



# Electronic Products for electrical panels

2011 - 2012 edition



UNI EN-ISO 9001



UNI EN-ISO 14001

**WARNING** If not specified, the technical data in this catalogue are typical and measured at 25°C (77°F), 230 Vac, Unom, Vdc and rated current; ripple is measured at 20 MHz with probe connected to 0.1 µF. The technical data in this catalogue are typical and are not binding for Cabur and may be modified without prior notice, simply for production or improvement and/or evolution reason. Please contact our technical-commercial offices for any relevant confirmation or updates. For more informations visit our web site [www.cabur.eu](http://www.cabur.eu).



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# Cabur power house

**C**ontinues to renew and expand its range of power supplies for use in industrial automation and control of processes and systems, improving product performance and technology to meet the needs created by the continuing changes in applications and regulations.

**QUALITY AND SAFETY:** Cabur was the first Italian company to obtain UL508 Industrial Control Equipment certification for industrial automation processes and Hazardous Location Class 1 Div. 2 for processes in dangerous areas, as well as to have been certified as conforming to the Directives on Electric Safety. It also has been EMC certified by an accredited laboratory. All of these are indispensable for the CE certified label.

## INNOVATION AND RESEARCH:

- 1997 - Cabur is the first Italian company to produce switching power supplies for Din-rail with 90-264Vac/110-340Vdc universal input.
- 2001 - Cabur is the first Italian company to produce high efficiency power supplies with resonant technology (the 20A three-phase dissipates only 36W compared with over 75W for our competitors at the time).
- 2009 – With the new generation of power supplies in the catalogue, Cabur has further improved performance using “Synchronous Rectifier” technology, which reduces power dissipation and operating temperature to the minimum, an indispensable factor in minimizing the size of the power supplies, which are the smallest on the market. The lifespan of a power supply is halved by every +10°C increase in operating temperature. Hence, reducing operating temperature is fundamental to endurance and reliability, two objectives that can be achieved only by using circuit technology and next generation components. Thanks to this combination, Cabur has achieved output of over 94% (the new 20A three-phase dissipates only 28W, compared to the 50-75W in heat dissipation found in other products currently on the market).

**HIGH OVERLOAD CAPACITY:** the new power supplies have an overload capacity of over +50% for 5 seconds or for several minutes (please see the technical data), while maintaining stable output voltage even under these conditions.

**SYSTEM COMMUNICATIONS:** all the CSF, CSG, and CSW Series models are provided with “intelligent” alarm contacts that commute when the output voltage drops below -10% of the nominal value. This allows the controls to activate automated or emergency procedures to reduce machine stoppage, production losses, and the risk to safety.

**TOTAL PROTECTION:** all models are provided with output protection against overload short circuiting, overtemperature, and overvoltage, both for input and output. Input for the three-phase models includes the Active Surge Suppressor – Inrush Current Limiter, which avoids malfunctioning in the case of overvoltage generated by commutation of loads or malfunctions on industrial networks, where the value can reach 3-4 times the network voltage, with a duration of 1.3ms (Regulation VDE-0160), which can be destructive for the input components. This increases reliability, especially in networks subject to power surges and power malfunctions.

**SHORT CIRCUIT** and overload protection: this serves to protect the power supply from malfunctions due to overloading and overheating of the components. This function can be designed by starting with different application needs, with varying practical results and costs. In automated applications, the operating conditions and the nature of the loads can vary greatly and are only partially known to the power supply designer. Power supplies for automated processes need to meet a number of requirements. They need to be protected from overcurrent, but at the same time they need to be able to supply loads which call for a high peak current, working at temperatures of at least 45° C, according to regulations, and sometimes higher, in critical ventilation situations and guaranteeing high reliability and acceptable costs.

The overcurrent protection must support the high peak currents required by loads such as filament lamps (cold, they make a short circuit), capacitive loads such as dc/dc converters and filter condensators (when these switch on they are seen as a short-circuit for a few tenths of a ms) or inductive loads (engines in dc, electromagnets, etc.) which at peak require currents from 5 – 30 times their nominal power. Frequently, all these loads must be started up at the same time. The peak current must be provided for a sufficient duration to “start” the load, which can go from a few tenths of a ms up to 5s.

With high power power supplies, which power various loads protected from overcurrent, the capacity to provide overcurrent is indispensable to guarantee selectivity in protection interventions. This is because it allows the fuse of the malfunctioning load to be “burned” before the electronic protection of the power supply intervenes, disconnecting the output and hence the entire system.

## ELECTRONIC OVERLOAD POWER SUPPLY PROTECTION CAN BE OBTAINED USING VARIOUS TECHNIQUES:

- switch off the output as soon as possible: this is cost effective but doesn't allow for either start up of heavy loads nor for protection selectivity for various loads.
- constant power protection: if the allowed overload is sufficiently high, it is possible to start up heavy loads. However, if the condition continues, the power supply will continue to operate in overload and with a high thermal stress level. Hiccup protection: combines the advantages of the techniques described above, while limiting the disadvantages because it allows over +50-100% of the overload for at least 5 seconds, and then switches off output for a longer break. In this way, the peak power necessary for heavy load peaks is obtained while component heating is decreased, as they can cool off during the break. Hiccup protection with high overcurrent output, for durations from 200 ms to over 5 sec., has been proven to satisfy the new requirements established by the Machinery Directive EN 60204-1.

Real operating temperature: the operating temperature range for all Cabur models is between -20 and +50°C at full load without derating (see technical data), certified in accordance with the rigorous UL508 standard. The project takes into consideration the ambient temperature, allowed overcurrent, and overcurrent duration when determining component size, and is always more than the 45°C required by the standards for electric panels. Ambient temperature is a fundamental reference parameter, because this influences not only performance, but also component operating temperature and power supply duration.

**HOLD UP TIME:** this is the time in which the power supply output supplies nominal voltage at nominal load. This performance is important because it limits the cases in which machine/system stoppage can occur due to voltage “holes” in the network. EMC standards establish that Hold Up time must be at least 10ms. For all Cabur power supplies, Hold Up time is greater than that required by the official standards, which ensures better operational consistency in networks with frequent voltage holes.

**MTBF:** this figure should be taken with a care, because it is the result of theoretical calculations that are easy to manipulate. For example, if we know that the mortality rate for 25 year old men is 0.1%/year, the resultant MTBF, calculated in accordance with SN29500 – IEC 61709, would be 800 years. Obviously, this result is highly unrealistic. The significant piece of information is the “life expectancy,” which for men averages about 75 years – less spectacular but more realistic. The same reasoning can be applied to electronic products for which, in accordance with the calculation methods, we can use an MTBF of 750,000 hours (85 years), or a life expectancy of about 70,000 hours (7.9 years, on average). The second estimate is less optimistic, but is without doubt closer to reality. As a consequence, data published regarding MTBF must be interpreted based on the credibility of the calculation methods used. In addition to the values according to SN 29500, Cabur has also chosen to declare those according to the MIL HDBKn217F standards, which are much stricter.

**CUSTOM POWER SUPPLIES:** Cabur designs and produces “custom” power supplies on request to meet the requirements of regulations and the high demanding applications. Furthermore our laboratory offers technical documentation and the measures which prove the conformity of the products with the directives on Electric Safety and Electromagnetic Compatibility, besides the necessary technical support to define the product characteristics on the basis of the client's needs and our own experience.

**THE ENVIRONMENT AND ROHS CONFORMANCE:** Cabur was one of the first Italian companies to obtain the International Environmental Certificate UNI EN ISO 14001, certified by CSQ for ecologically compatible treatment of all the materials used in our production.

## General Notes

**PARALLEL AND REDUNDANT PARALLEL CONNECTION:** all Cabur power supplies can be connected in parallel to combine the power of two or more power supplies. In addition, models that already include an output separation diode (ORing diode) are available for use with redundant parallels (please see the related item in the catalogue). We recommend adjusting the outputs of all the power supply units to the same voltage (tolerance  $\pm 50$  mV), applying the same calibration load, before connecting them in parallel. We also recommend using power supply units of the same model. If it is necessary to connect two power supplies without internal diodes in redundant parallel, the connection must be completed as in fig. 1.

**CONNECTION IN SERIES:** all Cabur power supplies can have their outputs connected in series to double the voltage (see fig. 2) or to obtain dual voltage output, for example with  $\pm 12$ V or  $\pm 24$  V (see fig. 3). We recommend that you use power supplies of the same model and an anti-parallel diode, of an appropriate size to resist the maximum current of the power supply.

**POWER SIGNAL OK:** this is found on all CSF, CSG, and CWS models. The 1A/30Vdc contact commutates when output voltage falls below the threshold of -10% of nominal voltage, in the case of a short circuit on the output line or an overload that exceeds the specifications, or due to network failure.

**100-340Vdc POWER SUPPLY:** available for certain models (please see technical data), which respect the following:

- power supply of 110...127 Vdc, reduces output current by 25%
- min. voltage allowed 100 Vdc, max 340 for single phase, 280...775 Vdc for single/two-phase, 564...775Vdc for three-phase (please see technical data)
- respect input polarity as indicated in the instructions.

### NOTE FOR POWER SUPPLIES WITH SECONDARY INPUT FROM A TRANSFORMER

**INSULATION:** this series of power supply units is not insulated.

**TYPE OF USE:** they are suitable for use in PELV (one pole of the Protective Extra Low Voltage earthed) and SELV (Safety Extra Low Voltage, no pole earthed). The transformer used must have double or reinforced isolation in accordance with CEI 14.6 / EN 60742.

In the case of use in PELV circuits, only earth one pole of the 24 Vdc of the power supply unit.

In the case of use in SELV circuits, do not earth the input earth terminal.

**Earthing one pole of the secondary of the transformer and the 24Vdc of the power supply would damage the power supply.**

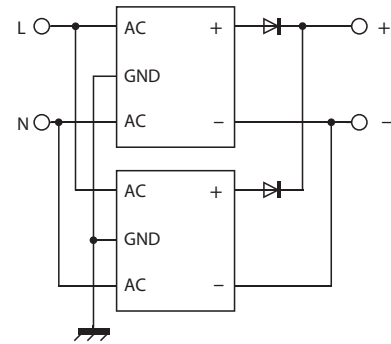


figure 1

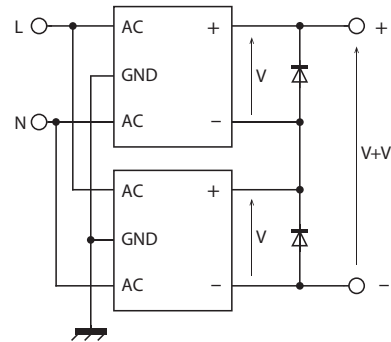


figure 2

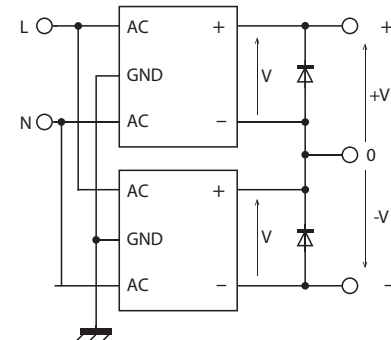


figure 3

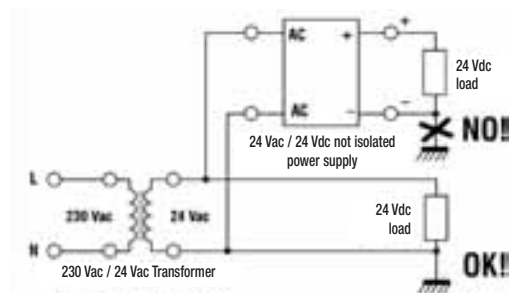


figure 4

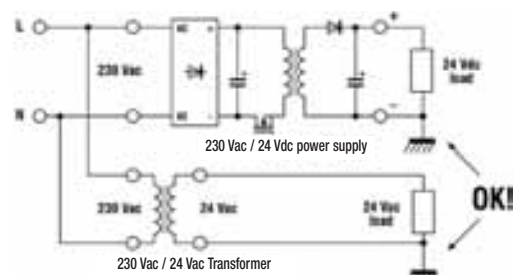


figure 5

# Power supply quick selection table

These tables allow you to quickly select only the items, then check if all product's technical data meet your application requirements.

## Single-phase switching power supply - Cool Power series

Output voltage	Output current	Input voltage	Notes	Type	Cat. No.	Page
10...15 Vdc	1.5...1 A	90...264 Vac / 100...320 Vdc	(1) (8) (9)	CSF30B	XCSF30B	22
12...15 Vdc	6 A	90...264 Vac / 100...345 Vdc	(1) (7) (8) (9)	CSF85B	XCSF85B	23
12...15 Vdc	16 A	120 Vac / 230 Vac	(2) (7) (8)	CSF240B	XCSF240B	25
24 Vdc	1.2 A	90...264 Vac / 100...320 Vdc	(1) (9)	CSF30C	XCSF30C	22
24 Vdc	3.5 A	90...264 Vac / 100...345 Vdc	(1) (7) (9)	CSF85C	XCSF85C	23
24 Vdc	3.5 A	90...264 Vac / 100...345 Vdc	(1) (6) (7) (9)	CSF85CP	XCSF85CP	23
24 Vdc	5 A	90...264 Vac / 100...345 Vdc	(1) (7) (9)	CSF120C	XCSF120C	24
24 Vdc	5 A	90...264 Vac / 100...345 Vdc	(1) (6) (7) (9)	CSF120CP	XCSF120CP	24
24 Vdc	10 A	120 Vac / 230 Vac	(2) (7)	CSF240C	XCSF240C	25
24 Vdc	10 A	120 Vac / 230 Vac	(2) (6) (7)	CSF240CP	XCSF240CP	25
24 Vdc	20 A	120 Vac / 230 Vac	(2) (6) (7)	CSF500C	XCSF500C	27
48 Vdc	2.5 A	90...264 Vac / 100...345 Vdc	(1) (6) (7)	CSF120DP	XCSF120DP	24
48 Vdc	5 A	120 Vac / 230 Vac	(2) (6) (7)	CSF240DP	XCSF240DP	25
48 Vdc	10 A	120 Vac / 230 Vac	(2) (6) (7)	CSF500D	XCSF500D	27
72 Vdc	3.5 A	120 Vac / 230 Vac	(2) (6) (7) (8)	CSF240G	XCSF240G	26
72 Vdc	6.7 A	120 Vac / 230 Vac	(2) (6) (7) (8)	CSF500G	XCSF500G	28

## Single-phase switching power supply - Easy Power series

Output voltage	Output current	Input voltage	Notes	Type	Cat. No.	Page
24 Vdc	3.5 A	90...264 Vac	(1)	CSP85C	XCSP85C	31
24 Vdc	3.5 A	90...264 Vac	(1)	CSL85C	XCSL85C	31
24 Vdc	5 A	90...264 Vac	(1)	CSP120C	XCSP120C	32
24 Vdc	5 A	90...264 Vac	(1)	CSL120C	XCSL120C	32
24 Vdc	10 A	120 Vac / 230 Vac	(2)	CSP240C	XCSP240C	33
24 Vdc	10 A	120 Vac / 230 Vac	(2)	CSL240C	XCSL240C	33

## Single-phase switching power supply - Domotic Power series

Output voltage	Output current	Input voltage	Notes	Type	Cat. No.	Page
5...15 Vdc	3...1.5 A	90...264 Vac / 100...345 Vdc	(1) (8) (9)	CSD30E	XCSD30E	18
±12...±15	0.6 A	90...264 Vac / 100...345 Vdc	(1) (8) (9)	CSD30F	XCSD30F	18
12 Vdc	1.2 A	90...264 Vac / 100...315 Vdc	(1) (9)	CSD15B	XCSD15B	17
12...15 Vdc	3.5...3 A	90...264 Vac / 100...345 Vdc	(1) (8) (9)	CSD50B	XCSD50B	19
24 Vdc	0.6 A	90...264 Vac / 100...315 Vdc	(1) (9)	CSD15C	XCSD15C	17
24 Vdc	1.2 A	90...264 Vac / 100...345 Vdc	(1) (9)	CSD30C	XCSD30C	18
24 Vdc	3 A	90...264 Vac / 100...345 Vdc	(1) (9)	CSD70C	XCSD70C	20

## Single phase, 2-phase and 3-phase switching power supply - Universal Power series

Output voltage	Output current	Input voltage	Notes	Type	Cat. No.	Page
12...15 Vdc	8...7 A	1-2x 230-400-500 Vac	(1) (3) (8)	CSW120B	XCSW120B	35
12...15 Vdc	8...7 A	1-2x 230-400-500 Vac	(1) (3) (7) (8) (9)	CSW121B	XCSW121B	36
12...15 Vdc	16...15 A	1-2-3x 230-400-500 Vac	(1) (3) (4) (7) (8) (9)	CSW241B	XCSW241B	38
24 Vdc	5 A	1-2x 230-400-500 Vac	(1) (3)	CSW120C	XCSW120C	35
24 Vdc	5 A	1-2x 230-400-500 Vac	(1) (3) (7) (9)	CSW121C	XCSW121C	36
24 Vdc	10 A	1-2x 230-400-500 Vac	(1) (3) (7)	CSW240C	XCSW240C	37
24 Vdc	10 A	1-2-3x 230-400-500 Vac	(1) (3) (4) (7) (9)	CSW241C	XCSW241C	38
48 Vdc	2.5 A	1-2x 230-400-500 Vac	(1) (3) (6) (7) (9)	CSW121DP	XCSW121DP	36
48 Vdc	5 A	1-2-3x 230-400-500 Vac	(1) (3) (4) (6) (7) (9)	CSW241DP	XCSW241DP	38
72 Vdc	3.3 A	1-2-3x 230-400-500 Vac	(1) (3) (4) (6) (7) (8) (9)	CSW241G	XCSW241G	38

# Power supply quick selection table

These tables allow you to quickly select only the items, then check if all product's technical data meet your application requirements.

## 2-phase and 3-phase switching power supply - Triple Power series

Output voltage	Output current	Input voltage	Notes	Type	Cat. No.	Page
24 Vdc	3.5 A	2x 400-500 Vac	(3)	CSB85C	XCSB85C	40
24 Vdc	6 A	2x 400-500 Vac	(3)	CSB150C	XCSB150C	41
24 Vdc	10 A	3x 400-500 Vac	(4) (7)	CSG240C	XCSG240C	42
24 Vdc	20 A	3x 400-500 Vac	(4) (7)	CSG500C	XCSG500C	43
24 Vdc	30 A	3x 400-500 Vac	(4) (7)	CSG720C	XCSG720C	44
24 Vdc	40 A	3x 400-500 Vac	(4) (7)	CSG960C	XCSG960C	45
24 Vdc	100 A	3x 400-500 Vac	(4) (6) (7) (8)	CSG2401C	XCSG2401C	46
48 Vdc	10 A	3x 400-500 Vac	(4) (6) (7)	CSG500D	XCSG500D	43
48 Vdc	15 A	3x 400-500 Vac	(4) (6) (7)	CSG720D	XCSG720D	44
48 Vdc	20 A	3x 400-500 Vac	(4) (6) (7)	CSG960D	XCSG960D	45
48 Vdc	50 A	3x 400-500 Vac	(4) (6) (7) (8)	CSG2401D	XCSG2401D	46
72 Vdc	6.7 A	3x 400-500 Vac	(4) (6) (7) (8)	CSG500G	XCSG500G	43
72 Vdc	13.3 A	3x 400-500 Vac	(4) (6) (7) (8)	CSG960G	XCSG960G	45
72 Vdc	33 A	3x 400-500 Vac	(4) (6) (7) (8)	CSG2401G	XCSG2401G	46
170 Vdc	14 A	3x 400-500 Vac	(4) (6) (7) (8)	CSG2401R	XCSG2401R	46

## Power supply with IP65 protection degree

Output voltage	Output current	Input type	Input voltage	Notes	Type	Cat. No.	Page
24 Vdc	5 A	single-phase	90...264 Vac / 100...345 Vdc	(1) (7) (9)	CSF565	XCSF565	29

## Power supply with input from transformer

Output voltage	Output current	Input type	Input voltage	Notes	Type	Cat. No.	Page
1.2...24 Vdc	1.5 A	from transformer	9...26 Vac	(5) (8)	CL1R	XCL1R	53
1.2...24 Vdc	5 A	from transformer	9...26 Vac	(5) (8)	CL5R	XCL5R	53
24 Vdc	10 A	from transformer	24 Vac	(5)	CSE10	XCSE10	52

## Filtered power supply with not stabilised output

Output voltage	Output current	Input type	Input voltage	Notes	Type	Cat. No.	Page
12...24 Vdc	1 A	from transformer	9...20 Vac	(5)	AR1	XAR1	54
12...24 Vdc	6 A	from transformer	9...20 Vac	(5)	AR6	XAR6	54

## DC/DC isolated converter

Input voltage	Output voltage	Output current	Notes	Type	Cat. No.	Page
12 Vdc	24 Vdc	5 A	(9)	CSA120BC	XCSA120BC	48
12 Vdc	48 Vdc	2.5 A	(9)	CSA120BD	XCSA120BD	48
24 Vdc	12...15 Vdc	7 A	(8) (9)	CSA120CB	XCSA120CB	48
24 Vdc	24 Vdc	5 A	(9)	CSA120CC	XCSA120CC	48
48 Vdc	12...15 Vdc	8 A	(8) (9)	CSA120DB	XCSA120DB	49
48 Vdc	24 Vdc	5 A	(9)	CSA120DC	XCSA120DC	49
110 Vdc	24 Vdc	10 A	(6) (7) (9)	CSA240FC	XCSA240FC	49

(All single phase wide range power supply can be feed at 110 Vdc)

### Note

- (1) wide range single-phase input
- (2) double range single-phase input
- (3) two-phase input
- (4) three-phase input

- (5) input from a secondary of a transformer
- (6) redundant version
- (8) with failure contact (power good)
- (8) with adjustable output
- (9) DC/DC converter



# Modular switching power supply CSD series

## DOMOTIC POWER

Single phase switching power supplies with output power up to 70W for civil and industrial automation applications.

The housings have the standard dimensions for installation in DIN modular panels, and are **optimized for the deployment in the field of building automation**. The high performance and compact size make them an excellent solution for low-depth electrical panels.

The high efficiency and low dissipated power save energy and increase the life of the components.

### Suggested uses

- Applications in industrial automation
- Applications in civil automation
- General applications in systems fit into small remote panels

### Main features

- The 90...264 Vac and 110...370 Vdc input makes them suitable for use on all power supply lines.
- These power supplies are Insulation Class 2, thus they don't require grounding, which reduces costs and times during installation into remote panels, surveillance and monitoring systems.
- Their high efficiency reduces energy consumption and working temperature and allows their use in small panels.
- Their backup power allows the supply of continuous current at least +50% above the rated value ensuring safety and reliability.
- Dimensioned power supply and surge protection supplying breakaway starting currents 150% above the rated value required by heavy loads.
- Thermal protection prevents faults caused by prolonged overload at high ambient temperatures.
- Their internal components' high efficiency and excellent ventilation offer small dimensions and IP20 protection against accidental contacts in compliance with IEC529.



### Short circuit and overload

*Designed to provide load start up current required by medium loads*

### Compact size

*Ideal solution for electrical panels with low profile*

### High Efficiency

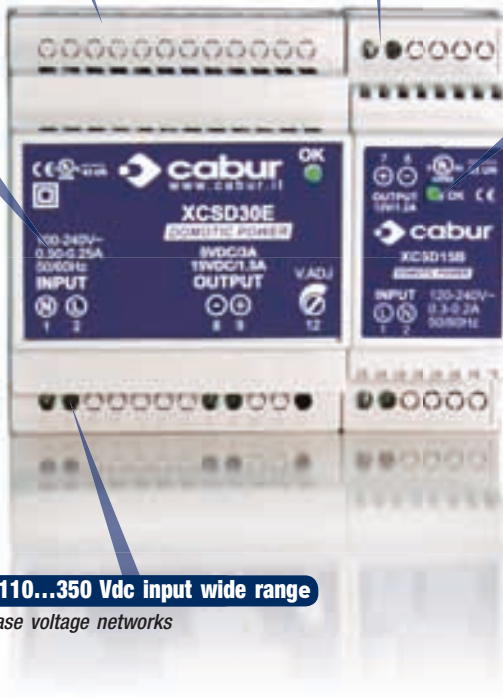
*Designed to save energy and reduce working temperature*

### Power boost

*The output power supplied reaches up to 130% of the rated value*

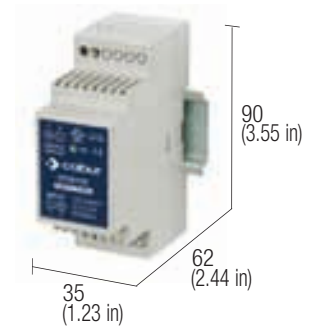
### 90...264 Vac and 110...350 Vdc input wide range

*Suitable in single phase voltage networks*



# Single-phase switching power supply 120-230 Vac output power 15 W

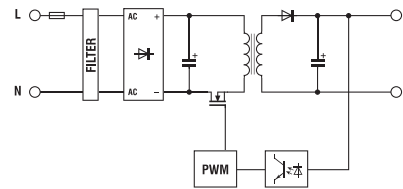
- Single-phase input 90...264 Vac and DC 100...315 Vdc
- Short circuit, overload, over temperature, input overvoltage protections
- Isolation Class 2, no grounding needed
- Compact dimensions
- Suitable for applications in SELV and PELV circuits



## NOTES

- The depth dimension includes the DIN rail clamp.
- (2) Over 50°C (122°F) apply a derating: C version: -0.015 A/°C; B version: -0.03 A/°C.
- (3) Overload and short circuit current depends on the total line resistance

## BLOCK DIAGRAM



## VERSIONS

- Output 24 Vdc 0.6 A
- Output 24 Vdc 0.6 A redundant version
- Output 12 Vdc 1.2 A
- Output 48 Vdc 0.3 A

## Cod. XCSD15C Cod. XCSD15B

CSD15C	-	CSD15B	-
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## INPUT TECHNICAL DATA

- Input rated voltage
- Frequency
- Current @ nominal Iout (Iin 120 / 230 Vac)
- Inrush peak current
- Power factor
- Internal protection fuse
- External protection on AC line

<b>120-230 Vac</b> (range 90...264 Vac / 100...315 Vdc)
47...63 Hz
0.3 A / 0.16 A ± 10%
< 5 A
> 0.6
T 1 A replaceable
circuit breaker: 2 A - C characteristic - fuse: T 2 A

## OUTPUT TECHNICAL DATA

- Output rated voltage
- Output adjustable range
- Continuous current
- Overload limit
- Short circuit peak current
- Load regulation
- Ripple @ nominal ratings
- Hold up time @ Iin (Iin 120 / 230 Vac)
- Overload / short circuit protections
- Status display
- Alarm contact threshold
- Parallel connection
- Redundant parallel connection

24 Vdc ± 1%	12 Vdc ± 0.5 Vdc
—	—
<b>0.6 A @ 50°C</b> (2)	<b>1.2 A @ 50°C</b> (2)
1.08 A (3)	2.16 A (3)
—	—
< 1%	< 1%
≤ 30 mVpp	≤ 30 mVpp
>12 ms / >20 ms	>12 ms / >20 ms
hiccup at the overload limit with auto reset / over temperature protection	
"DC OK" green LED	
—	—
possible	possible
possible with external ORing diode	possible with external ORing diode

## GENERAL TECHNICAL DATA

- Efficiency (Iin 120 / 230 Vac)
- Dissipated power (Iin 120 / 230 Vac)
- Operating temperature range
- Input/output isolation
- Input/ground isolation
- Output/ground isolation
- Standard/approvals
- EMC Standards
- MTBF @ 25°C @ nominal ratings
- Overvoltage category/Pollution degree
- Protection degree
- Connection terminal
- Housing material
- Approx. weight
- Mounting information

>85% / >87%	>85% / >87%
19 W / 13 W	21 W / 15 W
-20...+60°C, with derating over 50°C / over temperature protection (2)	
3 kVac / 60 s SELV output	
class 2 without PE connection	
class 2 without PE connection	
EN50178, EN61558, EN60950, IEC950, UL508	
EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11	
>750'000 h acc. to SN 29500 / >250'000 h acc. to MIL Std. HDBK 217F	
II / 2	
IP 20 IEC 529, EN60529	
2.5 mm <sup>2</sup> fixed screw type	
UL94V-0 plastic material	
130 g (5.12 oz)	
vertical on rail, allow 10 mm spacing between adjacent components	

## MOUNTING ACCESSORIES

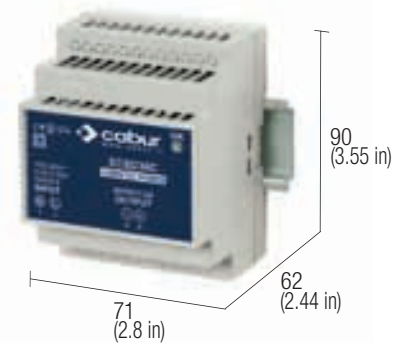
- Mounting rail type according to IEC60715/TH35-7.5
- Mounting rail type according to IEC60715/G32

## PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

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# Single-phase switching power supply 120-230 Vac output power 30 W

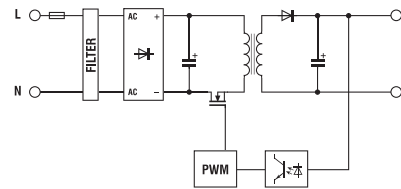
- Single-phase input 90...264 Vac and DC 100...345 Vdc
- Short circuit, overload, over temperature, input overvoltage protections
- Isolation Class 2, no grounding needed
- Compact dimensions
- Suitable for applications in SELV and PELV circuits



## NOTES

- The depth dimension includes the DIN rail clamp.
- (2) Over 50°C (122°F) apply a derating: C and F versions: -0.03 A/°C; E version: -0.08...-0.04 A/°C.
- (3) Overload and short circuit current depends on the total line resistance.
- (4) Output current depends on the output voltage: 3.3A @ 5Vdc, 2A @ 9Vdc, 2.2A @ 12Vdc, 1.5A @ 15Vdc.

