Relative humidity	max. 90 % non-condensed		
Operation temperature range	-20 °C – 60 °C		
Storage temperature range	-40 – 85 °C		
Dimensions (w × h × d) in mm	22.5 × 99.0 × 114.5		
Weight (kg/piece)	0.130		
Approvals	CE		
Standards	EN 60950-1, EN 61131-1, EN 61000, EN 60947-4-1, EN 50016		
Comments			
Screw terminal on request			

Use



Load monitoring - Gateway

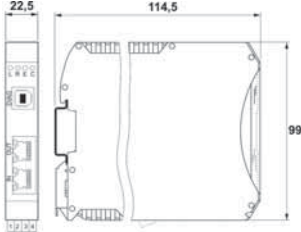
Gateway for LOCC-Box-Net (716410)

Input: LOCCbus (LIN)

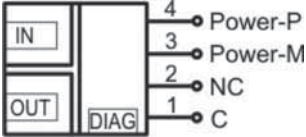
Output: USB, EtherCAT



Dimensions

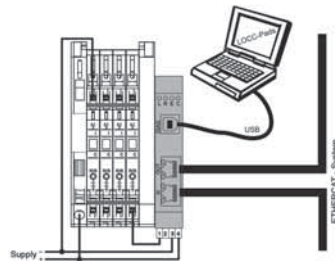


PIN assignment



Description	Part-No.	Type	PU
Spring terminal			
Nominal voltage	DC 12 / 24 V	716456	LOCC-Box-GWEC 0-6456
			1
Input			
Bus system	LOCCbus, basic LIN		
Access method	Single-Master - Multiple Slave		
Bus technology	Line		
Physical level	1-wire		
Participants	typ. 40, max. 64		
Bus length	max. 40 m		
Transfer rate	9600 Baud		
Data rate	8 Bit + fixed parity (Bit 9)		
Transfer protocol	Modified multi-drop		
Output			
	USB	EtherCAT	
Bus system	USB 2.0 Full-Speed	EtherCAT	
Transfer rate	12 Mbit/s	100 bit/s (IEE 802.3)	
Interface	USB connector, Type B	IN, OUT, 2 × RJ-45 female with galvanic isolation and LEDs	
General			
Nominal voltage	DC 12 / 24 V		
Operation voltage range	10 – 32 V		
Rated current	55 mA @ 24 V		
Reverse voltage protection	Yes		
Status Indication	LED L, red - flashing: EEPROM error, EEPROM not loaded LED R, green - lit: ECT Run LED E, green - lit: ECT error LED C, green - flashing: data traffic with LOCC Box-Net modules (LOCCbus) link/activity: green - 100Base/T-connection, flashes with EtherCAT traffic Connect: yellow - speed LED, 100Base/T-connection		
Insulation voltage	1.5 kV		
Housing material	PA		
Field installation	Snaps on to TS 35 rail (EN 50022)		
Protection class	IP 20		
Installation position	Optional		
Termination	Spring terminal : 0.14 - 2.5 mm ² (with AE 1.5 mm ²)		
Relative humidity	max. 90 % non-condensed		
Operation temperature range	-20 °C – 60 °C		
Storage temperature range	-40 – 85 °C		
Dimensions (w × h × d) in mm	22.5 × 99.0 × 114.5		
Weight (kg/piece)	0.130		
Approvals	CE		
Standards	EN 60950-1, EN 61131-1, -2, EN 60898, EN 60947-4-1, EN 50081		
Comments			
Screw terminal on request			

Use

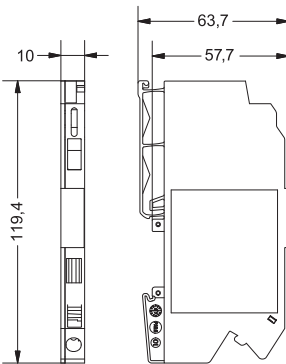


Load monitoring - Accessories

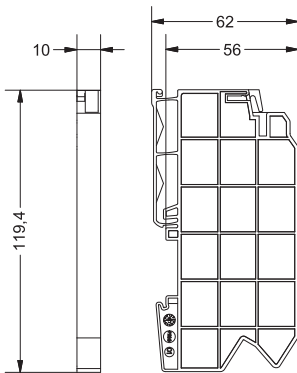
LOCC-Box supply set consisting of supply terminal and end block maximum total current 40 A



Dimensions
Supply terminal



End block



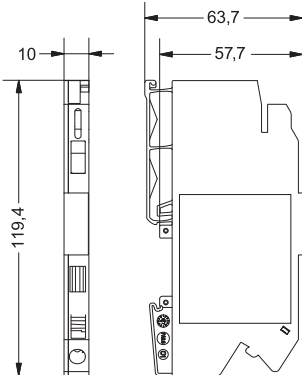
Description	Part-No.	Type	PU	
Nominal voltage	DC 12 / 24 V	716425	LOCC-Box-ES 7-6425	1
Input				
LOCC-Box-ES 7-6425				
Nominal voltage	DC 12 / 24 V			
Rated current	max. DC 40 A			
Reverse voltage protection	No			
Termination	Spring terminal : 0.33 – 10 mm ² (AWG 22–8) conductor connection cross section, single wire (solid): max. 10 mm ² conductor connection cross section, fine wire: max. 6 mm ² conductor connection cross section, fine wire with AEH: max. 6 mm ²			
Length of stripped insulation	12 mm			
Output				
Nominal voltage	DC 12 / 24 V			
Output current	max. DC 40 A			
Termination	screwless disconnect terminal			
Copper bus bar	3 × 10mm			
General				
Housing material	PA 6.6 (UL 94-V0; NFF I2, F2)			
Field installation	rail TS 35 (EN 50022)			
Protection class	IP 20			
Installation position	Optional			
Operation temperature range	-25 °C – 60 °C			
Storage temperature range	-40 – 85 °C			
Dimensions (w × h × d) in mm	10.0 × 119.4 × 63.7			
Weight (kg/piece)	0.035			
Approvals	cURus			
Standards	-			

