Cabur power house

Continues 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 suppliers 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 indispensible 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 commutate 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 suppliers 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 ± 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 ± 12V or ±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.

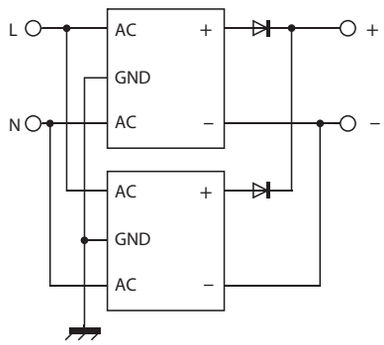


figure 1

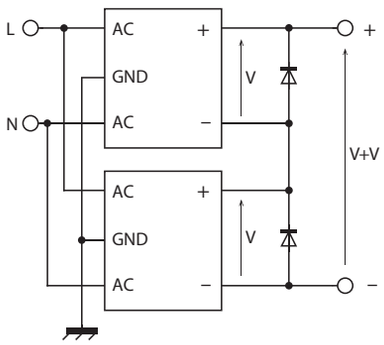


figure 2

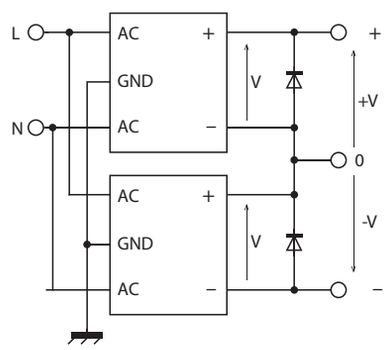


figure 3

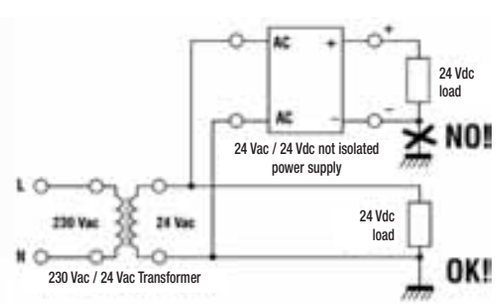


figure 4

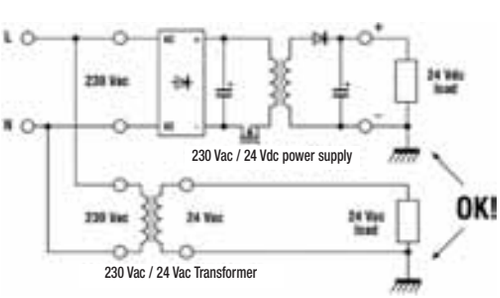


figure 5

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

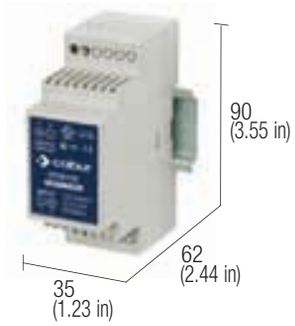
High Efficiency
Designed to save energy and reduce working temperature

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

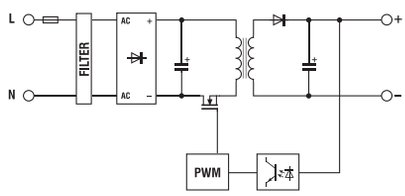
- Single-phase input 90…264 Vac and DC 100…315 Vdc
- Short circuit, overload, over temperature, input overvoltage protections
- Isolation Class 2, no grounding needed
- Compact dimensions
- Suitable for applications in SELV and PELV circuits



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	Cod. XCSD15C	Cod. XCSD15B
Output 24 Vdc 0.6 A	**CSD15C**	
Output 24 Vdc 0.6 A redundant version	–	
Output 12 Vdc 1.2 A		**CSD15B**
Output 48 Vdc 0.3 A		–

INPUT TECHNICAL DATA	
Input rated voltage	**120–230 Vac** (range 90…264 Vac / 100…315 Vdc)
Frequency	47...63 Hz
Current @ nominal Iout (Uin 120 /230 Vac)	0.3 A / 0.16 A ± 10%
Inrush peak current	< 5 A
Power factor	> 0.6
Internal protection fuse	T 1 A replaceable
External protection on AC line	circuit breaker: 2 A - C characteristic - fuse: T 2 A

OUTPUT TECHNICAL DATA		
Output rated voltage	**24 Vdc** ± 1%	**12 Vdc** ± 0.5 Vdc
Output adjustable range	—	—
Continuous current	**0.6 A** @ 50°C (2)	**1.2 A** @ 50°C (2)
Overload limit	1.08 A (3)	2.16 A (3)
Short circuit peak current	—	—
Load regulation	< 1%	< 1%
Ripple @ nominal ratings	≤ 30 mVpp	≤ 30 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	
Alarm contact threshold	–	–
Parallel connection	possible	possible
Redundant parallel connection	possible with external ORing diode	possible with external ORing diode

GENERAL TECHNICAL DATA		
Efficiency (Uin 120 / 230 Vac)	>85% / >87%	>85% / >87%
Dissipated power (Uin 120 / 230 Vac)	19 W / 13 W	21 W / 15 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^2 fixed screw type	
Housing material	UL94V-0 plastic material	
Approx. weight	130 g (5.12 oz)	
Mounting information	vertical on rail, allow 10 mm spacing between adjacent components	

MOUNTING ACCESSORIES	
Mounting rail type according to IEC60715/TH35-7.5	**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 30 W

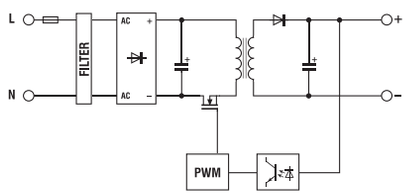
- Single-phase input 90…264 Vac and DC 100…345 Vdc
- Short circuit, overload, over temperature, input overvoltage protections
- Isolation Class 2, no grounding needed
- Compact dimensions
- Suitable for applications in SELV and PELV circuits

c UL us LISTED E203601

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	Cod. XCSD30C		Cod. XCSD30E	Cod. XCSD30F
Output 24 Vdc 1.2 A	**CSD30C**			
Output 24 Vdc 1.2 A redundant version		–		
Output 5…15 Vdc 3.3…1.5 A			**CSD30E**	
Output ±12...±15 Vdc 0.6 A				**CSD30F**
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			
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 @ In (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
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 mm² 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	**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 50 W

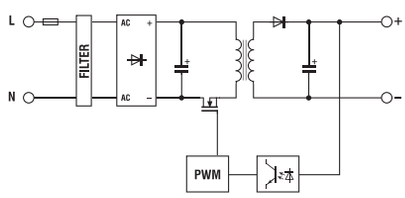
- Single-phase input 90…264 Vac and DC 100…345 Vdc
- Short circuit, overload, over temperature, input overvoltage protections
- Isolation Class 2, no grounding needed
- Compact dimensions
- Suitable for applications in SELV and PELV circuits

c UL us LISTED E203601

NOTES

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

BLOCK DIAGRAM



VERSIONS	Cod. XCSD50B		
Output 24 Vdc 2.2 A	–		
Output 24 Vdc 2.2 A redundant version			
Output 12…15 Vdc 3.5...3 A		**CSD50B**	
Output 48 Vdc 1.1 A			–
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 ± 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°C (3)	
Overload limit		4.37…3.75 A (4)	
Short circuit peak current		—	
Load regulation		< 1%	
Ripple @ nominal ratings		≤ 50 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...+60°C, with derating over 50°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°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 mm² 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	**PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB**		
Mounting rail type according to IEC60715/G32	—		

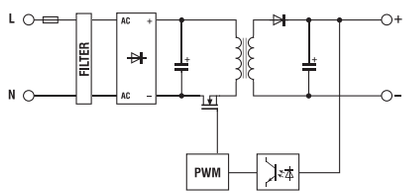
Single-phase switching power supply 120-230 Vac output power 70 W

- 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 Ta>45°C, the output current must be derated by 25%.
(3) Over 50°C (122°F) apply a derating: C version: -0.15 A/°C.
(4) Overload and short circuit current depends on the total line resistance.

BLOCK DIAGRAM



VERSIONS	Cod. XCSD70C			
Output 24 Vdc 3 A	**CSD70C**			
Output 24 Vdc 3 A redundant version		–		
Output 12…15 Vdc 5…4 A			–	
Output 48 Vdc 1.5 A				–
INPUT TECHNICAL DATA				
Input rated voltage	**120–230 Vac** (range 90…264 Vac / 100…370 Vdc) (2)			
Frequency	47...63 Hz			
Current @ nominal Iout (Uin 120 /230 Vac)	1.25 A / 0.8 A ± 10%			
Inrush peak current	< 15 A			
Power factor	> 0.6			
Internal protection fuse	T 2 A not replaceable			
External protection on AC line	circuit breaker: 4 A C characteristic - fuse: T 3.15 A			
OUTPUT TECHNICAL DATA				
Output rated voltage	**24 Vdc**			
Output adjustable range	24...27.5 Vdc			
Continuous current	**3 A** @ 55°C (3)			
Overload limit	4 A (4)			
Short circuit peak current	—			
Load regulation	< 1%			
Ripple @ nominal ratings	≤ 60 mVpp			
Hold up time @ In (Uin 120 / 230 Vac)	>15 ms / >30 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% / >89%			
Dissipated power (Uin 120 / 230 Vac)	10.4 W / 8.6 W			
Operating temperature range	–20...+60°C, with derating over 55°C (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°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 mm² fixed screw type			
Housing material	UL94V-0 plastic material			
Approx. weight	250 g (8.82 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 CSF 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

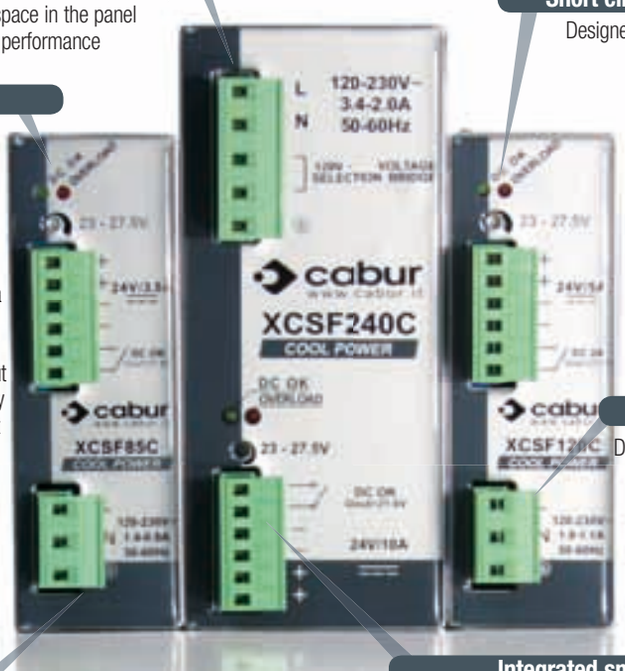
New 48Vdc and 72-85Vdc models have been introduced, designed to reliably power engines in DC. They:

- 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



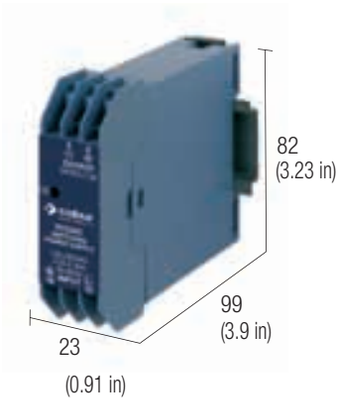
High Efficiency
Designed to save energy and reduce working temperature

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

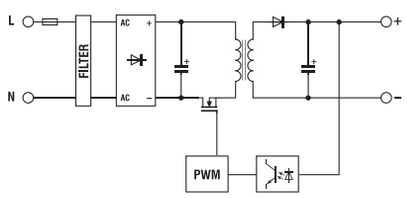
- Single-phase input 90…264 Vac and DC 100…320 Vdc
- Short circuit, overload, over temperature protection
- Isolation Class 2, no grounding needed
- Compact dimensions
- Suitable for applications in SELV and PELV circuits



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 Ta>45°C, the output current must be derated by 25%
(3) Over 50°C (122°F) apply a derating: C version: -0.03 A/°C; B version: -0.038 A/°C; F version: -0.013 A/°C
(4) Overload and short circuit current depends on the total line resistance.