## BLOCK DIAGRAM



## VERSIONS

- Output 24 Vdc 1.2 A
- Output 24 Vdc 1.2 A redundant version
- Output 5...15 Vdc 3.3...1.5 A
- Output ±12...±15 Vdc 0.6 A

## Cod. XCSD30C

## Cod. XCSD30E

## Cod. XCSD30F

## INPUT TECHNICAL DATA

Input rated voltage	120-230 Vac (range 90...264 Vac / 100...345 Vdc)		
Frequency	47...63 Hz		
Current @ nominal Iout (Uin 120 / 230 Vac)	0.55 A / 0.28 A ± 10%	0.45 A / 0.25 A ± 10%	0.4 A / 0.2 A ± 10%
Inrush peak current	< 13 A	< 13 A	< 13 A
Power factor	> 0.6		
Internal protection fuse	T 2 A replaceable		
External protection on AC line	circuit breaker: 3 A - C characteristic - fuse: T 3.15 A		

CSD30C	-	CSD30E	CSD30F
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## OUTPUT TECHNICAL DATA

Output rated voltage	24 Vdc ± 1%	5...15 Vdc	±12...±15 Vdc
Output adjustable range	—	5...15 Vdc	±12...±15 Vdc
Continuous current	1.2 A @ 50°C (2)	3.3...1.5 A @ 50°C (2)(4)	2x0.6 A @ 50°C (2)
Overload limit	1.6 (3)	4 A (3)	>2x0.8 A (3)
Short circuit peak current	—	—	—
Load regulation	< 1%	< 1%	< 1%
Ripple @ nominal ratings	≤ 50 mVpp	≤ 50 mVpp	≤ 50 mVpp
Hold up time @ Iin (Uin 120 / 230 Vac)	>30 ms / >60 ms	>50 ms / >100 ms	>50 ms / >100 ms
Overload / short circuit protections	hiccup at the overload limit with auto reset / over temperature protection		
Status display	"DC OK" green LED		
Alarm contact threshold	—	—	—
Parallel connection	possible	possible	possible
Redundant parallel connection	possible with external ORing diode	possible with external ORing diode	possible with external ORing diode

24 Vdc ± 1%	5...15 Vdc	±12...±15 Vdc
1.2 A @ 50°C (2)	3.3...1.5 A @ 50°C (2)(4)	2x0.6 A @ 50°C (2)
1.6 (3)	4 A (3)	>2x0.8 A (3)
< 1%	< 1%	< 1%
≤ 50 mVpp	≤ 50 mVpp	≤ 50 mVpp
>30 ms / >60 ms	>50 ms / >100 ms	>50 ms / >100 ms
hiccup at the overload limit with auto reset / over temperature protection		
"DC OK" green LED		
—	—	—
possible	possible	possible
possible with external ORing diode	possible with external ORing diode	possible with external ORing diode

## GENERAL TECHNICAL DATA

Efficiency (Uin 120 / 230 Vac)	>85% / >87%	>87% / >89%	>87% / >89%
Dissipated power (Uin 120 / 230 Vac)	5.2 W / 4.5 W	4.5 W / 3.7 W	4.5 W / 3.7 W
Operating temperature range	-20...+60°C, with derating over 50°C / over temperature protection (2)		
Input/output isolation	3 kVac / 60 s SELV output		
Input/ground isolation	class 2 without PE connection		
Output/ground isolation	class 2 without PE connection		
Standard/approvals	EN50178, EN61558, EN60950, IEC950, UL508		
EMC Standards	EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11		
MTBF @ 25°C @ nominal ratings	>750'000 h acc. to SN 29500 / >250'000 h acc. to MIL Std. HDBK 217F		
Overvoltage category/Pollution degree	II / 2		
Protection degree	IP 20 IEC 529, EN60529		
Connection terminal	2.5 mm <sup>2</sup> fixed screw type		
Housing material	UL94V-0 plastic material		
Approx. weight	200 g (7.06 oz)		
Mounting information	vertical on rail, allow 10 mm spacing between adjacent components		

24 Vdc ± 1%	5...15 Vdc	±12...±15 Vdc
1.2 A @ 50°C (2)	3.3...1.5 A @ 50°C (2)(4)	2x0.6 A @ 50°C (2)
1.6 (3)	4 A (3)	>2x0.8 A (3)
< 1%	< 1%	< 1%
≤ 50 mVpp	≤ 50 mVpp	≤ 50 mVpp
>30 ms / >60 ms	>50 ms / >100 ms	>50 ms / >100 ms
hiccup at the overload limit with auto reset / over temperature protection		
"DC OK" green LED		
—	—	—
possible	possible	possible
possible with external ORing diode	possible with external ORing diode	possible with external ORing diode

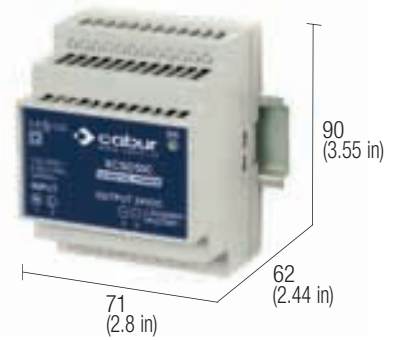
## MOUNTING ACCESSORIES

- Mounting rail type according to IEC60715/TH35-7.5
- Mounting rail type according to IEC60715/G32

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

# Single-phase switching power supply 120-230 Vac output power 50 W

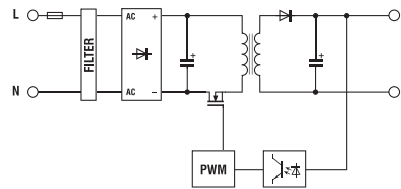
- Single-phase input 90...264 Vac and DC 100...345 Vdc
- Short circuit, overload, over temperature, input overvoltage protections
- Isolation Class 2, no grounding needed
- Compact dimensions
- Suitable for applications in SELV and PELV circuits



## NOTES

- The depth dimension includes the DIN rail clamp.
- (2) With 100...127 Vdc input voltage, constant output power and  $T_a > 45^\circ\text{C}$ , the output current must be derated by 25%
- (3) Over  $50^\circ\text{C}$  ( $122^\circ\text{F}$ ) apply a derating:  
C version:  $-0.06\text{ A}/^\circ\text{C}$ ; B version:  $-0.085\text{ A}/^\circ\text{C}$ .
- (4) Overload and short circuit current depends on the total line resistance.

## BLOCK DIAGRAM



## VERSIONS

- Output 24 Vdc 2.2 A
- Output 24 Vdc 2.2 A redundant version
- Output 12...15 Vdc 3.5...3 A
- Output 48 Vdc 1.1 A

## Cod. XCSD50B

## INPUT TECHNICAL DATA

Input rated voltage	120-230 Vac (range 90...264 Vac / 100...345 Vdc) (2)
Frequency	47...63 Hz
Current @ nominal Iout (Uin 120 / 230 Vac)	0.9 A / 0.5 A $\pm 10\%$
Inrush peak current	< 15 A
Power factor	> 0.6
Internal protection fuse	T 2 A replaceable
External protection on AC line	circuit breaker: 3 A - C characteristic - fuse: T 3.15 A

## OUTPUT TECHNICAL DATA

Output rated voltage	12...15 Vdc
Output adjustable range	12...15 Vdc
Continuous current	3.5...3 A @ $50^\circ\text{C}$ (3)
Overload limit	4.37...3.75 A (4)
Short circuit peak current	—
Load regulation	< 1%
Ripple @ nominal ratings	$\leq 50\text{ mVpp}$
Hold up time @ In (Uin 120 / 230 Vac)	>20 ms / >40 ms
Overload / short circuit protections	hiccup at the overload limit with auto reset / over temperature protection
Status display	"DC OK" green LED
Alarm contact threshold	—
Parallel connection	possible
Redundant parallel connection	possible with external ORing diode

## GENERAL TECHNICAL DATA

Efficiency (Uin 120 / 230 Vac)	>88% / >90%
Dissipated power (Uin 120 / 230 Vac)	6.8 W / 5.5 W
Operating temperature range	$-20\text{...}+60^\circ\text{C}$ , with derating over $50^\circ\text{C}$ / over temperature protection (3)
Input/output isolation	3 kVac / 60 s SELV output
Input/ground isolation	class 2 without PE connection
Output/ground isolation	class 2 without PE connection
Standard/approvals	EN50178, EN61558, EN60950, IEC950, UL508
EMC Standards	EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11
MTBF @ $25^\circ\text{C}$ @ nominal ratings	>750'000 h acc. to SN 29500 / >250'000 h acc. to MIL Std. HDBK 217F
Overvoltage category/Pollution degree	II / 2
Protection degree	IP 20 IEC 529, EN60529
Connection terminal	2.5 mm <sup>2</sup> fixed screw type
Housing material	UL94V-0 plastic material
Approx. weight	200 g (7.06 oz)
Mounting information	vertical on rail, allow 10 mm spacing between adjacent components

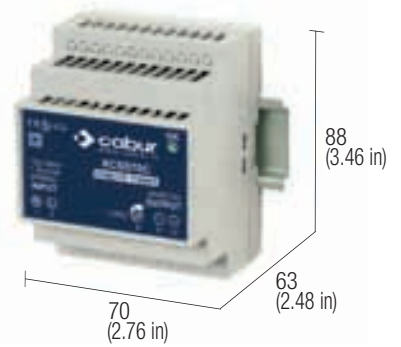
## MOUNTING ACCESSORIES

- Mounting rail type according to IEC60715/TH35-7.5
- Mounting rail type according to IEC60715/G32

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

# Single-phase switching power supply 120-230 Vac output power 70 W

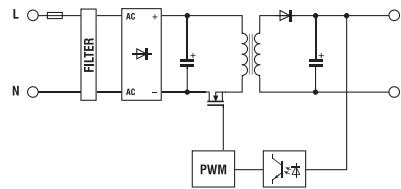
- Single-phase input 90...264 Vac and DC 100...345 Vdc
- Short circuit, overload, over temperature, input overvoltage protections
- Isolation Class 2, no grounding needed
- Compact dimensions
- Suitable for applications in SELV and PELV circuits



## NOTES

- The depth dimension includes the DIN rail clamp.
- (2) With 100...127 Vdc input voltage, constant output power and  $T_a > 45^\circ\text{C}$ , the output current must be derated by 25%.
- (3) Over  $50^\circ\text{C}$  ( $122^\circ\text{F}$ ) apply a derating: C version:  $-0.15\text{ A}/^\circ\text{C}$ .
- (4) Overload and short circuit current depends on the total line resistance.

## BLOCK DIAGRAM



## VERSIONS

- Output 24 Vdc 3 A
- Output 24 Vdc 3 A redundant version
- Output 12...15 Vdc 5...4 A
- Output 48 Vdc 1.5 A

Cod. XCS70C			
CSD70C			
	-		
		-	
			-

## INPUT TECHNICAL DATA

- Input rated voltage
- Frequency
- Current @ nominal Iout (Iin 120 / 230 Vac)
- Inrush peak current
- Power factor
- Internal protection fuse
- External protection on AC line

<b>120-230 Vac</b> (range 90...264 Vac / 100...370 Vdc) (2)
47...63 Hz
1.25 A / 0.8 A $\pm 10\%$
< 15 A
> 0.6
T 2 A not replaceable
circuit breaker: 4 A C characteristic - fuse: T 3.15 A

## OUTPUT TECHNICAL DATA

- Output rated voltage
- Output adjustable range
- Continuous current
- Overload limit
- Short circuit peak current
- Load regulation
- Ripple @ nominal ratings
- Hold up time @ Iin (Iin 120 / 230 Vac)
- Overload / short circuit protections
- Status display
- Alarm contact threshold
- Parallel connection
- Redundant parallel connection

<b>24 Vdc</b>			
24...27.5 Vdc			
<b>3 A @ 55°C</b> (3)			
4 A (4)			
—			
< 1%			
$\leq 60\text{ mVpp}$			
>15 ms / >30 ms			
hiccup at the overload limit with auto reset / over temperature protection			
"DC OK" green LED			
—			
possible			
possible with external ORing diode			

## GENERAL TECHNICAL DATA

- Efficiency (Iin 120 / 230 Vac)
- Dissipated power (Iin 120 / 230 Vac)
- Operating temperature range
- Input/output isolation
- Input/ground isolation
- Output/ground isolation
- Standard/approvals
- EMC Standards
- MTBF @ 25°C @ nominal ratings
- Overvoltage category/Pollution degree
- Protection degree
- Connection terminal
- Housing material
- Approx. weight
- Mounting information

>87% / >89%			
10.4 W / 8.6 W			
-20...+60°C, with derating over 55°C (3)			
3 kVac / 60 s SELV output			
class 2 without PE connection			
class 2 without PE connection			
EN50178, EN61558, EN60950, IEC950, UL508			
EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11			
>750'000 h acc. to SN 29500 / >250'000 h acc. to MIL Std. HDBK 217F			
II / 2			
IP 20 IEC 529, EN60529			
2.5 mm <sup>2</sup> fixed screw type			
UL94V-0 plastic material			
250 g (8.82 oz)			
vertical on rail, allow 10 mm spacing between adjacent components			

## MOUNTING ACCESSORIES

- Mounting rail type according to IEC60715/TH35-7.5
- Mounting rail type according to IEC60715/G32

<b>PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB</b>
—

# Switching power supply GSF series

## COOL POWER

**DIN-rail single phase switching power supplies**, specifically designed for applications in industrial automation panels and process control panels. They can deliver +60% to +80% of the nominal current for a sustained period keeping the output voltage constant; the alarm contact is controlled by a voltage threshold, and it switches when the voltage drops under 90% of the rated output value.

**Thanks to these features and to the numerous international certifications, this series of power supplies allows engineers to meet all the requirements of the new EN 60204-1 Machinery Directive**, to enable the protection devices connected to the output to trigger quickly, safely and above all selectively, thus ensuring continuity of service to the other parts of the system.

### Suggested uses

- Applications in industrial automation requiring high levels of efficiency and reliability
- Applications requiring selectivity of surge protection devices on DC lines.
- Application in machinery automation requiring high levels of reliability in terms of control and safety voltage
- Applications in process control
- Heavy duty uses
- Applications in civil automation

### Main features

- The 90...264 Vac and 110...370 Vdc input makes them suitable for use on all power supply lines.
- Threshold alarm contact warning when the voltage drops 90% below the rated value.
- Versions with integrated Oring diode for redundant parallel connections, avoiding the use of external devices and reducing dimensions and installation costs.
- Their high efficiency reduces energy consumption and components' operating temperature allowing their use in small panels and under severe ambient conditions.
- Their backup power allows the supply of current and voltage at least +60-80% above the rated value for a few minutes ensuring safety and reliability.
- The output voltage may be adjusted and the output is protected against the input of surges coming from the DC line and caused by inductive loads.
- The output is equipped with double electronic protection devices preventing dangerous voltages which may damage powered components in the event of internal faults.
- Thermal protection prevents faults in the event of prolonged overloads at high ambient temperatures.
- Their design ensures excellent ventilation to internal components, small dimensions and IP20 protection against accidental contacts in compliance with IEC529.
- Thanks to their high efficiency and excellent ventilation, they are the smallest devices available on the market.

### Special power supplies for engines in DC, Brushless, and relative drives

New 48Vdc and 72-85Vdc models have been introduced, designed to reliably power engines in DC. They:

- Supply peak power equal to even 4-5 times the nominal current, which is required by the engine during the peak phase
- Have an output stage protected from overvoltage generated by the engines and drives during braking, which could otherwise cause malfunctions or cause the power supply to lose control over output voltage stability
- Provide output voltage at 48Vdc, and 72-85Vdc. By increasing the voltage of the engine power supply, the same power can be obtained at lower current, with notable advantages for performance, engine construction, cables, and drives.



### Extremely compact dimensions

They are among the smallest on the market, optimising the use of space in the panel without compromising performance

### Power boost

The output power reaches 120% of the nominal value for several minutes, up to 160% during an overload, and up to 300% in the event of a short-circuit, to enable the protection devices connected to the output to trigger quickly, safely and selectively, without the use of additional modules

### Short circuit and overload

Designed to provide load start up current required by heavy loads

### High Efficiency

Designed to save energy and reduce working temperature

### Integrated smart alarm contact

Activated when output voltage decreases below 90% of rated value

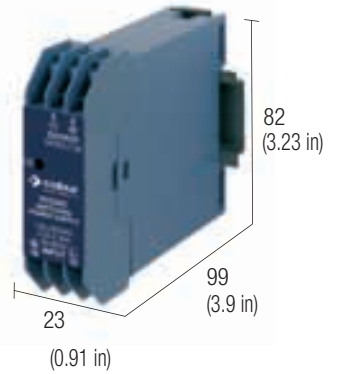
### 90...264 Vac and 110...350 Vdc input wide range

Suitable in all single phase supply voltage networks



# Single-phase switching power supply 120-230 Vac output power 30 W

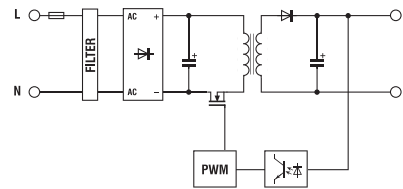
- Single-phase input 90...264 Vac and DC 100...320 Vdc
- Short circuit, overload, over temperature protection
- Isolation Class 2, no grounding needed
- Compact dimensions
- Suitable for applications in SELV and PELV circuits



## NOTES

- The depth dimension includes the DIN rail clamp.
- (1) Version available upon request; for information call our sales department, local agent or representative
  - (2) With 100...127 Vdc input voltage, constant output power and  $T_a > 45^\circ\text{C}$ , the output current must be derated by 25%
  - (3) Over  $50^\circ\text{C}$  ( $122^\circ\text{F}$ ) apply a derating: C version:  $-0.03 \text{ A}/^\circ\text{C}$ ; B version:  $-0.038 \text{ A}/^\circ\text{C}$ ; F version:  $-0.013 \text{ A}/^\circ\text{C}$
  - (4) Overload and short circuit current depends on the total line resistance.

## BLOCK DIAGRAM



## VERSIONS

- Output 24 Vdc 1.2 A
- Output 10...15 Vdc 1.5 A
- Output  $\pm 12... \pm 15$  Vdc 0.5 A

Cod. XCSF30C	Cod. XCSF30B	Cod. XCSF30F
CSF30C		
	CSF30B	
		CSF30F (1)

## INPUT TECHNICAL DATA

- Input rated voltage
- Frequency
- Current @ nominal Iout (Uin 120 / 230 Vac)
- Inrush peak current
- Power factor
- Internal protection fuse
- External protection on AC line

<b>120-230 Vac</b> (range 90...264 Vac / 100...320 Vdc) (2)		
47...63 Hz		
0.55 A / 0.3 A $\pm 10\%$	0.35 A / 0.2 A $\pm 10\%$	
< 25 A		
> 0.60		
T 1,25 A not replaceable		
circuit breaker: 2 A - C characteristic - fuse: T 2 A		

## OUTPUT TECHNICAL DATA

- Output rated voltage
- Output adjustable range
- Continuous current
- Overload limit
- Short circuit peak current
- Load regulation
- Ripple @ nominal ratings
- Hold up time @ In (Uin 120 / 230 Vac)
- Overload / short circuit protections
- Status display
- Alarm contact threshold
- Parallel connection
- Redundant parallel connection

24 Vdc $\pm 1\%$	12 - 15 Vdc	$\pm 12 \pm 15$ Vdc
—	10...15 Vdc	$\pm 12... \pm 15$ Vdc
<b>1.2 A @ 50°C</b> (3)	<b>1.5...1 A @ 50°C</b> (3)	<b>0.5 A @ 50°C</b> (3)
1.4 A (4)	1.7...1.2 A (4)	0.8...0.6 A (4)
—	—	—
< 1%		
$\leq 50 \text{ mVpp}$		
>10 ms / >30 ms		
hiccup at the overload limit with auto reset		
"DC OK" green LED		
—		
possible		
possible with external ORing diode		

## GENERAL TECHNICAL DATA

- Efficiency (Uin 120 / 230 Vac)
- Dissipated power (Uin 120 / 230 Vac)
- Operating temperature range
- Input/output isolation
- Input/ground isolation
- Output/ground isolation
- Standard/approvals
- EMC Standards
- MTBF @ 25°C @ nominal ratings
- Overvoltage category/Pollution degree
- Protection degree
- Connection terminal
- Housing material
- Approx. weight
- Mounting information

>86% / >87%
4.7 W / 4.3 W
-20...+60°C, with derating over 50°C (3)
3 kVac / 60 s SELV output
class 2 without PE connection
class 2 without PE connection
EN50178, EN61558, EN60950, IEC950, UL508, UL60950
EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11
>750'000 h acc. to SN 29500 / >250'000 h acc. to MIL Std. HDBK 217F
II / 2
IP 20 IEC 529, EN60529
2.5 mm <sup>2</sup> fixed screw type
UL94V-0 plastic material
140 g (4.94 oz)
vertical on rail, allow 10 mm spacing between adjacent components

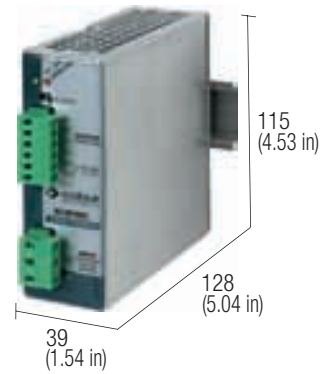
## MOUNTING ACCESSORIES

- Mounting rail type according to IEC60715/TH35-7.5
- Mounting rail type according to IEC60715/G32

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB
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# Single-phase switching power supply 120-230 Vac output power 85 W

- Single-phase input 90...264 Vac and DC 100...345 Vdc
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- Failure contact for Uout -10%
- Compact dimensions
- Suitable for applications in SELV and PELV circuits

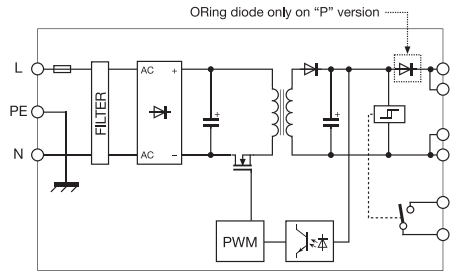


## NOTES

The depth dimension includes the DIN rail clamp.

