

CP-S.1 24/3.0; CP-S.1 24/5.0; CP-S.1 24/10.0; CP-S.1 24/20.0; CP-S.1 24/40.0

Primary switch mode power supplies CP-S.1 range



Doc.no. 1SVC 320 360 M0000 A (09/21)

it	Attenzione: Tensione pericolosa! Fare riferimento alle istruzioni per l'uso. Prima di intervenire su questo dispositivo, scollegare e isolare tutte le fonti di alimentazione. Attenzione! L'installazione deve essere eseguita esclusivamente da un installatore qualificato.
ar	تحذیر: جهد كهربائي خطرا! راجع تعليمات التشغيل. افصل الكهرباء وقم بتأمينها قبل العمل في هذا الجهاز تنبيه! يجب عدم التركيب إلا من خلال شخص على دراية بمجال التقنية الكهربائية .
bg	Brīdinājums: Bīstams spriegums! Skatiet darba norādījumus. Pirms sākat darbu ar šo ierīci, atvienojiet un bloķējiet strāvas padevi. Uzmanību! Uzstādīšanu drīkst veikt tikai persona ar zināšanām par elektrotehniku.
cs	Waarschuwing: Gevaarlijke spanning! Raadpleeg de installatie-instructies. Koppel dit apparaat los van de stroomvoorziening voordat u werkzaamheden uitvoert. Let op! Installatie mag alleen worden uitgevoerd door een monteur met elektrotechnische expertise.
da	Advarsel: Farlig spænding! Se installationsinstruktioner. Frakobl enheden, og afbryd strømforsyningen, før du arbejder med denne enhed. Giv agt! Installation må kun foretages af personer med elektroteknisk ekspertise.
de	Ostrzeżenie: Niebezpieczne napięcie! Patrz: instrukcja instalacji. Przed rozpoczęciem wykonywania pracy z tym urządzeniem odłącz i zablokuj zasilanie. Uwaga! Montaż może wykonywać wyłącznie osoba posiadająca doświadczenie elektrotechniczne.
el	Aviso: Tensão perigosa! Consulte as instruções de instalação. Desconecte e desligue a energia elétrica antes de trabalhar nesse dispositivo. Atenção! A instalação deve ser feita apenas por uma pessoa com especialidade eletrotécnica.
en	Avertisment: Tensiune electrică periculoasă! Consultați instrucțiunile de utilizare. Deconectați și închideți sursa de energie înainte de a lucra cu acest dispozitiv. Atenție! Instalarea trebuie realizată doar de către o persoană cu expertiză electrotehnică.
es	Предупреждение: Опасное электрическое напряжение! Обратитесь к инструкциям по монтажу. Отключите электропитание и обеспечьте безопасность перед началом работ. Внимание! Монтаж должен выполняться только специалистом по электротехническим работам.
et	Výstraha: Nebezpečné napätie! Pozrite si návod na použitie. Pred začatím prác na tomto zariadení odpojte a zablokujte napájanie. Pozor! Inštaláciu smie vykonávať len osoba s odbornými znalosťami v oblasti elektrotechniky.
fi	Opozorilo: Nevarna napetost! Glejte navodila za uporabo. Pred delom na tej napravi izklopite in zaklenite električno napajanje. Pozor! Namestitvev sme izvesti samo elektrotehnični strokovnjak.
fr	Varning: Livsfarlig spänning! Se i bruksanvisningen. Frånkoppla och blockera anläggning eller en anläggningsdel innan arbete utförs. Obs! Får endast installeras av behörig elektriker.
hr	Uyarı: Tehlikeli gerilim! Montaj talimatlarına bakın. Bu cihaz üzerinde çalışmadan önce elektriği kesin ve kilitleyin. Dikkat! Yalnızca elektroteknik uzmanlığına sahip kişiler tarafından kurulabilir.
hu	Figyelmeztetés: Veszélyes feszültség! Lásd a használati utasítást. Válassza le és zárja ki az áramellátást, mielőtt a berendezésen dolgozni kezd. Figyelem! Az üzembe helyezés csak elektrotechnikai szakértelemmel rendelkező személy végezheti el.
zh	警告：高压危险！请参见操作手册。操作本设备前请断开并锁定电源。注意！安装仅限专业电工人员。

INSTALLATION INSTRUCTIONS

CP-S.1 24/3.0; CP-S.1 24/5.0; CP-S.1 24/10.0; CP-S.1 24/20.0; CP-S.1 24/40.0

Primary switch mode power supplies CP-S.1 range

Note: These instructions cannot claim to contain all detailed information of all types of this product range and can even not consider every possible application of the products. All statements serve exclusively to describe the product and have not to be understood as contractually agreed characteristics. Further information and data is obtainable from the catalogues and data sheets of this product, from the local ABB sales organisations as well as on the ABB homepage www.abb.com. Subject to change without prior notice.