BLOCK DIAGRAM

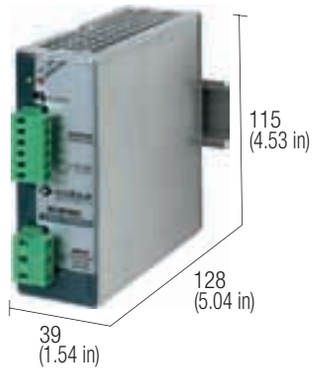


VERSIONS	Cod. XCSF30C	Cod. XCSF30B	Cod. XCSF30F
Output 24 Vdc 1.2 A	**CSF30C**		
Output 10…15 Vdc 1.5 A		**CSF30B**	
Output ±12...±15 Vdc 0.5 A			**CSF30F (1)**

INPUT TECHNICAL DATA			
Input rated voltage	**120–230 Vac** (range 90…264 Vac / 100…320 Vdc) (2)		
Frequency	47...63 Hz		
Current @ nominal Iout (Uin 120 /230 Vac)	0.55 A / 0.3 A ± 10%	0.35 A / 0.2 A ± 10%	
Inrush peak current	< 25 A		
Power factor	> 0.60		
Internal protection fuse	T 1,25 A not replaceable		
External protection on AC line	circuit breaker: 2 A - C characteristic - fuse: T 2 A		
OUTPUT TECHNICAL DATA			
Output rated voltage	**24 Vdc** ± 1%	**12 – 15 Vdc**	**±12 ±15 Vdc**
Output adjustable range	—	10…15 Vdc	±12…±15 Vdc
Continuous current	**1.2 A** @ 50°C (3)	**1.5…1 A** @ 50°C (3)	**0.5 A** @ 50°C (3)
Overload limit	1.4 A (4)	1.7…1.2 A (4)	0.8…0.6 A (4)
Short circuit peak current	—	—	—
Load regulation	< 1%		
Ripple @ nominal ratings	≤ 50 mVpp		
Hold up time @ In (Uin 120 / 230 Vac)	>10 ms / >30 ms		
Overload / short circuit protections	hiccup at the overload limit with auto reset		
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)	>86% / >87%		
Dissipated power (Uin 120 / 230 Vac)	4.7 W / 4.3 W		
Operating temperature range	–20...+60°C, with derating over 50°C (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, 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	>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 mm² fixed screw type		
Housing material	UL94V-0 plastic material		
Approx. weight	140 g (4.94 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 85 W

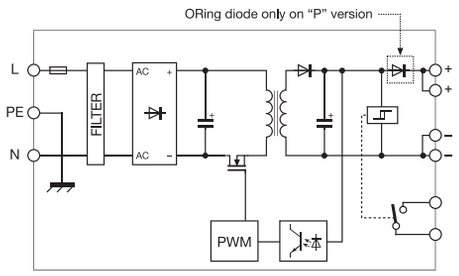
- Single-phase input 90…264 Vac and DC 100…345 Vdc
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- Failure contact for Uout -10%
- Compact dimensions
- 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 Ta>45°C, the output current must be derated by 25%
(3) Over 45°C (113°F) apply derating: CSF3-CSF3P: -0.06 A/°C for version C, CP and CPH; -0.10 A/°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)

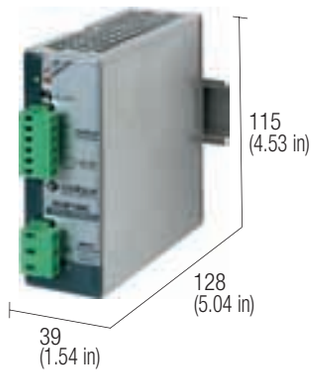
BLOCK DIAGRAM



VERSIONS	Cod. XCSF85C	Cod. XCSF85CP	Cod. XCSF85B	
Output 24 Vdc 3.5 A	**CSF85C**			
Output 24 Vdc 3.5 A redundant version		**CSF85CP**		
Output 12…15 Vdc 6 A			**CSF85B**	
Output 48 Vdc 1.8 A				–
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)	1.6 A / 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**		**12…15 Vdc**	
Output adjustable range	23...27.5 Vdc		12…15 Vdc	
Continuous current	**3.5 A** @ 50°C (3)		**6 A** @ 50°C (3)	
Overload limit	6 A for >30 s with Uout >90% Un (4)		9 A for >30 s with Uout >90% Un (4)	
Short circuit peak current	10 A for 50 ms (4)		10 A for 50 ms (4)	
Load regulation	< 1%		< 1%	
Ripple @ nominal ratings	≤ 70 mVpp		≤ 30 mVpp	
Hold up time @ In (Uin 120 / 230 Vac)	>20 ms / >70 ms		>15 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	
Parallel connection	possible		possible	
Redundant parallel connection	possible with external ORing diode	factory provided with internal ORing diode	possible with external ORing diode	
GENERAL TECHNICAL DATA				
Efficiency (Uin 120 / 230 Vac)	>85% / >89%		>83% / >87%	
Dissipated power (Uin 120 / 230 Vac)	15 W / 11 W		17 W / 13 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	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	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	**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

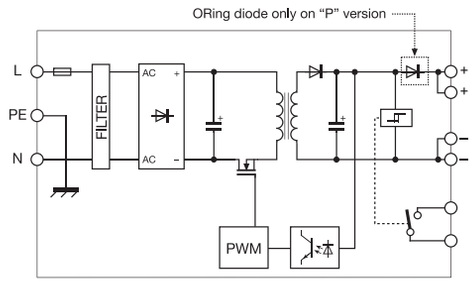
- Single-phase input 90…264 Vac and DC 100…345 Vdc
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- Failure contact for Uout -10%
- Compact dimensions
- 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 Ta>45°C, the output current must be derated by 25%
(3) Over 45°C (113°F) apply a derating-0.08 A/°C for version C, CP and CPH; -0.12 A/°C for version B; -0.05 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 CSF120CP, for orders, adds the letter H to the code (XCSF120CPH)
(6) article available till seel-out

BLOCK DIAGRAM

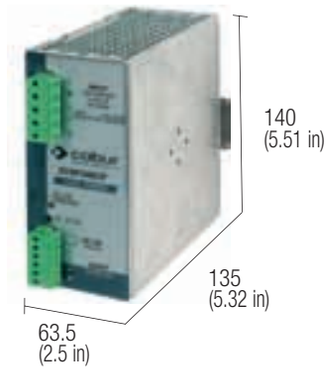


Special version for DC motors

VERSIONS	Cod. XCSF120C	Cod. XCSF120CP	Cod. XCSF120B	Cod. XCSF120DP
Output 24 Vdc 5 A	**CSF120C**			
Output 24 Vdc 5 A redundant version		**CSF120CP**		
Output 12…15 Vdc 7 A			**CSF120B (6)**	
Output 48 Vdc 2.5 A				**CSF120DP**
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)	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**		**12…15 Vdc**	**48 Vdc**
Output adjustable range	23...27.5 Vdc		12…15 Vdc	45…55 Vdc
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	≤ 30 mVpp		≤ 40 mVpp	≤ 30 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	possible with external 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 mm² 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	**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

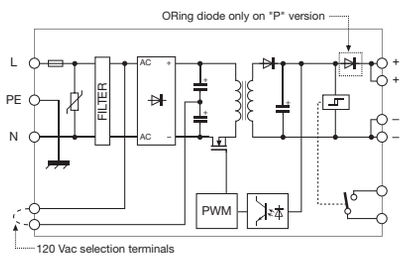
- Single-phase input 120 and 230 Vac
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- Failure contact for Uout -10%
- Compact dimensions
- Suitable for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

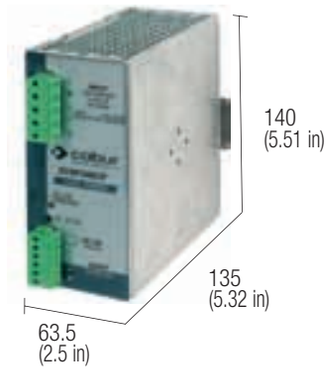


Special version for DC motors

VERSIONS	Cod. XCSF240C	Cod. XCSF240CP	Cod. XCSF240B	XCSF240DP
Output 24 Vdc 10 A	**CSF240C**			
Output 24 Vdc 10 A redundant version		**CSF240CP**		
Output 12…15 Vdc 16 A			**CSF240B**	
Output 48 Vdc 5 A redundant version				**CSF240DP**
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	possible with external 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	**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

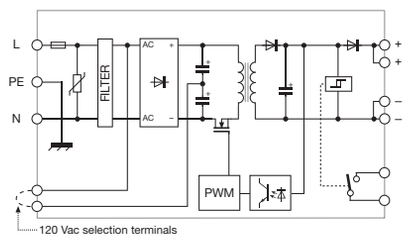
- Single-phase input 120 and 230 Vac
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- Failure contact for Uout -10%
- Compact dimensions
- Suitable for 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	Cod. XCSF240G
Output 72 Vdc 3.5 A redundant version	**CSF240G**

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

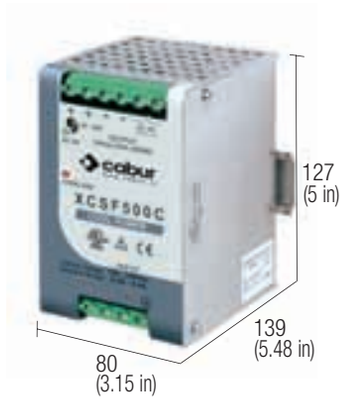
OUTPUT TECHNICAL DATA	
Output rated voltage	**72 Vdc**
Output adjustable range	72…85 Vdc
Continuous current	**3.5 A** @ 50°C (3)
Overload limit	>13.8A for >30 s with Uout >90% Un (4)
Short circuit peak current	>25 A for 400 ms (4)
Load regulation	< 1%
Ripple @ nominal ratings	≤ 50 mVpp
Hold up time @ 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	**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 500 W

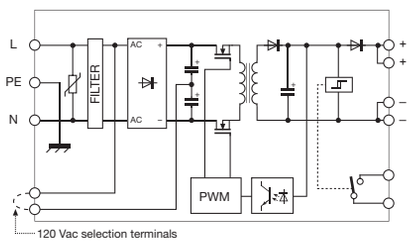
- Single-phase input 120 and 230 Vac
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- Compact dimensions
- Suitable for applications in SELV and PELV circuits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