Load monitoring - Accessories

LOCC Box supply terminal maximum total current 40 A



Dimensions



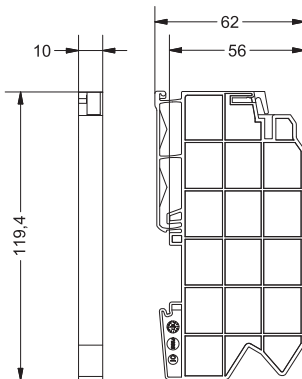
Description	Part-No.	Type	PU	
Nominal voltage	DC 12 / 24 V	716435	LOCC-Box-EKL 7-6435	2
Input				
LOCC-Box-EKL 7-6435				
Nominal voltage	DC 12 / 24 V			
Rated current	max. DC 40 A			
Reverse voltage protection	No			
Termination	Spring terminal : 0.33 – 10 mm ² (AWG 22–8) conductor connection cross section, single wire (solid): max. 10 mm ² conductor connection cross section, fine wire: max. 6 mm ² conductor connection cross section, fine wire with AEH: max. 6 mm ²			
Length of stripped insulation	12 mm			
Output				
Nominal voltage	DC 12 / 24 V			
Output current	max. DC 40 A			
Termination	screwless disconnect terminal			
Copper bus bar	3 × 10mm			
General				
Housing material	PA 6.6 (UL 94-V0; NFF I2, F2)			
Field installation	rail TS 35 (EN 50022)			
Protection class	IP 20			
Installation position	Optional			
Operation temperature range	-25 °C – 60 °C			
Storage temperature range	-40 – 85 °C			
Dimensions (w × h × d) in mm	10.0 × 119.4 × 63.7			
Weight (kg/piece)	0.035			
Approvals	cULus			
Standards	-			

Load monitoring - Accessories

LOCC Box end block



Dimensions
End block



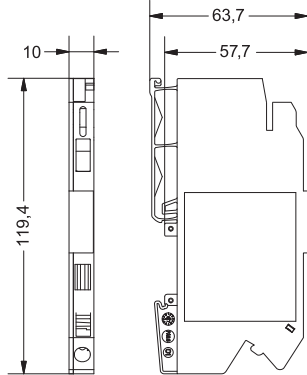
Description	Part-No.	Type	PU
Nominal voltage	716436	LOCC-Box-EB 7-6436	2
General			
Housing material	PA 6.6 (UL 94-V0; NFF I2, F2)		
Field installation	rail TS 35 (EN 50022)		
Protection class	IP 20		
Installation position	Optional		
Operation temperature range	-25 °C – 60 °C		
Storage temperature range	-40 – 85 °C		
Dimensions (w × h × d) in mm	10.0 × 119.4 × 62.0		
Weight (kg/piece)	0.010		
Approvals	cULus		
Standards	-		

Load monitoring - Accessories

LOCC-Box supply terminal Additional supply terminal for increased current maximum total current 40 A



Dimensions



Use



716421

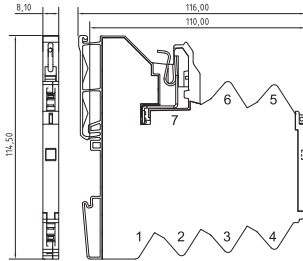
Description	Part-No.	Type	PU	
Nominal voltage	DC 12 / 24 V	716421	LOCC-Box-EKL 7-6421	2
Input				
LOCC-Box-EKL 7-6421				
Nominal voltage	DC 12 / 24 V			
Rated current	max. DC 40 A			
Reverse voltage protection	No			
Termination	Spring terminal : 0.33 – 10 mm ² (AWG 22–8) conductor connection cross section, single wire (solid): max. 10 mm ² conductor connection cross section, fine wire: max. 6 mm ² conductor connection cross section, fine wire with AEH: max. 6 mm ²			
Length of stripped insulation	12 mm			
Output				
Nominal voltage	DC 12 / 24 V			
Output current	max. DC 40 A			
Termination	screwless disconnect terminal			
Copper bus bar	3 × 10mm			
General				
Housing material	PA 6.6 (UL 94-V0; NFF I2, F2)			
Field installation	rail TS 35 (EN 50022)			
Protection class	IP 20			
Installation position	Optional			
Operation temperature range	-25 °C – 60 °C			
Storage temperature range	-40 – 85 °C			
Dimensions (w × h × d) in mm	10.0 × 119.4 × 63.7			
Weight (kg/piece)	0.035			
Approvals	cURus			
Standards	-			

Load monitoring - Accessories

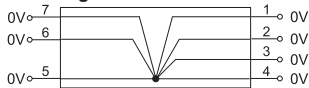
0V Collective Terminal Single-channel design maximum total current 40 A



Dimensions



PIN assignment



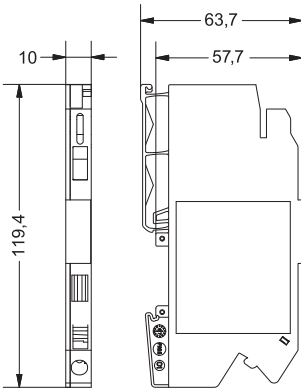
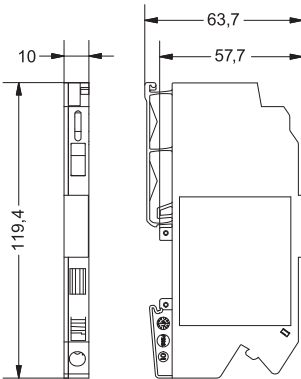
Description	Part-No.	Type	PU	
Nominal voltage	DC 12 / 24 V	716420	LOCC-Box-SK 7-6420	2
Input				
LOCC-Box-SK 7-6420				
Nominal voltage	DC 12 / 24 V			
Rated current	6× max. DC 10 A			
Reverse voltage protection	No			
Termination	Spring terminal: 0.25–2.5 mm ²			
Connection	1 – 6			
Output				
Output current	max. DC 40 A			
Voltage drop	–			
Termination	screwless disconnect terminal			
Connection	7			
General				
Housing material	PA 6.6 (UL 94-V0; NFF I2, F2)			
Field installation	rail TS 35 (EN 50022)			
Protection class	IP 20			
Installation position	Optional			
Operation temperature range	-25 °C – 60 °C			
Storage temperature range	-40 – 85 °C			
Dimensions (w × h × d) in mm	8.1 × 114.5 × 116.0			
Weight (kg/piece)	0.700			
Approvals	–			
Standards	–			