Additional information relating to cULus / ANSI-ISA 12.12 approval:

Units with the Class I, Div. 2 marking on the safety label are suitable for use in Class I, Division 2, Groups A, B, C, D or non-hazardous locations only. The units are Open Type Power Supplies, which need to be mounted in a fire, mechanically and electrically safe enclosure.

WARNING - EXPLOSION HAZARD - Substitution of components may impair suitability for Class I, Division 2.

WARNING - EXPLOSION HAZARD - Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.

WARNING - Exposure to some chemicals may degrade the sealing properties of materials used in the sealed relays.

Units are for indoor use only.

Units can be used up to an altitude of max 2000 m.

Units are for "overvoltage category II" (mains supply).

Use in controlled environment.

Surrounding air temperature: See characteristic curves of temperature.

The normal mounting orientation is DIN-rail vertical (standard mounting orientation: Input (pri) aligned on bottom; Output (sec) on top side).

Information complémentaire relative à la certification cULus / ANSI-ISA 12.12:

Les unités avec le marquage Class I, Div. 2 sur l'étiquette de sécurité sont adaptées à une utilisation selon la Classe I, Division 2, Groupes A, B, C, D ou environnements non dangereux seulement.

Les boîtiers des sources d'alimentation sont de type ouvert, qui doivent être montés dans un coffret offrant une protection mécanique, électrique et incendie.

AVERTISSEMENT - RISQUE D'EXPLOSION - La substitution de composants peut nuire à la conformité Classe I, Division 2

AVERTISSEMENT - RISQUE D'EXPLOSION - Ne pas débrancher un composant avant d'avoir coupé l'alimentation ou d'être en présence d'une zone non dangereuse.

AVERTISSEMENT - L'exposition à certains produits chimiques peuvent dégrader les propriétés d'étanchéité des matériaux utilisés par les relais scellés.

Les unités sont pour un usage intérieur.


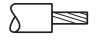

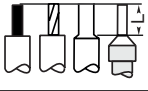
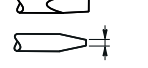
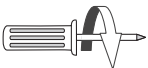
Les unités peuvent être utilisées jusqu'à une altitude maximale de 2000 m.

Les unités sont pour "la catégorie de surtension II" (alimentation principale).

Utilisation en milieu contrôlé.

Température ambiante: Voir les courbes caractéristiques de température.

La position normale de montage est verticale sur profilé DIN (orientation de montage standard: Entrée (pri) au-dessous, sortie (sec) au-dessus).

	CP-S.1 24/3.0	CP-S.1 24/5.0 CP-S.1 24/10.0 CP-S.1 24/20.0	CP-S.1 24/40.0	Relay 13-14
 1x	0.5 ... 2.5 mm ² 20 ... 14 AWG	0.5 ... 4.0 mm ² 20 ... 12 AWG	0.5 ... 10.0 mm ² 20 ... 8 AWG	0.15 ... 0.8 mm ² 26 ... 18 AWG
 1x	0.5 ... 2.5 mm ² 20 ... 14 AWG	0.5 ... 4.0 mm ² 20 ... 12 AWG	0.5 ... 10.0 mm ² 20 ... 8 AWG	0.15 ... 0.8 mm ² 26 ... 18 AWG
 1x	0.5 ... 2.5 mm ² 20 ... 14 AWG	0.5 ... 4.0 mm ² 20 ... 12 AWG	0.5 ... 10.0 mm ² 20 ... 8 AWG	0.15 ... 0.8 mm ² 26 ... 18 AWG
	9 mm	9 mm	10 mm	7 mm
	PH0 Ø 3.5 x 0.6 mm	PH1 Ø 4.0 x 0.8 mm	PH2 Ø 5.5 x 1.0 mm	
	0.5 Nm (4.43 lb.in)	L, N, PE: 0.5 Nm (4.43 lb.in) L+, L-: 1.13 Nm (10 lb.in)	1.47 Nm (13 lb.in)	