- (2) With 100...127 Vdc input voltage, constant output power and  $T_a > 45^\circ\text{C}$ , the output current must be derated by 25%
- (3) Over  $45^\circ\text{C}$  ( $113^\circ\text{F}$ ) apply derating: CSF3-CSF3P:  $-0.06\text{ A}/^\circ\text{C}$  for version C, CP and CPH;  $-0.10\text{ A}/^\circ\text{C}$  for version B
- (4) For this peak current, the output voltage does not drop more than 10% of the nominal value, but the current value, provided by the power supply also depends on the total line resistance.
- (5) Only on version CSF85CP, for orders, adds the letter H to the code (XCSF85CPH)

## BLOCK DIAGRAM



## VERSIONS

- Output 24 Vdc 3.5 A
- Output 24 Vdc 3.5 A redundant version
- Output 12...15 Vdc 6 A
- Output 48 Vdc 1.8 A

### Cod. XCSF85C

### Cod. XCSF85CP

### Cod. XCSF85B

CSF85C

CSF85CP

CSF85B

## INPUT TECHNICAL DATA

- Input rated voltage
- Frequency
- Current @ nominal Iout (Uin 120 / 230 Vac)
- Inrush peak current
- Power factor
- Internal protection fuse
- External protection on AC line

**120-230 Vac** (range 90...264 Vac / 100...345 Vdc) (2)

47...63 Hz

1.6 A / 0.9 A  $\pm 10\%$

< 20 A

> 0.65

T 2 A replaceable

circuit breaker: 4 A - C characteristic - fuse: T 4 A

## OUTPUT TECHNICAL DATA

- Output rated voltage
- Output adjustable range
- Continuous current
- Overload limit
- Short circuit peak current
- Load regulation
- Ripple @ nominal ratings
- Hold up time @ In (Uin 120 / 230 Vac)
- Overload / short circuit protections
- Status display
- Alarm contact threshold
- Parallel connection
- Redundant parallel connection

**24 Vdc**

23...27.5 Vdc

**3.5 A @ 50°C** (3)

6 A for >30 s

with Uout >90% Un (4)

10 A for 50 ms (4)

< 1%

$\leq 70\text{ mVpp}$

>20 ms / >70 ms

hiccup at the overload limit with auto reset / over temperature protection

"DC OK" green LED / "DC OK" alarm contact/ "Overload" red LED

21.6 Vdc

possible

possible with external ORing diode

factory provided with internal ORing diode

**12...15 Vdc**

12...15 Vdc

**6 A @ 50°C** (3)

9 A for >30 s

with Uout >90% Un (4)

10 A for 50 ms (4)

< 1%

$\leq 30\text{ mVpp}$

>15 ms / >60 ms

hiccup at the overload limit with auto reset / over temperature protection

"DC OK" green LED / "DC OK" alarm contact/ "Overload" red LED

10.8 Vdc

possible

possible with external ORing diode

## GENERAL TECHNICAL DATA

- Efficiency (Uin 120 / 230 Vac)
- Dissipated power (Uin 120 / 230 Vac)
- Operating temperature range
- Input/output isolation
- Input/ground isolation
- Output/ground isolation
- Standard/approvals
- EMC Standards
- MTBF @ 25°C @ nominal ratings
- Overvoltage category/Pollution degree
- Protection degree
- Connection terminal
- Housing material
- Approx. weight
- Mounting information

>85% / >89%

15 W / 11 W

-20...+60°C, with derating over 50°C / over temperature protection (3)

3 kVac / 60 s SELV output

1.5 kVac / 60 s

0.5 kVac / 60 s

EN50178, EN61558, EN60950, IEC950, UL508, UL60950

EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11

>500'000 h acc. to SN 29500 / >150'000 h acc. to MIL Std. HDBK 217F

II / 3

IP 20 IEC 529, EN60529

2.5 mm<sup>2</sup> pluggable screw type

aluminium

400 g (14.12 oz)

vertical on rail, allow 10 mm spacing between adjacent components

## MOUNTING ACCESSORIES

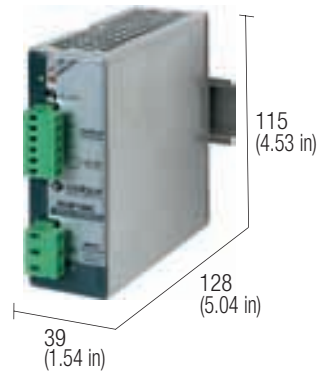
- Mounting rail type according to IEC60715/TH35-7.5
- Mounting rail type according to IEC60715/G32

**PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB**



# Single-phase switching power supply 120-230 Vac output power 120 W

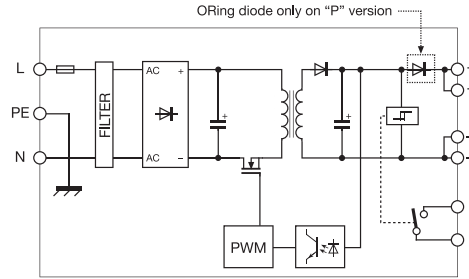
- Single-phase input 90...264 Vac and DC 100...345 Vdc
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- Failure contact for Uout -10%
- Compact dimensions
- Suitable for applications in SELV and PELV circuits



## NOTES

- The depth dimension includes the terminal blocks and the DIN clamp.
- (2) With 100...127 Vdc input voltage, constant output power and  $T_a > 45^\circ\text{C}$ , the output current must be derated by 25%
- (3) Over  $45^\circ\text{C}$  ( $113^\circ\text{F}$ ) apply a derating  $-0.08 \text{ A}/^\circ\text{C}$  for version C, CP and CPH;  $-0.12 \text{ A}/^\circ\text{C}$  for version B;  $-0.05 \text{ A}/^\circ\text{C}$  for version DP;
- (4) For this peak current, the output voltage does not drop more than 10% of the nominal value, but the current value, provided by the power supply also depends on the total line resistance.
- (5) Only on version CSF120CP, for orders, adds the letter H to the code (XCFSF120CPH)
- (6) article available till seal-out

## BLOCK DIAGRAM



Special version for DC motors

## VERSIONS

- Output 24 Vdc 5 A
- Output 24 Vdc 5 A redundant version
- Output 12...15 Vdc 7 A
- Output 48 Vdc 2.5 A

Cod. XCSF120C	Cod. XCSF120CP	Cod. XCSF120B	Cod. XCSF120DP
CSF120C	CSF120CP		
		CSF120B (6)	
			CSF120DP

## INPUT TECHNICAL DATA

Input rated voltage	120-230 Vac (range 90...264 Vac / 100...345 Vdc) (2)
Frequency	47...63 Hz
Current @ nominal lout (Uin 120 / 230 Vac)	1.9 A / 1.1 A $\pm 10\%$
Inrush peak current	< 20 A
Power factor	> 0.65
Internal protection fuse	T 3.15 A replaceable
External protection on AC line	circuit breaker: 4 A - C characteristic - fuse: T 4 A

## OUTPUT TECHNICAL DATA

	24 Vdc	12...15 Vdc	48 Vdc
Output rated voltage	23...27.5 Vdc	12...15 Vdc	45...55 Vdc
Output adjustable range			
Continuous current	5 A @ 45°C (3)	7 A @ 45°C (3)	2.5 A @ 45°C (3)
Overload limit	8 A for >30 s with 90% Un (4)	8 A for >30 s with 90% Un (4)	8 A for >30 s with 90% Un (4)
Short circuit peak current	15 A for 50 ms (4)	15 A for 50 ms (4)	7.5 A for 50 ms (4)
Load regulation	< 1%	< 1%	< 1%
Ripple @ nominal ratings	$\leq 30 \text{ mVpp}$	$\leq 40 \text{ mVpp}$	$\leq 30 \text{ mVpp}$
Hold up time @ In (Uin 120 / 230 Vac)	>17 ms / >72 ms	>24 ms / >80 ms	>16 ms / >81 ms
Overload / short circuit protections	hiccup at the overload limit with auto reset / over temperature protection		
Status display	"DC OK" green LED / "DC OK" alarm contact/ "Overload" red LED		
Alarm contact threshold	<21.6 Vdc	<10.8 Vdc	<43.2 Vdc
Parallel connection	possible	possible	possible
Redundant parallel connection	possible with external ORing diode	factory provided with internal ORing diode	factory provided with internal ORing diode

## GENERAL TECHNICAL DATA

Efficiency (Uin 120 / 230 Vac)	>86% / >90%	>85% / >89%	>86% / >90%
Dissipated power (Uin 120 / 230 Vac)	19 W / 13 W	21 W / 15 W	20 W / 13 W
Operating temperature range	-20...+60°C, with derating over 45°C / over temperature protection (3)		
Input/output isolation	3 kVac / 60 s SELV output		
Input/ground isolation	1.5 kVac / 60 s		
Output/ground isolation	0.5 kVac / 60 s		
Standard/approvals	EN50178, EN61558, EN60950, IEC950, UL508, UL60950		
EMC Standards	EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11		
MTBF @ 25°C @ nominal ratings	>500'000 h acc. to SN 29500 / >150'000 h acc. to MIL Std. HDBK 217F		
Overvoltage category/Pollution degree	II / 3		
Protection degree	IP 20 IEC 529, EN60529		
Connection terminal	2.5 mm <sup>2</sup> pluggable screw type		
Housing material	aluminium		
Approx. weight	400 g (14.12 oz)		
Mounting information	vertical on rail, allow 10 mm spacing between adjacent components		

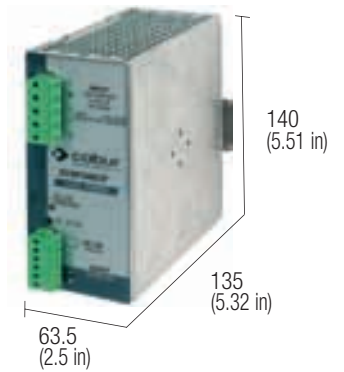
## MOUNTING ACCESSORIES

- Mounting rail type according to IEC60715/TH35-7.5
- Mounting rail type according to IEC60715/G32

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

# Single-phase switching power supply 120-230 Vac output power 240 W

- Single-phase input 120 and 230 Vac
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- Failure contact for Uout -10%
- Compact dimensions
- Suitable for applications in SELV and PELV circuits

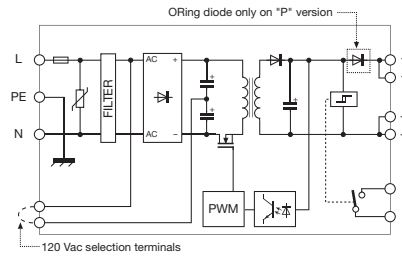


## NOTES

The depth dimension includes the terminal blocks and the DIN clamp.

- (2) Double input selectable with external jumper, DC supply allow only between 300 and 345 Vdc
- (3) Over 45°C (113°F) apply a derating: -0.17 A/°C for version C, CP and CPH; -0.27 A/°C for version B; -0.08 A/°C for version DP;
- (4) For this peak current, the output voltage does not drop more than 10% of the nominal value, but the current value, provided by the power supply also depends on the total line resistance.
- (5) Only on version CSF240CP, for orders, adds the letter H to the code (XCSF240CPH)

## BLOCK DIAGRAM



Special version for DC motors

## VERSIONS

- Output 24 Vdc 10 A
- Output 24 Vdc 10 A redundant version
- Output 12...15 Vdc 16 A
- Output 48 Vdc 5 A redundant version

## INPUT TECHNICAL DATA

Input rated voltage	120 - 230 Vac (range 90...132 Vac / 185...264 Vac / 300...345 Vdc) (2)
Frequency	47...63 Hz
Current @ nominal Iout (Uin 120 / 230 Vac)	3.5 A / 1.8 A ± 10%
Inrush peak current	< 35 A
Power factor	> 0.6
Internal protection fuse	T 6.3 A replaceable
External protection on AC line	circuit breaker: 6 A C characteristic - fuse: T 6.3 A

## OUTPUT TECHNICAL DATA

Output rated voltage	24 Vdc	12...15 Vdc	48 Vdc
Output adjustable range	23...27.5 Vdc	12...15 Vdc	45...55 Vdc
Continuous current	10 A @ 45°C (3)	16 A @ 45°C (3)	5 A @ 45°C (3)
Overload limit	15 A for >30 s with Uout >90% Un (4)	24 A for >30 s with Uout >90% Un (4)	7.5 A for >30 s with Uout >90% Un (4)
Short circuit peak current	>25 A for 400 ms (4)	>25 A for 400 ms (4)	>25 A for 400 ms (4)
Load regulation	< 1%	< 1%	< 1%
Ripple @ nominal ratings	≤ 50 mVpp	≤ 50 mVpp	≤ 50 mVpp
Hold up time @ In (Uin 120 / 230 Vac)	>30 ms / >60 ms	>30 ms / >60 ms	>30 ms / >60 ms
Overload / short circuit protections	hiccup at the overload limit with auto reset / over temperature protection		
Status display	"DC OK" green LED / "DC OK" alarm contact/ "Overload" red LED		
Alarm contact threshold	21.6 Vdc	10.8 Vdc	43.2 Vdc
Parallel connection	possible	possible	possible
Redundant parallel connection	possible with external ORing diode	factory provided with internal ORing diode	factory provided with internal ORing diode

## GENERAL TECHNICAL DATA

Efficiency (Uin 120 / 230 Vac)	>88% / >90%	>87% / >90%	>88% / >90%
Dissipated power (Uin 120 / 230 Vac)	32 W / 27 W	35 W / 27 W	32 W / 27 W
Operating temperature range	-20...+60°C, with derating over 45°C / over temperature protection (3)		
Input/output isolation	3 kVac / 60 s SELV output		
Input/ground isolation	1.5 kVac / 60 s		
Output/ground isolation	0.5 kVac / 60 s		
Standard/approvals	EN50178, EN61558, EN60950, IEC950, UL508, UL60950		
EMC Standards	EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11		
MTBF @ 25°C @ nominal ratings	>500'000 h acc. to SN 29500 / >150'000 h acc. to MIL Std. HDBK 217F		
Overvoltage category/Pollution degree	II / 3		
Protection degree	IP 20 IEC 529, EN60529		
Connection terminal	2.5 mm² pluggable screw type		
Housing material	aluminium		
Approx. weight	920 g (32.48 oz)		
Mounting information	vertical on rail, allow 10 mm spacing between adjacent components		

## MOUNTING ACCESSORIES

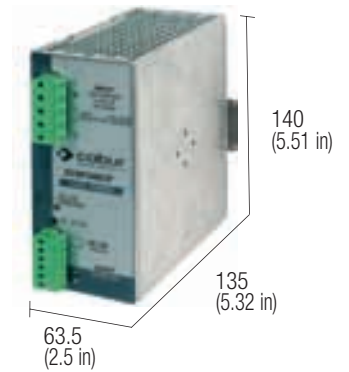
- Mounting rail type according to IEC60715/TH35-7.5
- Mounting rail type according to IEC60715/G32

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

# Single-phase switching power supply 120-230 Vac output power 240 W



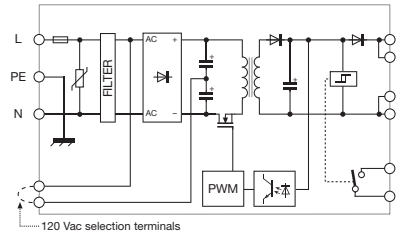
- Single-phase input 120 and 230 Vac
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- Failure contact for Uout -10%
- Compact dimensions
- Suitable for applications in PELV circuits



## NOTES

- The depth dimension includes the terminal blocks and the DIN clamp.
- (2) Double input selectable with external jumper, DC supply allow only between 300 and 345 Vdc
  - (3) Over 45°C (113°F) apply a derating: -0.17 A/°C for version C, CP and CPH; -0.27 A/°C for version B; -0.08 A/°C for version DP;
  - (4) For this peak current, the output voltage does not drop more than 10% of the nominal value, but the current value, provided by the power supply also depends on the total line resistance.
  - (5) Version CSF240G is not suitable for SELV applications

## BLOCK DIAGRAM



### Special version for DC motors

## VERSIONS

**Output 72 Vdc 3.5 A redundant version**

<b>Cod. XCSF240G</b>			
<b>CSF240G</b>			

## INPUT TECHNICAL DATA

Input rated voltage	<b>120 - 230 Vac</b> (range 90...132 Vac / 185...264 Vac / 300...345 Vdc) (2)
Frequency	47...63 Hz
Current @ nominal Iout (Uin 120 / 230 Vac)	3.5 A / 1.8 A ± 10%
Inrush peak current	< 35 A
Power factor	> 0.6
Internal protection fuse	T 6.3 A replaceable
External protection on AC line	circuit breaker: 6 A C characteristic - fuse: T 6.3 A


## OUTPUT TECHNICAL DATA

Output rated voltage	<b>72 Vdc</b>
Output adjustable range	72...85 Vdc
Continuous current	<b>3.5 A @ 50°C</b> (3)
Overload limit	>13.8A for >30 s with Uout >90% Un (4)
Short circuit peak current	>25 A for 400 ms (4)
Load regulation	< 1%
Ripple @ nominal ratings	≤ 50 mVpp
Hold up time @ In (Uin 120 / 230 Vac)	>30 ms / >60 ms
Overload / short circuit protections	hiccup at the overload limit with auto reset / over temperature protection
Status display	"DC OK" green LED / "DC OK" alarm contact/ "Overload" red LED
Alarm contact threshold	64.8 Vdc
Parallel connection	possible
Redundant parallel connection	factory provided with internal ORing diode


## GENERAL TECHNICAL DATA

Efficiency (Uin 120 / 230 Vac)	>89.5% / >89.5%
Dissipated power (Uin 120 / 230 Vac)	28 W / 28 W
Operating temperature range	-20...+60°C, with derating over 45°C / over temperature protection (3)
Input/output isolation	3 kVac / 60 s not SELV output (5)
Input/ground isolation	1.5 kVac / 60 s
Output/ground isolation	0.5 kVac / 60 s
Standard/approvals	IEC950, EN60950, UL508
EMC Standards	EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11
MTBF @ 25°C @ nominal ratings	>500'000 h secondo SN 29500 / >150'000 h secondo MIL Std. HDBK 217F
Overvoltage category/Pollution degree	II / 3
Protection degree	IP 20 IEC 529, EN60529
Connection terminal	2.5 mm² pluggable screw type
Housing material	aluminium
Approx. weight	920 g (32.48 oz)
Mounting information	vertical on rail, allow 10 mm spacing between adjacent components

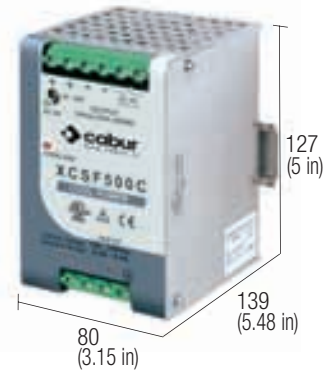

## MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5	<b>PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB</b>
Mounting rail type according to IEC60715/G32	—

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# Single-phase switching power supply 120-230 Vac output power 500 W

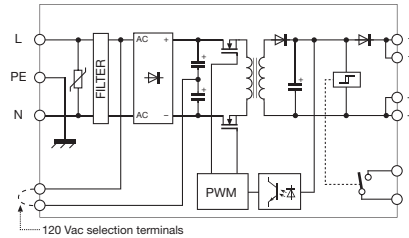
- Single-phase input 120 and 230 Vac
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- Compact dimensions
- Suitable for applications in SELV and PELV circuits
- Failure contact for Uout -10%



## NOTES

- The depth dimension includes the DIN rail clamp.
- (2) Double input selectable with external jumper.
  - (3) Over 45°C (113°F) apply a derating: C version: -0.34 A/°C for version C; -0.17 A/°C for version D;
  - (4) For this peak current, the output voltage does not drop more than 10% of the nominal value, but the current value, provided by the power supply also depends on the total line resistance.

## BLOCK DIAGRAM



## VERSIONS

- Output 24 Vdc 20 A
- Output 24 Vdc 20 A redundant version
- Output 12...15 Vdc 40 A
- Output 48 Vdc 10 A redundant version

## INPUT TECHNICAL DATA

- Input rated voltage
- Frequency
- Current @ nominal Iout (Uin 120 / 230 Vac)
- Inrush peak current
- Power factor
- Internal protection fuse
- External protection on AC line

## OUTPUT TECHNICAL DATA

- Output rated voltage
- Output adjustable range
- Continuous current
- Overload limit
- Short circuit peak current
- Load regulation
- Ripple @ nominal ratings
- Hold up time @ In (Uin 120 / 230 Vac)
- Overload / short circuit protections
- Status display
- Alarm contact threshold
- Parallel connection
- Redundant parallel connection

## GENERAL TECHNICAL DATA

- Efficiency (Uin 120 / 230 Vac)
- Dissipated power (Uin 120 / 230 Vac)
- Operating temperature range
- Input/output isolation
- Input/ground isolation
- Output/ground isolation
- Standard/approvals
- EMC Standards
- MTBF @ 25°C @ nominal ratings
- Overvoltage category/Pollution degree
- Protection degree
- Connection terminal
- Housing material
- Approx. weight
- Mounting information

## MOUNTING ACCESSORIES

- Mounting rail type according to IEC60715/TH35-7.5
- Mounting rail type according to IEC60715/G32

## Cod. XCSF500C

-	CSF500C	-	CSF500D
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## Special version for DC motors

120-230 Vac (range 90...132 Vac / 185...264 Vac) (2)	47...63 Hz	4.1 A / 2 A ± 10%	< 25 A with electronic limiter	> 0.75 with PFC
circuit breaker: 16 A C characteristic - fuse: T 15 A				

	24 Vdc	48 Vdc
Output rated voltage	24...28 Vdc	45...55 Vdc
Output adjustable range	24...28 Vdc	45...55 Vdc
Continuous current	20 A @ 45°C (3)	10 A @ 45°C (3)
Overload limit	30 A for >5 s with Uout >90% Un (4)	15 A for >5 s with Uout >90% Un (4)
Short circuit peak current	>50 A for 5 s (4)	>50 A for 5 s (4)
Load regulation	< 0.5%	< 0.5%
Ripple @ nominal ratings	≤ 50 mVpp	≤ 50 mVpp
Hold up time @ In (Uin 120 / 230 Vac)	>12 ms / >20 ms	>12 ms / >20 ms
Overload / short circuit protections	hiccup at the overload limit with auto reset / over temperature protection	
Status display	"DC OK" green LED / "DC OK" alarm contact/ "Overload" red LED	
Alarm contact threshold	21.6 Vdc	43.2 Vdc
Parallel connection	possible	possible
Redundant parallel connection	factory provided with internal ORing diode	factory provided with internal ORing diode

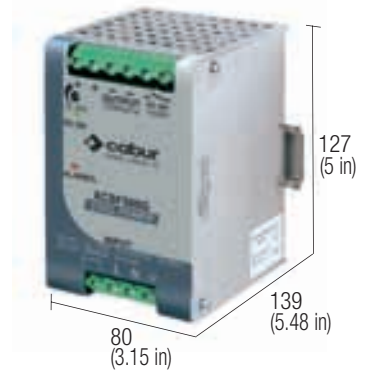
Efficiency (Uin 120 / 230 Vac)	>90% / >92%	>90% / >92%
Dissipated power (Uin 120 / 230 Vac)	55 W / 43 W	55 W / 43 W
Operating temperature range	-20...+60°C, with derating over 45°C / over temperature protection (3)	
Input/output isolation	3 kVac / 60 s SELV output	
Input/ground isolation	1.5 kVac / 60 s	
Output/ground isolation	0.5 kVac / 60 s	
Standard/approvals	EN50178, EN61558, EN60950, IEC950, UL508	
EMC Standards	EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11	
MTBF @ 25°C @ nominal ratings	>500'000 h acc. to SN 29500 / >150'000 h acc. to MIL Std. HDBK 217F	
Overvoltage category/Pollution degree	II / 2	
Protection degree	IP 20 IEC 529, EN60529	
Connection terminal	4 and 6 mm² fixed screw type	
Housing material	aluminium	
Approx. weight	1,3 kg (45.89 oz)	
Mounting information	vertical on rail, allow 10 mm spacing between adjacent components	

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB
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# Single-phase switching power supply 120-230 Vac output power 500 W



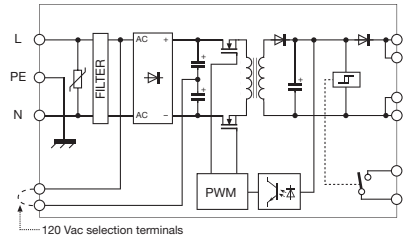
- Single-phase input 120 and 230 Vac
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- Compact dimensions
- Suitable for applications in PELV circuits



## NOTES

- The depth dimension includes the DIN rail clamp.
- (2) Double input selectable with external jumper.
  - (3) Over 45°C (113°F) apply a derating: C version: -0.34 A/°C for version C; -0.17 A/°C for version D;
  - (4) For this peak current, the output voltage does not drop more than 10% of the nominal value, but the current value, provided by the power supply also depends on the total line resistance.
  - (5) Version CSF240G is not suitable for SELV applications

## BLOCK DIAGRAM



## VERSIONS

Sortie 72 Vdc 6.7 A versione redundante

Special version for DC motors

Cod. XCSF500G

CSF500G

## INPUT TECHNICAL DATA

Input rated voltage	<b>120-230 Vac</b> (échelle 90...132 Vac / 185...264 Vac) (2)
Frequency	47...63 Hz
Current @ nominal Iout (Uin 120 / 230 Vac)	8.4 A / 4.4 A ± 10%
Inrush peak current	< 35 A
Power factor	> 0.67
Internal protection fuse	—
External protection on AC line	circuit breaker: 16 A C characteristic - fuse: T 15 A

## OUTPUT TECHNICAL DATA

Output rated voltage	<b>72 Vdc</b>
Output adjustable range	72...85 Vdc
Continuous current	<b>6.7 A @ 50°C (3)</b>
Overload limit	>10A for >5 s con Uout >90% Un (4)
Short circuit peak current	>20 A for 400 ms (4)
Load regulation	< 1%
Ripple @ nominal ratings	≤ 100 mVpp
Hold up time @ In (Uin 120 / 230 Vac)	>30 ms / >35ms
Overload / short circuit protections	hiccup at the overload limit with auto reset / over temperature protection "DC OK" green LED / "DC OK" alarm contact/ "Overload" red LED
Status display	
Alarm contact threshold	<64.8 Vd
Parallel connection	possible
Redundant parallel connection	factory provided with internal ORing diode

## GENERAL TECHNICAL DATA

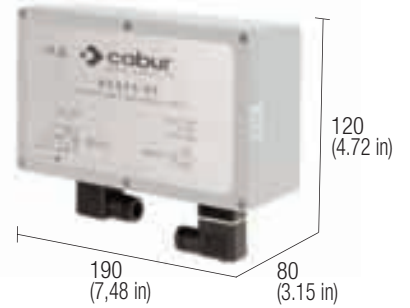
Efficiency (Uin 120 / 230 Vac)	>92% / >92%
Dissipated power (Uin 120 / 230 Vac)	42 W / 72 W
Operating temperature range	-20...+60°C, with derating over 45°C / over temperature protection (3)
Input/output isolation	3 kVac / 60 s SELV output (5)
Input/ground isolation	2 kVac / 60 s
Output/ground isolation	0.7 kVac / 60 s
Standard/approvals	IEC950, EN60950, UL508
EMC Standards	EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11
MTBF @ 25°C @ nominal ratings	>500'000 h secondo SN 29500 / >150'000 h secondo MIL Std. HDBK 217F
Overvoltage category/Pollution degree	
Protection degree	IP 20 IEC 529, EN60529
Connection terminal	4 and 6 mm² fixed screw type
Housing material	aluminium
Approx. weight	1,3 kg (45.89 oz)
Mounting information	vertical on rail, allow 10 mm spacing between adjacent components

## MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5	<b>PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB</b>
Mounting rail type according to IEC60715/G32	—

# Single-phase switching power supply 120-230 Vac IP65 protection degree

- Single-phase input 90...264 Vac and DC 100...345 Vdc
- Short circuit, overload, over temperature, input and output overvoltage protections
- Suitable to be mounted directly on the machinery frame, don't require any protective enclosure
- IP65 pluggable screw connectors
- Suitable for applications in SELV and PELV circuits

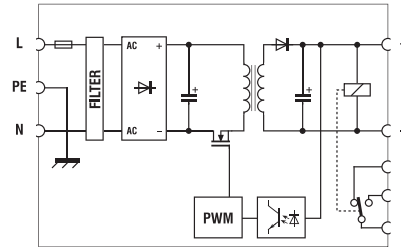


## NOTES

The depth dimension includes the terminal blocks and the DIN clamp.

- (1) With 100...127 Vdc input voltage, constant output power and  $T_a > 45^\circ\text{C}$ , the output current must be derated by 25%
- (2) Overload and short circuit current depends on the total line resistance.

## BLOCK DIAGRAM



## VERSIONS

Output 24 Vdc 5 A

Cod. XCSF565

CSF5-65

## INPUT TECHNICAL DATA

Input rated voltage  
Frequency  
Current @ nominal Iout (Uin 120 / 230 Vac)  
Inrush peak current  
Power factor  
Internal protection fuse  
External protection on AC line

**120-230 Vac** (range 90...264 Vac / 100...345 Vdc) (1)  
47...63 Hz  
1.8 A / 1 A  $\pm 10\%$   
< 20 A  
> 0.7  
T 3.15 A replaceable  
circuit breaker: 4 A - C characteristic - fuse: T 4 A

## OUTPUT TECHNICAL DATA

Output rated voltage  
Output adjustable range  
Continuous current  
Overload limit  
Short circuit peak current  
Load regulation  
Ripple @ nominal ratings  
Hold up time @ In (Uin 120 / 230 Vac)  
Overload / short circuit protections  
Status display  
Alarm contact threshold  
Parallel connection  
Redundant parallel connection

**24 Vdc**  
23...27.5 Vdc  
**5 A @ 60°C**  
8 A (2)  
—  
< 1%  
 $\leq 50 \text{ mVpp}$   
>10 ms / >20 ms  
hiccup at the overload limit with auto reset / over temperature protection  
"DC OK" green LED / "DC OK" alarm contact  
—  
possible  
possible with external ORing diode

## GENERAL TECHNICAL DATA

Efficiency (Uin 120 / 230 Vac)  
Dissipated power (Uin 120 / 230 Vac)  
Operating temperature range  
Input/output isolation  
Input/ground isolation  
Output/ground isolation  
Standard/approvals  
EMC Standards  
MTBF @ 25°C @ nominal ratings  
Overvoltage category/Pollution degree  
Protection degree  
Connection terminal  
Housing material  
Approx. weight  
Mounting information

>87% / >90%  
18 W / 12 W  
-20...+60°C / over temperature protection  
3 kVac / 60 s SELV output  
1.5 kVac / 60 s  
0.5 kVac / 60 s  
EN50178, EN61558, EN60950, IEC950, UL508  
EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11  
>500'000 h acc. to SN 29500 / >150'000 h acc. to MIL Std. HDBK 217F  
II / 2  
IP 20 IEC 529, EN60529  
2.5 mm<sup>2</sup> IP65 pluggable screw connectors  
aluminium  
1.9 Kg (67.02 oz)  
vertical on rail or panel mounting by means of screws

## MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5  
Mounting rail type according to IEC60715/G32

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

# Switching power supply CSL and CSP series

## EASY POWER

**Single phase DIN rail power supplies** for general applications in automation and installation. **With particularly high quality / price ratio**, these products are ideal and convenient for applications where loads do not require high peak currents. They can deliver over +40% of nominal current for a sustained period, keeping the output voltage stable and ensuring continuity of supply to the system. **With these features, this range of power supplies enables designers to meet the requirements of the Machinery Directive, EN 60204-1**, allowing the protection devices connected to the output to trigger quickly, safely and selectively, thus ensuring continuity of service to the other parts of the system.