Load monitoring - Accessories

LOCC Box supply terminal LOCC Box supply terminal for power distribution maximum total current 40 A



Dimensions Supply terminal

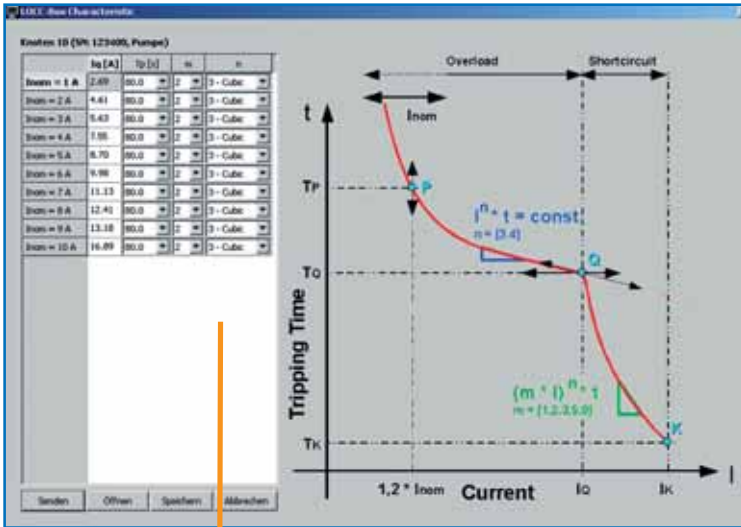


Description	Part-No.	Type	PU	
Nominal voltage	DC 12 / 24 V	716437	LOCC-Box-ES 7-6437	1
Input				
LOCC-Box-ES 7-6437				
Nominal voltage	DC 12 / 24 V			
Rated current	max. DC 40 A			
Reverse voltage protection	No			
Termination	Spring terminal : 0.33 – 10 mm ² (AWG 22–8) conductor connection cross section, single wire (solid): max. 10 mm ² conductor connection cross section, fine wire: max. 6 mm ² conductor connection cross section, fine wire with AEH: max. 6 mm ²			
Length of stripped insulation	12 mm			
Output				
Nominal voltage	DC 12 / 24 V			
Output current	max. DC 40 A			
Termination	screwless disconnect terminal			
Copper bus bar	3 × 10mm			
General				
Housing material	PA 6.6 (UL 94-V0; NFF I2, F2)			
Field installation	rail TS 35 (EN 50022)			
Protection class	IP 20			
Installation position	Optional			
Operation temperature range	-25 °C – 60 °C			
Storage temperature range	-40 – 85 °C			
Dimensions (w × h × d) in mm	10.0 × 119.4 × 63.7			
Weight (kg/piece)	0.035			
Approvals	cULus			
Standards	-			

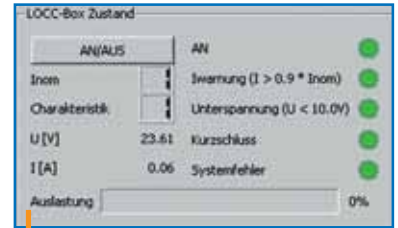
LOCC-Pads • Monitoring software

LOCC-Pads*

Software for the parameterisation of the LOCC-Box-Net, as well as the analysis and diagnosis of DC 12 / 24 V circuits



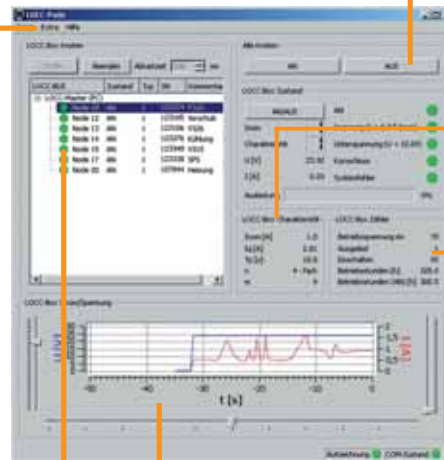
Adjustment parameters for the parameterisable characteristic No. 10



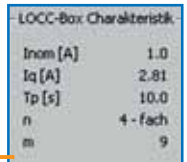
Displays the operating status, current range / characteristic, the load capacity of the characteristic, as well as the updated current and voltage values.

- COM Einstellung
- LOCC-Box Charakteristik
- LOCC-Box Module
- LOCC-Box Aufzeichnung
- LOCC-Box Einstellung
- LOCC-Box Gateway
- Firmware Download
- Sprache

Menu "Extra"



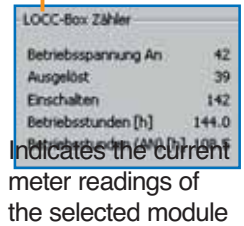
Overall view



Displays the parameters of the selected characteristic curve.