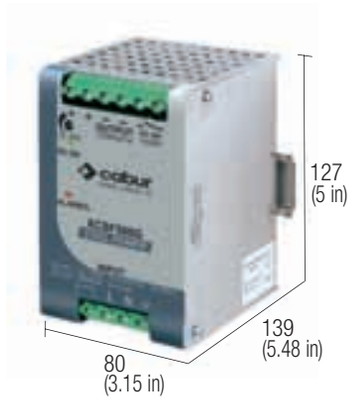


Special version for DC motors

VERSIONS	Cod. XCSF500C			Cod. XCSF500D
Output 24 Vdc 20 A	–			
Output 24 Vdc 20 A redundant version		**CSF500C**		
Output 12…15 Vdc 40 A			–	
Output 48 Vdc 10 A redundant version				**CSF500D**
INPUT TECHNICAL DATA				
Input rated voltage	**120–230 Vac** (range 90…132 Vac / 185…264 Vac) (2)			
Frequency	47...63 Hz			
Current @ nominal Iout (Uin 120 /230 Vac)	4.1 A / 2 A ± 10%			
Inrush peak current	< 25 A with electronic limiter			
Power factor	> 0.75 with PFC			
Internal protection fuse	—			
External protection on AC line	circuit breaker: 16 A C characteristic - fuse: T 15 A			
OUTPUT TECHNICAL DATA				
Output rated voltage	**24 Vdc**			**48 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
GENERAL TECHNICAL DATA				
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			
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 500 W

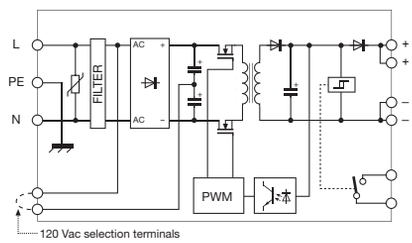
- Single-phase input 120 and 230 Vac
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity and to start-up heavy loads
- Compact dimensions
- Suitable for applications in PELV circuits



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

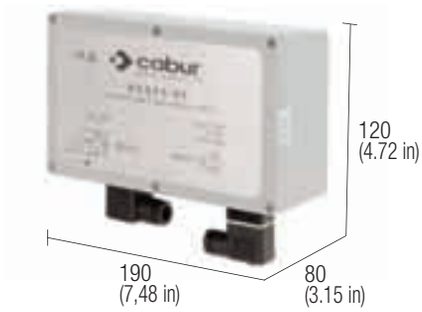
BLOCK DIAGRAM



	Special version for DC motors			
VERSIONS	**Cod. XCSF500G**			
Sortie 72 Vdc 6.7 A versione redondante	**CSF500G**			
INPUT TECHNICAL DATA				
Input rated voltage	**120–230 Vac** (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	**72 Vdc**			
Output adjustable range	72…85 Vdc			
Continuous current	**6.7 A** @ 50°C (3)			
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			
Status display	“DC OK” green LED / “DC OK” alarm contact/ “Overload” red LED			
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	**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 IP65 protection degree

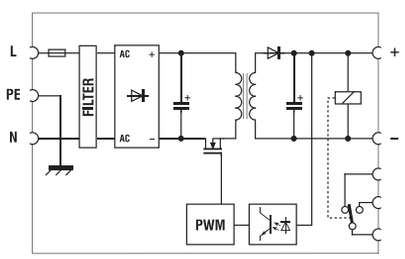
- Single-phase input 90…264 Vac and DC 100…345 Vdc
- Short circuit, overload, over temperature, input and output overvoltage protections
- Suitable to be mounted directly on the machinery frame, don't require any protective enclosure
- IP65 pluggable screw connectors
- Suitable for applications in SELV 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 Ta>45°C, the output current must be derated by 25%
(2) Overload and short circuit current depends on the total line resistance.

BLOCK DIAGRAM



VERSIONS	Cod. XCSF565
Output 24 Vdc 5 A	**CSF5-65**

INPUT TECHNICAL DATA	
Input rated voltage	**120–230 Vac** (range 90…264 Vac / 100…345 Vdc) (1)
Frequency	47...63 Hz
Current @ nominal Iout (Uin 120 /230 Vac)	1.8 A / 1 A ± 10%
Inrush peak current	< 20 A
Power factor	> 0.7
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**
Output adjustable range	23...27.5 Vdc
Continuous current	**5 A** @ 60°C
Overload limit	8 A (2)
Short circuit peak current	—
Load regulation	< 1%
Ripple @ nominal ratings	≤ 50 mVpp
Hold up time @ In (Uin 120 / 230 Vac)	>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 / "DC OK" alarm contact
Alarm contact threshold	—
Parallel connection	possible
Redundant parallel connection	possible with external ORing diode
GENERAL TECHNICAL DATA	
Efficiency (Uin 120 / 230 Vac)	>87% / >90%
Dissipated power (Uin 120 / 230 Vac)	18 W / 12 W
Operating temperature range	–20...+60°C / over temperature protection
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	2.5 mm² IP65 pluggable screw connectors
Housing material	aluminium
Approx. weight	1.9 Kg (67.02 oz)
Mounting information	vertical on rail or panel mounting by means of screws
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 CSL and CSP series

EASY POWER

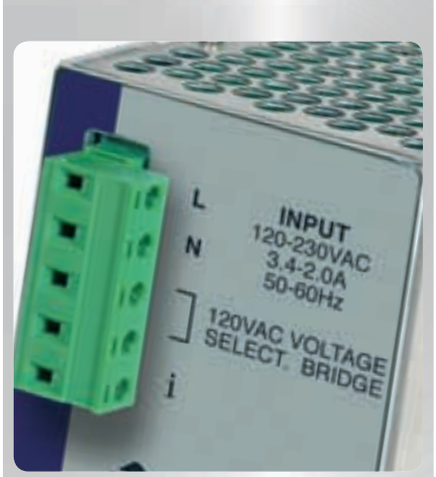
Single phase DIN rail power supplies for general applications in automation and installation. **With particulary high quality / price ratio**, these products are ideal and convenient for applications where loads do not require high peak currents. They can deliver over +40% of nominal current for a sustained 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

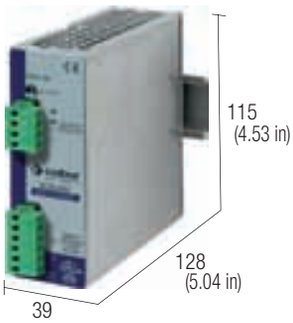
Power boost
The output power reaches 120% of the nominal value for several minutes, up to 140% during an overload, and up to 300% in the event of a short-circuit, to enable the protection devices connected to the output to trigger quickly, safely and selectively, without the use of additional modulesi

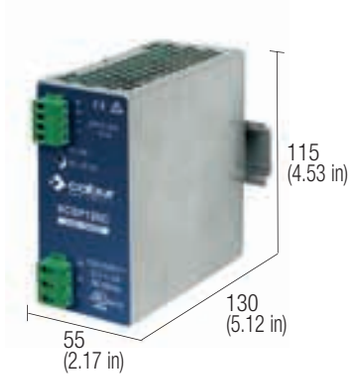
Extremely compact dimensions
They are among the smallest on the market, optimising the use of space in the panel without compromising performance

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

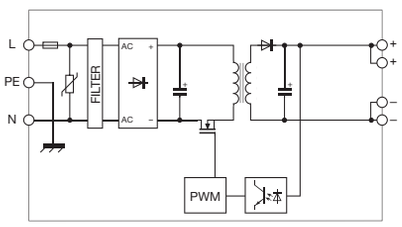




NOTES

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	Cod. XCSL85C	Cod. XCSP85C
Output 24 Vdc 5 A	**CSL85C (5)**	**CSP85C**
Output 24 Vdc 5		

INPUT TECHNICAL DATA	
Input rated voltage	**120–230 Vac** (range 90…264 Vac)
Frequency	47...63 Hz
Current @ nominal Iout (Uin 120 /230 Vac)	1.6A / 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

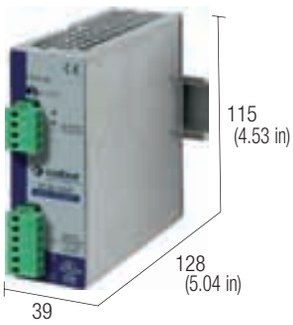
OUTPUT TECHNICAL DATA		
Output rated voltage	**24 Vdc**	**24 Vdc**
Output adjustable range	23...27.5 Vdc	23...27.5 Vdc
Continuous current	**3.5 A** @ 45°C (3)	**3.5 A** @ 45°C (3)
Overload limit	5 A per >30 s con Uout >90% Un (4)	>5 A (4)
Short circuit peak current	9 A per 50 ms	—
Load regulation	< 1%	< 1%
Ripple @ nominal ratings	70 mVpp	≤ 40 mVpp
Hold up time @ In (Uin 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	

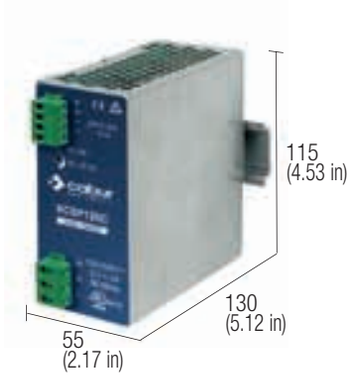
GENERAL TECHNICAL DATA		
Efficiency (Uin 120 / 230 Vac)	>86% / >90%	>85% / >89%
Dissipated power (Uin 120 / 230 Vac)	12 W / 8 W	15 W / 11 W
Operating temperature range	-20...+60°C, with derating over 45°C / over temperature protection (3)	
Input/output isolation	3 KVac / 60 s SELV output	
Input/ground 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 mm² 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

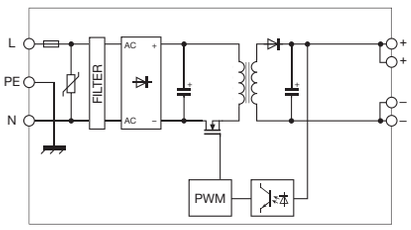




NOTES

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	Cod. XCSL120C	Cod. XCSP120C
Output 24 Vdc 5 A	**CSL120C (5)**	**CSP120C**
Output 24 Vdc 5 A		

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

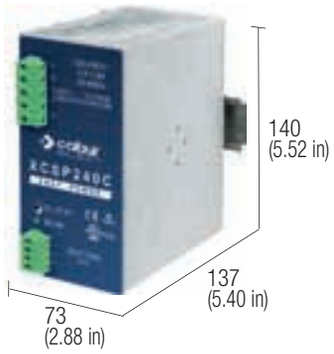
OUTPUT TECHNICAL DATA		
Output rated voltage	**24 Vdc**	**24 Vdc**
Output adjustable range	23...27.5 Vdc	23...27.5 Vdc
Continuous current	**5 A** @ 45°C (3)	**5 A** @ 45°C (3)
Overload limit	8 A per >30 s con Uout > 90% Un (4)	>6 A (4)
Short circuit peak current	13 A per 50 ms (4)	—
Load regulation	< 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 mm² 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

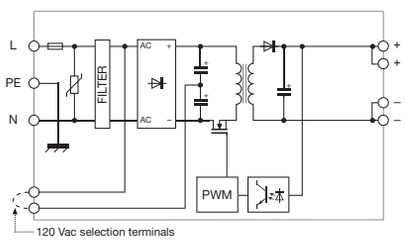
- Single-phase input 120 and 230 Vac
- Short circuit, overload, over temperature, input and output overvoltage protections
- Suitable in civil automation and general applications in the installation of systems
- Suitable for applications in SELV and PELV circuits



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	Cod. XCSL240C	Cod. XCSP240C
Output 24 Vdc 10 A	**CSL204C (5)**	**CSP240C**
INPUT TECHNICAL DATA		
Input rated voltage	**120–230 Vac** (range 90…132 Vac / 185…264 Vac) (2)	
Frequency	47...63 Hz	
Current @ nominal Iout (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 mm² 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 CSW 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.