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Surrounding air temperature:

-25 °C to +70 °C operational

+60 °C to +70 °C derating see table on page 8

LEDs + signaling outputs

Output voltage U _{out}	OUTPUT OK: LED green	Relay 13-14
> 92 % of U _{out}		closed 
< 90 % of U _{out}		open 

For surrounding temperature ≤ 60 °C:

use 75 °C - copper wire only

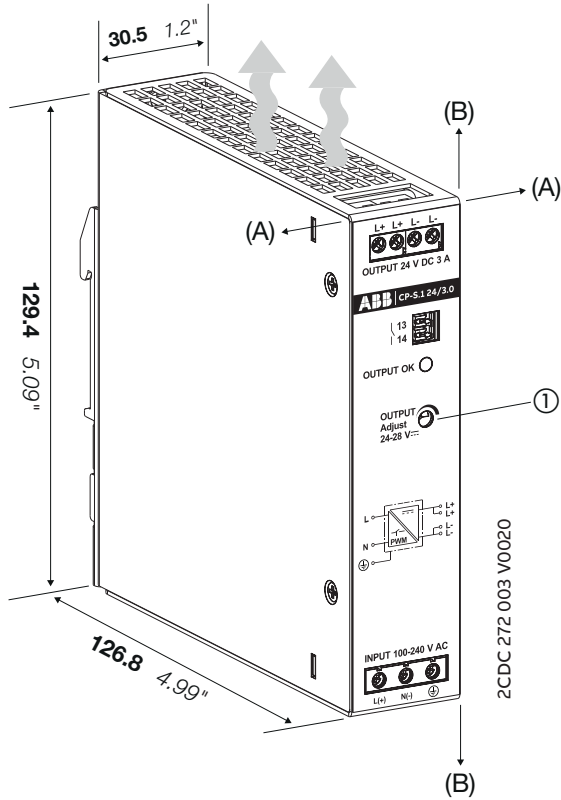
For surrounding temperature > 60 °C up to 70 °C:

use 90 °C - copper wire only

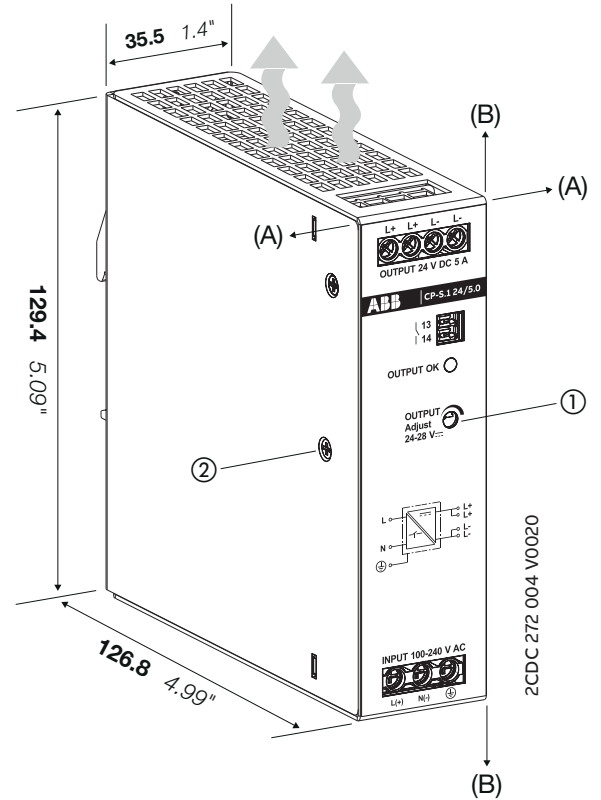
Use only wires with a minimum dielectric strength of 300 V (input) and 30 V (output).