### Suggested uses

- Applications in civil automation
- General applications in the installation of systems

### Main features

- Equipped with 120 - 230 Vac input, they are suitable for use in all single-phase networks.
- Their high efficiency reduces energy consumption and components' operating temperature allowing their use in small panels and under severe ambient conditions.
- Backup power +40% above the rated voltage ensuring safety and reliability.
- The output voltage may be adjusted and is protected against the input of surges caused by inductive loads on the DC line and is equipped with double electronic protection devices preventing damages to powered equipment in the event of internal faults.
- Short-circuit, overload and thermal protection devices prevent faults in the event of prolonged overloads at high ambient temperatures.
- Their design ensures excellent ventilation to internal components, very small dimensions and IP20 protection against accidental contacts in compliance with IEC529.
- Compared to other products having similar power and costs, they offer higher performances, functions and reliability.



### Short circuit, overload and thermal protections

Avoids failures caused by overload at high ambient temperatures

### Adjustable output voltage

Protected against the input of surges coming from the DC line and caused by inductive loads

### Power boost

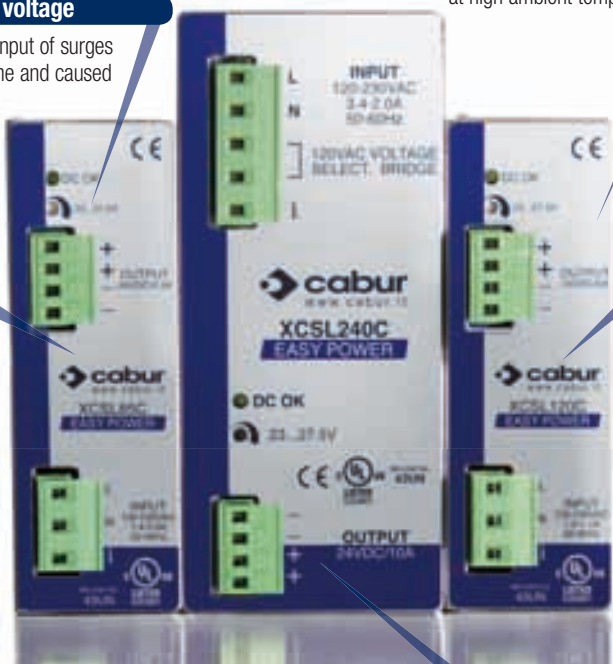
The output power reaches 120% of the nominal value for several minutes, up to 140% during an overload, and up to 300% in the event of a short-circuit, to enable the protection devices connected to the output to trigger quickly, safely and selectively, without the use of additional modules!

### Extremely compact dimensions

They are among the smallest on the market, optimising the use of space in the panel without compromising performance

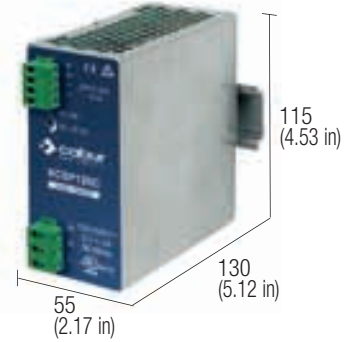
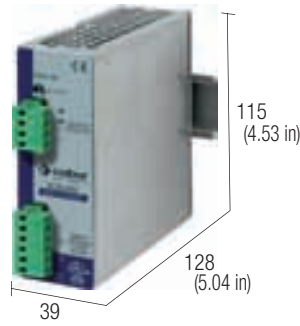
### High Performance

Reduces energy consumption and reduces the working temperature of the components and allows use in small panel and in heavy environmental conditions



# Single-phase switching power supply 120-230 Vac output power 85 W

- Single-phase input 90...264 Vac
- Short circuit, overload, over temperature, input and output overvoltage protections
- Suitable in civil automation and general applications in the installation of systems
- Suitable for applications in SELV and PELV circuits



## NOTES

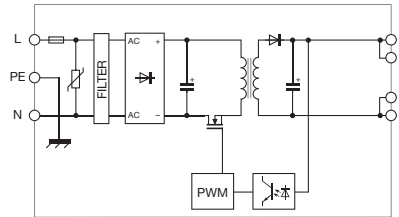
The depth dimension includes the terminal blocks and the DIN clamp.

(3) Over 45°C (113°F) apply a derating of -0.06 A/°C

(4) For this peak current, the output voltage does not drop more than 10% of the nominal value, but the current value, provided by the power supply also depends on the total line resistance.

(5) Version available after September 2011

## BLOCK DIAGRAM



Items sold until sell-out, will be replaced by **CSL85C** series

## VERSIONS

Output 24 Vdc 5 A  
Output 24 Vdc 5

Cod. XCSL85C

CSL85C (5)

Cod. XCSP85C

CSP85C

## INPUT TECHNICAL DATA

Input rated voltage

120-230 Vac (range 90...264 Vac)

Frequency

47...63 Hz

Current @ nominal Iout (Iin 120 / 230 Vac)

1.6A / 0.9 A ± 10%

Inrush peak current

< 20 A

Power factor

> 0.65

Internal protection fuse

T 2 A replaceable

External protection on AC line

circuit breaker: 4 A - C characteristic - fuse: T 4 A

## OUTPUT TECHNICAL DATA

Output rated voltage

24 Vdc

24 Vdc

Output adjustable range

23...27.5 Vdc

23...27.5 Vdc

Continuous current

3.5 A @ 45°C (3)

3.5 A @ 45°C (3)

Overload limit

5 A per >30 s con Uout >90% Un (4)

>5 A (4)

Short circuit peak current

9 A per 50 ms

—

Load regulation

< 1%

< 1%

Ripple @ nominal ratings

70 mVpp

≤ 40 mVpp

Hold up time @ Iin (Iin 120 / 230 Vac)

>20 ms / >70 ms

>10 ms / >20 ms

Overload / short circuit protections

hiccup at the overload limit with auto reset / over temperature protection

Status display

"DC OK" green LED

Alarm contact threshold

—

Parallel connection

possible

Redundant parallel connection

possible with external ORing diode

## GENERAL TECHNICAL DATA

Efficiency (Iin 120 / 230 Vac)

>86% / >90%

>85% / >89%

Dissipated power (Iin 120 / 230 Vac)

12 W / 8 W

15 W / 11 W

Operating temperature range

-20...+60°C, with derating over 45°C / over temperature protection (3)

Input/output isolation

3 kVac / 60 s SELV output

Input/ground isolation

1.5 kVac / 60 s

Output/ground isolation

0.5 kVac / 60 s

Standard/approvals

EN50178, EN61558, EN60950, IEC950, UL508

EMC Standards

EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11

MTBF @ 25°C @ nominal ratings

>400'000 h acc. to SN 29500 / >100'000 h acc. to MIL Std. HDBK 217F

Overvoltage category/Pollution degree

II / 2

Protection degree

IP 20 IEC 529, EN60529

Connection terminal

2.5 mm<sup>2</sup> pluggable screw type

Housing material

aluminium and stainless steel

Approx. weight

400 g (14.10 oz)

Mounting information

vertical on rail, allow 10 mm spacing between adjacent components

## MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5

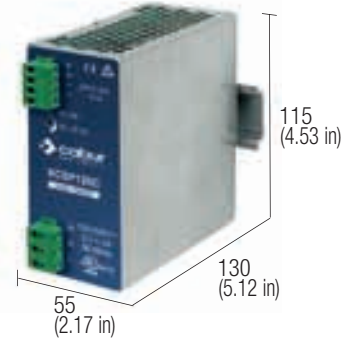
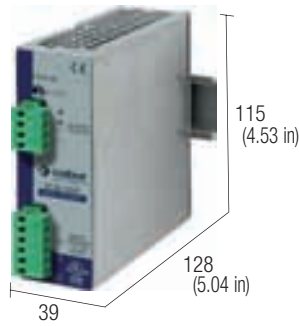
PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

Mounting rail type according to IEC60715/G32



# Single-phase switching power supply 120-230 Vac output power 120 W

- Single-phase input 90...264 Vac
- Short circuit, overload, over temperature, input and output overvoltage protections
- Suitable in civil automation and general applications in the installation of systems
- Suitable for applications in SELV and PELV circuits



## NOTES

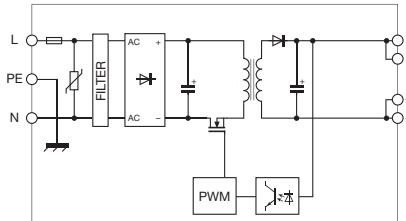
The depth dimension includes the terminal blocks and the DIN clamp.

(3) Over 45°C (113°F) apply a derating of -0.08 A/°C

(4) For this peak current, the output voltage does not drop more than 10% of the nominal value, but the current value, provided by the power supply also depends on the total line resistance.

(5) Version available after September 2011

## BLOCK DIAGRAM



Items sold until sell-out, will be replaced by **CSL120C** series

## VERSIONS

Output 24 Vdc 5 A  
Output 24 Vdc 5 A

Cod. XCSL120C

CSL120C (5)

Cod. XCSP120C

CSP120C

## INPUT TECHNICAL DATA

Input rated voltage

120-230 Vac (range 90...264 Vac)

Frequency

47...63 Hz

Current @ nominal Iout (Uin 120 / 230 Vac)

1.9 A / 1.1 A ± 10%

Inrush peak current

< 20 A

Power factor

> 0.65

Internal protection fuse

T 3.15 A replaceable

External protection on AC line

circuit breaker: 4 A - C characteristic - fuse: T 4 A

## OUTPUT TECHNICAL DATA

Output rated voltage

24 Vdc

24 Vdc

Output adjustable range

23...27.5 Vdc

23...27.5 Vdc

Continuous current

5 A @ 45°C (3)

5 A @ 45°C (3)

Overload limit

8 A per >30 s con Uout > 90% Un (4)

>6 A (4)

Short circuit peak current

13 A per 50 ms (4)

—

Load regulation

< 1%

< 1%

Ripple @ nominal ratings

30 mVpp

≤ 40 mVpp

Hold up time @ In (Uin 120 / 230 Vac)

>17 ms / >72 ms

>10 ms / >20 ms

Overload / short circuit protections

hiccup at the overload limit with auto reset / over temperature protection

Status display

"DC OK" green LED

Alarm contact threshold

—

Parallel connection

possible

Redundant parallel connection

possible with external ORing diode

## GENERAL TECHNICAL DATA

Efficiency (Uin 120 / 230 Vac)

>87% / >91%

>86% / >90%

Dissipated power (Uin 120 / 230 Vac)

18 W / 12 W

19 W / 13 W

Operating temperature range

-20...+60°C, with derating over 45°C / over temperature protection (3)

Input/output isolation

3 kVac / 60 s SELV output

Input/ground isolation

1.5 kVac / 60 s

Output/ground isolation

0.5 kVac / 60 s

Standard/approvals

EN50178, EN61558, EN60950, IEC950, UL508

EMC Standards

EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11

MTBF @ 25°C @ nominal ratings

>400'000 h acc. to SN 29500 / >100'000 h acc. to MIL Std. HDBK 217F

Overvoltage category/Pollution degree

II / 2

Protection degree

IP 20 IEC 529, EN60529

Connection terminal

2.5 mm<sup>2</sup> pluggable screw type

Housing material

aluminium and stainless steel

Approx. weight

400 g (14.10 oz)

Mounting information

vertical on rail, allow 10 mm spacing between adjacent components

## MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

Mounting rail type according to IEC60715/G32

# Single-phase switching power supply 120-230 Vac output power 240 W

- Single-phase input 120 and 230 Vac
- Short circuit, overload, over temperature, input and output overvoltage protections
- Suitable in civil automation and general applications in the installation of systems
- Suitable for applications in SELV and PELV circuits

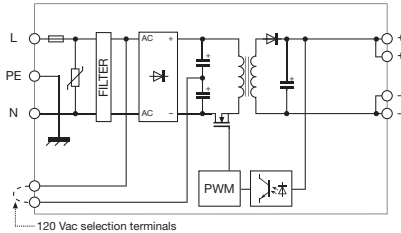


## NOTES

The depth dimension includes the terminal blocks and the DIN clamp.

- (2) Double input selectable with external jumper.
- (3) Over 45°C (113°F) apply a derating of -0.17 A/°C
- (4) For this peak current, the output voltage does not drop more than 10% of the nominal value, but the current value, provided by the power supply also depends on the total line resistance.
- (5) Version available after September 2011

## BLOCK DIAGRAM



Items sold until sell-out, will be replaced by **CSL240C** series

## VERSIONS

Output 24 Vdc 10 A

Cod. XCSL240C

CSL204C (5)

Cod. XCSP240C

CSP240C

## INPUT TECHNICAL DATA

Input rated voltage

120-230 Vac (range 90...132 Vac / 185...264 Vac) (2)

Frequency

47...63 Hz

Current @ nominal lout (Uin 120 /230 Vac)

3.5A / 1.8 A ± 10%

Inrush peak current

< 35 A

Power factor

> 0.6 / >0.85

Internal protection fuse

T 6.3 A sostituibile

External protection on AC line

magnetotermico: 6 A curva C - fusibili: T 6.3 A

## OUTPUT TECHNICAL DATA

Output rated voltage

24 Vdc

24 Vdc

Output adjustable range

23...27.5 Vdc

23...27.5 Vdc

Continuous current

10 A @ 45°C (3)

10 A @ 45°C (3)

Overload limit

14 A per >30 s with Uout > 90% Un (4)

>14 A (4)

Short circuit peak current

>24 A per 400 ms

—

Load regulation

< 1%

< 1%

Ripple @ nominal ratings

50 mVpp

≤ 60 mVpp

Hold up time @ In (Uin 120 / 230 Vac)

>30 ms / >60 ms

>20 ms / >40 ms

Overload / short circuit protections

hiccup at the overload limit with auto reset / over temperature protection

Status display

"DC OK" green LED

Alarm contact threshold

—

Parallel connection

possible

Redundant parallel connection

possible with external ORing diode

## GENERAL TECHNICAL DATA

Efficiency (Uin 120 / 230 Vac)

>87% / >90%

>88% / >90%

Dissipated power (Uin 120 / 230 Vac)

35 W / 27 W

32 W / 27 W

Operating temperature range

-20...+60°C, with derating over 45°C / over temperature protection (3)

Input/output isolation

3 kVac / 60 s SELV output

Input/ground isolation

1.5 kVac / 60 s

Output/ground isolation

0.5 kVac / 60 s

Standard/approvals

EN50178, EN61558, EN60950, IEC950, UL508

EMC Standards

EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11

MTBF @ 25°C @ nominal ratings

>400'000 h acc. to SN 29500 / >100'000 h acc. to MIL Std. HDBK 217F

Overvoltage category/Pollution degree

II / 2

Protection degree

IP 20 IEC 529, EN60529

Connection terminal

2.5 mm<sup>2</sup> pluggable screw type

Housing material

aluminium and stainless steel

Approx. weight

920 g (32.48 oz)

Mounting information

vertical on rail, allow 10 mm spacing between adjacent components

## MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

Mounting rail type according to IEC60715/G32

# Switching power supply GSW series

## UNIVERSAL POWER

**DIN rail switching power supplies with universal input 185 ... 550 Vac single phase and two-phase applications in industrial automation and process control.** The input circuit technology makes them immune to surges caused by failures in the three-phase networks with neutral wire, increasing application reliability. Compared to single-phase power supplies, **this series has a higher reliability in industrial environments.** The input circuit uses components with an operating voltage of 900 V, more resistant to voltage peaks present in industrial networks, than the components used in single phase power supplies. The capability to operate from 185 to 550 Vac allows for installations in both single-phase 230V and three-phase 400V networks.

### Suggested uses

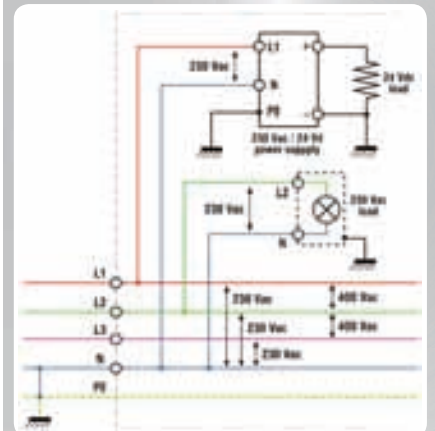
- In single or three-phase systems requiring great flexibility
- Applications in industrial automation and process control
- Heavy duty uses
- Applications in civil automation

### Main features

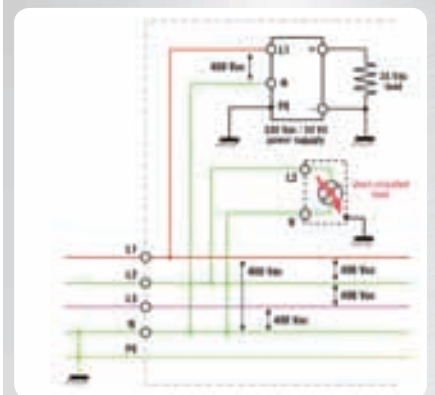
- The wide-range input 185...550 Vac may be supplied single-phase 230...240 Vac, two-phase 208 Vac and two-phase 400...500 Vac ensuring excellent adaptability to AC networks and enabling to get rid of the isolating transformer.
- The two-phase input enables to reduce dimensions, wiring, installation costs and space inside the panel.
- They enable to get rid of the transformer for adapting to power voltages.
- Versions with DC OK alarm contact.
- Their high efficiency reduces energy consumption and components' operating temperature allowing their use in small panels and under severe ambient conditions.
- Great backup power allowing to supply at least + 50% above the rated voltage for 5 seconds ensuring safety and reliability.
- The output voltage may be adjusted and is protected against the input of surges on the DC line and is equipped with double electronic protection devices disconnecting output in the event of internal faults.
- Dimensioned short-circuit and overload protection supplying breakaway starting currents 150% above the rated value required by heavy loads; thermal protection prevents failures in the event of prolonged overloads at high ambient temperatures.
- Their design ensures excellent ventilation to internal components, very small dimensions and IP20 protection against accidental contacts in compliance with IEC529.
- Thanks to their high efficiency and excellent ventilation, they are the smallest devices available on the market.

### Greater reliability

Compared to single-phase power supplies, this Series is more reliable in industrial applications. The input stage uses components with 900 V operating voltage, which are more resistant to voltage peaks in industrial power lines compared to components used in single-phase supplies, whose operating voltage is 550V in high-quality power supplies, but often 400...450 V in low-cost products. Being able to work from 185 to 550 Vac, these power supplies are immune to power failures; at 230 Vac input (L1-N), when another device connected to L2-N goes short, the neutral rises up to approx. 400 Vac and the input is supplied phase/phase until the protection is activated, which takes place - at best - in 300 ms; this is one of the most common causes of damages to 230-Vac single-phase power supplies in industrial applications. Another example of faults in 230-Vac single-phase devices powered between phase-neutral is due to the disconnection or accidental interruption of the panel's neutral from the system's neutral: failing to return to the neutral point, the neutral rises up to phase voltage applying approx. 400 Vac to single-phase loads, inevitably damaging the system.



Typical application with three-phase network and neutral. The latter is used to obtain a 230-Vac voltage in order to supply power to loads (in the example, a simple bulb) and power supplies.



A simple short-circuit on the load causes a rise in the neutral's potential, all the devices connected to it will be powered between two phases, i.e. with a value of approx. 340...400 Vac instead of 230 Vac.

### 185...550 Vac wide range input

Connectable in 230 or 240V single-phase lines, in 208, 400 or 500 V three-phase lines for the maximum adaptability to the AC lines, by removing the isolation transformer

### Two-phase input

Saves space, wiring, installation costs

### Power boost

The output power reaches 120% of the nominal value for several minutes, up to 150% during an overload, and up to 250% in the event of a short-circuit, to enable the protection devices connected to the output to trigger quickly, safely and selectively, without the use of additional

### High Performance

Reduces energy consumption and the operating temperature of the components and allows installation in small panels

### Increased reliability in industrial environments

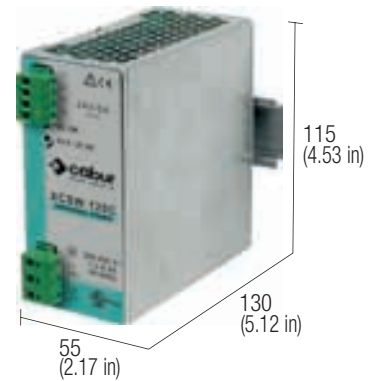
The input circuit uses components with a voltage of 900 V, more resistant to voltage peaks typical in industrial networks



# 1 or 2-phase switching power supply

## 230-400-500 Vac output power 120 W

- Both single-phase and two-phase input 185...550 Vac
- High reliability and immunity against over voltage due to failures on AC line
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- High efficiency and low dissipated power
- Suitable for applications in SELV and PELV circuits

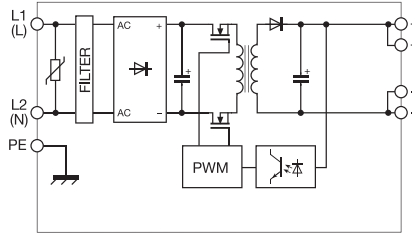


### NOTES

The depth dimension includes the terminal blocks and the DIN clamp.

- (1) Version available upon request; for information call our sales department, local agent or representative
- (2) 550 Vdc max for UL508
- (3) Over 50°C (122°F) apply a derating of about 3 W/°C
- (4) For this peak current, the output voltage does not drop more than 10% of the nominal value, but the current value, provided by the power supply also depends on the total line resistance.

### BLOCK DIAGRAM



Item available till sell-out,  
will be replaced by **CSW121**

### VERSIONS

- Output 24 Vdc 5 A
- Output 24 Vdc 5 A redundant version
- Output 12...15 Vdc 7 A
- Output 48 Vdc 2.5 A

#### Cod. XCSW120C

#### Cod. XCSW120B

CSW120C	-	
		CSW120B
		-

### INPUT TECHNICAL DATA

Input rated voltage
Frequency
Current @ Iout max. (Uin 230 / 400 Vac)
Inrush peak current
Power factor
Internal protection fuse
External protection on AC line

1-2x 230-400-500 Vac (range 185...550 Vac / 270...725 Vdc) (2)
47...63 Hz
1.1 A / 0.55 A
< 20 A
> 0.65
-
circuit breaker: 2x 6 A C characteristic - fuse: 2x T 3.15 A

### OUTPUT TECHNICAL DATA

Output rated voltage
Output adjustable range
Continuous current
Overload limit
Short circuit peak current
Load regulation
Ripple @ nominal ratings
Hold up time (Uin 230 / 400 Vac)
Overload / short circuit protections
Status display
Alarm contact threshold
Parallel connection
Redundant parallel connection

24 Vdc	12...15 Vdc
24...27.5 Vdc	12...15 Vdc
<b>5 A @ 50°C (3)</b>	<b>8 A @ 12 Vdc / 7 A @ 15 Vdc</b>
6.5 A for >5 s with Uout >90% Un (4)	8.8...7.7 A for >5 s with Uout >90% Un (4)
15 A for 0.5 s (4)	> 15 A for 0.5 s (4)
< 1%	< 1%
≤ 50 mVpp	≤ 50 mVpp
>20 ms / >200 ms	>20 ms / >200 ms
hiccup at the overload limit with auto reset / over temperature protection	
"DC OK" green LED	
-	-
possible	possible
possible with external ORing diode	possible with external ORing diode

### GENERAL TECHNICAL DATA

Efficiency (Uin 230 / 400 Vac)
Dissipated power (Uin 230 / 400 Vac)
Operating temperature range
Input/output isolation
Input/ground isolation
Output/ground isolation
Standard/approvals
EMC Standards
MTBF @ 25°C @ nominal ratings
Overvoltage category/Pollution degree
Protection degree
Connection terminal
Housing material
Approx. weight
Mounting information

>86% / >88%
20 W / 16 W
-20...+60°C, with derating over 50°C / over temperature protection (3)
3 kVac / 60 s SELV output
2 kVac / 60 s
0.5 kVac / 60 s
EN50178, EN61558, EN60950, IEC950, UL508
EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11
>500'000 h acc. to SN 29500 / >150'000 h acc. to MIL Std. HDBK 217F
II / 2
IP 20 IEC 529, EN60529
2.5 mm² pluggable screw type
aluminium and stainless steel
600 g (21.18 oz)
vertical on rail, allow 10 mm spacing between adjacent components

### MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5
Mounting rail type according to IEC60715/G32

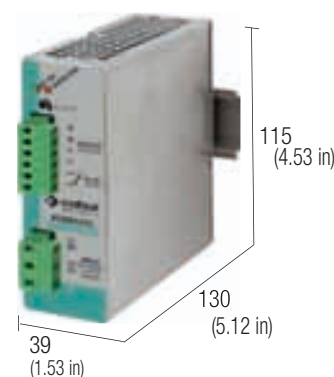
PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB
-

# 1 or 2-phase switching power supply 230-400-500 Vac output power 120 W



Available from September 2011

- Single-phase and 2-phase input 185...550 Vac
- High reliability and immunity against over voltage due to failures on AC line
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- High efficiency and low dissipated power
- Suitable for applications in SELV and PELV circuits

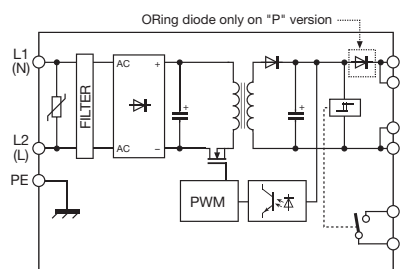


## NOTES

The depth dimension includes the terminal blocks and the DIN clamp.

- (1) Version available upon request; for information call our sales department, local agent or representative
- (2) 550 Vdc max for UL508
- (3) Over 50°C (122°F) apply a derating of about 3 W/°C
- (4) For this peak current, the output voltage does not drop more than 10% of the nominal value, but the current value, provided by the power supply also depends on the total line resistance.