185…550 Vac wide range input

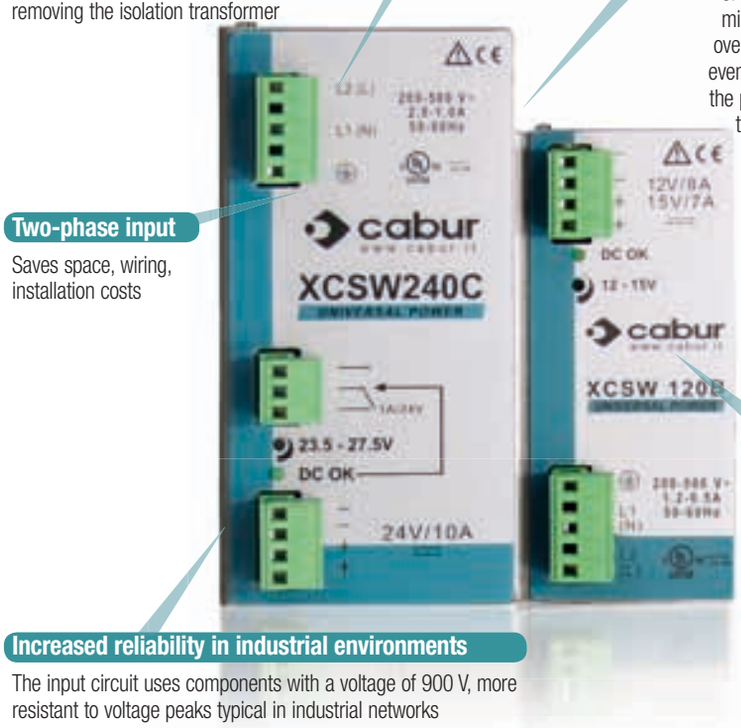
Connectable in 230 or 240V single-phase lines, in 208, 400 or 500 V three-phase lines for the maximum adaptability to the AC lines, by removing the isolation transformer

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

Two-phase input

Saves space, wiring, installation costs



High Performance

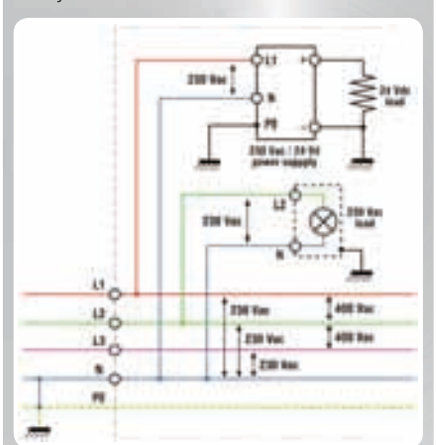
Reduces energy consumption and the operating temperature of the components and allows installation in small panels

Increased reliability in industrial environments

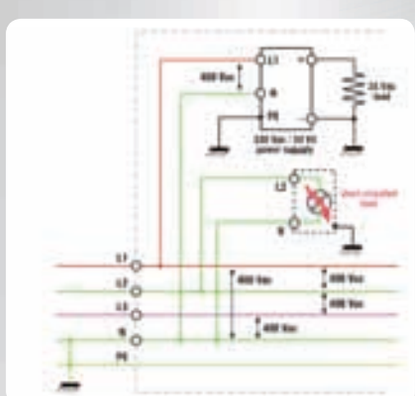
The input circuit uses components with a voltage of 900 V, more resistant to voltage peaks typical in industrial networks

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.



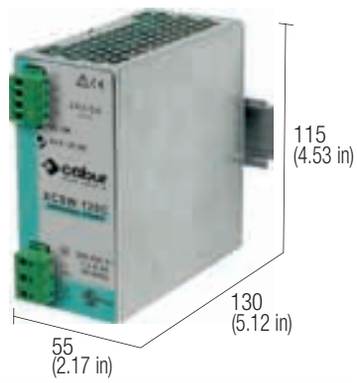
Typical application with three-phase network and neutral. The latter is used to obtain a 230-Vac voltage in order to supply power to loads (in the example, a simple bulb) and power supplies.



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.

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.

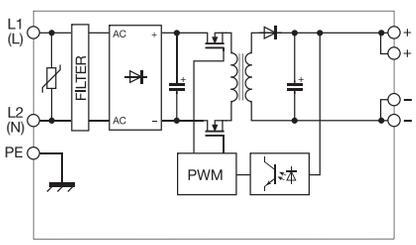
(1) Version available upon request; for information call our sales department, local agent or representative

(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



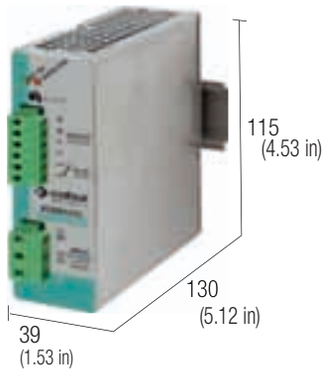
Item available till sell-out, will be replaced by CSW121

VERSIONS	Cod. XCSW120C		Cod. XCSW120B	
Output 24 Vdc 5 A	**CSW120C**			
Output 24 Vdc 5 A redundant version		–		
Output 12…15 Vdc 7 A			**CSW120B**	
Output 48 Vdc 2.5 A				–
INPUT TECHNICAL DATA				
Input rated voltage	1-2x **230-400-500 Vac** (range 185…550 Vac / 270…725 Vdc) (2)			
Frequency	47...63 Hz			
Current @ Iout max. (Uin 230 / 400 Vac)	1.1 A / 0.55 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 3.15 A			
OUTPUT TECHNICAL DATA				
Output rated voltage	**24 Vdc**		**12…15 Vdc**	
Output adjustable range	24...27.5 Vdc		12…15 Vdc	
Continuous current	**5 A** @ 50°C (3)		**8 A** @ 12 Vdc / **7 A** @ 15 Vdc	
Overload limit	6.5 A for >5 s with Uout >90% Un (4)		8.8…7.7 A for >5 s with Uout >90% Un (4)	
Short circuit peak current	15 A for 0.5 s (4)		> 15 A for 0.5 s (4)	
Load regulation	< 1%		< 1%	
Ripple @ nominal ratings	≤ 50 mVpp		≤ 50 mVpp	
Hold up time (Uin 230 / 400 Vac)	>20 ms / >200 ms		>20 ms / >200 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	
Redundant parallel connection	possible with external ORing diode		possible with external ORing diode	
GENERAL TECHNICAL DATA				
Efficiency (Uin 230 / 400 Vac)	>86% / >88%		>84% / >86%	
Dissipated power (Uin 230 / 400 Vac)	20 W / 16 W		20 W / 17 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 and stainless steel			
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	—			

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

- 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

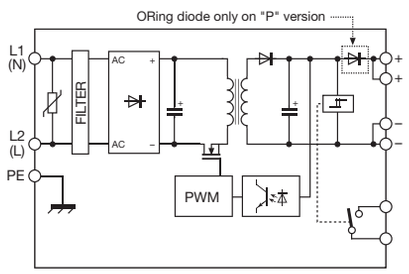
Available from September 2011



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.

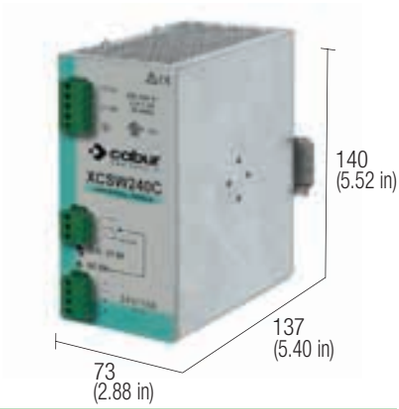
BLOCK DIAGRAM



VERSIONS	Cod. XCSW121C	Cod. XCSW121B	Cod. XCSW121DP	Cod. XCSW121G
Output 24 Vdc 5 A	**CSW121C**			
Output 12…15 Vdc 7 A		**CSW121B**		
Output 48 Vdc 2.5 A redundant version			**CSW121DP (1)**	
Output 72 Vdc 1.5 A redundant version				**CSW121G (1)**
INPUT TECHNICAL DATA				
Input rated voltage	1-2x **230-400-500 Vac** (range 185…550 Vac / 270…725 Vdc) (2)			
Frequency	47...63 Hz			
Current @ Iout max. (Uin 230 / 400 Vac)	1.1 A / 0.55 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 3.15 A			
OUTPUT TECHNICAL DATA				
Output rated voltage	**24 Vdc**	**12…15 Vdc**		
Output adjustable range	24...27.5 Vdc	12…15 Vdc		
Continuous current	**5 A** @ 50°C (3)	**8 A** @ 12 Vdc / **7 A** @ 15 Vdc		
Overload limit	7.5 A for >5 s with Uout >90% Un (4)	10...9 A for >5 s with Uout >90% Un (4)		
Short circuit peak current	15 A for 0.5 s (4)	> 15 A for 0.5 s (4)		
Load regulation	< 1%	< 1%		
Ripple @ nominal ratings	≤ 50 mVpp	≤ 50 mVpp		
Hold up time (Uin 230 / 400 Vac)	>20 ms / >200 ms	>20 ms / >200 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		
Parallel connection	possible	possible		
Redundant parallel connection	possible with external ORing diode	possible with external ORing diode		
GENERAL TECHNICAL DATA				
Efficiency (Uin 230 / 400 Vac)	>86% / >88%	>84% / >86%		
Dissipated power (Uin 230 / 400 Vac)	20 W / 16 W	20 W / 17 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 and stainless steel			
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	—			

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

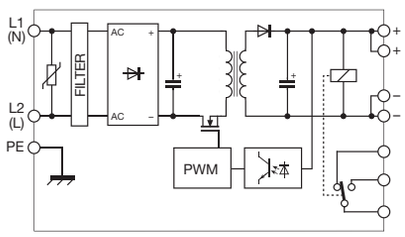
- Both single-phase and two-phase input 185...550 Vac
- High reliability and immunity against over voltage due to failures on AC line
- Short circuit, overload, over temperature, input and output overvoltage protections
- High outrush current to guarantee downstream overcurrent protections selectivity 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



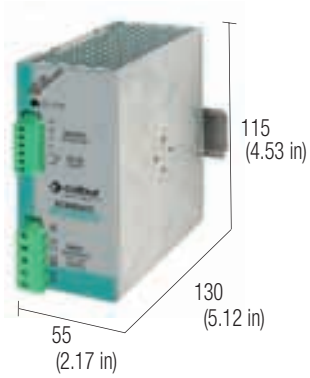
Item available till sell-out, will be replaced by CSW241.. series

VERSIONS	Cod. XCSW240C		Cod. XCSW240B	Cod. XCSW240D
Output 24 Vdc 10 A	**CSW240C**			
Output 24 Vdc 10 A redundant version		–		
Output 12…15 Vdc 16...15 A			**XCSW240B (1)**	
Output 48 Vdc 5 A				**XCSW240D (1)**
INPUT TECHNICAL DATA				
Input rated voltage	1-2x **230-400-500 Vac** (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				
Output rated voltage	**24 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	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 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	**PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB**			
Mounting rail type according to IEC60715/G32	—			

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

- 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

Available from September 2011



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

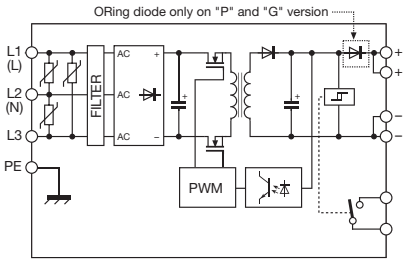
(2) 550 Vdc max for UL508

(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	Cod. XCSW241C	Cod. XCSW241B	Cod. XCSW241DP	Cod. XCSW241G
Output 24 Vdc 10 A	**CSW241C**			
Output 12…15 Vdc 16...15 A		**XCSW241B** (1)		
Output 48 Vdc 5 A redundant version			**CSW241DP** (1)	
Output 72 Vdc 3.3 A redundant version				**CSW241G** (1) (5)
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 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	>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 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	**PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB**			
Mounting rail type according to IEC60715/G32	—			

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.