Datum/Zeit	Knoten	Zustand	Fehler	I[A]	U[V]	Kommentar
2008-12-09 11:23:42						Aufzeichnung gestartet ...
2008-12-09 11:23:43	17	AN		0.06	23.90	SPS
2008-12-09 11:23:43	10	AN		0.06	23.61	Pumpe
2008-12-09 11:23:44	11	AN		0.03	23.92	L
2008-12-09 11:23:44	12	AN		0.06	23.77	Motor 1
2008-12-09 11:23:44	13	AN		0.06	23.46	V326
2008-12-09 11:23:45	14	AN		0.03	24.22	L
2008-12-09 11:23:45	15	AN		0.03	23.92	V315
2008-12-09 11:24:01	10	Ausgelöst	Kurzschluss	0.06	23.61	Pumpe
2008-12-09 11:24:07	10	AUS	Kurzschluss	0.00	0.00	Pumpe
2008-12-09 11:24:08	10	AN		0.06	23.61	Pumpe

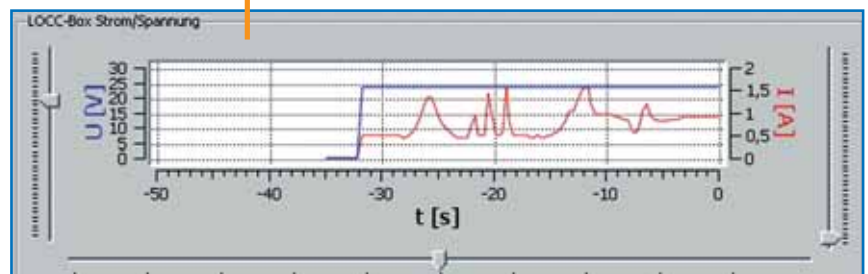
Recording of all results such as "ON", "OFF" or "SHORT CIRCUIT" with date and time



Indicates the current meter readings of the selected module

LOCC-BUS	Zustand	Typ	SN	Kommentar
LOCC-Master (PC)				
Node 10	AN	1	123400	Pumpe
Node 11	AN	1	123314	L
Node 12	AN	1	123165	Motor 1
Node 13	AN	1	123106	V326
Node 14	AN	1	123376	L
Node 15	AN	1	123348	V315
Node 17	AN	1	123338	SPS

Overview of all connected modules



Plotter function for the selected module – current/voltage progression (analysis)

* in connection with a gateway (CANopen, EtherCAT, Profinet-IO, Profibus-DP)

Load monitoring · LCOS-CC

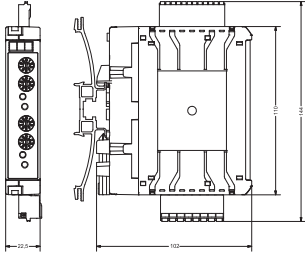
Electronic load monitoring up to DC 10 A

2-channel version, one-pole switching, DC 1 A – DC 10 A, characteristic can be set

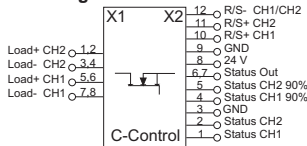
Collective fault message: single/collective/90% message, Remote Control input



Dimensions



PIN assignment



Description	Part-No.	Type	PU	
Nominal voltage	DC 24 V	779000.2111	LCOS-CC-2K-1P-DC24V	1
Input				
Nominal voltage	DC 24 V			
Operation voltage range	DC 20.4 V – 28.8 V			
Rated current	DC 10 A			
Supply current	DC 32 A via LCOS power bus			
Reverse voltage protection	internal electronics			
Control input (Set / Reset)				
Signal level	DC 24 V (EN 61131)			
OFF	Pulse with falling edge >100 ms, <800 ms			
ON	Pulse with falling edge > 1 s			
Galvanic insulation I/O	2.5 kV, 50 Hz, 1 min.			
Output				
Switching element	MosFet			
Output current	max. DC 10 A			
Voltage drop	<170 mV (10 A)			
Status Indication	LED green: operating voltage ON, no fault, green flashing: 90 % I _B red flashing: triggered, red: OFF			
Switch-on capacity	>10000 µF			
Current range	1 A – 10 A (adjustable via switch in 1 A steps)			
Characteristic	fast (1), middle (2), slow 1 (3), slow 2 (4), slow 3 (5), adjustable via switch			
Signal output				
Switching element	Transistor in open collector version with Pull Up resistance			
Single channel message	(Status CH1, CH2) Acc. to IEC 61131-2: High level, no errors, low level, there are errors			
90 % of the rated current I _B	(Status 90 % CH1, CH2) Acc. to IEC 61131-2: High level <90 %, low level >90 %			
Insulation voltage				
centralised fault signalling	(Status Out) Single channel message 1+2, decoupled via diodes			
General				
Housing material	PA 6.6 (UL 94-V0; NFF I2, F2)			
Field installation	can be connected to LCOS function carrier 22.5 mm (accessories), DIN Rail mounting EN 60715			
Protection class	IP 20			
Installation position	Optional			
Vibration resistance	Vibration: EN 60068-2-6 Fc, Shock: EN 60068-2-27 Ea			
Climatic conditions	Acc. to EN 60721 Stationary use at weather protected locations			
Termination	X1: Load side: 8-pole measuring strip, CS 5.08 X2: Control side: 12-pole measuring strip, CS 3,5			
Operation temperature range	0 °C – 55 °C			
Storage temperature range	-40 – 70 °C			
Dimensions (w × h × d)	22.5 × 110.0 × 102.0 mm (including function carrier, without plug-in terminals on the side)			
Weight (kg/piece)	0.200			
Approvals	CE, in preparation: cULus			
Standards	EN 61131-2, EN 55016-1-2, EN 60529, EN 61000-6-2, EN 61000-6-4			
Accessories				
Accessories	Color	Article number	Type	PU
Function carrier 22.5 mm, Power module		780402.225.1	LCOS-FT-PE-225-0P-02-1	1
Function carrier 22.5 mm, Power module		780402.225.2	LCOS-FT-PE-225-0P-02-1	10
Supply module DC 24 V, 57.5 mm, PE, no field bus connection		780700.575.1	LCOS-FTE-PE-575-NC-00-1	1
Power bridge 1-pole		780961.001.2	LCOS-ZB-PB-01-00	10
Power bridge 1-pole		780961.001.3	LCOS-ZB-PB-01-00	50
Label plate 5×5 mm, frame with 200 plates	white	780981.000.2	LCOS-ZB-BZS-white-00	10
Label plate 5×5 mm, frame with 200 plates	red	780982.000.2	LCOS-ZB-BZS-red-00	10
Label plate 5×5 mm, frame with 200 plates	blue	780983.000.2	LCOS-ZB-BZS-blue-00	10
Terminal black, CS 5.08, 8-pole, 2.5 mm ² Push-in, 1-8 printed		780922.000.2	LCOS-ZB-KL-FS-508-25-8-black	10
Terminal black, CS3.50, 12-pole, 1.5 mm ² Push-in, 1-12 printed		780921.000.2	LCOS-ZB-KL-FS-350-15-12-black	10