## BLOCK DIAGRAM



## VERSIONS

- Output 24 Vdc 5 A
- Output 12...15 Vdc 7 A
- Output 48 Vdc 2.5 A redundant version
- Output 72 Vdc 1.5 A redundant version

## INPUT TECHNICAL DATA

- Input rated voltage
- Frequency
- Current @ Iout max. (Uin 230 / 400 Vac)
- Inrush peak current
- Power factor
- Internal protection fuse
- External protection on AC line

Cod. XCSW121C	Cod. XCSW121B	Cod. XCSW121DP	Cod. XCSW121G
CSW121C	CSW121B	CSW121DP (1)	CSW121G (1)

1-2x **230-400-500 Vac** (range 185...550 Vac / 270...725 Vdc) (2)

47...63 Hz

1.1 A / 0.55 A

< 20 A

> 0.65

circuit breaker: 2x 6 A C characteristic - fuse: 2x T 3.15 A

## OUTPUT TECHNICAL DATA

- Output rated voltage
- Output adjustable range
- Continuous current
- Overload limit
- Short circuit peak current
- Load regulation
- Ripple @ nominal ratings
- Hold up time (Uin 230 / 400 Vac)
- Overload / short circuit protections
- Status display
- Alarm contact threshold
- Parallel connection
- Redundant parallel connection

24 Vdc	12...15 Vdc		
24...27.5 Vdc	12...15 Vdc		
<b>5 A @ 50°C (3)</b>	<b>8 A @ 12 Vdc / 7 A @ 15 Vdc</b>		
7.5 A for >5 s with Uout >90% Un (4)	10...9 A for >5 s with Uout >90% Un (4)		
15 A for 0.5 s (4)	> 15 A for 0.5 s (4)		
< 1%	< 1%		
≤ 50 mVpp	≤ 50 mVpp		
>20 ms / >200 ms	>20 ms / >200 ms		
hiccup at the overload limit with auto reset / over temperature protection			
"DC OK" green LED / "DC OK" alarm contact/ "Overload" red LED			
21.6 Vdc	10.8 Vdc		
possible	possible		
possible with external ORing diode	possible with external ORing diode		

## GENERAL TECHNICAL DATA

- Efficiency (Uin 230 / 400 Vac)
- Dissipated power (Uin 230 / 400 Vac)
- Operating temperature range
- Input/output isolation
- Input/ground isolation
- Output/ground isolation
- Standard/approvals
- EMC Standards
- MTBF @ 25°C @ nominal ratings
- Overvoltage category/Pollution degree
- Protection degree
- Connection terminal
- Housing material
- Approx. weight
- Mounting information

>86% / >88%	>84% / >86%		
20 W / 16 W	20 W / 17 W		
-20...+60°C, with derating over 50°C / over temperature protection (3)			
3 kVac / 60 s SELV output			
2 kVac / 60 s			
0.5 kVac / 60 s			
EN50178, EN61558, EN60950, IEC950, UL508			
EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11			
>500'000 h acc. to SN 29500 / >150'000 h acc. to MIL Std. HDBK 217F			
II / 2			
IP 20 IEC 529, EN60529			
2.5 mm <sup>2</sup> pluggable screw type			
aluminium and stainless steel			
600 g (21.18 oz)			
vertical on rail, allow 10 mm spacing between adjacent components			

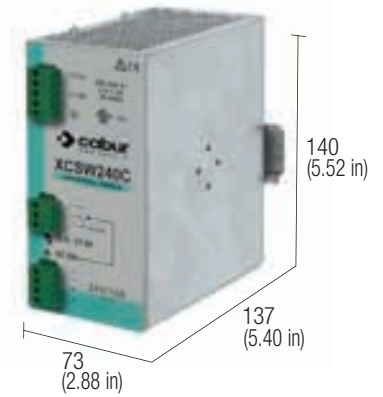
## MOUNTING ACCESSORIES

- Mounting rail type according to IEC60715/TH35-7.5
- Mounting rail type according to IEC60715/G32

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

# 1 or 2-phase switching power supply 230-400-500 Vac output power 240 W

- Both single-phase and two-phase input 185...550 Vac
- High reliability and immunity against over voltage due to failures on AC line
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- High efficiency and low dissipated power
- Suitable for applications in SELV and PELV circuits

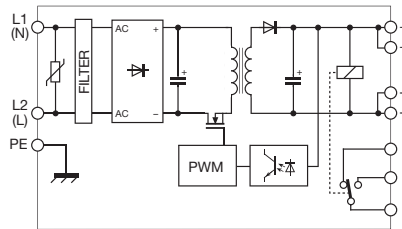


## NOTES

The depth dimension includes the terminal blocks and the DIN clamp.

- (1) Version available upon request; for information call our sales department, local agent or representative
- (2) 550 Vdc max for UL508
- (3) Over 50°C (122°F) apply a derating of about 3 W/°C
- (4) Overload and short circuit current depends on the total line resistance.

## BLOCK DIAGRAM



Item available till sell-out, will be replaced by  
**CSW241.. series**

## VERSIONS

- Output 24 Vdc 10 A
- Output 24 Vdc 10 A redundant version
- Output 12...15 Vdc 16...15 A
- Output 48 Vdc 5 A

### Cod. XCSW240C

### Cod. XCSW240B

### Cod. XCSW240D

CSW240C

-

XCSW240B (1)

XCSW240D (1)

## INPUT TECHNICAL DATA

Input rated voltage	1-2x <b>230-400-500 Vac</b> (range 185...480 Vac / 270...650 Vdc) (2)
Frequency	47...63 Hz
Current @ Iout max. (Uin 230 / 400 Vac)	2 A / 1 A
Inrush peak current	< 20 A
Power factor	> 0.65
Internal protection fuse	-
External protection on AC line	circuit breaker: 2x 6 A C characteristic - fuse: 2x T 6.3 A

## OUTPUT TECHNICAL DATA

	<b>24 Vdc</b>	<b>12...15 Vdc</b>	<b>48 Vdc</b>
Output rated voltage	24...27.5 Vdc	12...15 Vdc	45...55 Vdc
Output adjustable range			
Continuous current	<b>10 A @ 50°C</b> (3)	<b>16 A @ 12 Vdc / 15 A @ 15 Vdc</b>	<b>5 A @ 50°C</b> (3)
Overload limit	12 A for >5 s with Uout >90% Un (4)	20...18 A for >5 s with Uout >90% Un (4)	6 A for >5 s with Uout >90% Un (4)
Short circuit peak current	20 A for 0.5 s (4)	20 A for 0.5 s (4)	20 A for 0.5 s (4)
Load regulation	< 1%	< 1%	< 1%
Ripple @ nominal ratings	≤ 80 mVpp	≤ 80 mVpp	≤ 80 mVpp
Hold up time (Uin 230 / 400 Vac)	>20 ms / >120 ms	>20 ms / >120 ms	>20 ms / >120 ms
Overload / short circuit protections	hiccup at the overload limit with auto reset / over temperature protection		
Status display	"DC OK" green LED / "DC OK" alarm contact		
Alarm contact threshold	-	-	-
Parallel connection	possible	possible	possible
Redundant parallel connection	possible with external ORing diode	possible with external ORing diode	possible with external ORing diode

## GENERAL TECHNICAL DATA

Efficiency (Uin 230 / 400 Vac)	>88% / >90%	>87% / >89%	>88% / >90%
Dissipated power (Uin 230 / 400 Vac)	33 W / 27 W	34 W / 28 W	33 W / 27 W
Operating temperature range	-20...+60°C, with derating over 50°C / over temperature protection (3)		
Input/output isolation	3 kVac / 60 s SELV output		
Input/ground isolation	2 kVac / 60 s		
Output/ground isolation	0.5 kVac / 60 s		
Standard/approvals	EN50178, EN61558, EN60950, IEC950, UL508		
EMC Standards	EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11		
MTBF @ 25°C @ nominal ratings	>500'000 h acc. to SN 29500 / >150'000 h acc. to MIL Std. HDBK 217F		
Overvoltage category/Pollution degree	II / 2		
Protection degree	IP 20 IEC 529, EN60529		
Connection terminal	2.5 mm <sup>2</sup> pluggable screw type		
Housing material	aluminium and stainless steel		
Approx. weight	1 Kg (35.3 oz)		
Mounting information	vertical on rail, allow 10 mm spacing between adjacent components		

## MOUNTING ACCESSORIES

- Mounting rail type according to IEC60715/TH35-7.5
- Mounting rail type according to IEC60715/G32

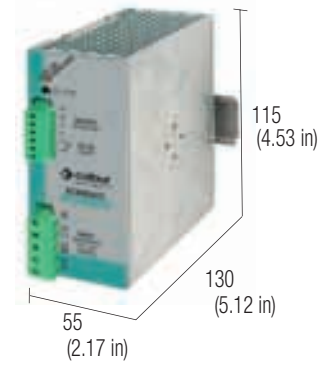
**PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB**

# 1, 2 or 3-phase switching power supply 230-400-500 Vac output power 240 W



Available from September 2011

- Single-phase, 2-phase and 3-phase input 185...550 Vac
- High reliability and immunity against over voltage due to failures on AC line
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- High efficiency and low dissipated power
- Suitable for applications in SELV and PELV circuits

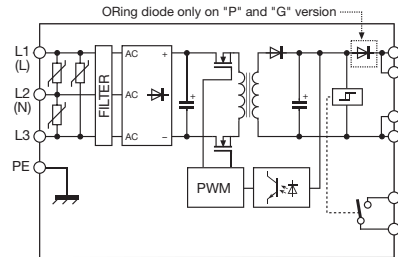


## NOTES

The depth dimension includes the terminal blocks and the DIN clamp.

- (1) Version available upon request; for information call our sales department, local agent or representative
- (2) 550 Vdc max for UL508
- (3) Over 50°C (122°F) apply a derating of about 3 W/°C
- (4) For this peak current, the output voltage does not drop more than 10% of the nominal value, but the current value, provided by the power supply also depends on the total line resistance.
- (5) Version CSW241G is not suitable for SELV applications

## BLOCK DIAGRAM



## VERSIONS

- Output 24 Vdc 10 A
- Output 12...15 Vdc 16...15 A
- Output 48 Vdc 5 A redundant version
- Output 72 Vdc 3.3 A redundant version

## INPUT TECHNICAL DATA

Input rated voltage	1-2-3x 230-400-500 Vac (range 185...550 Vac / 270...770 Vdc) (2)
Frequency	47...63 Hz
Current @ Iout max. (Uin 230 / 400 Vac)	2 A / 1 A
Inrush peak current	< 20 A
Power factor	> 0.65
Internal protection fuse	-
External protection on AC line	circuit breaker: 2-3x 6 A C characteristic - fuse: 2-3x T 6.3 A

## OUTPUT TECHNICAL DATA

Output rated voltage	24...27.5 Vdc	12...15 Vdc	48 Vdc	
Output adjustable range	24...27.5 Vdc	12...15 Vdc	45...55 Vdc	
Continuous current	10 A @ 50°C (3)	16 A @ 12 Vdc / 15 A @ 15 Vdc	5 A @ 50°C (3)	
Overload limit	15 A for >5 s with Uout >90% Un (4)	20...18 A for >5 s with Uout >90% Un (4)	6 A for >5 s with Uout >90% Un (4)	
Short circuit peak current	20 A for 0.5 s (4)	20 A for 0.5 s (4)	20 A for 0.5 s (4)	
Load regulation	< 1%	< 1%	< 1%	
Ripple @ nominal ratings	≤ 80 mVpp	≤ 80 mVpp	≤ 80 mVpp	
Hold up time (Uin 230 / 400 Vac)	>20 ms / >120 ms	>20 ms / >120 ms	>20 ms / >120 ms	
Overload / short circuit protections	hiccup at the overload limit with auto reset / over temperature protection			
Status display	"DC OK" green LED / "DC OK" alarm contact/ "Overload" red LED			
Alarm contact threshold	21.6 Vdc	10.8 Vdc	43.2 Vdc	-
Parallel connection	possible	possible	possible	possible
Redundant parallel connection	possible with external ORing diode	possible with external ORing diode	possible with external ORing diode	possible with external ORing diode

## GENERAL TECHNICAL DATA

Efficiency (Uin 230 / 400 Vac)	>88% / >90%	>87% / >89%	>88% / >90%	
Dissipated power (Uin 230 / 400 Vac)	33 W / 27 W	34 W / 28 W	33 W / 27 W	
Operating temperature range	-20...+60°C, with derating over 50°C / over temperature protection (3)			
Input/output isolation	3 kVac / 60 s SELV output (5)			
Input/ground isolation	2 kVac / 60 s			
Output/ground isolation	0.5 kVac / 60 s			
Standard/approvals	EN50178, EN61558, EN60950, IEC950, UL508			
EMC Standards	EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11			
MTBF @ 25°C @ nominal ratings	>50'000 h acc. to SN 29500 / >150'000 h acc. to MIL Std. HDBK 217F			
Overvoltage category/Pollution degree	II / 2			
Protection degree	IP 20 IEC 529, EN60529			
Connection terminal	2.5 mm² pluggable screw type			
Housing material	aluminium and stainless steel			
Approx. weight	1 Kg (35.3 oz)			
Mounting information	vertical on rail, allow 10 mm spacing between adjacent components			

## MOUNTING ACCESSORIES

- Mounting rail type according to IEC60715/TH35-7.5
- Mounting rail type according to IEC60715/G32

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

# Switching power supply CSB and CSG series

## TRIPLE POWER

**DIN-rail 3-phase switching power supplies** specifically designed for applications in industrial automation control panels. They can deliver over +50% of the nominal current for a sustained period keeping a stable output voltage.

The alarm contact is controlled by a voltage threshold and it switches when the voltage drops below 90% of the rated value.

**Thanks to these features and to the numerous international certifications, this series of power supplies allows engineers to meet all the requirements of the new EN 60204-1 Machinery Directive**, to enable the protection devices connected to the output to trigger quickly, safely and selectively, thus ensuring continuity of service to the other parts of the system.

### Suggested uses

- Applications in machinery automation requiring high levels of reliability in terms of control and safety voltage
- In applications requiring selectivity of surge protection devices on DC lines
- Applications in industrial automation
- Heavy duty uses

### Main features

- Equipped with 340...550 Vac / 507...770 Vdc, they are suitable for use on all power lines.
- Their high efficiency reduces energy consumption and components' operating temperature allowing their use in small panels and under severe ambient conditions.
- Great backup power allowing to supply at least + 50% above the rated voltage for 5 seconds, keeping output voltage constant and ensuring safety and reliability.
- The output voltage may be adjusted and is protected against the input of surges on the DC line and is equipped with double electronic protection devices preventing damages to powered components in the event of internal faults.
- Dimensioned short-circuit and overload protection supplying breakaway starting currents 150% above the rated value required by heavy loads.
- Thermal protection prevents faults in the event of prolonged overloads at high ambient temperatures.
- Their design ensures excellent ventilation to internal components, very small dimensions and IP20 protection against accidental contacts in compliance with IEC529.

### Special power supplies for engines in DC, Brushless, and relative drives

New 48Vdc, 72-85Vdc, and 110-180Vdc models have been introduced, designed to reliably power engines in DC. They:

- Supply peak power equal to even 4-5 times the nominal current, which is required by the engine during the peak phase
- Have an output stage protected from overvoltage generated by the engines and drives during braking, which could otherwise cause malfunctions or cause the power supply to lose control over output voltage stability
- Provide output voltage at 48Vdc, and 72-85Vdc. By increasing the voltage of the engine power supply, the same power can be obtained at lower current, with notable advantages for performance, engine construction, connection wires, and drives.



### Integrated smart alarm contact

Activated when output voltage decreases below 90% of rated value

### Extremely compact dimensions

They are among the smallest on the market, optimising the use of space in the panel without compromising performance

### Power boost

The output power reaches 120% of the nominal value for several minutes, up to 150% during an overload, and up to 250% in the event of a short-circuit, to enable the protection devices connected to the output to trigger quickly, safely and selectively, without the use of additional modules

### Very high efficiency

Designed to save energy and reduce the working temperature

### Wide range

The widest range on the market, with power ratings from 120 to 2400W and output voltages of 24, 48 and 72 V, for uses including powering special motors

### New active electronic ASSIL protection

Three-phase networks can cause reliability problems for electronic devices due to various phenomena. Simple activation of a protection or the commutation of a load can generate holes in the network and voltage peaks whose size depends on several variables.

These damaging phenomena are governed by the VDE0160-2 standard and cannot be resolved using traditional passive protections (varistors, NTC).

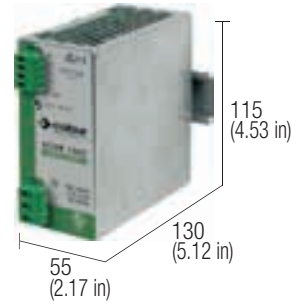
The solution is the active ASSIL circuit (Active Surge Suppressor and Inrush Current Limiter). A power semi-conductor "opens" the DC side in less than 0.1 ms in the case that voltage exceeds 750V, preventing damaging voltage peaks from reaching the convertor's MOSFET.

The protection circuit also serves to actively limit the inrush current, which allows for precise coordination of the overcurrent protections, as well as eliminating undesirable bursts which can occur when the network returns to its nominal value after a voltage hole.



# 2-phase switching power supply 400-500 Vac output power 85 W

- Two-phase input 340...550 Vac
- It saves cabling costs and line protection costs
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- High efficiency and low dissipated power
- Suitable for applications in SELV and PELV circuits



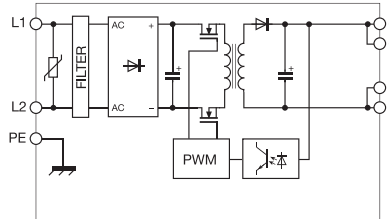
## NOTES

The depth dimension includes the terminal blocks and the DIN clamp.

(3) Over 50°C (122°F) apply a derating of about 2 W/°C

(4) For this peak current, the output voltage does not drop more than 10% of the nominal value, but the current value, provided by the power supply also depends on the total line resistance.

## BLOCK DIAGRAM



Item available till sell-out, will be replaced by **CSW121C**

## VERSIONS

- Output 24 Vdc 3.5 A
- Output 24 Vdc 3.5 A redundant version
- Output 12...15 Vdc 7 A
- Output 48 Vdc 1.75 A

## Cod. XCSB85C

CSB85C	—		
		—	
			—

## INPUT TECHNICAL DATA

Input rated voltage	2x 400-500 Vac (range 340...550 Vac)
Frequency	47...63 Hz
Current @ Iout max. (Uin 400 / 500 Vac)	0.5 A / 0.45 A
Inrush peak current	< 50 A
Power factor	> 0.65
Internal protection fuse	—
External protection on AC line	circuit breaker: 2x 6 A C characteristic - fuse: 2x T 6.3 A

## OUTPUT TECHNICAL DATA

Output rated voltage	24 Vdc
Output adjustable range	24...27.5 Vdc
Continuous current	3.5 A @ 50°C (3)
Overload limit	6 A for >5 s con Uout > 90% Un (4)
Short circuit peak current	15 A for 0.4 s (4)
Load regulation	< 1%
Ripple @ nominal ratings	≤ 60 mVpp
Hold up time (Uin 400 / 500 Vac)	>50 ms / >60 ms
Overload / short circuit protections	hiccup at the overload limit with auto reset / over temperature protection
Status display	"DC OK" green LED
Alarm contact threshold	—
Parallel connection	possible
Redundant parallel connection	possible with external ORing diode

## GENERAL TECHNICAL DATA

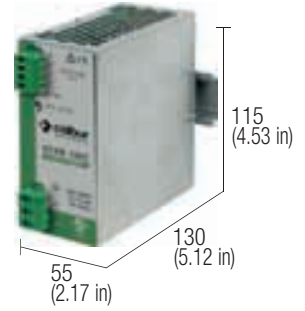
Efficiency (Uin 400 / 500 Vac)	>88% / >90%
Dissipated power (Uin 400 / 500 Vac)	12 W / 9 W
Operating temperature range	-20...+60°C, with derating over 50°C / over temperature protection (3)
Input/output isolation	3 kVac / 60 s SELV output
Input/ground isolation	2 kVac / 60 s
Output/ground isolation	0.5 kVac / 60 s
Standard/approvals	EN50178, EN61558, EN60950, IEC950, UL508
EMC Standards	EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11
MTBF @ 25°C @ nominal ratings	>500'000 h acc. to SN 29500 / >150'000 h acc. to MIL Std. HDBK 217F
Overvoltage category/Pollution degree	II / 2
Protection degree	IP 20 IEC 529, EN60529
Connection terminal	2.5 mm² pluggable screw type
Housing material	aluminium
Approx. weight	600 g (21.18 oz)
Mounting information	vertical on rail, allow 10 mm spacing between adjacent components

## MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5	PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB
Mounting rail type according to IEC60715/G32	—

# 2-phase switching power supply 400-500 Vac output power 150 W

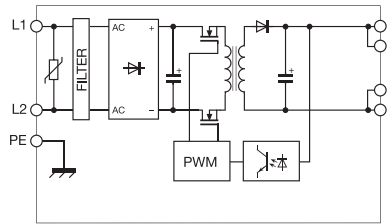
- Two-phase input 340...550 Vac
- It saves cabling costs and line protection costs
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- High efficiency and low dissipated power
- Suitable for applications in SELV and PELV circuits



## NOTES

The depth dimension includes the terminal blocks and the DIN clamp.  
 (3) Over 50°C (122°F) apply a derating of about 2 W/°C  
 (4) For this peak current, the output voltage does not drop more than 10% of the nominal value, but the current value, provided by the power supply also depends on the total line resistance.

## BLOCK DIAGRAM



Item available till sell-out, will be replaced by **CSW121C**

## VERSIONS

- Output 24 Vdc 5 A
- Output 24 Vdc 5 A redundant version
- Output 12...15 Vdc 8...7 A
- Output 48 Vdc 3 A

## Cod. XCSB150C

<b>CSB150C</b>	—	—	—
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## INPUT TECHNICAL DATA

Input rated voltage  
 Frequency  
 Current @ Iout max. (Uin 400 / 500 Vac)  
 Inrush peak current  
 Power factor  
 Internal protection fuse  
 External protection on AC line

2x **400-500 Vac** (range 340...550 Vac) (2)  
 47...63 Hz  
 0.7 A / 0.55 A  
 < 50 A  
 > 0.65  
 —  
 circuit breaker: 2x 6 A C characteristic - fuse: 2x T 6.3 A

## OUTPUT TECHNICAL DATA

Output rated voltage  
 Output adjustable range  
 Continuous current  
 Overload limit  
 Short circuit peak current  
 Load regulation  
 Ripple @ nominal ratings  
 Hold up time (Uin 400 / 500 Vac)  
 Overload / short circuit protections  
 Status display  
 Alarm contact threshold  
 Parallel connection  
 Redundant parallel connection

**24 Vdc**  
 24...27.5 Vdc  
**6 A @ 50°C (3)**  
 9 A for >5 s  
 with Uout >90% Un (4)  
 20 A for 0.4 s (4)  
 < 1%  
 ≤ 60 mVpp  
 >50 ms / >60 ms  
 hiccup at the overload limit with auto reset / over temperature protection  
 "DC OK" green LED  
 —  
 possible  
 possible with external ORing diode

## GENERAL TECHNICAL DATA

Efficiency (Uin 400 / 500 Vac)  
 Dissipated power (Uin 400 / 500 Vac)  
 Operating temperature range  
 Input/output isolation  
 Input/ground isolation  
 Output/ground isolation  
 Standard/approvals  
 EMC Standards  
 MTBF @ 25°C @ nominal ratings  
 Overvoltage category/Pollution degree  
 Protection degree  
 Connection terminal  
 Housing material  
 Approx. weight  
 Mounting information

>90% / >91%  
 17 W / 15 W  
 -20...+60°C, with derating over 50°C / over temperature protection (3)  
 3 kVac / 60 s SELV output  
 2 kVac / 60 s  
 0.5 kVac / 60 s  
 EN50178, EN61558, EN60950, IEC950, UL508  
 EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11  
 >500'000 h acc. to SN 29500 / >150'000 h acc. to MIL Std. HDBK 217F  
 II / 2  
 IP 20 IEC 529, EN60529  
 2.5 mm² pluggable screw type  
 aluminium  
 600 g (21.18 oz)  
 vertical on rail, allow 10 mm spacing between adjacent components

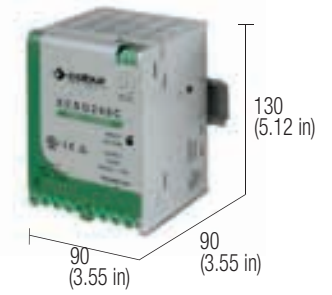
## MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5  
 Mounting rail type according to IEC60715/G32

**PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB**  
 —

# 3-phase switching power supply 400-500 Vac output power 240 W

- Three-phase input 340...550 Vac or two-phase with derating
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- High efficiency and low dissipated power
- Suitable for applications in SELV and PELV circuits



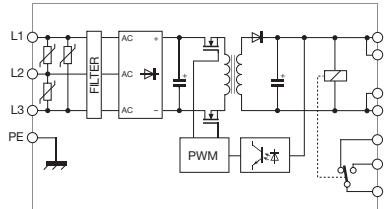
## NOTES

The depth dimension includes the DIN rail clamp.

(3) Over 50°C (122°F) apply a derating of about 6 W/°C

(4) For this peak current, the output voltage does not drop more than 10% of the nominal value, but the current value, provided by the power supply also depends on the total line resistance.

## BLOCK DIAGRAM



Item available till sell-out, will be replaced by **CSW241C**

## VERSIONS

- Output 24 Vdc 10 A
- Output 24 Vdc 10 A redundant version
- Output 12...15 Vdc 20 A
- Output 48 Vdc 5 A

Cod. XCSG240C

CSG240C

## INPUT TECHNICAL DATA

Input rated voltage	3x 400-500 Vac (range 340...550 Vac)
Frequency	47...63 Hz
Current @ Iout max. (Uin 400 / 500 Vac)	0.6 A / 0.42 A
Inrush peak current	< 50 A
Power factor	> 0.7
Internal protection fuse	—
External protection on AC line	circuit breaker: 3x 6 A C characteristic - fuse: 3x T 1.5 A

## OUTPUT TECHNICAL DATA

Output rated voltage	24 Vdc
Output adjustable range	24...28 Vdc
Continuous current	10 A @ 50°C (3)
Overload limit	13.5 A for >1,5 s with Uout >90% Un (4)
Short circuit peak current	>25 A for 1.5 s (4)
Load regulation	< 1%
Ripple @ nominal ratings	≤ 50 mVpp
Hold up time (Uin 400 / 500 Vac)	>20 ms / >30 ms
Overload / short circuit protections	hiccup at the overload limit with auto reset / over temperature protection (3)
Status display	"DC OK" green LED / "DC OK" alarm contact
Alarm contact threshold	—
Parallel connection	possible
Redundant parallel connection	possible with external ORing diode

## GENERAL TECHNICAL DATA

Efficiency (Uin 400 / 500 Vac)	>90% / >90%
Dissipated power (Uin 400 / 500 Vac)	27 W / 27 W
Operating temperature range	-20...+60°C, with derating over 50°C / over temperature protection (3)
Input/output isolation	3 kVac / 60 s SELV output
Input/ground isolation	2 kVac / 60 s
Output/ground isolation	0.5 kVac / 60 s
Standard/approvals	EN50178, EN61558, EN60950, IEC950, UL508
EMC Standards	EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11
MTBF @ 25°C @ nominal ratings	>500'000 h acc. to SN 29500 / >150'000 h acc. to MIL Std. HDBK 217F
Overvoltage category/Pollution degree	II / 2
Protection degree	IP 20 IEC 529, EN60529
Connection terminal	4 mm² fixed screw type
Housing material	aluminium
Approx. weight	1 Kg (35.3 oz)
Mounting information	vertical on rail, allow 10 mm spacing between adjacent components

## MOUNTING ACCESSORIES

- Mounting rail type according to IEC60715/TH35-7.5
- Mounting rail type according to IEC60715/G32

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

# 3-phase switching power supply 400-500 Vac output power 500 W

- Three-phase input 340...550 Vac or two-phase with derating
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- High efficiency and low dissipated power
- Suitable for applications in SELV and PELV circuits
- Input protected by ASSIL circuit (Surge Suppressor and Inrush Limiter)

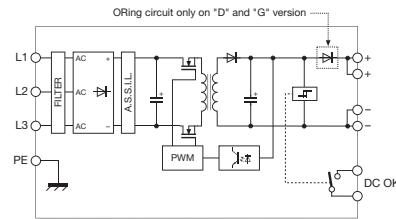


## NOTES

The depth dimension includes the DIN rail clamp.