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

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

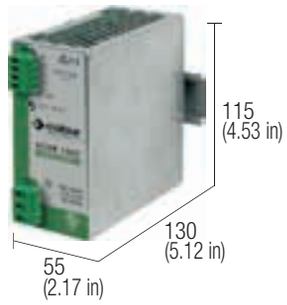
New 48Vdc, 72-85Vdc, and 110-180Vdc models have been introduced, designed to reliably power engines in DC. They:

- 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.

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

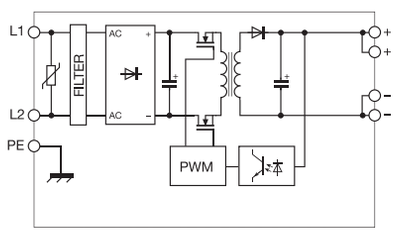
c UL us LISTED E203601

CE

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

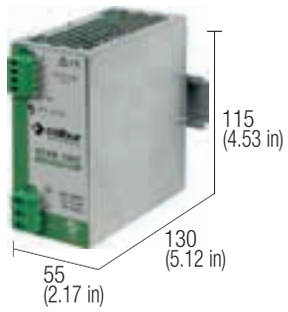


Item available till sell-out, will be replaced by **CSW121C**

VERSIONS	Cod. XCSB85C			
Output 24 Vdc 3.5 A	**CSB85C**			
Output 24 Vdc 3.5 A redundant version		—		
Output 12…15 Vdc 7 A			—	
Output 48 Vdc 1.75 A				—
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



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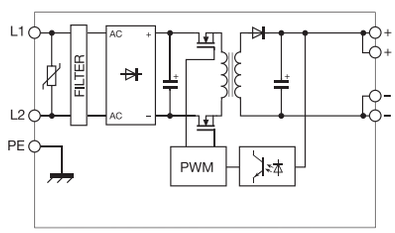
CE

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

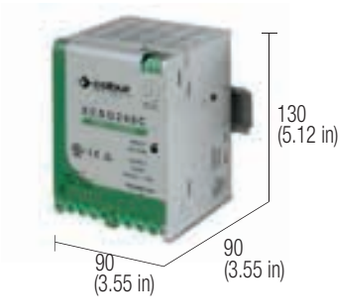


Item available till sell-out, will be replaced by **CSW121C**

VERSIONS	Cod. XCSB150C			
Output 24 Vdc 5 A	**CSB150C**			
Output 24 Vdc 5 A redundant version		—		
Output 12…15 Vdc 8...7 A			—	
Output 48 Vdc 3 A				—
INPUT TECHNICAL DATA				
Input rated voltage	2x **400–500 Vac** (range 340…550 Vac) (2)			
Frequency	47...63 Hz			
Current @ Iout max. (Uin 400 / 500 Vac)	0.7 A / 0.55 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	**6 A @ 50°C (3)**			
Overload limit	9 A for >5 s with Uout >90% Un (4)			
Short circuit peak current	20 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)	>90% / >91%			
Dissipated power (Uin 400 / 500 Vac)	17 W / 15 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	—			

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



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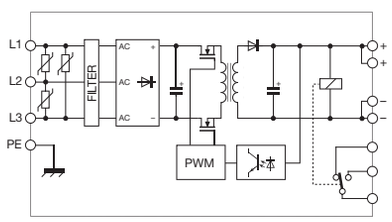
NOTES

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	Cod. XCSG240C			
Output 24 Vdc 10 A	**CSG240C**			
Output 24 Vdc 10 A redundant version		—		
Output 12…15 Vdc 20 A			—	
Output 48 Vdc 5 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)	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	**PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB**			
Mounting rail type according to IEC60715/G32	—			

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)

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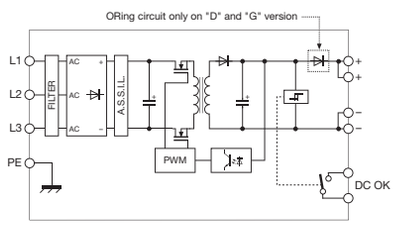
NOTES

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



NEW

	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			
Input rated voltage	3x **400–500 Vac** (range 340…550 Vac)		
Frequency	47...63 Hz		
Current @ Iout max. (Uin 400 / 500 Vac)	1 A / 0.6 A		
Inrush peak current	< 35 A		
Power factor	> 0.75 with PFC		
Internal protection fuse	—		
External protection on AC line	circuit breaker: 3x 6 A C characteristic - fuse: 3x T 3.15 A		
OUTPUT TECHNICAL DATA			
Output rated voltage	**24 Vdc**	**48 Vdc**	**72 Vdc**
Output adjustable range	24...28 Vdc	45…55 Vdc	72…85 Vdc
Continuous current	**20 A** @ 50°C (3)	**10 A** @ 50°C (3)	**6.7 A** @ 50°C (3)
Overload limit	>30 A for >5 s with Uout >90% Un (4)	>15 A for >5 s with Uout >90% Un (4)	10 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)	>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			
Efficiency (Uin 400 / 500 Vac)	>93% / >94%	>93% / >94%	>95% / >95%
Dissipated power (Uin 400 / 500 Vac)	36 W / 30 W	36 W / 30 W	26 W / 26 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	>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 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	**PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB**		
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)

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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.

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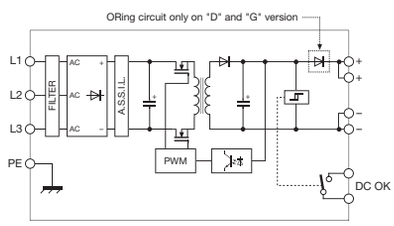

Special version for DC motors

VERSIONS	Cod. XCSG720C			
Output 24 Vdc 30 A	**CSG720C**			
Output 24 Vdc 30 A redundant version		**(1)**		
Output 12…15 Vdc 60 A				
Output 48 Vdc 15 A			**CSG720D (1)**	
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)	1.4 A / 1.1 A			
Inrush peak current	< 30 A			
Power factor	> 0.75			
Internal protection fuse	—			
External protection on AC line	circuit breaker: 3x 10 A C characteristic - fuse: 3x T 5 A			
OUTPUT TECHNICAL DATA				
Output rated voltage	**24 Vdc**		**48 Vdc**	
Output adjustable range	24…28 Vdc		45…55 Vdc	
Continuous current	**30 A** @ 50°C (3)		**15 A** @ 50°C (3)	
Overload limit	45 A for >5 s with Uout >90% Un (4)		22.5 A for >5 s with Uout >90% Un (4)	
Short circuit peak current	>50 A for 1.5 s (4)		>50 A for 1.5 s (4)	
Load regulation	< 1%		< 1%	
Ripple @ nominal ratings	≤ 200 mVpp		≤ 200 mVpp	
Hold up time (Uin 400 / 500 Vac)	>10 ms / >15 ms		>10 ms / >15 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	
Parallel connection	possible		possible	
Redundant parallel connection	possible with external ORing diode		factory provided with internal ORing diod	
GENERAL TECHNICAL DATA				
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, EN61000-4-2, 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	6 mm² 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	**PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB**			
Mounting rail type according to IEC60715/G32	—			

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)

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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

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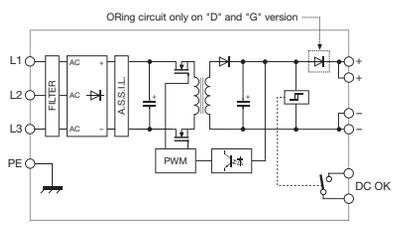
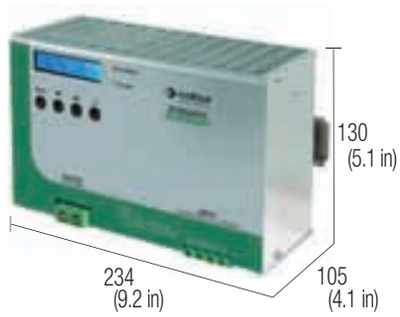


NEW

	Special version for DC motors	Special version for DC motors
VERSIONS	**Cod. XCSG960D**	**Cod. XCSG960G**
Output 24 Vdc 40 A		
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		
Input rated voltage	3x **400–500 Vac** (range 340…550 Vac)	
Frequency	47...63 Hz	
Current @ Iout max. (Uin 400 / 500 Vac)	2.2 A / 1.1 A	
Inrush peak current	< 20 A	
Power factor	> 0.65	
Internal protection fuse	—	
External protection on AC line	circuit breaker: 3x 10 A C characteristic - fuse: 3x T 6.3 A	
OUTPUT TECHNICAL DATA		
Output rated voltage	**48 Vdc**	**72 Vdc**
Output adjustable range	45…55 Vdc	72…85 Vdc
Continuous current	**20 A** @ 50°C (3)	**13.3 A** @ 50°C (3)
Overload limit	30 A for >5 s with Uout >90% Un (4)	18.6 A for >5 s with Uout >90% Un (4)
Short circuit peak current	>80 A for 5 s (4)	>30 A for 5 s (4)
Load regulation	< 1%	< 1%
Ripple @ nominal ratings	≤ 250 mVpp	≤ 100 mVpp
Hold up time (Uin 400 / 500 Vac)	>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	<43.2 Vdc	<21.6 Vdc
Parallel connection	possible	possible
Redundant parallel connection	factory provided with internal ORing diode	factory provided with internal ORing diode
GENERAL TECHNICAL DATA		
Efficiency (Uin 400 / 500 Vac)	>94% / >94%	>92% / >92%
Dissipated power (Uin 400 / 500 Vac)	61 W / 61 W	85 W / 85 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	>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 mm² fixed screw type	
Housing material	aluminium	
Approx. weight	1,2 Kg (70.55 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	—	

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)



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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

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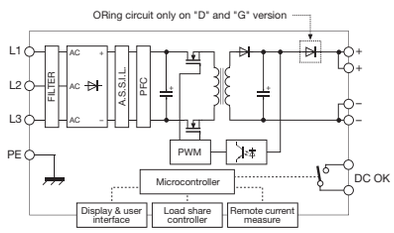


Special version for DC motors

VERSIONS	Cod. XCSG2401C	Cod. XCSG2401D
Output 24 Vdc 40 A	**CSG2401C (6)**	
Output 24 Vdc 40 A redundant version		**CSG2401D (6)**
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**	**48 Vdc**
Output adjustable range	11.5…29 Vdc	23…58 Vdc
Continuous current	**100 A** @ 45°C (3)	**50 A** @ 45°C (3)
Overload limit	150 A for >5 s with Uout >90% Un (4)	75 A for >5 s with Uout >90% Un (4)
Short circuit peak current	>150 A for 5 s (4)	>75 A for 5 s (4)
Load regulation	< 1%	< 1%
Ripple @ nominal ratings	≤ 200 mVpp	≤ 200 mVpp
Hold up time (Uin 400 / 500 Vac)	>10 ms / >10 ms	>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%	>92% / >92%
Dissipated power (Uin 400 / 500 Vac)	200 W / 200 W	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 mm² 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	—	

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.