Fig. I Illustrations of the products

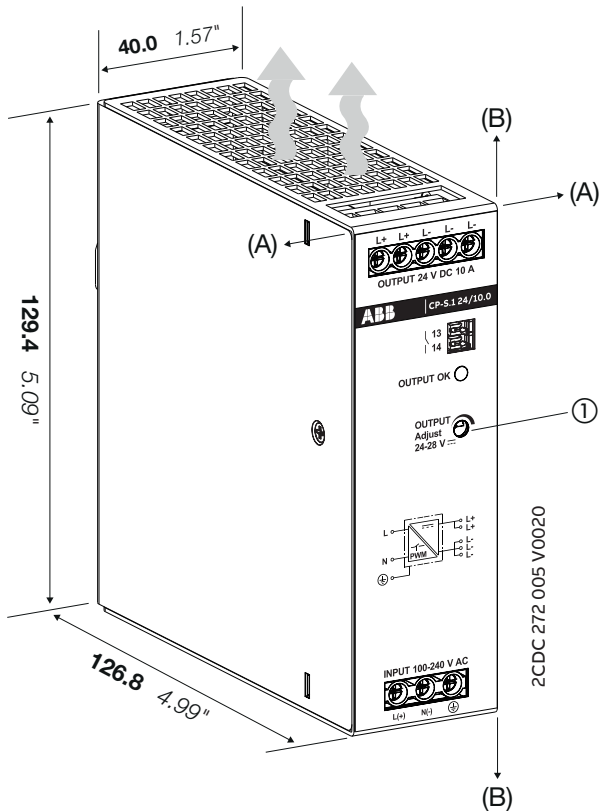
CP-S.1 24/3.0



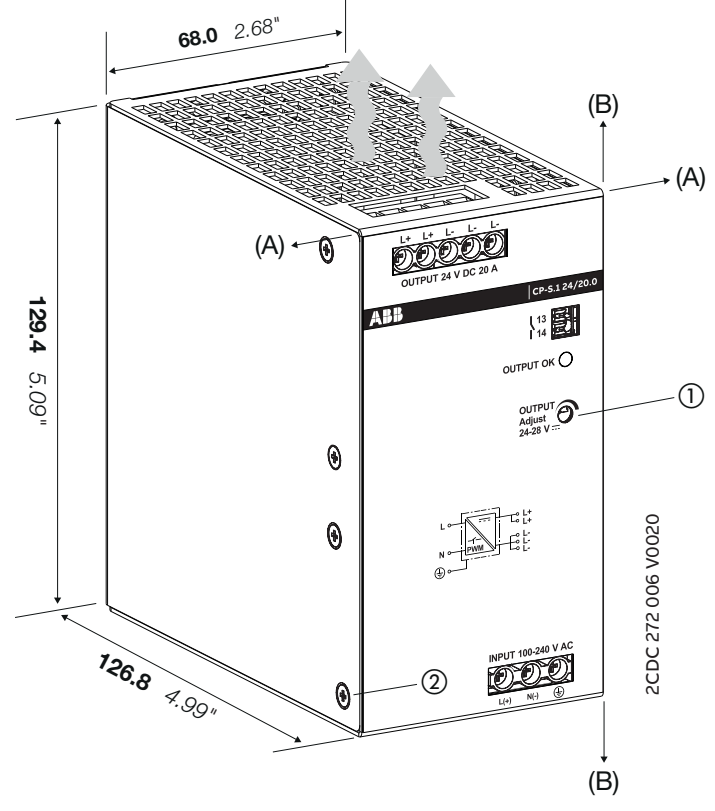
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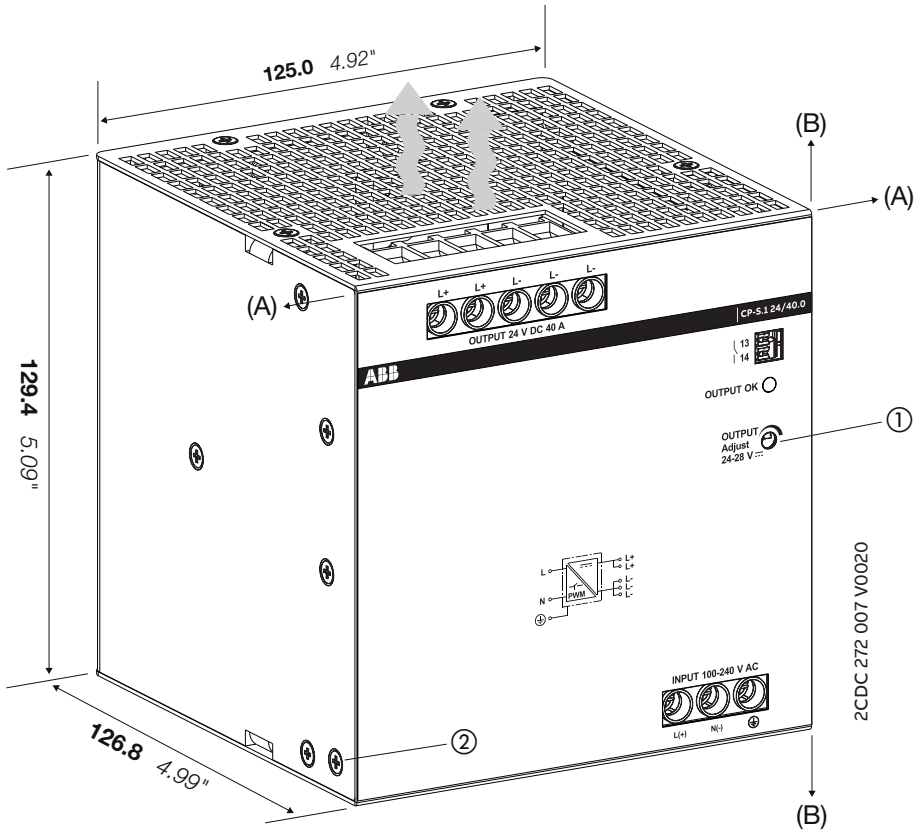