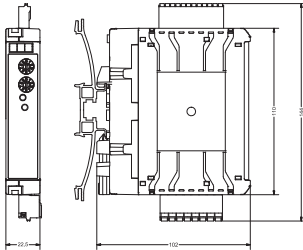
Load monitoring - LCOS-CC

Electronic load monitoring up to DC 10 A

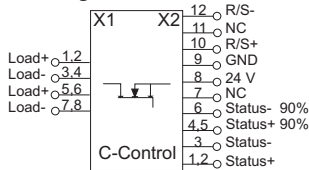
1-channel version, two-pole switching, DC 1 A – DC 10 A can be set, characteristic can be set
 Collective fault message: single/collective/90% message, Remote Control input per channel



Dimensions



PIN assignment



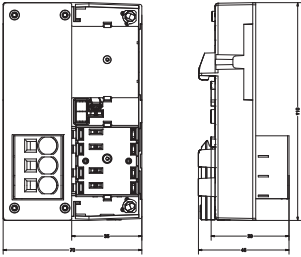
Description	Part-No.	Type	PU	
Nominal voltage	DC 24 V	779000.1211	LCOS-CC-1K-2P-DC24V	1
Input				
Nominal voltage		DC 24 V		
Operation voltage range		DC 20.4 – 28.8 V		
Rated current		DC 10 A		
Supply current		DC 32 A via LCOS power bus		
Reverse voltage protection		internal electronics		
Control input (Set / Reset)				
Signal level		DC 24 V (EN 61131)		
OFF		Pulse with falling edge >100 ms, <800 ms		
ON		Pulse with falling edge > 1 s		
Galvanic insulation I/O		2.5 kV, 50 Hz, 1 min.		
Output				
Switching element		MosFet and relay (galvanic separation both poles: 500 V)		
Output current		max. DC 10 A		
Voltage drop		<170 mV (10 A)		
Status Indication		LED green: operating voltage ON, no fault, green flashing: 90 % I _B red flashing: triggered, red: OFF		
Switch-on capacity		>10000 µF		
Current range		1 A – 10 A (adjustable via switch in 1 A steps)		
Characteristic		fast (1), middle (2), slow 1 (3), slow 2 (4), slow 3 (5), adjustable via switch		
Signal output				
Switching element		One relay with 1 S per signal type		
Single channel message		(Status CH1, CH2) 1 N/O contact, AC/DC 250 V, 1 A Relay closed: error Relay open: no error		
90 % of the rated current I _B		(Status 90 % CH1, CH2) 1 N/O contact, AC/DC 250 V, 1 A Relay closed: >90 %, Relay open: <90 %		
Insulation voltage		2.5 kV, 50 Hz, 1 min.		
centralised fault signalling		-		
General				
Housing material		PA 6.6 (UL 94-V0; NFF I2, F2)		
Field installation		can be connected to LCOS function carrier 22.5 mm (accessories), DIN Rail mounting EN 60715		
Protection class		IP 20		
Installation position		Optional		
Vibration resistance		Vibration: EN 60068-2-6 Fc, Shock: EN 60068-2-27 Ea		
Climatic conditions		Acc. to EN 60721 Stationary use at weather protected locations		
Termination		X1: Load side: 8-pole measuring strip, CS 5,08 X2: Control side: 12-pole measuring strip, CS 3,5		
Operation temperature range		0 °C – 55 °C		
Storage temperature range		-40 – 70 °C		
Dimensions (w × h × d)		22.5 × 110.0 × 102.0 mm (including function carrier, without plug-in terminals on the side)		
Weight (kg/piece)		0.200		
Approvals		CE, in preparation: cULus		
Standards		EN 61131-2, EN 55016-1-2, EN 60529, EN 61000-6-2, EN 61000-6-4		
Accessories				
Function carrier 22.5 mm, Power module	Color	Article number	Type	PU
Function carrier 22.5 mm, Power module		780402.225.1	LCOS-FT-PE-225-0P-02-1	1
Function carrier 22.5 mm, Power module		780402.225.2	LCOS-FT-PE-225-0P-02-1	10
Supply module DC 24 V, 57,5 mm, PE, no field bus connection		780700.575.1	LCOS-FTE-PE-575-NC-00-1	1
Power bridge 1-pole		780961.001.2	LCOS-ZB-PB-01-00	10
Power bridge 1-pole		780961.001.3	LCOS-ZB-PB-01-00	50
Label plate 5×5 mm, frame with 200 plates	white	780981.000.2	LCOS-ZB-BZS-white-00	10
Label plate 5×5 mm, frame with 200 plates	red	780982.000.2	LCOS-ZB-BZS-red-00	10
Label plate 5×5 mm, frame with 200 plates	blue	780983.000.2	LCOS-ZB-BZS-blue-00	10
Terminal black, CS 5.08, 8-pole, 2.5 mm ² Push-in, 1-8 printed		780922.000.2	LCOS-ZB-KL-FS-508-25-8-black	10
Terminal black, CS3.50, 12-pole, 1.5 mm ² Push-in, 1-12 printed		780921.000.2	LCOS-ZB-KL-FS-350-15-12-black	10