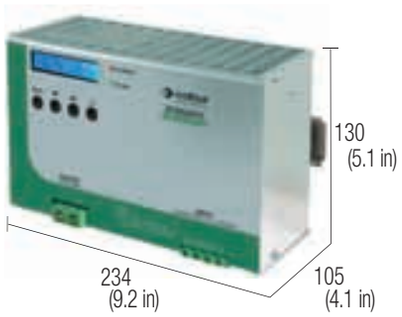
Output protection: limit current can be selected as between 10% and 100% of rated current; protection type against overload and short circuit can be chosen from:
1) hiccup autoreset with limit current, equal to 150% of rated current and ON/OFF time equal to 5 secs./10 secs. (values can be altered manually);
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.

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)



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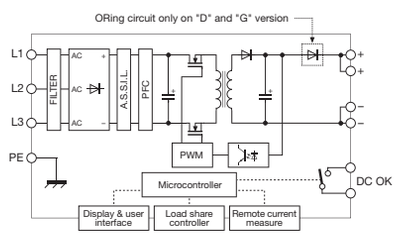
NOTES

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	Cod. XCSG2401G	Cod. XCSG2401R
Uscita 72 Vdc 33 A versione ridondante (5)	**CSG2401G (5) (6)**	
Uscita 170 Vdc 14 A versione ridondante (5)		**CSG2401R (5) (6)**

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	**72 Vdc**	**170 Vdc**
Output adjustable range	34.5…87 Vdc	80…190 Vdc
Continuous current	**33 A** @ 45°C (3)	**14 A** @ 45°C (3)
Overload limit	50 A per >5 s con Uout>90% Un (4)	21 A per >5 s con Uout>90% Un (4)
Short circuit peak current	>50 A per 5 s (4)	>21 A per 5 s (4)
Load regulation	< 1%	< 1%
Ripple @ nominal ratings	≤ 200 mVpp	≤ 200 mVpp
Hold up time (Uin 400 / 500 Vac)	>10 ms / >10 ms	>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 (see on right side)	
Alarm contact threshold	programmable	
Parallel connection	possibile	
Redundant parallel connection	possibile	
GENERAL TECHNICAL DATA		
Efficiency (Uin 400 / 500 Vac)	>92% / >92%	>92% / >92%
Dissipated power (Uin 400 / 500 Vac)	200 W / 200 W	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 and 6 mm² 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	—	

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.

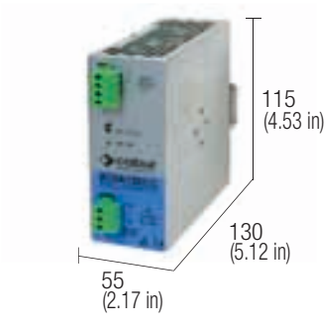
Output protection: limit current can be selected as between 10% and 100% of rated current; protection type against overload and short circuit can be chosen from:
1) hiccup autoreset with limit current, equal to 150% of rated current and ON/OFF time equal to 5 secs./10 secs. (values can be altered manually);
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.

DC/DC Insulated converters output power 120 W

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



CE

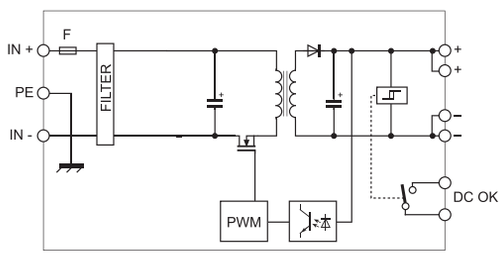
NOTES

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.

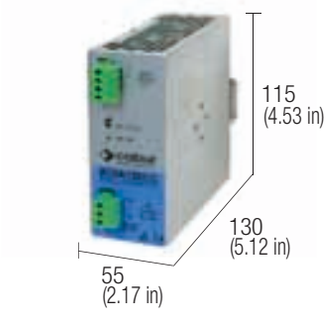
BLOCK DIAGRAM



VERSIONS	Cod. XCSA120BC	Cod. XCSA120BD	Cod. XCSA120CB	Cod. XCSA120CC
12 Vdc / 24 Vdc 5 A	**CSA120BC**			
12 Vdc / 48 Vdc 2.5 A		**CSA120BD**		
24 Vdc / 12 Vdc 7 A			**CSA120CB**	
24 Vdc / 24 Vdc 5 A				**CSA120CC**
INPUT TECHNICAL DATA				
Input rated voltage	**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)
Current @ Iout max.	12 A ±10%	12 A ±10%	5.1 A ±10%	5.8 A ±10%
Inrush peak current	< 60A / < 2ms (1)	< 60A / < 2ms (1)	< 110A / < 2ms (1)	< 90A /< 2ms (1)
Standby power	<1.5 W @ 12 Vdc	<1.5 W @ 12 Vdc	<1 W @ 24 Vdc	<1.5 W @ 24 Vdc
Internal protection fuse	T 20 A replaceable		T 10 A replaceable	
External protection on AC line	≥25 A C characteristic		≥13 A C characteristic	
Overvoltage input protection circuit	Passive varistor and active shutdown at 19 Vdc		Passive varistor and active shutdown at 38 Vdc	
OUTPUT TECHNICAL DATA				
Output rated voltage	**24 Vdc**	**48 Vdc**	**12...15 Vdc**	**24 Vdc**
Output adjustable range	22.5...27.5 Vdc	45…55 Vdc	12...15 Vdc	22.5...27.5 Vdc
Continuous current	**5 A** @ 24 Vdc	**2.5 A** @ 48 Vdc	**7 A** @ 12 Vdc	**5 A** @ 24 Vdc
Overload limit	6.5 A	3.4 A	9.1 A	6.5 A
Short circuit peak current	12 A for 300 ms	5.8 A for 300 ms	15 A for 300 ms	12 A for 300 ms
Load regulation	<0.5%		<0.5%	<0.5%
Ripple @ nominal ratings	≤ 100 mVpp		≤ 100 mVpp	≤ 150 mVpp
Hold up time @ In	>1 ms		>2 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 110 Vdc)	> 83%	> 83%	>87%	>87%
Dissipated power (Uin 110 Vdc)	<25 W	<25 W	<16 W	<18 W
Operating temperature range	–20...+50°C			
Input/output isolation	2.1 kVdc / 60s (2)			
Input/ground isolation	1.41 kVdc / 60s (2)			
Output/ground isolation	0.75 kVdc / 60s (2)			
Standard/approvals	IEC950, EN60950			
EMC Standards	EN50081-1, EN50082-2, EN61000-3-2			
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 IEC 529, EN60529			
Connection terminal	2.5 mm² pluggable screw type			
Housing material	aluminium			
Approx. weight	550 g (19.40 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	—			

DC/DC Insulated converters output power 120 W

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



CE

NOTES

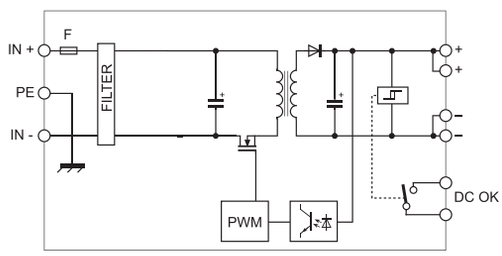
The depth dimension includes the terminal blocks and the DIN clamp.

(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

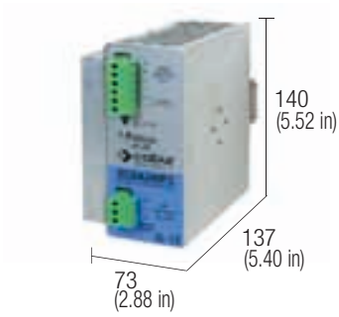


VERSIONS	Cod. XCSA120DB	Cod. XCSA120DC		
48 Vdc / 12 Vdc 8 A	**CSA120DB**			
48 Vdc / 24 Vdc 5 A		**CSA120DC**		
INPUT TECHNICAL DATA				
Input rated voltage	**48 Vdc** (range 36…72 Vdc)	**48 Vdc** (range 36…72 Vdc)		
Current @ Iout max.	2.8 A ±10%	2.8 A ±10%		
Inrush peak current	< 120A / < 2ms (1)	< 120A / < 2ms (1)		
Standby power	<2 W @ 48 Vdc	<2 W @ 48 Vdc		
Internal protection fuse	T 5 A replaceable			
External protection on AC line	≥6 A C characteristic			
Overvoltage input protection circuit	Passive varistor and active shutdown at 76 Vdc			
OUTPUT TECHNICAL DATA				
Output rated voltage	**12...15 Vdc**	**24 Vdc**		
Output adjustable range	12...15 Vdc	22.5...27.5 Vdc		
Continuous current	8 A @ 12 Vdc	5A @ 24 Vdc		
Overload limit	12 A	6.5 A		
Short circuit peak current	18 A per 300 ms	13 A per 300 ms		
Load regulation	<0.5%	<0.5%		
Ripple @ nominal ratings	≤ 100 mVpp	≤ 200 mVpp		
Hold up time @ In	2 ms	4.5 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 110 Vdc)	>89%	>90%		
Dissipated power (Uin 110 Vdc)	<17 W	<13 W		
Operating temperature range	–20...+60°C, with derating over 50°C			
Input/output isolation	2.1 kVdc / 60s (2)			
Input/ground isolation	1.41 kVdc / 60s (2)			
Output/ground isolation	0.75 kVdc / 60s (2)			
Standard/approvals	IEC950, EN60950			
EMC Standards	EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-5-5, 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	550 g (19.40 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	—			

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

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

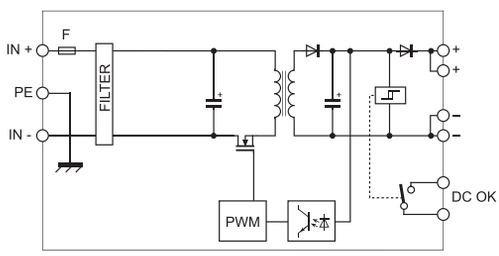


CE

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	Cod. XCSA240FC			
110 Vdc / 24 Vdc 10 A	—			
110 Vdc / 24 Vdc 10 A ridondante		**CSA240FC**		

INPUT TECHNICAL DATA				
Input rated voltage		**110 Vdc** (range 90…130 Vdc)		
Current @ Iout max.		2.4 A ±10%		
Inrush peak current		< 150A / < 2ms (1)		
Standby power		<3.4 W @ 110 Vdc		
Internal protection fuse		T 5 A replaceable		
External protection on AC line		≥6 A C characteristic		
Overvoltage input protection circuit		Passive varistor and active shutdown at 136 Vdc		

OUTPUT TECHNICAL DATA				
Output rated voltage		**24 Vdc**		
Output adjustable range		22.7…27 Vdc		
Continuous current		**10 A @ 50°C (2)**		
Overload limit		15 A		
Short circuit peak current		21 A for 300 ms		
Load regulation		<1.5%		
Ripple @ nominal ratings		≤ 100 mVpp		
Hold up time @ In (Uin 110 Vdc)		>4 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		—		
Parallel connection		possible		
Redundant parallel connection		factory provided with internal ORing diode		