- (1) Version available upon request; for information call our sales department, local agent or representative
- (3) Over 50°C (122°F) apply a derating of about 6 W/°C
- (4) For this peak current, the output voltage does not drop more than 10% of the nominal value, but the current value, provided by the power supply also depends on the total line resistance.
- (5) Version CSG500G is not suitable for SELV applications

## BLOCK DIAGRAM



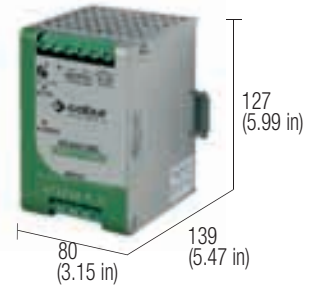
Special version for DC motors

Special version for DC motors

VERSIONS	Cod. XCSG500C	Cod. XCSG500D	Cod. XCSG500G
Output 24 Vdc 20 A	CSG500C	—	—
Output 12...15 Vdc 40 A	—	—	—
Output 48 Vdc 10 A redundant version	—	CSG500D	—
Output 72 Vdc 6.7 A redundant version	—	—	CSG500G (5)
INPUT TECHNICAL DATA	3x 400-500 Vac (range 340...550 Vac)		
Input rated voltage	47...63 Hz		
Frequency	1 A / 0.6 A		
Current @ Iout max. (Uin 400 / 500 Vac)	< 35 A		
Current @ Iout max. (Uin 400 / 500 Vac)	> 0.75 with PFC		
Inrush peak current	—		
Power factor	circuit breaker: 3x 6 A C characteristic - fuse: 3x T 3.15 A		
Internal protection fuse	—		
External protection on AC line	—		
OUTPUT TECHNICAL DATA	<b>24 Vdc</b>	<b>48 Vdc</b>	<b>72 Vdc</b>
Output rated voltage	24...28 Vdc	45...55 Vdc	72...85 Vdc
Output adjustable range	<b>20 A @ 50°C (3)</b>	<b>10 A @ 50°C (3)</b>	<b>6.7 A @ 50°C (3)</b>
Continuous current	>30 A for >5 s	>15 A for >5 s	10 A for >5 s
Overload limit	with Uout >90% Un (4)	with Uout >90% Un (4)	with Uout >90% Un (4)
Short circuit peak current	>50 A for 5 s (4)	>50 A for 5 s (4)	>20 A for 5 s (4)
Load regulation	< 0.5%	< 0.5%	< 1%
Ripple @ nominal ratings	≤ 50 mVpp	≤ 50 mVpp	≤ 100 mVpp
Hold up time (Uin 400 / 500 Vac)	>12 ms / >20 ms	>15 ms / >30 ms	>15 ms / >18 ms
Overload / short circuit protections	hiccup at the overload limit with auto reset / over temperature protection / ASSIL circuit		
Status display	"DC OK" green LED / "DC OK" alarm contact/ "Overload" red LED		
Alarm contact threshold	<21.6 Vdc	<43.2 Vdc	<21.6 Vdc
Parallel connection	possible	possible	possible
Redundant parallel connection	possible with external ORing diode	factory provided with internal ORing diode	factory provided with internal ORing diode
GENERAL TECHNICAL DATA	>93% / >94%	>93% / >94%	>95% / >95%
Efficiency (Uin 400 / 500 Vac)	36 W / 30 W	36 W / 30 W	26 W / 26 W
Dissipated power (Uin 400 / 500 Vac)	-20...+60°C, with derating over 50°C / over temperature protection (3)		
Operating temperature range	3 kVac / 60 s SELV output (5)		
Input/output isolation	2 kVac / 60 s		
Input/ground isolation	0.5 kVac / 60 s		
Output/ground isolation	EN50178, EN61558, EN60950, IEC950, UL508		
Standard/approvals	EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11		
EMC Standards	>500'000 h acc. to SN 29500 / >150'000 h acc. to MIL Std. HDBK 217F		
MTBF @ 25°C @ nominal ratings	II / 2		
Overvoltage category/Pollution degree	IP 20 IEC 529, EN60529		
Protection degree	6 mm² fixed screw type		
Connection terminal	aluminium		
Housing material	1.3 Kg (45.89 oz)		
Approx. weight	vertical on rail, allow 10 mm spacing between adjacent components		
Mounting information	PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB		
MOUNTING ACCESSORIES	—		
Mounting rail type according to IEC60715/TH35-7.5	—		
Mounting rail type according to IEC60715/G32	—		

# 3-phase switching power supply 400-500 Vac output power 720 W

- Three-phase input 340...550 Vac or two-phase with derating
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- High efficiency and low dissipated power
- Suitable for applications in SELV and PELV circuits
- Input protected by ASSIL circuit (Surge Suppressor and Inrush Limiter)

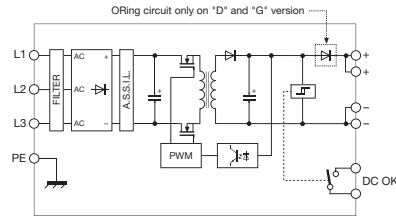


## NOTES

The depth dimension includes the DIN rail clamp.

- (1) Version available upon request; for information call our sales department, local agent or representative
- (3) Over 50°C (122°F) apply a derating of about 6 W/°C
- (4) For this peak current, the output voltage does not drop more than 10% of the nominal value, but the current value, provided by the power supply also depends on the total line resistance.

## BLOCK DIAGRAM



Special version for DC motors

## VERSIONS

- Output 24 Vdc 30 A
- Output 24 Vdc 30 A redundant version
- Output 12...15 Vdc 60 A
- Output 48 Vdc 15 A

Cod. XCSG720C

CSG720C

(1)

CSG720D (1)

## INPUT TECHNICAL DATA

- Input rated voltage
- Frequency
- Current @ Iout max. (Uin 400 / 500 Vac)
- Inrush peak current
- Power factor
- Internal protection fuse
- External protection on AC line

3x **400-500 Vac** (range 340...550 Vac)  
 47...63 Hz  
 1.4 A / 1.1 A  
 < 30 A  
 > 0.75

circuit breaker: 3x 10 A C characteristic - fuse: 3x T 5 A

## OUTPUT TECHNICAL DATA

- Output rated voltage
- Output adjustable range
- Continuous current
- Overload limit
- Short circuit peak current
- Load regulation
- Ripple @ nominal ratings
- Hold up time (Uin 400 / 500 Vac)
- Overload / short circuit protections

	24 Vdc	48 Vdc
Output rated voltage	24...28 Vdc	45...55 Vdc
Output adjustable range	30 A @ 50°C (3)	15 A @ 50°C (3)
Continuous current	45 A for >5 s with Uout >90% Un (4)	22.5 A for >5 s with Uout >90% Un (4)
Overload limit	>50 A for 1.5 s (4)	>50 A for 1.5 s (4)
Short circuit peak current	< 1%	< 1%
Load regulation	≤ 200 mVpp	≤ 200 mVpp
Ripple @ nominal ratings	>10 ms / >15 ms	>10 ms / >15 ms

hiccup at the overload limit with auto reset / over temperature protection / ASSIL circuit

"DC OK" green LED / "DC OK" alarm contact/ "Overload" red LED

- Alarm contact threshold
- Parallel connection
- Redundant parallel connection

Alarm contact threshold	<21.6 Vdc	<43.2 Vdc
Parallel connection	possible possible with external ORing diode	possible factory provided with internal ORing diode

## GENERAL TECHNICAL DATA

- Efficiency (Uin 400 / 500 Vac)
- Dissipated power (Uin 400 / 500 Vac)
- Operating temperature range
- Input/output isolation
- Input/ground isolation
- Output/ground isolation
- Standard/approvals
- EMC Standards
- MTBF @ 25°C @ nominal ratings
- Overvoltage category/Pollution degree
- Protection degree
- Connection terminal
- Housing material
- Approx. weight
- Mounting information

Efficiency (Uin 400 / 500 Vac)	>91% / >92%	>92% / >93%
Dissipated power (Uin 400 / 500 Vac)	66 W / 60 W	60 W / 55 W
Operating temperature range	-20...+60°C, with derating over 50°C / over temperature protection (3)	
Input/output isolation	3 kVac / 60 s SELV output	
Input/ground isolation	2 kVac / 60 s	
Output/ground isolation	0.5 kVac / 60 s	
Standard/approvals	EN50178, EN61558, EN60950, IEC950, UL508	
EMC Standards	EN61000-6-2, EN61000-6-4, EN61000-4-3, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11	
MTBF @ 25°C @ nominal ratings	>500'000 h acc. to SN 29500 / >150'000 h acc. to MIL Std. HDBK 217F	
Overvoltage category/Pollution degree	II / 2	
Protection degree	IP 20 IEC 529, EN60529	
Connection terminal	6 mm <sup>2</sup> fixed screw type	
Housing material	aluminium	
Approx. weight	1.3 Kg (45.86 oz)	
Mounting information	vertical on rail, allow 10 mm spacing between adjacent components	

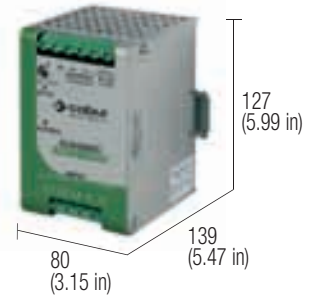
## MOUNTING ACCESSORIES

- Mounting rail type according to IEC60715/TH35-7.5
- Mounting rail type according to IEC60715/G32

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

# 3-phase switching power supply 400-500 Vac output power 960 W

- Three-phase input 340...550 Vac or two-phase with derating
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- High efficiency and low dissipated power
- Suitable for applications in SELV and PELV circuits
- Input protected by ASSIL circuit (Surge Suppressor and Inrush Limiter)

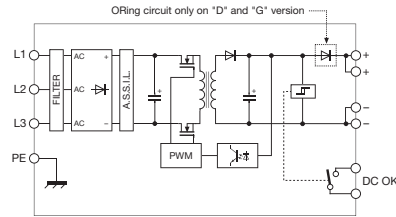


## NOTES

The depth dimension includes the DIN rail clamp.

- (3) Over 50°C (122°F) apply a derating of about 18 W/°C
- (4) For this peak current, the output voltage does not drop more than 10% of the nominal value, but the current value, provided by the power supply also depends on the total line resistance.
- (5) Version CSG960G is not suitable for SELV applications

## BLOCK DIAGRAM



Special version for DC motors

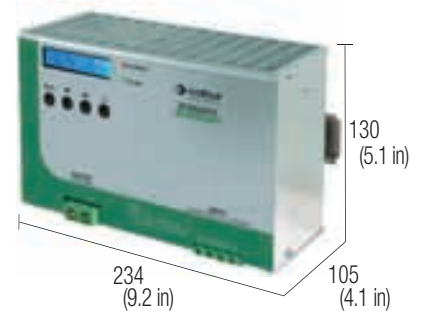
Special version for DC motors



VERSIONS	Cod. XCSG960C	Cod. XCSG960D	Cod. XCSG960G
Output 24 Vdc 40 A	CSG960C	—	—
Output 12...15 Vdc 80 A	—	—	—
Output 48 Vdc 20 A redundant version	—	CSG960D	—
Output 72 Vdc 13.3 A redundant version	—	—	CSG960G (5)
INPUT TECHNICAL DATA	3x 400-500 Vac (range 340...550 Vac)		
Input rated voltage	47...63 Hz		
Frequency	2.2 A / 1.1 A		
Current @ Iout max. (Uin 400 / 500 Vac)	< 20 A		
Inrush peak current	> 0.65		
Power factor	—		
Internal protection fuse	circuit breaker: 3x 10 A C characteristic - fuse: 3x T 6.3 A		
External protection on AC line	—		
OUTPUT TECHNICAL DATA	<b>24 Vdc</b>	<b>48 Vdc</b>	<b>72 Vdc</b>
Output rated voltage	24...28 Vdc	45...55 Vdc	72...85 Vdc
Output adjustable range	<b>40 A @ 50°C (3)</b>	<b>20 A @ 50°C (3)</b>	<b>13.3 A @ 50°C (3)</b>
Continuous current	60 A for >5 s	30 A for >5 s	18.6 A for >5 s
Overload limit	with Uout >90% Un (4)	with Uout >90% Un (4)	with Uout >90% Un (4)
Short circuit peak current	>90 A for 5 s (4)	>80 A for 5 s (4)	>30 A for 5 s (4)
Load regulation	< 1%	< 1%	< 1%
Ripple @ nominal ratings	100 mVpp	≤ 250 mVpp	≤ 100 mVpp
Hold up time (Uin 400 / 500 Vac)	>10 ms / >15 ms	>10 ms / >15 ms	>15 ms / >18 ms
Overload / short circuit protections	hiccup at the overload limit with auto reset / over temperature protection		
Status display	"DC OK" green LED / "DC OK" alarm contact/ "Overload" red LED		
Alarm contact threshold	<21.6 Vdc	<43.2 Vdc	<21.6 Vdc
Parallel connection	possible	possible	possible
Redundant parallel connection	possible with external ORing diode	factory provided with internal ORing diode	factory provided with internal ORing diode
GENERAL TECHNICAL DATA	>94% / >94%	>94% / >94%	>92% / >92%
Efficiency (Uin 400 / 500 Vac)	61 W / 61 W	61 W / 61 W	85 W / 85 W
Dissipated power (Uin 400 / 500 Vac)	-20...+60°C, with derating over 50°C / over temperature protection (3)		
Operating temperature range	3 kVac / 60 s SELV output (5)		
Input/output isolation	2 kVac / 60 s		
Input/ground isolation	0.5 kVac / 60 s		
Output/ground isolation	EN50178, EN61558, EN60950, IEC950, UL508		
Standard/approvals	EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11		
EMC Standards	>500'000 h acc. to SN 29500 / >150'000 h acc. to MIL Std. HDBK 217F		
MTBF @ 25°C @ nominal ratings	II / 2		
Overvoltage category/Pollution degree	IP 20 IEC 529, EN60529		
Protection degree	6 mm² fixed screw type		
Connection terminal	aluminium		
Housing material	1,2 Kg (70.55 oz)		
Approx. weight	vertical on rail, allow 10 mm spacing between adjacent components		
Mounting information	PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB		
MOUNTING ACCESSORIES	—		
Mounting rail type according to IEC60715/TH35-7.5	—		
Mounting rail type according to IEC60715/G32	—		

# 3-phase switching power supply 400-500 Vac output power 2400 W

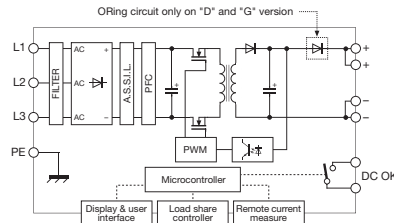
- Three-phase input 340...550 Vac or two-phase with derating
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- High efficiency and low dissipated power
- Suitable for applications in SELV and PELV circuits
- Input protected by ASSIL circuit (Surge Suppressor and Inrush Limiter)



## NOTES

- The depth dimension includes the DIN rail clamp.
- (3) Over 45°C (113°F) apply a derating of about 40 W/°C
- (4) For this peak current, the output voltage does not drop more than 10% of the nominal value, but the current value, provided by the power supply also depends on the total line resistance.
- (5) Available from July 2011

## BLOCK DIAGRAM



Special version for DC motors

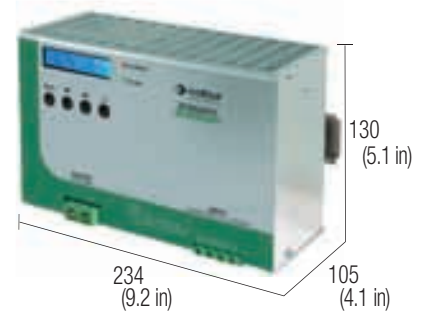
VERSIONS	
Output 24 Vdc 40 A	
Output 24 Vdc 40 A redundant version	
Output 12...15 Vdc 80 A	
Output 48 Vdc 20 A	
INPUT TECHNICAL DATA	
Input rated voltage	3x 400-500 Vac (range 340...550 Vac)
Frequency	47...63 Hz
Current @ Iout max. (Uin 400 / 500 Vac)	4.2 A / 3.5 A
Inrush peak current	< 2 A (with active inrush current limiter)
Power factor	> 0.92
Internal protection fuse	—
External protection on AC line	circuit breaker: 3x 10 A C characteristic - fuse: 3x T10 A
OUTPUT TECHNICAL DATA	
Output rated voltage	24 Vdc
Output adjustable range	11.5...29 Vdc
Continuous current	100 A @ 45°C (3)
Overload limit	150 A for >5 s with Uout >90% Un (4)
Short circuit peak current	>150 A for 5 s (4)
Load regulation	< 1%
Ripple @ nominal ratings	≤ 200 mVpp
Hold up time (Uin 400 / 500 Vac)	>10 ms / >10 ms
Overload / short circuit protections	programmable (see on right side)
Status display	"DC OK" green LED / "DC OK" alarm contact / "Overload" red LED / LCD display
Alarm contact threshold	programmable (see on right side)
Parallel connection	possibile
Redundant parallel connection	possibile
GENERAL TECHNICAL DATA	
Efficiency (Uin 400 / 500 Vac)	>92% / >92%
Dissipated power (Uin 400 / 500 Vac)	200 W / 200 W
Operating temperature range	-20...+60°C, con derating oltre 45°C / protezione termica (3)
Input/output isolation	3 kVac / 60 s SELV output (5)
Input/ground isolation	1.5 kVac / 60 s
Output/ground isolation	0.5 kVac / 60 s
Standard/approvals	EN60950, IEC950, UL508
EMC Standards	EN 55011, EN 61000-3-2, EN61000-4-5 Surge immunity Level IV, VDE0160
MTBF @ 25°C @ nominal ratings	>500'000 h secondo SN 29500 / >150'000 h secondo MIL Std. HDBK 217F
Overvoltage category/Pollution degree	II / 2
Protection degree	IP 20 IEC529, EN60529
Connection terminal	4-6 mm <sup>2</sup> fixed screw type
Housing material	aluminium
Approx. weight	2,8 Kg (98,76 oz)
Mounting information	vertical on rail, allow 60 mm spacing between adjacent components
MOUNTING ACCESSORIES	
Mounting rail type according to IEC60715/TH35-7.5	PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB
Mounting rail type according to IEC60715/G32	—

Cod. XCSG2401C	Cod. XCSG2401D
CSG2401C (6)	CSG2401D (6)
3x 400-500 Vac (range 340...550 Vac)	
47...63 Hz	
4.2 A / 3.5 A	
< 2 A (with active inrush current limiter)	
> 0.92	
—	
circuit breaker: 3x 10 A C characteristic - fuse: 3x T10 A	
24 Vdc	48 Vdc
11.5...29 Vdc	23...58 Vdc
100 A @ 45°C (3)	50 A @ 45°C (3)
150 A for >5 s with Uout >90% Un (4)	75 A for >5 s with Uout >90% Un (4)
>150 A for 5 s (4)	>75 A for 5 s (4)
< 1%	< 1%
≤ 200 mVpp	≤ 200 mVpp
>10 ms / >10 ms	>10 ms / >10 ms
programmable (see on right side)	
"DC OK" green LED / "DC OK" alarm contact / "Overload" red LED / LCD display	
programmable (see on right side)	
possibile	
possibile	
>92% / >92%	>92% / >92%
200 W / 200 W	200 W / 200 W
-20...+60°C, con derating oltre 45°C / protezione termica (3)	
3 kVac / 60 s SELV output (5)	
1.5 kVac / 60 s	
0.5 kVac / 60 s	
EN60950, IEC950, UL508	
EN 55011, EN 61000-3-2, EN61000-4-5 Surge immunity Level IV, VDE0160	
>500'000 h secondo SN 29500 / >150'000 h secondo MIL Std. HDBK 217F	
II / 2	
IP 20 IEC529, EN60529	
4-6 mm <sup>2</sup> fixed screw type	
aluminium	
2,8 Kg (98,76 oz)	
vertical on rail, allow 60 mm spacing between adjacent components	
PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB	
—	

APPLICATIONS
Series CSG2401 has an internal microprocessor that controls the many functions of the power supply, which can be programmed thanks to a user-friendly menu activated by 4 buttons on the front and shown on the front display.
<b>Front display:</b> during normal operation, this shows the output voltage value and current used by the load; during programming, it allows for the choice of the various functions available.
<b>Input protection:</b> the input circuit has been designed to avoid the most common problems seen in three-phase networks. It therefore has:
1) a special ASSIL (Active Surge Suppressor and Inrush Limiter) circuit to protect it against overvoltage in accordance with VDE0160;
2) a PFC circuit failure (latched shutdown) circuit;
3) a system for controlling lack of phase that automatically reduces output power;
4) an auto-restart switch-off system in the event of overvoltage and undervoltage.
<b>Output protection:</b> limit current can be selected as between 10% and 100% of rated current; protection type against overload and short circuit can be chosen from:
1) hiccup autoreset with limit current, equal to 150% of rated current and ON/OFF time equal to 5 secs./10 secs. (values can be altered manually);
2) constant power.
<b>Output signals:</b> in addition to the "DC OK" and "FAULT" LEDs, the device also has:
1) an analogue signal 0...10V or 4...20mA that provides an indication of current used by the load;
2) a programmable alarm contact able to signal and record the exceeding of the various limits to a memory: output voltage, input current, output overload, overtemperature and other parameters that can be defined by programming.
<b>Additional functions:</b> the following functions are also available:
1) battery charger: the acid lead battery charging function can be selected;
2) remote sensing (sense): this allows for the monitoring and compensation of voltage drops on long power supply lines;
3) remote switch-off: the power supply can be switched off and disabled from a remote position;
4) auxiliary voltage: auxiliary 12 Vdc is also available, regardless of the main output voltage status;
5) temperature control: by connecting an external sensor (NTC), the battery charge temperature can be controlled;
6) communication port: by means of an RS232 communication device, the power supply can be piloted and monitored from a remote position.

# 3-phase switching power supply 400-500 Vac output power 2400 W

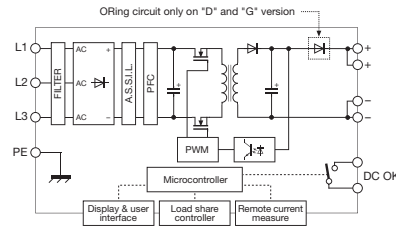
- Three-phase input 340...550 Vac or two-phase with derating
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- High efficiency and low dissipated power
- Suitable for applications in PELV circuits
- Input protected by ASSIL circuit (Surge Suppressor and Inrush Limiter)



## NOTES

- The depth dimension includes the DIN rail clamp.  
 With DC input voltage, the output current must be derated by 30%  
 (3) Over 45°C (113°F) apply a derating of about 40 W/°C  
 (4) For this peak current, the output voltage does not drop more than 10% of the nominal value, but the current value, provided by the power supply also depends on the total line resistance.  
 (5) Available from July 2011  
 (6) Version CSG2401G and CSG2401R is not suitable for SELV applications

## BLOCK DIAGRAM



Special version for DC motors

## VERSIONI

Uscita 72 Vdc 33 A versione ridondante (5)  
 Uscita 170 Vdc 14 A versione ridondante (5)

Cod. XCSG2401G

Cod. XCSG2401R

CSG2401G (5) (6)

CSG2401R (5) (6)

## APPLICATIONS

Series CSG2401 has an internal microprocessor that controls the many functions of the power supply, which can be programmed thanks to a user-friendly menu activated by 4 buttons on the front and shown on the front display.

**Front display:** during normal operation, this shows the output voltage value and current used by the load; during programming, it allows for the choice of the various functions available.

**Input protection:** the input circuit has been designed to avoid the most common problems seen in three-phase networks. It therefore has:

- 1) a special ASSIL (Active Surge Suppressor and Inrush Limiter) circuit to protect it against overvoltage in accordance with VDE0160;
- 2) a PFC circuit failure (latched shutdown) circuit;
- 3) a system for controlling lack of phase that automatically reduces output power;
- 4) an auto-restart switch-off system in the event of overvoltage and undervoltage.

**Output protection:** limit current can be selected as between 10% and 100% of rated current; protection type against overload and short circuit can be chosen from:

- 1) hiccup autoreset with limit current, equal to 150% of rated current and ON/OFF time equal to 5 secs./10 secs. (values can be altered manually);
- 2) constant power.

**Output signals:** in addition to the "DC OK" and "FAULT" LEDs, the device also has:

- 1) an analogue signal 0...10V or 4...20mA that provides an indication of current used by the load;
- 2) a programmable alarm contact able to signal and record the exceeding of the various limits to a memory: output voltage, input current, output overload, overtemperature and other parameters that can be defined by programming.

**Additional functions:** the following functions are also available:

- 1) battery charger: the acid lead battery charging function can be selected;
- 2) remote sensing (sense): this allows for the monitoring and compensation of voltage drops on long power supply lines;
- 3) remote switch-off: the power supply can be switched off and disabled from a remote position;
- 4) auxiliary voltage: auxiliary 12 Vdc is also available, regardless of the main output voltage status;
- 5) temperature control: by connecting an external sensor (NTC), the battery charge temperature can be controlled;
- 6) communication port: by means of an RS232 communication device, the power supply can be piloted and monitored from a remote position.

## INPUT TECHNICAL DATA

Input rated voltage  
 Frequency  
 Current @ Iout max. (Uin 400 / 500 Vac)  
 Inrush peak current  
 Power factor  
 Internal protection fuse  
 External protection on AC line

3x 400-500 Vac (range 340...550 Vac)  
 47...63 Hz  
 4.2 A / 3.5 A  
 < 2 A (with active inrush current limiter)  
 > 0.92  
 —  
 circuit breaker: 3x 10 A C characteristic - fuse: 3x T10 A

## OUTPUT TECHNICAL DATA

Output rated voltage  
 Output adjustable range  
 Continuous current  
 Overload limit  
 Short circuit peak current  
 Load regulation  
 Ripple @ nominal ratings  
 Hold up time (Uin 400 / 500 Vac)  
 Overload / short circuit protections  
 Status display

	72 Vdc	170 Vdc
Output rated voltage	34.5...87 Vdc	80...190 Vdc
Output adjustable range	33 A @ 45°C (3)	14 A @ 45°C (3)
Continuous current	50 A per >5 s con Uout>90% Un (4)	21 A per >5 s con Uout>90% Un (4)
Overload limit	>50 A per 5 s (4)	>21 A per 5 s (4)
Short circuit peak current	< 1%	< 1%
Load regulation	≤ 200 mVpp	≤ 200 mVpp
Ripple @ nominal ratings	>10 ms / >10 ms	>10 ms / >10 ms
Hold up time (Uin 400 / 500 Vac)	programmable (see on right side)	
Overload / short circuit protections	"DC OK" green LED / "DC OK" alarm contact/ "Overload" red LED / LCD display (see on right side)	
Status display	programmable	

Alarm contact threshold  
 Parallel connection  
 Redundant parallel connection

programmable  
 possibile  
 possibile

## GENERAL TECHNICAL DATA

Efficiency (Uin 400 / 500 Vac)  
 Dissipated power (Uin 400 / 500 Vac)  
 Operating temperature range  
 Input/output isolation  
 Input/ground isolation  
 Output/ground isolation  
 Standard/approvals  
 EMC Standards

	>92% / >92%	>92% / >92%
Efficiency (Uin 400 / 500 Vac)	200 W / 200 W	200 W / 200 W
Dissipated power (Uin 400 / 500 Vac)	-20...+60°C, con derating oltre 45°C / protezione termica (3)	
Operating temperature range	3 KVac / 60 s SELV output (5)	
Input/output isolation	1.5 KVac / 60 s	
Input/ground isolation	0.5 KVac / 60 s	
Output/ground isolation	EN60950, IEC950, UL508	
Standard/approvals	EN 55011, EN 61000-3-2, EN61000-4-5	
EMC Standards	Surge immunity Level IV, VDE0160	

MTBF @ 25°C @ nominal ratings  
 Overvoltage category/Pollution degree  
 Protection degree  
 Connection terminal  
 Housing material  
 Approx. weight  
 Mounting information

>500'000 h secondo SN 29500 / >150'000 h secondo MIL Std. HDBK 217F  
 II / 2  
 IP 20 IEC529, EN60529  
 4 and 6 mm<sup>2</sup> screw type  
 aluminium  
 2,8 Kg (98,76 oz)  
 vertical on rail, allow 60 mm spacing between adjacent components

## MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5  
 Mounting rail type according to IEC60715/G32

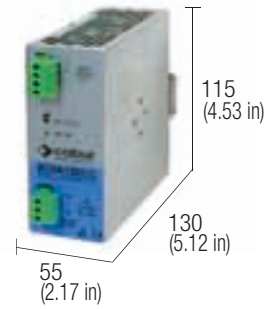
PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB



# DC/DC Insulated converters output power 120 W



- DC wide range input
- Short circuit, overload, over temperature protection
- Compact design

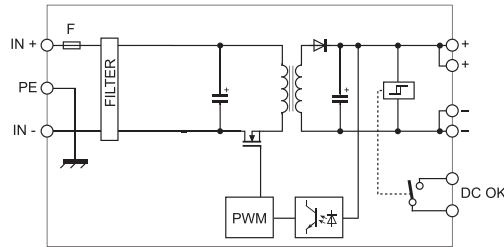


## NOTES

The depth dimension includes the terminal blocks and the DIN clamp.