CP-S.1 24/10.0



CP-S.1 24/20.0





Minimum distances to other units

- (A) = 30 mm (1.18 in)
- (B) = 50 mm (1.97 in)

①

Potentiometer for the adjustment of the output voltage

②

Warning!

For high-voltage (dielectric) test of 120 W, 480 W and 960 W variant, if applicable:

Disconnect gas discharge tube by removing screw ②. Keep screw in safe place and perform dielectric strength test on the unit. After performing the test, attach the original gas discharge tube screw back on the power supply. Do not attempt to remove other screws!

For further information refer to the technical data sheet.

Danger! Risk of electric shock!
Do not remove screw during operation. Use only the screw originally supplied with the unit.

Fig. II

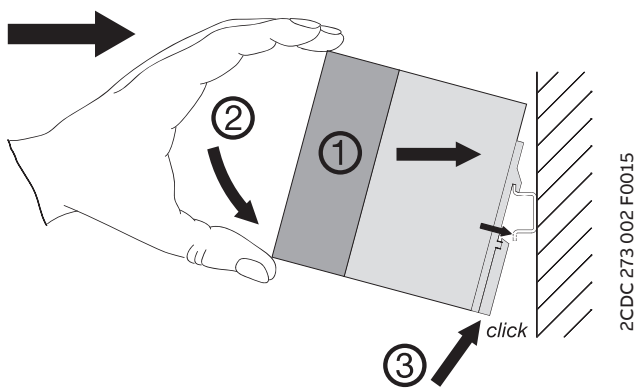
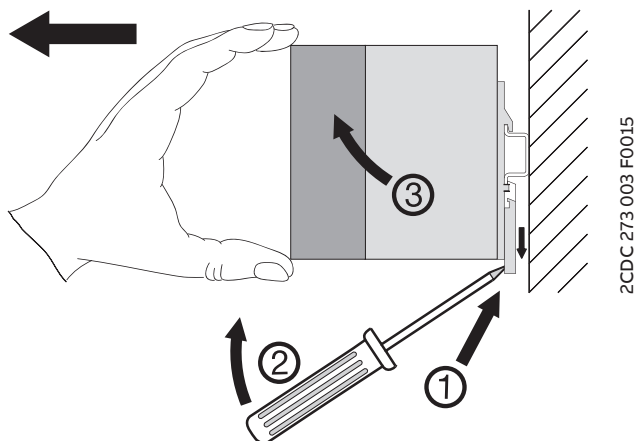
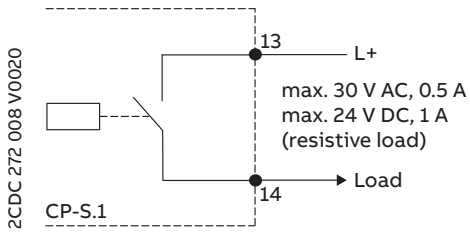