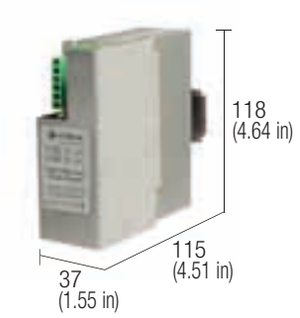
GENERAL TECHNICAL DATA				
Efficiency (Uin 110 Vdc)		>89%		
Dissipated power (Uin 110 Vdc)		<28 W		
Operating temperature range		–20...+60°C, with derating over 50°C (2)		
Input/output isolation		2.1 kVdc / 60s (3)		
Input/ground isolation		1.41 kVdc / 60s (3)		
Output/ground isolation		0.75 kVdc / 60s (3)		
Standard/approvals		IEC950, EN60950		
EMC Standards		EN61000-6-2, EN61000-6-4, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-5-5, 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		800 g (28.24 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 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



CE

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

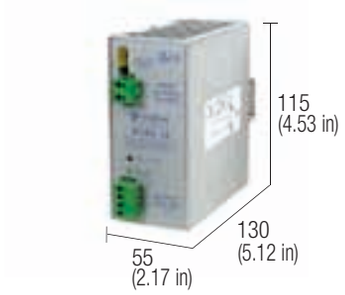
VERSIONS	Cod. XCSE3	Cod. XCSE5
Output 24 Vdc 3 A	**CSE3**	
Output 24 Vdc 5 A		**CSE5**
INPUT TECHNICAL DATA		
Input rated voltage	**24 Vac** (range 24…28 Vac)	
Frequency	50...60 Hz	
Current @ Iout max.	4 A	5 A
Internal protection fuse	T 8 A replaceable	
External protection on AC line	circuit breaker: 10 A C characteristic - fuse: T 10 A	
OUTPUT TECHNICAL DATA		
Output rated voltage	**24 Vdc**	**24 Vdc**
Output adjustable range	23…25 Vdc	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%	>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	**PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB**	
Mounting rail type according to IEC60715/G32	—	

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.

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



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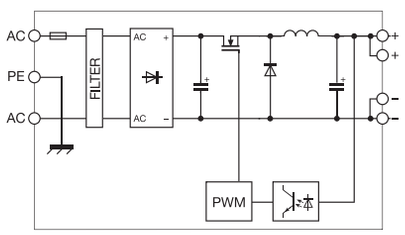
NOTES

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



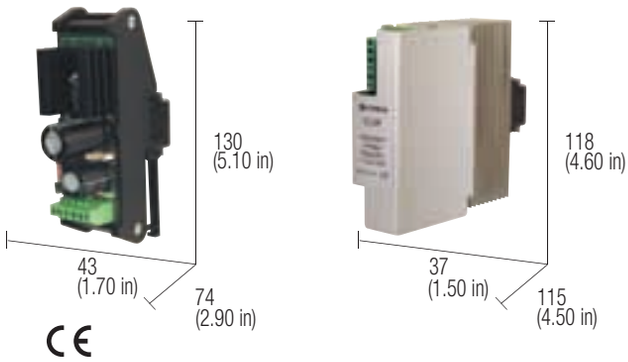
VERSIONS	Cod. XCSE10
Output 24 Vdc 10 A	**CSE10**
INPUT TECHNICAL DATA	
Input rated voltage	**24 Vac** (range 21…30 Vac)
Frequency	50...60 Hz
Current @ Iout max.	12 A
Internal protection fuse	T 20 A replaceable
External protection on AC line	circuit breaker: 25 A C characteristic - fuse: T 25 A
OUTPUT TECHNICAL DATA	
Output rated voltage	**24 Vdc**
Output adjustable range	22…26.5 Vdc
Continuous current	**10 A** @ 25°C (1)
Overload limit	12 A
Short circuit peak current	—
Load regulation	< 1%
Ripple @ nominal ratings	< 200 mVpp
Hold up time @ In	>10 ms
Overload / short circuit protections	hiccup at the overload limit with 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 (Uin 110 Vdc)	>90%
Dissipated power (Uin 110 Vdc)	< 26 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	600 g (21.16 oz)
Mounting information	vertical on rail, allow 20 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	—

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.

Adjustable linear power supply input 24 Vac

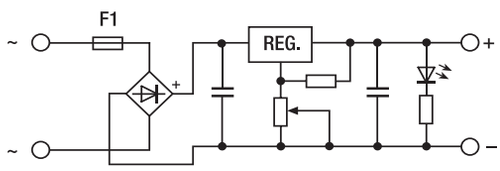
- Adjustable output voltage 1.2...24 Vdc
- Output current 1.5 and 5 A
- Short circuit, overload, over temperature protection



NOTES

The depth dimension includes the terminal blocks and the DIN clamp.
(1) See “Applications”

BLOCK DIAGRAM



VERSIONS	Cod. XCL1R	Cod. XCL5R
Output 1.2 A	**CL1R**	
Output 5 A		**CL5R**
INPUT TECHNICAL DATA		
Input rated voltage	**9…26 Vac** (see Tab. 1)	
Frequency	50...60 Hz	
Current @ Iout max.	2,5 A	6 A
Internal protection fuse	T 3 A replaceable	T 10 A replaceable
External protection on AC line	MCB: 4 A C characteristic - fuse T 4 A	MCB: 10 A C characteristic - fusibile T 10 A
OUTPUT TECHNICAL DATA		
Output rated voltage	**1.2...24 Vdc**	**1.2...24 Vdc**
Output adjustable range	(see Tab. 1 and Tab. 2)	(see Tab. 1 and Tab. 2)
Continuous current	**0.3...1.5 A** (see Tab. 2)	**0.8...5 A** (see Tab. 2)
Overload limit	—	—
Load regulation	< 1%	
Ripple @ nominal ratings	< 50 mVpp @ 24 Vac	
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	
GENERAL TECHNICAL DATA		
Operating temperature range	–20...+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	
EMC Standards	EN50081-1, EN61000-6-4	
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	aluminium
Approx. weight	120 g (4.23 oz)	350 g (12.35 oz)
Mounting information	vertical on rail, allow 20 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	**PR/DIN/AC, PR/DIN/AS, PR/DIN/AL**	—

APPLICATIONS

The CL-R linear reguated 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 indicted 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.

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

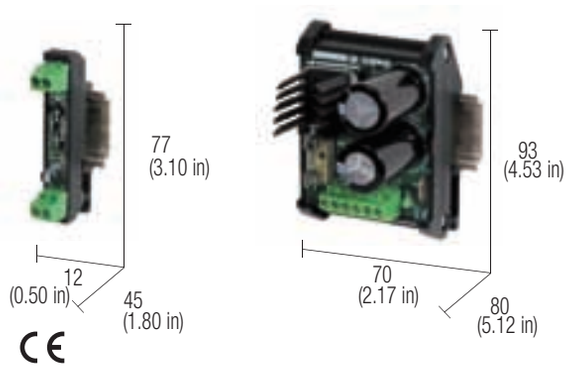
Tab. 1 (see explanation on right side)

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

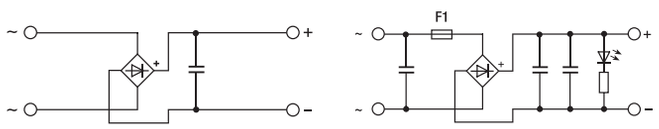
- DIN rail mounting
- Suitable for rectifying 6 Vac to 20 Vac
- V output = Vac input x 1.41 (-1V)



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	Cod. XAR1	Cod. XAR2
Output 1 A	**AR1**	
Output 6 A		**AR6**
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 - fusibilie T 10 A
OUTPUT TECHNICAL DATA		
Output voltage (without load)	Uout = (Uin x 1.41) (3)	
Output voltage (full load)	Uout = (Uin x 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	**PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB**	
Mounting rail type according to IEC60715/G32	**PR/DIN/AC, PR/DIN/AS, PR/DIN/AL**	

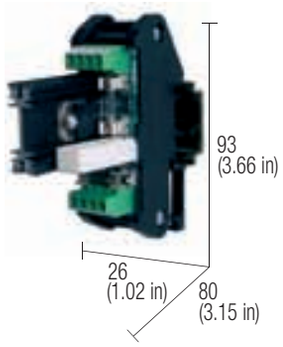
APPLICATIONS

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.**

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



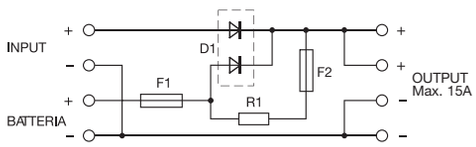
NOTES

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
	CSBC
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 mm² fixed screw type
Housing material	UL94V-0 plastic material
Approx. weight	80 g (2.82 oz)
Mounting information	vertical on rail, adjacent
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	**PR/DIN/AC, PR/DIN/AS, PR/DIN/AL**

APPLICATIONS

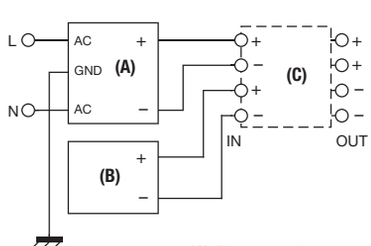
1. Battery charger

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

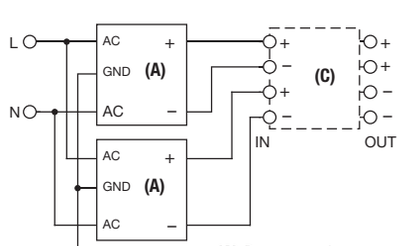
It is possible to use this module also to connect two power supplies in parallel, not provided with output decoupling diode, eliminating "Fuse 2" in series to charging current limiting resistor.
The next picture shows the connections.

1. Battery charger



(A) Power supply
(B) Battery
(C) CSBC

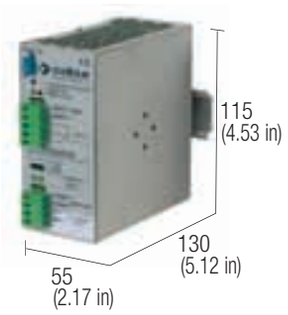
2. Parallel connection of power supplies



(A) Power supply
(C) CSBC

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



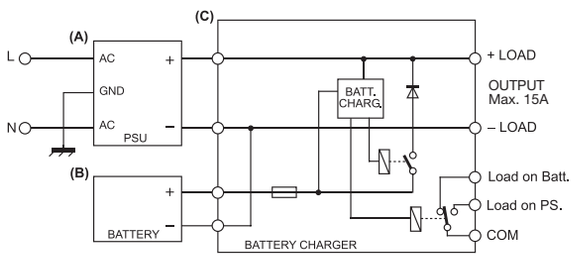
CE

NOTES

The depth dimension includes the DIN rail clamp.