Load monitoring - Accessories

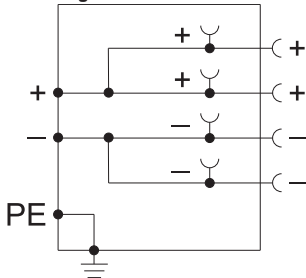
Supply module 57,5 mm, without data bus
 Power bus: DC 500 V, 4 × 16 A
 Integrated PE contact



Dimensions



PIN assignment



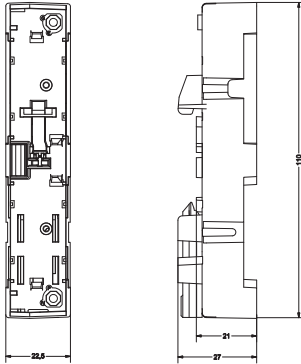
Description	Part-No.	Type	PU
Spring terminal			
Nominal voltage	780700.575.1	LCOS-FTE-PE-575-NC-00-1	1
Input			
Operating voltage	max. AC/DC 500 V UL max. 300 V max. AC/DC 16 A, 100 % ED		
Rated current	4 × 16 A, 100 % ED		
Reverse voltage protection	No		
Termination	Spring terminal (+, -, PE): 3 × 16 mm ² , 3 × 10 mm ² with ferrules		
Length of stripped insulation	12 mm		
Powermodul			
Nominal voltage	-		
Rated current	4 × 16 A, 100 % ED		
Termination	Bridge 1-pole, connectable		
Voltage drop	Powerbus at I _{max} <80 mV		
Material	Polyamid PA 6.6 (UL 94 V0, NFF I2, F2)		
Contact material	CuCrSiTi		
Surface	Contact: tin-plated		
General			
Housing material	Polyamid PA 6.6 (UL 94 V0, NFF I2, F2)		
Field installation	Din rail TS35 with interlock (EN 60715)		
Protection class	IP 20		
Installation position	Optional		
Operation temperature range	-40 °C – 85 °C		
Storage temperature range	-40 °C – 85 °C		
Dimensions (w × h × d) in mm	57.5 × 110.0 × 39.0		
Relative humidity	5 % – 95 % without condensing		
Weight (kg/piece)	0.102		
Approvals	cURus		
Loads from pollutants	According to IEC 60068-2-42, IEC 60068-2-43		
Insulation coordination	Acc. to EN 60664-1, EN 60947-1, EN 50178, EN 50124-1		
Length of entire node	1440 mm		
Shock resistance	15 g/11 ms acc. to IEC 60068-2-27 Ea		
Vibration resistance	1 g acc. to IEC 60068-2-6 Fc		
Rated insulation voltage (EN 50178)	500 V		
Overvoltage category	III		
Pollution degree	3		

Load monitoring - Accessories

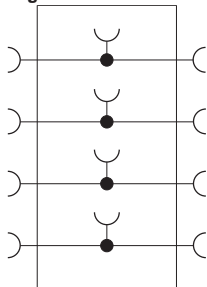
Function carrier 22.5 mm, Power module



Dimensions



PIN assignment

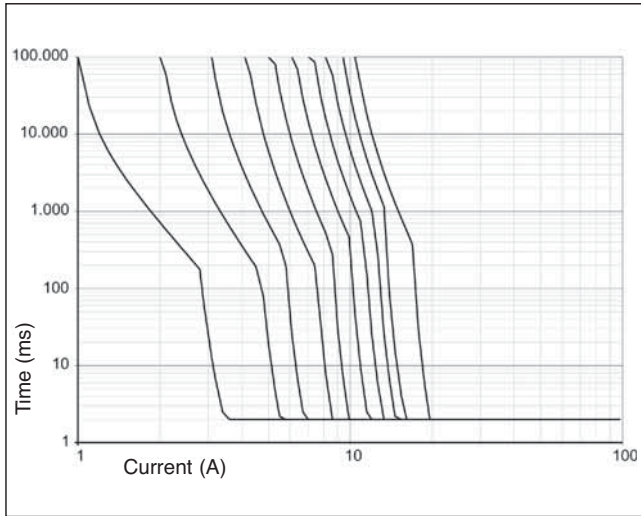


Description	Part-No.	Type	PU	
Spring terminal				
Nominal voltage	AC/DC 500 V	780402.225.2	LCOS-FT-PE-225-0P-02-1	10
	AC/DC 500 V	780402.225.1	LCOS-FT-PE-225-0P-02-1	1
Powermodul				
Nominal voltage	AC/DC 500 V			
Rated current	4 × 16 A, 100 % ED			
Termination	Bridge 1-pole, connectable			
Voltage drop	Powerbus at I _{max} <80 mV			
Material	Polyamid PA 6.6 (UL 94 V0, NFF I2, F2)			
Contact material	CuCrSiTi			
Surface	Contact: tin-plated			
General				
Housing material	Polyamid PA 6.6 (UL 94 V0, NFF I2, F2)			
Field installation	Din rail TS35 with interlock (EN 60715)			
Protection class	IP 20			
Installation position	Optional			
Operation temperature range	-40 °C – 85 °C			
Storage temperature range	-40 °C – 85 °C			
Dimensions (w × h × d) in mm	22.5 × 110.0 × 21.0			
Relative humidity	5 % – 95 % without condensing			
Weight (kg/piece)	0.023			
Approvals	cURus in preparation		cURus	
Loads from pollutants	According to IEC 60068-2-42, IEC 60068-2-43			
Insulation coordination	Acc. to EN 60664-1, EN 60947-1, EN 50178, EN 50124-1			
Length of entire node	1440 mm			
Shock resistance	15 g/11 ms acc. to IEC 60068-2-27 Ea			
Vibration resistance	1 g acc. to IEC 60068-2-6 Fc			