- (1) Inrush current is measured with input supplied by a battery; the current peak vary depending on the internal impedance of the current source and depending on cables and connections resistance.
- (2) According to EN60950 insulation tests on input side must be made only with DC instruments.

## BLOCK DIAGRAM



## VERSIONS

- 12 Vdc / 24 Vdc 5 A
- 12 Vdc / 48 Vdc 2.5 A
- 24 Vdc / 12 Vdc 7 A
- 24 Vdc / 24 Vdc 5 A

Cod. XCSA120BC	Cod. XCSA120BD	Cod. XCSA120CB	Cod. XCSA120CC
CSA120BC	CSA120BD	CSA120CB	CSA120CC

## INPUT TECHNICAL DATA

Input rated voltage
Current @ Iout max.
Inrush peak current
Standby power
Internal protection fuse
External protection on AC line
Overvoltage input protection circuit

12 Vdc (range 10.5...18 Vdc)	12 Vdc (range 10.5...18 Vdc)	24 Vdc (range 18...36 Vdc)	24 Vdc (range 18...36 Vdc)
12 A ±10%	12 A ±10%	5.1 A ±10%	5.8 A ±10%
< 60A / < 2ms (1)	< 60A / < 2ms (1)	< 110A / < 2ms (1)	< 90A / < 2ms (1)
<1.5 W @ 12 Vdc	<1.5 W @ 12 Vdc	<1 W @ 24 Vdc	<1.5 W @ 24 Vdc
T 20 A replaceable ≥25 A C characteristic		T 10 A replaceable ≥13 A C characteristic	
Passive varistor and active shutdown at 19 Vdc		Passive varistor and active shutdown at 38 Vdc	

## OUTPUT TECHNICAL DATA

Output rated voltage
Output adjustable range
Continuous current
Overload limit
Short circuit peak current
Load regulation
Ripple @ nominal ratings
Hold up time @ In
Overload / short circuit protections
Status display
Alarm contact threshold
Parallel connection

24 Vdc	48 Vdc	12...15 Vdc	24 Vdc
22.5...27.5 Vdc	45...55 Vdc	12...15 Vdc	22.5...27.5 Vdc
5 A @ 24 Vdc	2.5 A @ 48 Vdc	7 A @ 12 Vdc	5 A @ 24 Vdc
6.5 A	3.4 A	9.1 A	6.5 A
12 A for 300 ms	5.8 A for 300 ms	15 A for 300 ms	12 A for 300 ms
<0.5%		<0.5%	
≤ 100 mVpp		≤ 100 mVpp	
>1 ms		>2 ms	
hiccup at the overload limit with auto reset / over temperature protection			
"DC OK" green LED			
—			
possible			

Redundant parallel connection

possible with external ORing diode

## GENERAL TECHNICAL DATA

Efficiency (Uin 110 Vdc)
Dissipated power (Uin 110 Vdc)
Operating temperature range
Input/output isolation
Input/ground isolation
Output/ground isolation
Standard/approvals
EMC Standards
MTBF @ 25°C @ nominal ratings
Overvoltage category/Pollution degree
Protection degree
Connection terminal
Housing material
Approx. weight
Mounting information

> 83%	> 83%	>87%	>87%
<25 W	<25 W	<16 W	<18 W
-20...+50°C			
2.1 kVdc / 60s (2)			
1.41 kVdc / 60s (2)			
0.75 kVdc / 60s (2)			
IEC950, EN60950			
EN50081-1, EN50082-2, EN61000-3-2			
>500'000 h secondo SN 29500 / >150'000 h secondo MIL Std. HDBK 217F			
II / 2			
IP 20 IEC 529, EN60529			
2.5 mm <sup>2</sup> pluggable screw type			
aluminium			
550 g (19.40 oz)			
vertical on rail, allow 10 mm spacing between adjacent components			

## MOUNTING ACCESSORIES

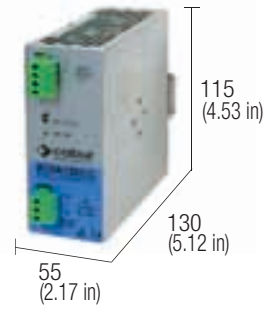
Mounting rail type according to IEC60715/TH35-7.5  
Mounting rail type according to IEC60715/G32

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

# DC/DC Insulated converters output power 120 W



- DC wide range input
- Short circuit, overload, over temperature protection
- Compact design

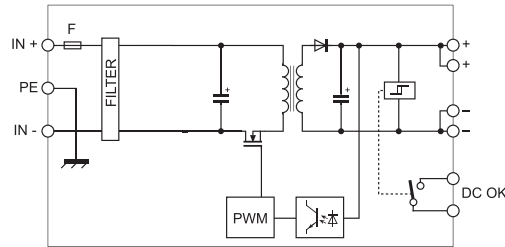


## NOTES

The depth dimension includes the terminal blocks and the DIN clamp.

- (1) Inrush current is measured with input supplied by a battery; the current peak vary depending on the internal impedance of the current source and depending on cables and connections resistance.
- (2) Over 50°C (122°F) apply a derating -3 W/°C, max 60°C
- (3) According to EN60950 insulation tests on input side must be made only with DC instruments.

## BLOCK DIAGRAM



## VERSIONS

**48 Vdc / 12 Vdc 8 A**  
**48 Vdc / 24 Vdc 5 A**

**Cod. XCSA120DB**

**Cod. XCSA120DC**

**CSA120DB**

**CSA120DC**

## INPUT TECHNICAL DATA

Input rated voltage  
Current @ Iout max.  
Inrush peak current  
Standby power  
Internal protection fuse  
External protection on AC line  
Overvoltage input protection circuit

**48 Vdc** (range 36...72 Vdc)  
2.8 A ±10%  
< 120A / < 2ms (1)

**48 Vdc** (range 36...72 Vdc)  
2.8 A ±10%  
< 120A / < 2ms (1)

T 5 A replaceable

≥6 A C characteristic

Passive varistor and active shutdown at 76 Vdc

## OUTPUT TECHNICAL DATA

Output rated voltage  
Output adjustable range  
Continuous current  
Overload limit  
Short circuit peak current  
Load regulation  
Ripple @ nominal ratings  
Hold up time @ In  
Overload / short circuit protections  
Status display  
Alarm contact threshold  
Parallel connection

**12...15 Vdc**

**24 Vdc**

12...15 Vdc

22.5...27.5 Vdc

8 A @ 12 Vdc

5A @ 24 Vdc

12 A

6.5 A

18 A per 300 ms

13 A per 300 ms

<0.5%

<0.5%

≤ 100 mVpp

≤ 200 mVpp

2 ms

4.5 ms

hiccup at the overload limit with auto reset / over temperature protection

"DC OK" green LED

—  
possible

possible with external ORing diode

## GENERAL TECHNICAL DATA

Efficiency (Uin 110 Vdc)  
Dissipated power (Uin 110 Vdc)  
Operating temperature range  
Input/output isolation  
Input/ground isolation  
Output/ground isolation  
Standard/approvals  
EMC Standards  
MTBF @ 25°C @ nominal ratings  
Overvoltage category/Pollution degree  
Protection degree  
Connection terminal  
Housing material  
Approx. weight  
Mounting information

>89%

>90%

<17 W

<13 W

-20...+60°C, with derating over 50°C

2.1 kVdc / 60s (2)

1.41 kVdc / 60s (2)

0.75 kVdc / 60s (2)

IEC950, EN60950

EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-5-5, EN61000-4-6, EN61000-4-11

>500'000 h acc. to SN 29500 / >150'000 h acc. to MIL Std. HDBK 217F

II / 2

IP 20 IEC 529, EN60529

2.5 mm<sup>2</sup> pluggable screw type

aluminium

550 g (19.40 oz)

vertical on rail, allow 10 mm spacing between adjacent components

## MOUNTING ACCESSORIES

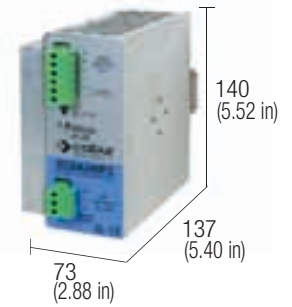
Mounting rail type according to IEC60715/TH35-7.5  
Mounting rail type according to IEC60715/G32

**PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB**

# DC/DC Insulated converters output power 240 W

- DC wide range input
- Short circuit, overload, over temperature protection
- Already preset with internal ORing diode for redundant connection
- Compact design

**NOTE:**  
NOTE: also the power supplies CSD, CSF30, CSF85 and CSF120 series can be supplied in DC 110 V

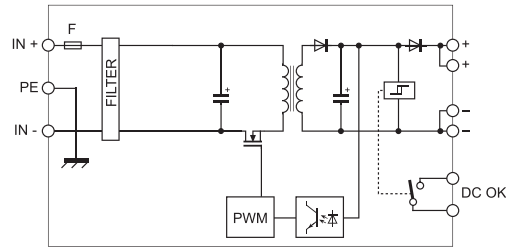


## NOTES

The depth dimension includes the terminal blocks and the DIN clamp.

- (1) Inrush current is measured with input supplied by a battery; the current peak vary depending on the internal impedance of the current source and depending on cables and connections resistance.
- (2) Over 50°C (122°F) apply a derating -6 W/°C, max 60°C
- (3) According to EN60950 insulation tests on input side must be made only with DC instruments.

## BLOCK DIAGRAM



## VERSIONS

**110 Vdc / 24 Vdc 10 A**  
**110 Vdc / 24 Vdc 10 A ridondante**

Cod. XCSA240FC

CSA240FC

## INPUT TECHNICAL DATA

Input rated voltage  
Current @ Iout max.  
Inrush peak current  
Standby power  
Internal protection fuse  
External protection on AC line  
Overvoltage input protection circuit

**110 Vdc** (range 90...130 Vdc)  
2.4 A ±10%  
< 150A / < 2ms (1)  
<3.4 W @ 110 Vdc  
T 5 A replaceable  
≥6 A C characteristic  
Passive varistor and active shutdown at 136 Vdc

## OUTPUT TECHNICAL DATA

Output rated voltage  
Output adjustable range  
Continuous current  
Overload limit  
Short circuit peak current  
Load regulation  
Ripple @ nominal ratings  
Hold up time @ In (Uin 110 Vdc)  
Overload / short circuit protections  
Status display  
Alarm contact threshold  
Parallel connection

**24 Vdc**  
22.7...27 Vdc  
**10 A @ 50°C (2)**  
15 A  
21 A for 300 ms  
<1.5%  
≤ 100 mVpp  
>4 ms  
hiccup at the overload limit with auto reset / over temperature protection  
"DC OK" green LED / "DC OK" alarm contact / "Overload" red LED

Redundant parallel connection

possible  
factory provided with internal ORing diode

## GENERAL TECHNICAL DATA

Efficiency (Uin 110 Vdc)  
Dissipated power (Uin 110 Vdc)  
Operating temperature range  
Input/output isolation  
Input/ground isolation  
Output/ground isolation  
Standard/approvals  
EMC Standards  
MTBF @ 25°C @ nominal ratings  
Overvoltage category/Pollution degree  
Protection degree  
Connection terminal  
Housing material  
Approx. weight  
Mounting information

>89%  
<28 W  
-20...+60°C, with derating over 50°C (2)  
2.1 kVdc / 60s (3)  
1.41 kVdc / 60s (3)  
0.75 kVdc / 60s (3)  
IEC950, EN60950  
EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-5-5, EN61000-4-6, EN61000-4-11  
>500'000 h acc. to SN 29500 / >150'000 h acc. to MIL Std. HDBK 217F  
II / 2  
IP 20 IEC 529, EN60529  
2.5 mm² pluggable screw type  
aluminium  
800 g (28.24 oz)  
vertical on rail, allow 10 mm spacing between adjacent components

## MOUNTING ACCESSORIES

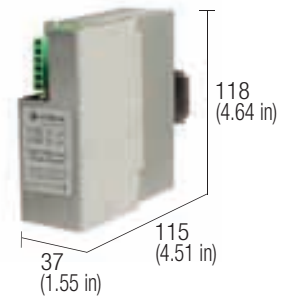
Mounting rail type according to IEC60715/TH35-7.5  
Mounting rail type according to IEC60715/G32

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

# Switching power supply input 24 Vac output power 72...120 W

- Standard input voltage 24 Vac
- Dissipated power less than 10%
- Short circuit, overload, over temperature protection
- Input protection fuse

Items sold until sell-out,  
will be replaced by **CL5R** series



## NOTES

The depth dimension includes the terminal blocks and the DIN clamp.

(1) Over 25°C (77°F) apply derating: CSE3: -0.5 W/°C; CSE5: -0.85 W/°C; max 60°C

## BLOCK DIAGRAM

## VERSIONS

Output 24 Vdc 3 A  
Output 24 Vdc 5 A

## INPUT TECHNICAL DATA

Input rated voltage	24 Vac (range 24...28 Vac)	
Frequency	50...60 Hz	
Current @ Iout max.	4 A	5 A
Internal protection fuse	T 8 A replaceable	
External protection on AC line	circuit breaker: 10 A C characteristic - fuse: T 10 A	

## OUTPUT TECHNICAL DATA

Output rated voltage	24 Vdc	
Output adjustable range	23...25 Vdc	
Continuous current	3 A @ 25°C (1)	5 A @ 25°C (1)
Overload limit	4 A	5.5 A
Short circuit peak current	—	
Load regulation	< 1%	
Ripple @ nominal ratings	< 100 mVpp	
Hold up time @ In	>20 ms	
Overload / short circuit protections	constant current, limit current, auto reset / over temperature protection	
Status display	"DC OK" green LED	
Parallel connection	possible	
Redundant parallel connection	possible with external ORing diode	

## GENERAL TECHNICAL DATA

Efficiency	>90%	
Dissipated power	< 8 W	< 13 W
Operating temperature range	-10...+60°C, with derating over 45°C / over temperature protection (1)	
Input/output isolation	not insulated	
Input/ground isolation	0.5 kVac / 60 s	
Output/ground isolation	0.5 kVac / 60 s	
Reference Standards	IEC 664-1, DIN VDE 0110.1	
EMC Standards	EN55011, EN55022	
MTBF @ 25°C @ nominal ratings	>500'000 h acc. to SN 29500 / >150'000 h acc. to MIL Std. HDBK 217F	
Overvoltage category/Pollution degree	II / 2	
Protection degree	IP 20 IEC 529, EN60529	
Connection terminal	2.5 mm² fixed screw type	
Housing material	metal	
Approx. weight	500 g (17.64 oz)	550 g (19.40 oz)
Mounting information	vertical on rail, allow 20 mm spacing between adjacent components	

## MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5  
Mounting rail type according to IEC60715/G32

## Cod. XCSE3 Cod. XCSE5

CSE3 CSE5

## APPLICATIONS

CSE power supplies are suitable for use in SELV and PELV circuits.

**WARNING!** In PELV circuits, in which one safety low voltage pole is connected to the ground, **a pole of the secondary of the transformer too must not be connected to ground at once**; the only one pole to be grounded is normally the negative of the 24 Vdc output of the power supply and effectively used as control voltage.

**The connection to ground of one pole of the transformer Vac output together with one pole of the 24 Vdc of the power supply output damages the power supply.**

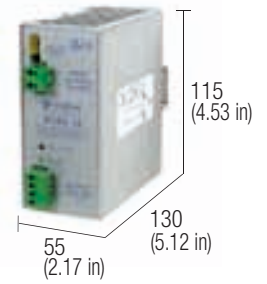
Input and output of the CSE Series power supplies are not isolated. Safety isolation function is therefore assigned to the external transformer which has to comply with EN60742 Std.

## PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

—

# Switching power supply input 24 Vac output power 240 W

- Standard input voltage 24 Vac
- Dissipated power less than 10%
- Short circuit, overload, over temperature protection
- Input protection fuse

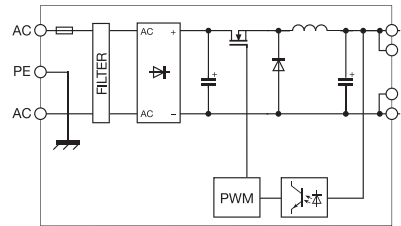


## NOTES

The depth dimension includes the terminal blocks and the DIN clamp.

(1) Over 45°C (113°F) apply a derating -4 W/°C, max 60°C.

## BLOCK DIAGRAM



## VERSIONS

Output 24 Vdc 10 A

## INPUT TECHNICAL DATA

Input rated voltage

Frequency

Current @ Iout max.

Internal protection fuse

External protection on AC line

## OUTPUT TECHNICAL DATA

Output rated voltage

Output adjustable range

Continuous current

Overload limit

Short circuit peak current

Load regulation

Ripple @ nominal ratings

Hold up time @ In

Overload / short circuit protections

Status display

Parallel connection

Redundant parallel connection

## GENERAL TECHNICAL DATA

Efficiency (Iin 110 Vdc)

Dissipated power (Iin 110 Vdc)

Operating temperature range

Input/output isolation

Input/ground isolation

Output/ground isolation

Reference Standards

EMC Standards

MTBF @ 25°C @ nominal ratings

Overvoltage category/Pollution degree

Protection degree

Connection terminal

Housing material

Approx. weight

Mounting information

## Cod. XCSE10

CSE10

24 Vac (range 21...30 Vac)

50...60 Hz

12 A

T 20 A replaceable

circuit breaker: 25 A C characteristic - fuse: T 25 A

24 Vdc

22...26.5 Vdc

10 A @ 25°C (1)

12 A

—

< 1%

< 200 mVpp

>10 ms

hiccup at the overload limit with auto reset / over temperature protection

"DC OK" green LED

possible

possible with external ORing diode

>90%

< 26 W

-10...+60°C, with derating over 45°C / over temperature protection (1)

not insulated

0.5 kVac / 60 s

0.5 kVac / 60 s

IEC 664-1, DIN VDE 0110.1

EN55011, EN55022

>500'000 h acc. to SN 29500 / >150'000 h acc. to MIL Std. HDBK 217F

II / 2

IP 20 IEC 529, EN60529

2.5 mm<sup>2</sup> fixed screw type

metal

600 g (21.16 oz)

vertical on rail, allow 20 mm spacing between adjacent components

## APPLICATIONS

CSE power supplies are suitable for use in SELV and PELV circuits.

**WARNING!** In PELV circuits, in which one safety low voltage pole is connected to the ground, **a pole of the secondary of the transformer too must not be connected to ground at once**; the only one pole to be grounded is normally the negative of the 24 Vdc output of the power supply and effectively used as control voltage.

**The connection to ground of one pole of the transformer Vac output together with one pole of the 24 Vdc of the power supply output damages the power supply.**

Input and output of the CSE Series power supplies are not isolated. Safety isolation function is therefore assigned to the external transformer which has to comply with EN60742 Std.

## MOUNTING ACCESSORIES

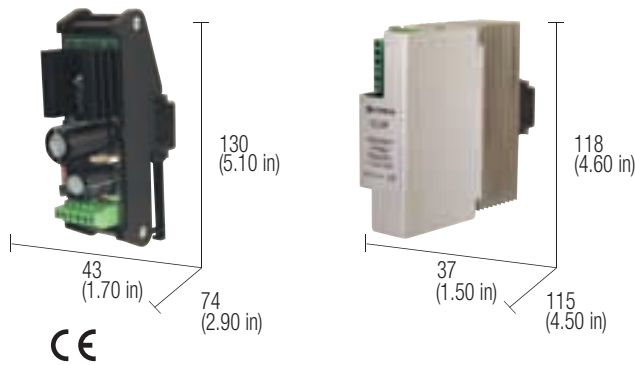
Mounting rail type according to IEC60715/TH35-7.5

Mounting rail type according to IEC60715/G32

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

# Adjustable linear power supply input 24 Vac

- Adjustable output voltage 1.2...24 Vdc
- Output current 1.5 and 5 A
- Short circuit, overload, over temperature protection

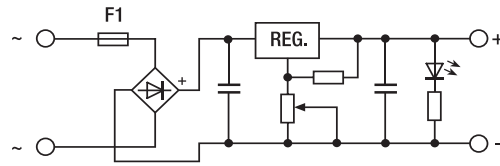


## NOTES

The depth dimension includes the terminal blocks and the DIN clamp.

(1) See "Applications"

## BLOCK DIAGRAM



## VERSIONS

Output 1.2 A  
Output 5 A

### INPUT TECHNICAL DATA

Input rated voltage  
Frequency  
Current @ Iout max.  
Internal protection fuse  
External protection on AC line

### OUTPUT TECHNICAL DATA

Output rated voltage  
Output adjustable range  
Continuous current  
Overload limit  
Load regulation  
Ripple @ nominal ratings  
Hold up time @ In  
Overload / short circuit protections  
Status display

### GENERAL TECHNICAL DATA

Operating temperature range  
Input/output isolation  
Input/ground isolation  
Output/ground isolation  
Reference Standards  
EMC Standards  
MTBF @ 25°C @ nominal ratings  
Overvoltage category/Pollution degree  
Protection degree  
Connection terminal  
Housing material  
Approx. weight  
Mounting information

## Cod. XCL1R

CL1R

## Cod. XCL5R

CL5R

9...26 Vac (see Tab. 1)  
50...60 Hz

2,5 A  
T 3 A replaceable  
MCB: 4 A C characteristic - fuse T 4 A

6 A  
T 10 A replaceable  
MCB: 10 A C characteristic - fusibile T 10 A

1.2...24 Vdc

(see Tab. 1 and Tab. 2)  
0.3...1.5 A (see Tab. 2)

1.2...24 Vdc

(see Tab. 1 and Tab. 2)  
0.8...5 A (see Tab. 2)

< 1%  
< 50 mVpp @ 24 Vac  
>20 ms  
constant current, limit current, auto reset / over temperature protection  
"DC OK" green LED

-20...+45°C / over temperature protection (1)

not insulated  
0.5 kVac / 60 s  
0.5 kVac / 60 s  
IEC 664-1, DIN VDE  
EN50081-1, EN61000-6-4  
>500'000 h acc. to SN 29500 / >150'000 h acc. to MIL Std. HDBK 217F  
II / 2  
IP 00 IEC 529, EN60529  
2.5 mm<sup>2</sup> fixed screw type

UL94V-0 plastic material  
120 g (4.23 oz)  
vertical on rail, allow 20 mm spacing between adjacent components

## APPLICATIONS

The CL-R linear regulated power supply series of CABUR is provided with adjustable output and it can satisfy all those needs related to the feeding of small loads with non-standard rated voltage and at an extremely limited cost. It can be mounted on the rail in whatever position, providing that enough space for the free circulation of the air remains for the cooling; the CL1R model having an IP 00 protection degree, its use is intended inside a protected enclosure. Even if the power supply is protected from over-current it is advisable to respect the rated values shown in table 1 and 2.

(1) CL1R and CL5R give the rated performances if fed by a voltage between 24 and 27 Vac, as indicated on Tab. 1; with input voltage between 24 and 27 Vac, the maximum output current for output voltages lower than 24 Vdc are indicated on Tab. 2; to achieve a good voltage stabilization and low ripple, linear power supplies must be fed with an input voltage higher than output voltage, while if they are supplied with 24 Vac, and adjusted for 24 Vdc output, when rated current is supplied, the ripple increases and voltage stabilization decreases; input voltages higher than 27 Vac increases power dissipation and increases operating temperature of the component, and might cause thermal protection shut down. The products are preadjusted to Vout 24 Vdc with Vin 26 Vac.

## MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5  
Mounting rail type according to IEC60715/G32

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

PR/DIN/AC, PR/DIN/AS, PR/DIN/AL

INPUT (Vac)	Uout max. (Vdc)	Iout max (A) XCL1R	Iout max (A) XCL5R
24...27	24	1.5	5
16...18	15	1.5	5
14...16	12	1.5	5
12...14	10	1.5	5
12	9	1.5	5
9	5	1.5	5

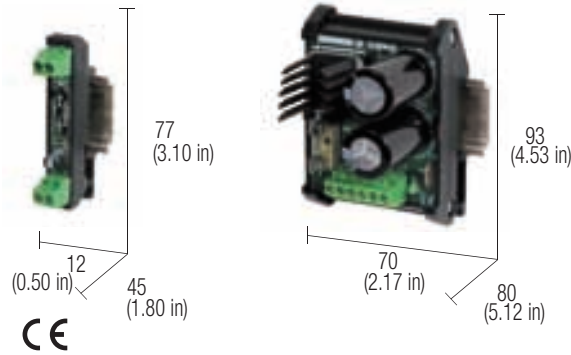
Tab. 1 (see explanation on right side)

INPUT (Vac)	Uout max. (Vdc)	Iout max (A) XCL1R	Iout max (A) XCL5R
24	24	1.5	5
24	15	0.8	2.5
24	12	0.7	2
24	10	0.5	1.5
24	9	0.45	1.3
24	5	0.3	0.8

Tab. 2 (see explanation on right side)

# Filtered power supplies without transformer with non regulated output

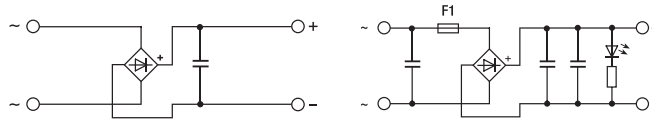
- DIN rail mounting
- Suitable for rectifying 6 Vac to 20 Vac
- V output = Vac input x 1.41 (-1V)



## NOTES

- (2) Version available upon request; for information call our sales department, local agent or representative  
 (3) They can work with input from min. 6 Vac to 30 Vac max., the non regulated output voltage depends on the load and on the variations of the input voltage supplied by the transformer  
 (4) They are protected from overcurrent by their input fuse (except AR1 model); it is recommended to protect cables of the output line with fuses of value coordinated with the current of the load and cables.