BLOCK DIAGRAM

(A) = Power Supply
(B) = Battery
(C) = CS-UPS



VERSIONS

	Cod. XCSUPS1	Cod. XCSUPS2
Output 24 Vdc	**CS-UPS1**	
Output 12 Vdc		**CS-UPS2**

GENERAL TECHNICAL DATA

Power supply input voltage		26...28.5 Vdc	12...15 Vdc
Power supply rated current		≥ 3 A	≥ 3 A
Load rated voltage		**26...28 Vdc**	**10...15 Vdc**
Max load current		**15 A**	**15 A**
Charging current		selectable 2 A or 4 A	selectable 2 A or 4 A
Battery disconnection voltage		≤ 18 Vdc ±0.5V	≤ 9.2 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:	SPDT 24 V / 1 A	
	Battery OK	green LED	
	Battery LOW	red LED	
	Load OK	yellow LED	
	Battery reverse polarity	green LED	
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 mm² 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	**PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB**
Mounting rail type according to IEC60715/G32	—

APPLICATIONS

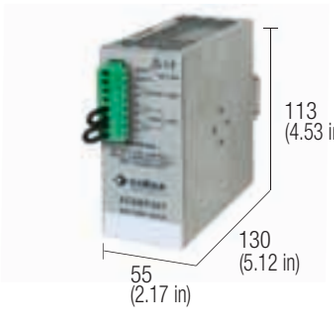
All power supplies with adjustable output voltage to +15% of rated voltage can be used as lead battery chargers, suitable to be used as back up supply in case of AC line breakdown.
The CS-UPS-1 circuit regulate the current charging the battery, and it is possible to set it up to 2A or 4A charging current ; CS- UPS1 disconnects the load form 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 in case of short circuit. The module is provided with the following leds diplay:
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.

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

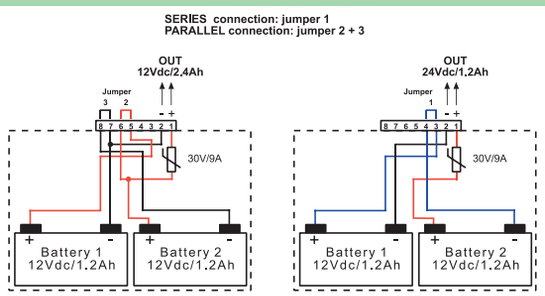


CE

NOTES

The depth dimension includes the terminal blocks and the DIN rail clamp.
(1) Into XCSBP30Y are necessary two batteries 8911012

BLOCK DIAGRAM



VERSIONS

Batteries holder module (empty)	**CSBP30Y**	**Cod. XCSBP30Y**
Battery (1)	**BAT12V1,2AH**	**Cod. 8911012**

GENERAL TECHNICAL DATA

Batteries type	2 sealed batteries 12 Vdc 1.2 Ah	
Internal protection fuse	15 A	
Setup type	**parallel**	**series**
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 mm² 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	**PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB**
Mounting rail type according to IEC60715/G32	—

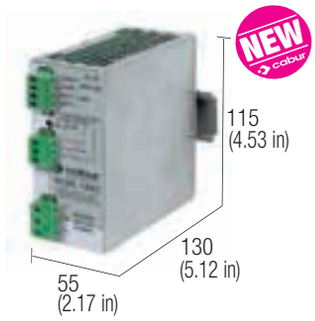
APPLICATIONS

Example 1:
XCSC120C + XCSBP30Y

Example 2:
XCSF120C + XCSUPS1 + XCSBP30Y

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

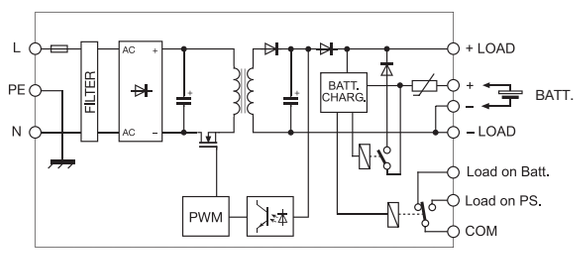


CE

NOTES

The depth dimension includes the terminal blocks and the DIN clamp.
(2) With 100...127 Vdc input voltage, constant output power and Ta>45°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°C (122°F) apply a derating -0.13 A/°C, max 60°C

BLOCK DIAGRAM



VERSIONS	Cod. XCSC120B	Cod. XCSC120C
Output 12 Vdc 5 A	**CSC120B**	
Output 24 Vdc 5 A		**CSC120C**

APPLICATIONS

INPUT TECHNICAL DATA	
Input rated voltage	**120–230 Vac** (range 90…264 Vac / 100…370 Vdc) (2)
Frequency	47...63 Hz
Current @ nominal Iout (Uin 120 /230 Vac)	2.0 A / 1.1 A ± 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

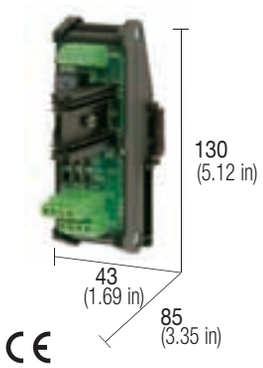
OUTPUT TECHNICAL DATA		
Output voltage with operating power supply	**12.5…15.5 Vdc**	**23…27.5 Vdc**
Output voltage with batteries	12…14.4 Vdc	24…26.2 Vdc
Continuous current	**7 A** @ 50°C (3)	**5 A** @ 50°C (3)
Overload limit	>11 A for >30 s	>8 A for >30 s
Short circuit peak current	>18 A for >50 ms	>12 A for >50 ms
Load regulation	< 1%	< 1%
Ripple @ nominal ratings	80 mVpp	80 mVpp
Hold up time @ In (Uin 120 / 230 Vac)	>24 ms / >80 ms	>17 ms / >72 ms
Overload / short circuit protections	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	
Alarm signals	"PSU OK" green LED / failure contact / "BATTERY" red LED	
Max. charging current	0.8 A (suitable for sealed lead batteries up to 15 Ah)	

GENERAL TECHNICAL DATA		
Efficiency (Uin 120 / 230 Vac)	>86% / >90%	>90%
Dissipated power (Uin 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 mm² 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	**PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB**
Mounting rail type according to IEC60715/G32	**–**

Accessory for power supplies redundant parallel connections

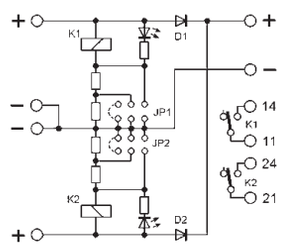
- Suitable for power supplies without Oring diodes
- Compact dimensions
- Three selectanle voltages 12, 24 and 48 Vdc
- 2 status/relays contacts
- Power supplied status LED



NOTES

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

BLOCK DIAGRAM



VERSIONS	Cod. XCSBD
	CSBD

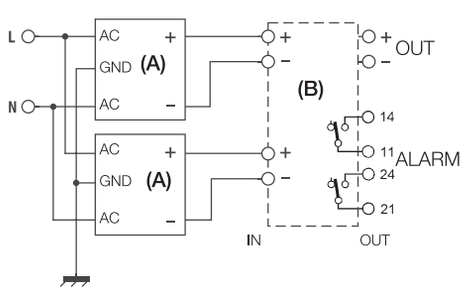
GENERAL TECHNICAL DATA	
Power supply rated voltage	**12–24–48 Vdc** selectable
Power supply rated current	15 A, max 30 A
Load rated voltage	**12–24–48 Vdc** selectable
Load max current	15 A
IN/OUT drop voltage	0.7 V @ 15 A
Protections	—
Alarm signal	2 contacts NA 2A @ 230 Vac
Operating temperature range	–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 mm² 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	**PR/3/AC, PR/3/AC/ZB, PR/3/AS, PR/3/AS/ZB**
Mounting rail type according to IEC60715/G32	**PR/DIN/AC, PR/DIN/AS, PR/DIN/AL**

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.

Block diagram



(A) Power supply
(B) CSBD

MBC2K
Motor brake controller

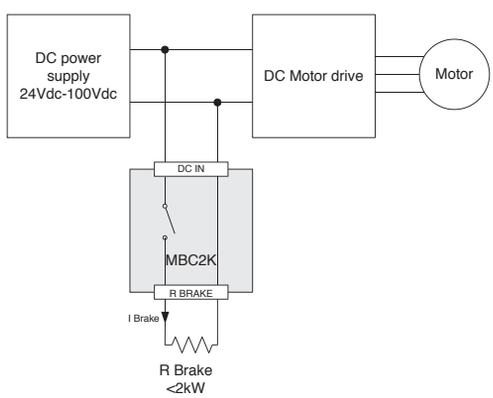
The **MBC2K** is a device controlled by a microprocessor, that can automatically insert a power resistor into the DC BUS for braking a motor fed by the same DC Bus through a motor drive. The function of the MBC2K is to dissipate the energy delivered by the motor in an external resistor thus damping the 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:
a) Brake intervention threshold (VTH) setup
b) Hysteresis around the brake intervention threshold voltage
c) 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



1. SET/RESET button: used to reset the protections and to change setup values in setup mode.
2. MENU button: used to enter into setup mode and to navigate through menu pages.
3. Synchronization bus connector: used to parallel up to 4 units.
4. Resistor temperature sensor connector: used to connect an optional brake resistor temperature sensor.
5. Alarm dry contact connector: an SPDT contact provide remote failure signal.
6. Brake resistor connector: used to connect the brake resistor wires 2.5mm²
7. DC Bus connector: used to connect the MBC2K unit to the power supply Bus (24….100Vdc).
8. Protective earth (PE) connection: to connect the module to the protective earth.
9. 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.
10. Brake indicator LED: used to display braking activity; when lit it means that there is a current flow through the brake resistor.
11. 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.
12. Alarm LED: used to indicate a fault condition of the unit.

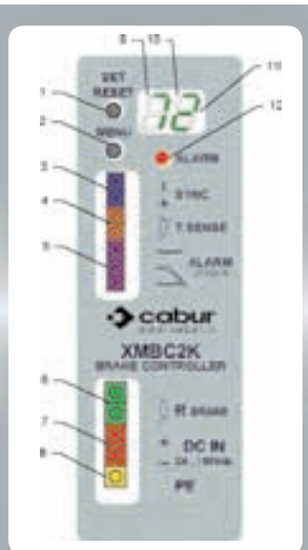
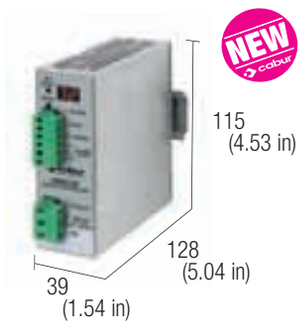


Figure 2: MBC2K Front View

Motor brake controller

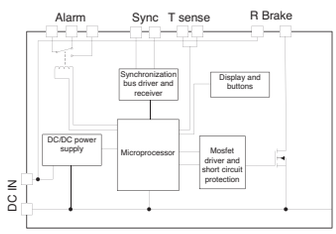
- 20 threshold levels with automatic activation
- Each module can drive 2kW bracking power
- It is possible to connect up to four modules master/slave to get 8kW total braking power
- Symple functions programming and set up
- Control of the temperature of the braking resistor



NOTES

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

BLOCK DIAGRAM



VERSIONS	Cod. XMBC2K
	MBC2K

INPUT TECHNICAL DATA	
Nominal DC BUS voltage range	**24…100 Vdc**
Maximum braking current	50 A for 1 s
Brake activation voltage	**27….106 V, threshold adjustable in 20 steps**
Brake voltage hysteresis	3 V o 6 V selectable
User interface	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
Protections	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
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	**20 W**
Operating temperature range	0...+70°C
Input/output isolation	—
Input/ground isolation	500 Vac / 60s
Output/ground isolation	—
Standard/approvals	IEC950, EN60950 for SELV use up to 60Vdc; using the MBC2K at voltages greater than 60Vdc is not classifiable as SELV
EMC Standards	EN55011 Class B
Overvoltage category/Pollution degree	I / 2
Protection degree	IP 20 IEC 529, EN60529
Connection terminal	1.5 and 2.5 mm² pluggable screw type
Housing material	aluminium
Approx. weight	200 g
Mounting information	vertical on rail, allow 10 mm spacing between adjacent components
Approx. weight	120 g
Mounting information	vertical on rail, adjacent

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	—

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

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