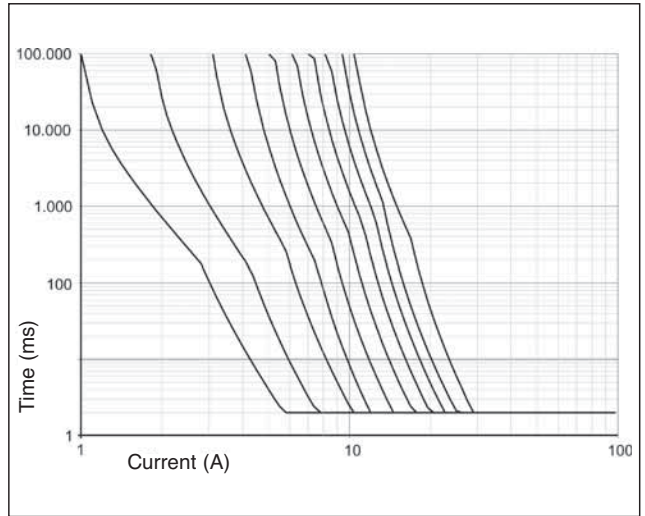
LCOS-CC • Characteristic Curves

All device variants incorporate the same characteristics

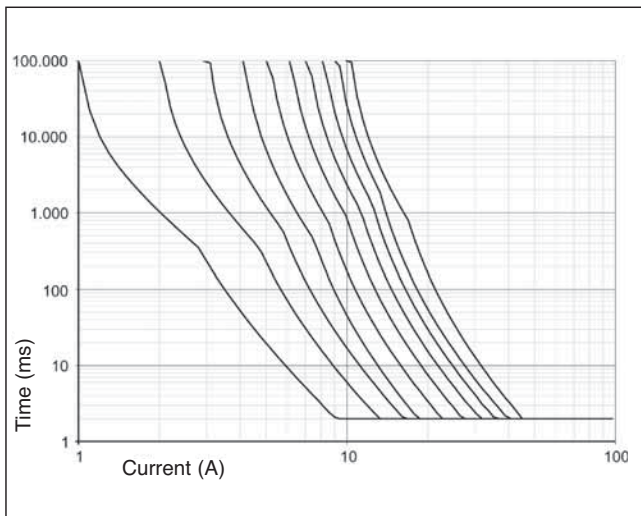
Switch position 1: Characteristic fast



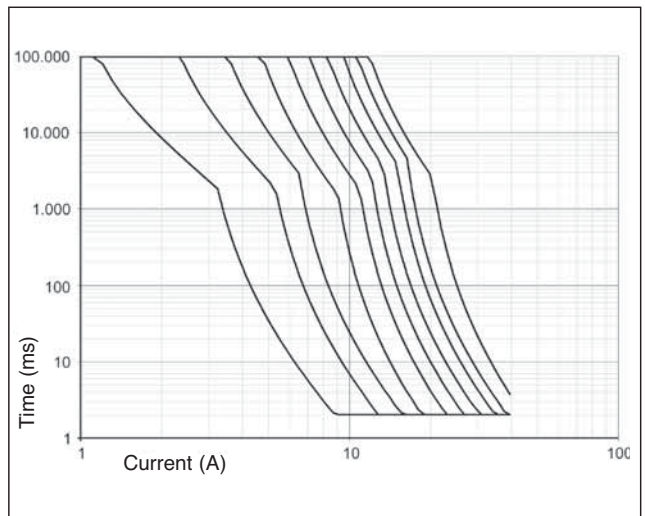
Switch position 2: Characteristic medium



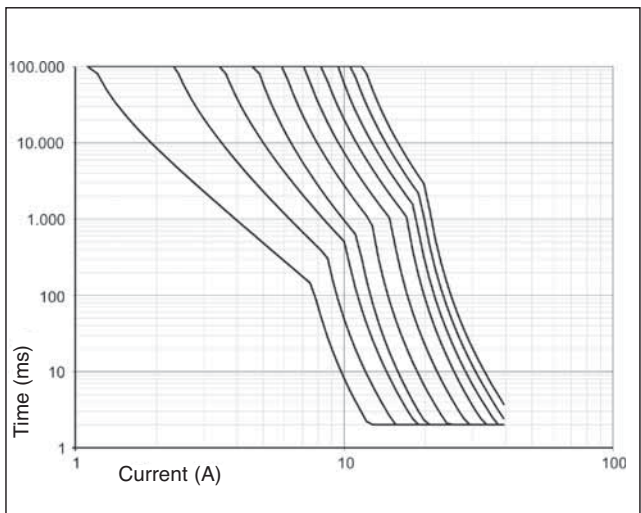
Switch position 3: Characteristic slow-1



Switch position 4: Characteristic slow-2



Switch position 5: Characteristic slow-3



Load monitoring - Varioprint fuse module

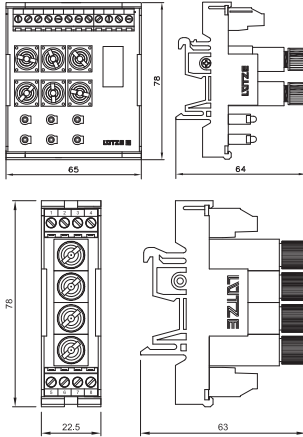
AC/DC Load monitoring with fuse (5 × 20 mm)

Monitoring circuits 2.5 A und 6.3 A

Group signal using potential-free relay contact (only 716123)