Fig. III



OUTPUT OK, relay output



Rated voltage limits of the signaling output relay:
Acc. UL 61010-1: 30 V RMS, 42.4 V peak, 60 V DC

Fig. IV Parallel operation, increased power

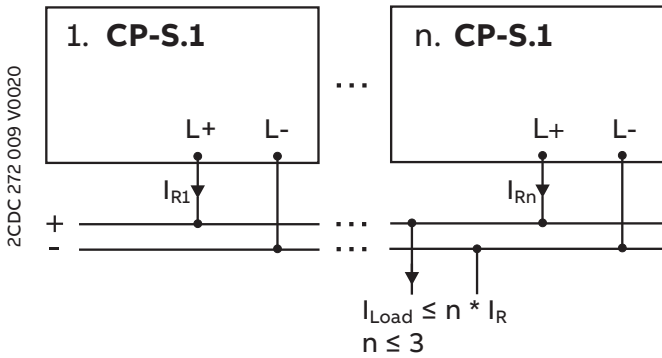
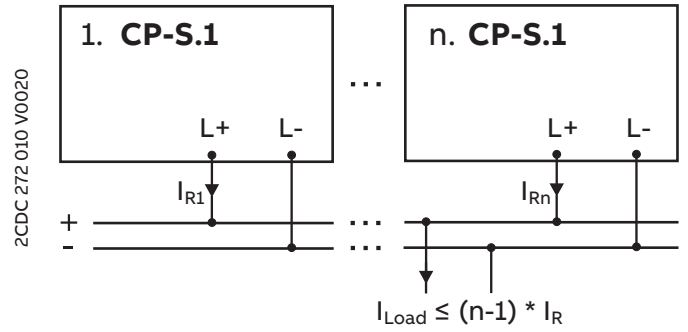
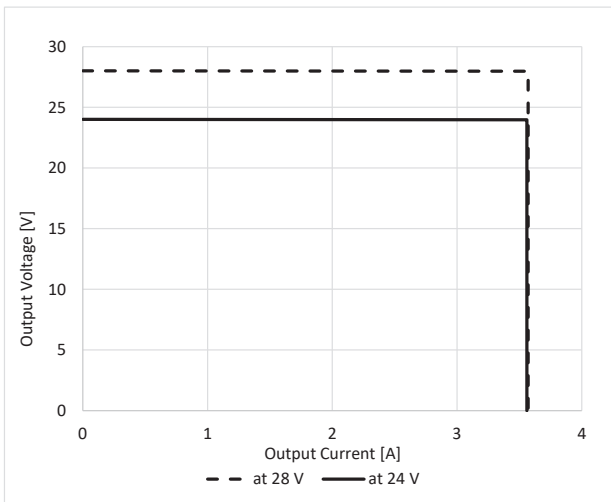