## BLOCK DIAGRAM



## VERSIONS

Output 1 A  
Output 6 A

### INPUT TECHNICAL DATA

Input rated voltage	6...20 Vac	
Frequency	50...60 Hz	
Current @ Iout max.	1.2 A @ 20 Vac	7.2 A @ 20 Vac
Internal protection fuse	not available	T 8 A replaceable
External protection on AC line	MCB: 1 A C characteristic - fuse T 1 A	MCB: 10 A C characteristic - fusibile T 10 A

### OUTPUT TECHNICAL DATA

Output voltage (without load)	$U_{out} = (U_{in} \times 1.41)$ (3)	
Output voltage (full load)	$U_{out} = (U_{in} \times 1.41) - 2$ (3)	
Continuous current	1 A @ 20°C	6 A @ 20°C
Overload limit	1 A	9 A
Load regulation	—	
Ripple @ nominal ratings	≤ 10%	
Hold up time @ In	>20 ms	
Overload / short circuit protections	not available, insert external fuse (4)	
Status display	"DC OK" green LED	
Parallel connection	—	
Redundant parallel connection	—	

### GENERAL TECHNICAL DATA

Operating temperature range	-20...+45°C / max 60°C	
Input/output isolation	not insulated	
Input/ground isolation	0.5 kVac / 60 s	
Output/ground isolation	0.5 kVac / 60 s	
Reference Standards	IEC 664-1, DIN VDE	
MTBF @ 25°C @ nominal ratings	>500'000 h acc. to SN 29500 / >150'000 h acc. to MIL Std. HDBK 217F	
Overvoltage category/Pollution degree	II / 2	
Protection degree	IP 00 IEC 529, EN60529	
Connection terminal	2.5 mm² fixed screw type	
Housing material	UL94V-0 plastic material	
Approx. weight	22 g (0.77 oz)	140 g (4.93 oz)
Mounting information	vertical on rail, allow 50 mm spacing between adjacent components	

### MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5  
 Mounting rail type according to IEC60715/G32

## Cod. XAR1

AR1

## Cod. XAR2

AR6

## APPLICATIONS

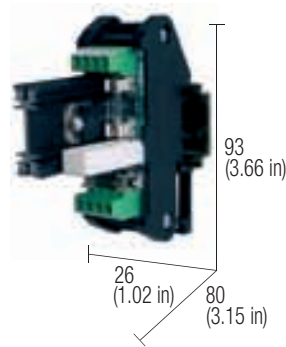
A rectified and filtered power supply is made with a rectifier bridge and a filter capacitor, that converts the alternating voltage into a continuous voltage. Since the power supply unit is not regulated, the output voltage varies considerably according to the current required by the load and according to the ±10% mains voltage variations. The formula indicated in the output specifications allows to calculate the output voltage with Zero load, with 50% load and full load. This allows you to choose the most suitable transformer for your needs. **These units offer a low cost and a reliable voltage source suitable for loads such as relays, contactors, solenoid valves or loads that can work with relatively high ripple and wide voltage variations; in applications where mains is unstable or troubled, it might be not suitable to feed microprocessor devices, analog converters, encoders and electronic devices which are sensitive to voltage variations.**

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB  
 PR/DIN/AC, PR/DIN/AS, PR/DIN/AL

INPUT (Vac)	OUTPUT without load (Vdc)	OUTPUT full load (Vdc)
20	28.7	24.2
18	25.4	21.4
15	21.2	17.2
12	17	15
9	12.7	8.7
6	8.5	4.5

# Accessory for charging buffer batteries

- Battery charger
- Allows to connect in redundant parallel two power supplies
- Suitable for power supplies up to 10 A
- Battery protection fuse
- Battery feedback protection diode
- Current charge limiting resistor

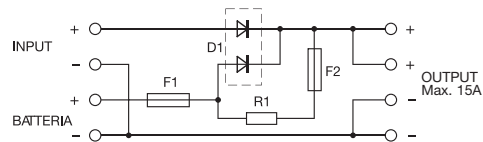


## NOTES

The depth dimension includes the terminal blocks and the DIN rail clamp.

- (1) The charging current is dependent on the battery type and the required level of charge, it's about:
- 0,5A max @ 12Vdc battery
  - 1A max @ 24Vdc battery
- (2) The device do not avoid total discharge which always shortens battery life.

## BLOCK DIAGRAM



## VERSIONS

## Cod. XCSBC

## APPLICATIONS

### GENERAL TECHNICAL DATA

Power supply rated voltage	6...30 Vdc
Power supply rated current	> 3 A
Load rated voltage	6...29.5 Vdc
Load max current	10 A
Charge current limitation	(1)
Battery disconnecting voltage	not available
IN/OUT drop voltage	0.5 V
Battery protection fuse	F1 = T 6.3 A / F2 = T 1 A
Protections	battery short circuit /overload (2)
Alarm signal	—
Operating temperature range	-10...+50°C
Reference Standards	IEC 664-1, DIN VDE
Overvoltage category/Pollution degree	II / 2
Protection degree	IP 20 IEC 529, EN60529
Connection terminal	2.5 mm <sup>2</sup> fixed screw type
Housing material	UL94V-0 plastic material
Approx. weight	80 g (2.82 oz)
Mounting information	vertical on rail, adjacent

### 1. Battery charger

With this module is possible to use a Cabur power supply as a battery charger while it is feeding the load.

The diode provides decoupling between the battery and the power supply; the resistance limits the current charge limiting power supply output current and assuring longer life to the battery. The F1 fuse protects the battery and its wiring against short circuit.

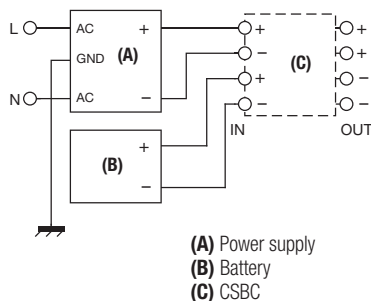
The next picture shows the connections.

### 2. Parallel connection of power supplies

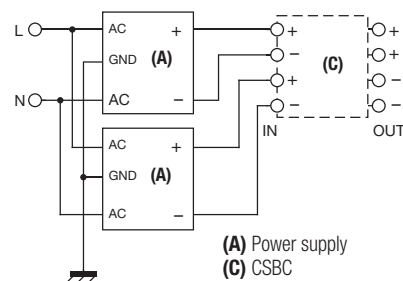
It is possible to use this module also to connect two power supplies in parallel, not provided with output decoupling diode, eliminating "Fuse 2" in series to charging current limiting resistor.

The next picture shows the connections.

### 1. Battery charger



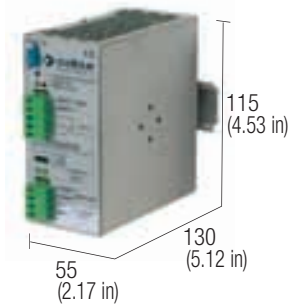
### 2. Parallel connection of power supplies





# Accessory for charging and controlling buffer batteries

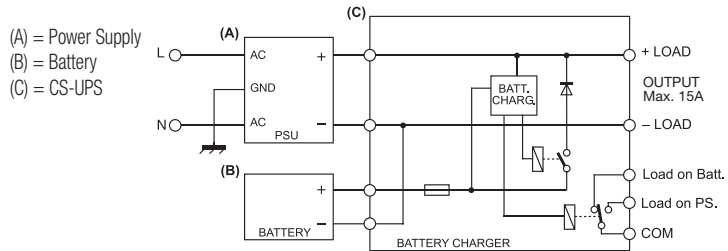
- Suitable for power supply with adjustable output
- Suitable for lead batteries
- Suitable for charging batteries while feeding loads
- Battery protection fuse
- "Deep discharge" battery protection
- Status display LED and failure contact



## NOTES

The depth dimension includes the DIN rail clamp.

## BLOCK DIAGRAM



## VERSIONS

Output 24 Vdc  
Output 12 Vdc

## GENERAL TECHNICAL DATA

Power supply input voltage	26...28.5 Vdc
Power supply rated current	≥ 3 A
Load rated voltage	<b>26...28 Vdc</b>
Max load current	<b>15 A</b>
Charging current	selectable 2 A or 4 A
Battery disconnection voltage	≤ 18 Vdc ±0.5V
IN/OUT voltage drop	0.4 V
Battery protection fuse	T 15 A 42 V blade type
Protections	Reverse polarity, short circuit, battery overload, battery deep discharge
Alarm signals	Power supply OK: Battery OK Battery LOW Load OK Battery reverse polarity
Operating temperature range	-10...+50°C
EMC Standards	IEC 664-1, DIN VDE
Overvoltage category/Pollution degree	II / 2
Protection degree	IP 20 IEC 529, EN60529
Connection terminal	2.5 mm <sup>2</sup> pluggable screw type
Housing material	aluminium
Approx. weight	300 g (10.58 oz)
Mounting information	vertical on rail, adjacent

## MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5  
Mounting rail type according to IEC60715/G32

## Cod. XCSUPS1

CS-UPS1

## Cod. XCSUPS2

CS-UPS2

## APPLICATIONS

All power supplies with adjustable output voltage to +15% of rated voltage can be used as lead battery chargers, suitable to be used as back up supply in case of AC line breakdown.

The CS-UPS-1 circuit regulate the current charging the battery, and it is possible to set it up to 2A or 4A charging current ; CS- UPS1 disconnects the load from the battery whenever the battery voltage drops under 19Vdc, to avoid total discharge which always shortens battery life.

The module is provided with a fuse protecting the battery and its cable to prevent fire risk in case of short circuit. The module is provided with the following leds display:

**PS OK:** The green LED is on when the power supply feeding the CS-UPS1 is OK and the load is supplied by the power supply while the battery is continuously charged.

**LOAD OK:** Yellow LED is on when CS-UPS1 feeds the load.

**BATT. OK:** Green LED is on when the power supply is turned OFF or disconnected and indicates that the battery is connected and can feed the load.

**BATT. LOW:** Red LED on when the battery is low or discharged.

**REVERSE BATTERY:** Red LED is on when battery is connected with reverse polarity.

**Alarm contact:** a relay with an SPDT contact 1A/24V switches when the load is no more supplied by the power supply and then is supplied by the battery. This contact allows to get a remote warning on the status of the system even in the case that the power supply is turned OFF or damaged, or non more supplied for any reasons.

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB



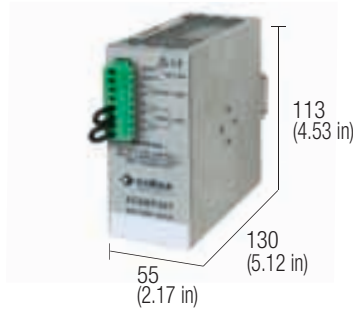
Example 1:  
XCSF120C + XCSUPS1 + batteria



Example 2:  
XCSF120C + XCSUPS1 + XCSBP30Y

# Batteries holder module

- 12 or 24 Vdc selectable output voltage
- Suitable for sealed lead rechargeable batteries
- Suitable for CSBC, CS-UPS, CSC75
- Suitable for DIN rail installation



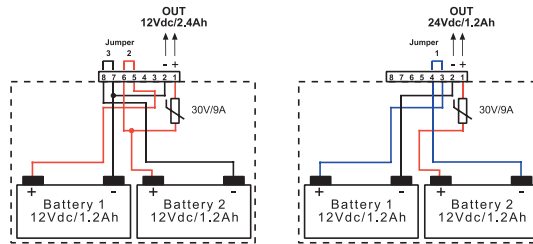
## NOTES

The depth dimension includes the terminal blocks and the DIN rail clamp.

(1) Into XCSBP30Y are necessary two batteries 8911012

## BLOCK DIAGRAM

SERIES connection: jumper 1  
PARALLEL connection: jumper 2 + 3



## VERSIONS

Batteries holder module (empty)  
Battery (1)

CSBP30Y  
BAT12V1,2AH

Cod. XCSBP30Y  
Cod. 8911012

## APPLICATIONS

## GENERAL TECHNICAL DATA

Batteries type	2 sealed batteries 12 Vdc 1.2 Ah	
Internal protection fuse	15 A	
Setup type	<b>parallel</b>	<b>series</b>
Output voltage	12 Vdc 2.4 Ah	24 Vdc 1.2 Ah
Charging current max.	0.6 A	0.3 A
Discharging current max.	5 A	3 A
Operating temperature range	-10...+50°C	
EMC Standards	IEC 664-1, DIN VDE	
Overvoltage category/Pollution degree	II / 2	
Protection degree	IP 20 IEC 529, EN60529	
Connection terminal	2.5 mm <sup>2</sup> pluggable screw type	
Housing material	aluminium	
Approx. weight	1.2 kg (42,36 oz)	
Mounting information	vertical on rail, adjacent	

## MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5  
Mounting rail type according to IEC60715/G32

PR/3/AC, PR/3/AG/ZB, PR/3/AS, PR/3/AS/ZB



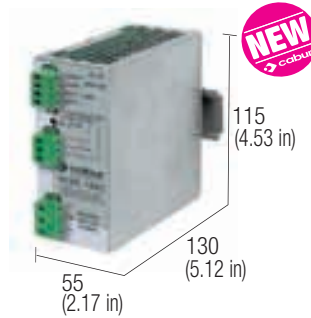
Example 1:  
XCSBP30Y



Example 2:  
XCSBP30Y + XCSUPS1 + XCS120C

# Switching power supply with integrated battery charger

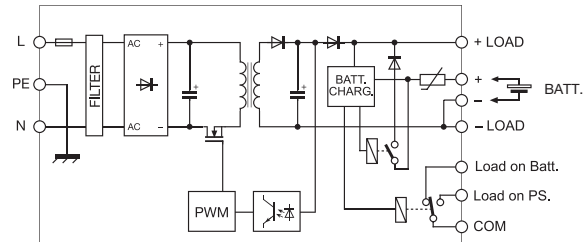
- Suitable for 12 Vdc loads and batteries
- Suitable for lead batteries
- Suitable for charging batteries while feeding loads
- Battery protection circuit
- "Deep discharge" battery protection
- Status display LED and failure contact



## NOTES

- The depth dimension includes the terminal blocks and the DIN clamp.
- (2) With 100...127 Vdc input voltage, constant output power and  $T_a > 45^\circ\text{C}$ , the output current must be derated by 25%
- (3) In addition to the current load, the device supplies about 0.8 A for battery charging
- (4) Over  $50^\circ\text{C}$  ( $122^\circ\text{F}$ ) apply a derating  $-0.13 \text{ A}/^\circ\text{C}$ , max  $60^\circ\text{C}$

## BLOCK DIAGRAM



## VERSIONS

- Output 12 Vdc 5 A
- Output 24 Vdc 5 A

## Cod. XCSC120B

CSC120B

## Cod. XCSC120C

CSC120C

## APPLICATIONS

## INPUT TECHNICAL DATA

Input rated voltage	<b>120–230 Vac</b> (range 90...264 Vac / 100...370 Vdc) (2)
Frequency	47...63 Hz
Current @ nominal lout (U <sub>in</sub> 120 / 230 Vac)	2.0 A / 1.1 A $\pm$ 10%
Inrush peak current	< 20 A
Power factor	> 0.6
Internal protection fuse	T 3.15 A replaceable
External protection on AC line	circuit breaker: 4 A - C characteristic - fuse: T 3.15 A

## OUTPUT TECHNICAL DATA

	<b>12.5...15.5 Vdc</b>	<b>23...27.5 Vdc</b>
Output voltage with operating power supply	12...14.4 Vdc	24...26.2 Vdc
Output voltage with batteries		
Continuous current	<b>7 A @ 50°C</b> (3)	<b>5 A @ 50°C</b> (3)
Overload limit	>11 A for >30 s	>8 A for >30 s
Short circuit peak current	>18 A for >50 ms	>12 A for >50 ms
Load regulation	< 1%	< 1%
Ripple @ nominal ratings	80 mVpp	80 mVpp
Hold up time @ I <sub>n</sub> (U <sub>in</sub> 120 / 230 Vac)	>24 ms / >80 ms	>17 ms / >72 ms

with operating power supply: hiccup at the overload limit with auto reset  
 non operating power supply: auto resettable electronic fuse against battery short circuit  
 with non operating power supply: threshold-relay against battery deep discharge  
 "PSU OK" green LED / failure contact / "BATTERY" red LED  
 0.8 A (suitable for sealed lead batteries up to 15 Ah)

- Alarm signals
- Max. charging current

## GENERAL TECHNICAL DATA

Efficiency (U <sub>in</sub> 120 / 230 Vac)	>86% / >90%	>90%
Dissipated power (U <sub>in</sub> 120 / 230 Vac)	21 W / 13 W	< 13 W
Operating temperature range	-20...+60°C, with derating over 50°C / over temperature protection (4)	
Input/output isolation	1.5 kVac / 60 s SELV output	
Input/ground isolation	1.5 kVac / 60 s	
Output/ground isolation	0.5 kVac / 60 s	
Standard/approvals	IEC950, EN60950	
EMC Standards	EN55011, EN61000-6-1	
MTBF @ 25°C @ nominal ratings	>500'000 h acc. to SN 29500 / >150'000 h acc. to MIL Std. HDBK 217F	
Overvoltage category/Pollution degree	II / 2	
Protection degree	IP 20 IEC 529 EN60529	
Connection terminal	2.5 mm <sup>2</sup> pluggable screw type	
Housing material	aluminium	
Approx. weight	500 g (17.65 oz)	
Mounting information	vertical on rail, allow 10 mm spacing between adjacent components	

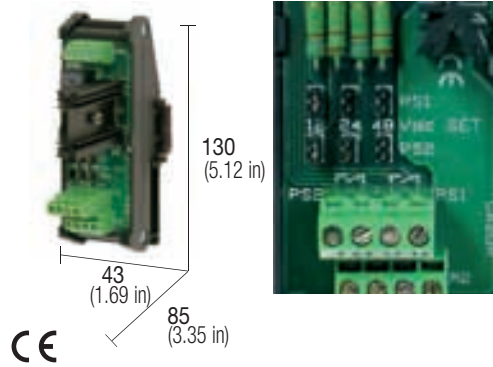
## MOUNTING ACCESSORIES

- Mounting rail type according to IEC60715/TH35-7.5
- Mounting rail type according to IEC60715/G32

PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB

# Accessory for power supplies redundant parallel connections

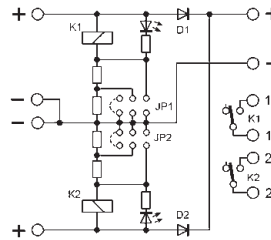
- Suitable for power supplies without Oring diodes
- Compact dimensions
- Three selectable voltages 12, 24 and 48 Vdc
- 2 status/relays contacts
- Power supplied status LED



## NOTES

The depth dimension includes the terminal blocks and the DIN rail clamp.

## BLOCK DIAGRAM



## VERSIONS

## Cod. XCSBD

CSBD

## APPLICATIONS

This module allows the customer to connect in redundant parallel two power supplies not provided with built in Oring diodes (output decoupling diodes); a jumper bridge allows to select 12, 15, 24 or 48 Vdc operating voltage; each channel is provided with status indication led, status relay and contact for remote failure alarm.

## GENERAL TECHNICAL DATA

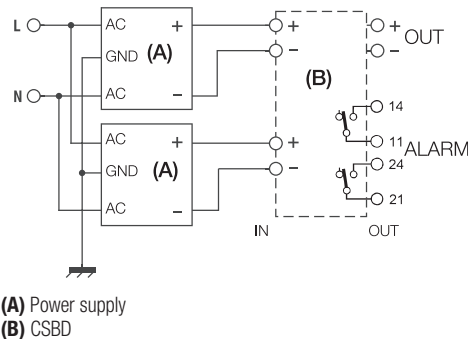
Power supply rated voltage	<b>12–24–48 Vdc</b> selectable
Power supply rated current	15 A, max 30 A
Load rated voltage	<b>12–24–48 Vdc</b> selectable
Load max current	15 A
IN/OUT drop voltage	0.7 V @ 15 A
Protections	—
Alarm signal	2 contacts NA 2A @ 230 Vac
Operating temperature range	-20...+50°C
Reference Standards	IEC 664-1, DIN VDE
Overvoltage category/Pollution degree	II / 2
Protection degree	IP 00 IEC 529, EN60529
Connection terminal	2.5 mm <sup>2</sup> fixed screw type
Housing material	UL94V-0 plastic material
Approx. weight	120 g (4.23 oz)
Mounting information	vertical on rail, adjacent

## MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5  
Mounting rail type according to IEC60715/G32

**PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB**  
**PR/DIN/AC, PR/DIN/AS, PR/DIN/AL**

## Block diagram



# MBC2K

## Motor brake controller

The **MBC2K** is a device controlled by a microprocessor, that can automatically insert a power resistor into the DC BUS for braking a motor fed by the same DC Bus through a motor drive. The function of the MBC2K is to dissipate the energy delivered by the motor in an external resistor thus damping the resulting overvoltage on the DC Bus.

On top of that the MBC2K provides several protections to ensure reliable operation.

MBC2K can be connected to any DC Bus within 24Vdc and 100Vdc. The simplified application diagram is shown in Figure 1, while the unit front view with all its controls is shown in Figure 2. Up to 4 MBC2K units can be connected in parallel to increase the braking power up to 8kW max. The MBC2K is provided with a 2.5 digits 7 segments LED display, used to display the DC Bus voltage (with +/- 1V accuracy), to help the user during the setup phase and/or to show error messages.

### MBC2K Setup

The MBC2K unit needs to be set up before operating.

The setup phase consists of 3 menu pages. The user can navigate through the menu pages by pressing the MENU button and the values on each menu page can be changed by pressing SET / RESET button.

The three menu pages are the following:

- Brake intervention threshold (VTH) setup
- Hysteresis around the brake intervention threshold voltage
- Master / Slave mode, used for parallel connection up to four modules.

### MBC2K protection and error codes

The MBC2K unit integrates several active protections to guarantee reliable operations in normal conditions. As soon as a faulty event is detected the MBC2K power stage is switched off so that no uncontrolled current flow through the brake resistor is possible. A fault condition is indicated by the continuous blinking of the Alarm LED. Remote sensing of the status of the MBC2K unit is possible thanks to the Alarm relay dry contact. To help the user to understand which faulty event occurred, an error code is displayed on the 7 segments LED display. Every protection is latched, so that to put back the MBC2K unit in "operation mode".

### Parallel connection up to 4 MBC2K units

The MBC2K brake controller provides a feature allowing connecting up to 4 identical MBC2K units to **increase the peak braking power up to 8kW**. In any case every MBC2K unit can handle only 2kW of peak braking power therefore every MBC2K unit need its own 2kW brake resistor.

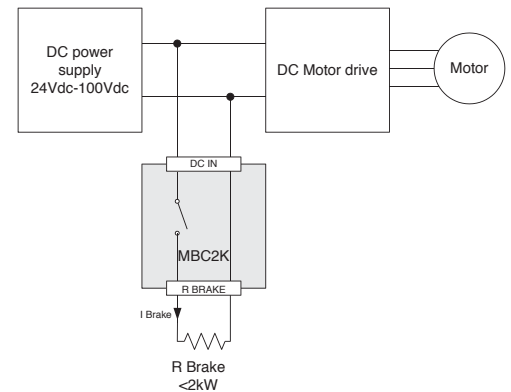
To realize this feature the MBC2K is equipped with a Synchronization Bus used to synchronize the operation of all the units connected to the synchronization bus. The principle of operation relies on one MBC2K unit configured as the **master** and others MBC2K units (up to 3) configured as **slave**.

The master measures the DC Bus voltage and decides when to insert its brake resistor in the circuit; on top of that it sends a command on the synchronization bus.

The slaves connected on the synchronization bus are waiting for the command sent by the master; when they receive the command they insert their brake resistors in the circuit too. Please note that even when the MBC2K is configured in slave mode, all its circuits protections are functional.



Figure 1: Simplified application diagram



- SET/RESET button:** used to reset the protections and to change setup values in setup mode.
- MENU button:** used to enter into setup mode and to navigate through menu pages.
- Synchronization bus connector:** used to parallel up to 4 units.
- Resistor temperature sensor connector:** used to connect an optional brake resistor temperature sensor.
- Alarm dry contact connector:** an SPDT contact provide remote failure signal.
- Brake resistor connector:** used to connect the brake resistor wires 2.5mm<sup>2</sup>
- DC Bus connector:** used to connect the MBC2K unit to the power supply Bus (24...100Vdc).
- Protective earth (PE) connection:** to connect the module to the protective earth.
- LED display 100's indicator:** used to display numbers >99 on 2 digits; when this indicator is lit and the display shows "03" this means 103V.
- Brake indicator LED:** used to display braking activity; when lit it means that there is a current flow through the brake resistor.
- 2.5 digits 7-segment display:** in operating mode it shows the voltage measured on the DC Bus (accuracy +/- 1V); it's used also to show menu items and error codes.
- Alarm LED:** used to indicate a fault condition of the unit.

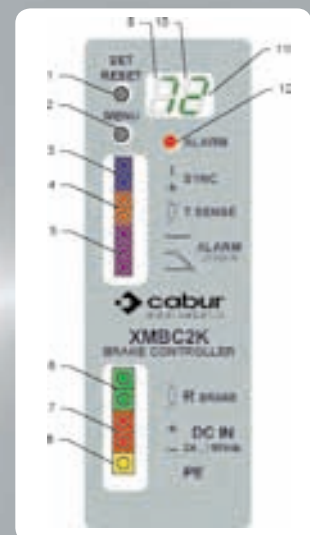
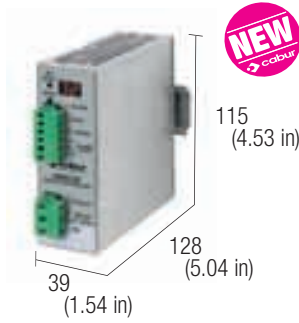


Figure 2: MBC2K Front View

# Motor brake controller

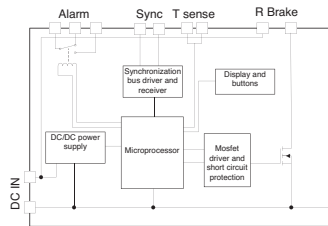
- 20 threshold levels with automatic activation
- Each module can drive 2kW braking power
- It is possible to connect up to four modules master/slave to get 8kW total braking power
- Simple functions programming and set up
- Control of the temperature of the braking resistor



## NOTES

The depth dimension includes the terminal blocks and the DIN clamp.

## BLOCK DIAGRAM



## VERSIONS


## Cod. XMBC2K

<b>MBC2K</b>

## APPLICATIONS

The MBC2K is a device controlled by a microprocessor, that can automatically insert a power resistor into the DC BUS for braking a motor fed by the same DC Bus through a motor drive. The function of the MBC2K is to dissipate the energy delivered by the motor in an external resistor thus damping the resulting over-voltage on the DC Bus. On top of that the MBC2K provides several protections to ensure reliable operation. MBC2K can be connected to any DC Bus within 24Vdc and 100Vdc. The simplified application diagram is shown in Figure 1, while the unit front view with all its controls is shown in Figure 2. Up to 4 MBC2K units can be connected in parallel to increase the braking power up to 8kW max. The MBC2K is provided with a 2.5 digits 7 segments LED display, used to display the DC Bus voltage (with +/- 1V accuracy), to help the user during the setup phase and/or to show error messages.

## INPUT TECHNICAL DATA

Nominal DC BUS voltage range
Maximum braking current
Brake activation voltage
Brake voltage hysteresis
User interface

## 24...100 Vdc

50 A for 1 s
<b>27...106 V, threshold adjustable in 20 steps</b>
3 V o 6 V selectable
2 setup push buttons (SET/RESET and MENU)
2 x 7 segment LED displays
1 LED for general alarm indication
1 SPDT dry contact for general alarm remote warning
Undervoltage on DC BUS < 22 Vdc
Overvoltage on DC BUS > 110 Vdc
Brake resistor overtemperature (if the temperature sensor is present)
Module Internal overtemperature > 90°C (194°F)
Brake resistor interrupted or not connected
Short circuit : braking current > 80 A
Overload : braking time > 1 s

Protections
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Parallel connection

Up to 4 units can be connected in parallel through synchronization bus for a total braking power of 8kW (4 x 2kW braking resistors are needed)

## GENERAL TECHNICAL DATA

Dissipated power
Operating temperature range
Input/output isolation
Input/ground isolation
Output/ground isolation
Standard/approvals
EMC Standards
Overvoltage category/Pollution degree
Protection degree
Connection terminal
Housing material
Approx. weight
Mounting information
Approx. weight
Mounting information

<b>20 W</b>
0...+70°C
—
500 Vac / 60s
—
IEC950, EN60950 for SELV use up to 60Vdc; using the MBC2K at voltages greater than 60Vdc is not classifiable as SELV
EN55011 Class B
1 / 2
IP 20 IEC 529, EN60529
1.5 and 2.5 mm <sup>2</sup> pluggable screw type
aluminium
200 g
vertical on rail, allow 10 mm spacing between adjacent components
120 g
vertical on rail, adjacent

## MOUNTING ACCESSORIES

Mounting rail type according to IEC60715/TH35-7.5
Mounting rail type according to IEC60715/G32

<b>PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB</b>
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