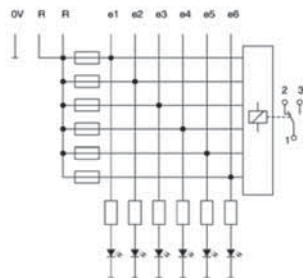


Dimensions

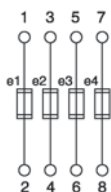


PIN assignment

716123



710820



Description	Part-No.	Type	PU
Load monitoring 6x2.5 A			
Termination	716123	SIPE-6LED-6123 DC 24 V	1
Load monitoring 4x6.3 A			
Termination	710820	SIPE-4-0820 AC/DC 250 V	2
Input	716123	710820	
Nominal voltage	DC 24 V	AC/DC 230 V	
Input voltage range	16.8 – 30.0 V	0.0 – 250.0 V	
Rated current	6 × DC 2.5 A	4 × DC 6.3 A	
Fuse	Glass tube 5x20 mm, not included in delivery		
Resistor		<0.1 Ω	
Status Indication		–	
Rated insulation voltage (EN 50178)	150 V	300 V	
Pollution degree		2	
Overvoltage category		I	
Signal circuit			
Switching element	Relay	–	
Contact type	1 change over contact	–	
Min. switching voltage	AC/DC 17 V	–	
Max. switching voltage	AC/DC 250 V	–	
Min. switching current	AC/DC 0.10 mA	–	
Max. switching current	AC/DC 3 A	–	
Switch-on delay	8 ms	–	
Switch-off delay	8 ms	–	
Switching capacity	max. 1250 VA	–	
Contact material	AgNi	–	
Mechanical service life	2 × 10 ⁷ operations	–	
Rated insulation voltage (EN 40178)		250 V	
Clearance/creep. dist. (control/load side)	>2 mm	–	
General			
Form		Varioprint	
Protection class		IP 20	
Field installation		rail TS 35 (EN 50022)	
Insulation voltage input/output		–	
Safe isolation		–	
Operation temperature range		-20 – + 60 °C	
Storage temperature range		-25 – 80 °C	
Dimensions (w × h × d)	65.0 × 77.0 × 63.0 mm	22.5 × 77.0 × 63.0 mm	
Weight (kg/piece)	0.116	0.070	
Approvals		–	
Termination		Screw terminal: 0.25–2.5 mm2	
Accessories	Article number	Description	PU
Identification unit	710799		100

Power supply - DC/DC converter

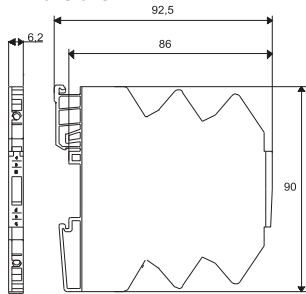
DC/DC converter, 1-channel

Input: DC 24 V

Output: DC 24 V / 10 V / 9 V / 5 V

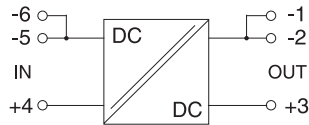


Dimensions

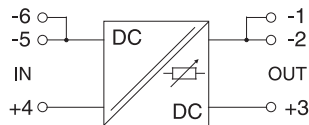


PIN assignment

762185/762186



762184/762084, 762187/762188



Description	Part-No.	Type	PU				
Screw terminal							
Output voltage/current	DC 24 V, 30 mA	762185	CV 7-2185 DC24V/24V	1			
	DC 10 V, 100 mA	762184	CV 7-2184 DC24V/10V	1			
	DC 5 V, 150 mA	762187	CV 7-2187 DC 24V/05/09V	1			
Spring terminal							
Output voltage/current	DC 24 V, 30 mA	762186	CV 7-2186 DC24V/24V	1			
	DC 10 V, 100 mA	762084	CV 7-2084 DC24V/10V	1			
	DC 5 V, 150 mA	762188	CV 7-2188 DC 24V/05/09V	1			
Input							
	762185/762186	762184/762084	762187/762188				
Nominal voltage	DC 24 V						
Operation voltage range	DC 16.8–30 V						
Rated current	21.5 mA	14 mA	15 mA				
Inrush current	-						
Internal fuse	-						
External fuse	-						
Power Factor Correction P.F.C.	-						
Status Indication	-	-	LED				
Short-circuit current	<250 mA						
Output							
	DC 24 V	DC 10 V	DC 5 V / 9 V				
Rated voltage output	DC 24 V	DC 10 V	DC 5 V / 9 V				
Rated current output	30 mA	100 mA	100 mA / 100 mA				
Configuration	-	-	via DIP switch (see instruction leaflet)				
Max. output current	-						
Short-circuit current	<900 mA						
Voltage trim range	-	±1.0 V via potentiometer	±0.5 V / ±1.0 V via potentiometer				
Load regulation	<1 %						
Rise time	<20 ms	<10 ms					
Ripple & Noise	<20 mV _{eff}	<10 mV _{eff}					
Temperature coefficient	-						
Hold up time	-						
Parallel/redundant operation	No						
Low power loss	-						
Over voltage protection	-						
Overtemperature protection	-						
Short circuit characteristics	Current limit						
General							
Insulation voltage input/output	1.5 kV _{eff}	0.5 kV _{eff}	1.5kV _{eff}				
Rated insulation voltage (EN 50178)	50 V						
Derating	-						
Operation temperature range	-25 °C – 60 °C						
Storage temperature range	-40 °C – 85 °C						
M.T.B.F.	-						
Dimensions (w × h × d)	6.2 × 90.0 × 92.5 mm						
Cooling	Air convection						
Housing material	PA						
Field installation	can be snapped onto top-hat rail TS 35 (EN 60715)						
Application height	-						
Installation position	Optional						
Protection class	IP 20 (IEC 529, EN 60529)						
IP rating	-						
Overvoltage category	I						
Pollution degree	2						
Weight (kg/piece)	0.040						
Termination	Screw terminal: 0.14–1.5 mm ²						
Approvals	-						
Accessories							
	Color	2-pole	3-pole	4-pole	8-pole	16-pole	PU
6 A jumper comb	red	762802	762805	762812	762822	762832	10
6 A jumper comb	white	762803	762806	762813	762823	762833	10
6 A jumper comb	blue	762804	762807	762814	762824	762834	10
Accessories							
	Color	Article number		Type	PU		
Tag holder 4×11 mm	white	681313		BZT-0411	100		
Isolation plate		760809		TP 7-0809	10		
Labels for laser printer A4 unpunched		681031		LEB-A4	1		

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Suppression Technology

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