Fig. V Parallel operation, redundancy

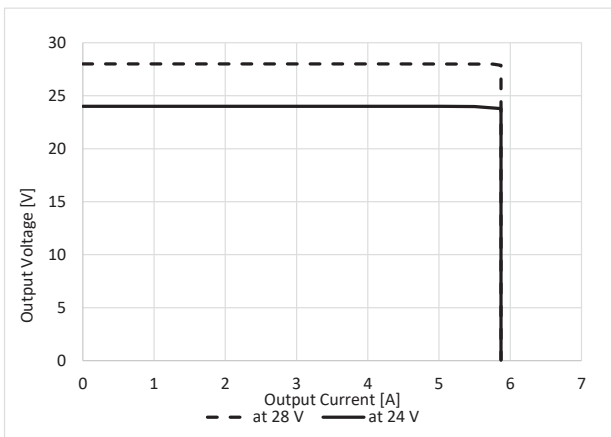


U/I Characteristic curves of output $T_a = 25^\circ\text{C}$

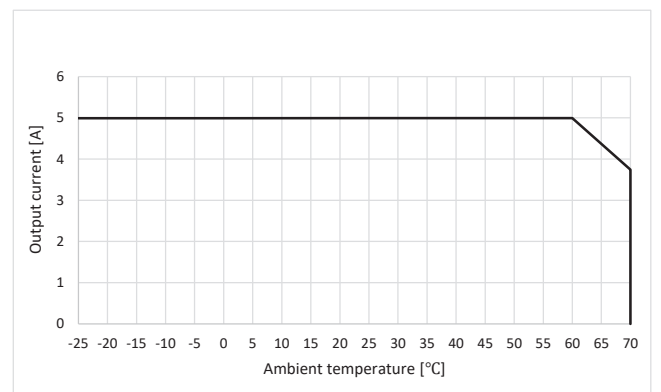
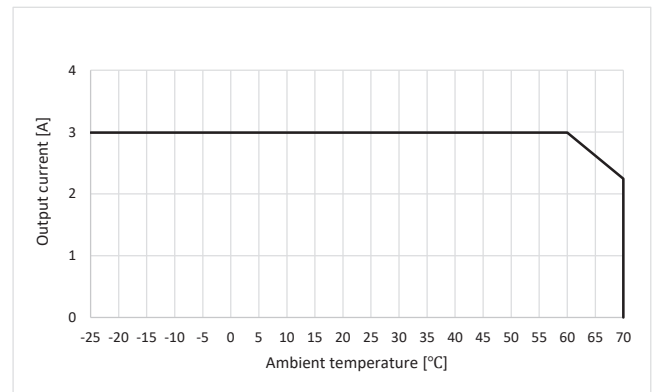
CP-S.1 24/3.0



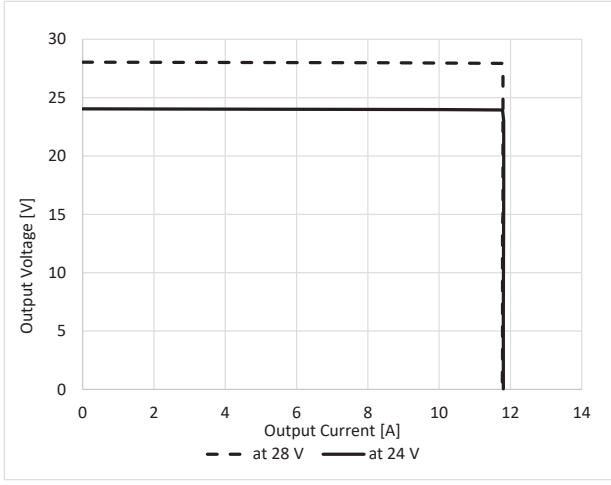
CP-S.1 24/5.0



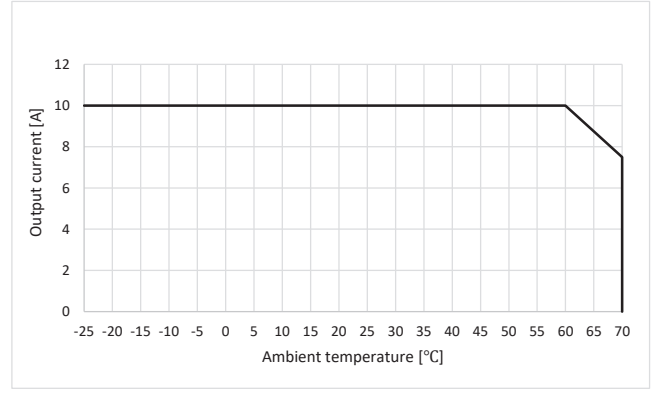
Characteristic curves of temperature $U_{out} = 24\text{ V DC}$



CP-S.1 24/10.0

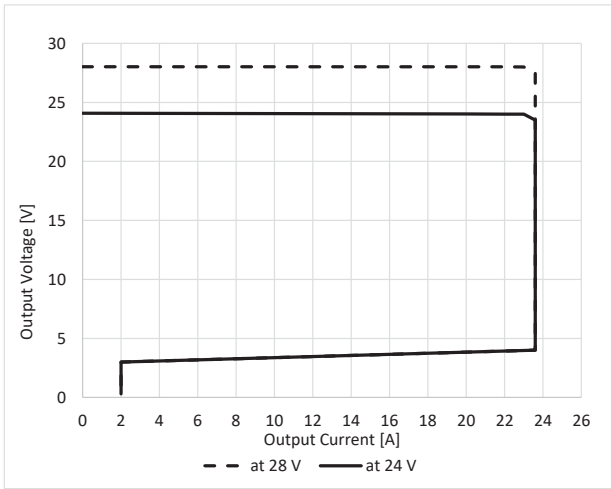


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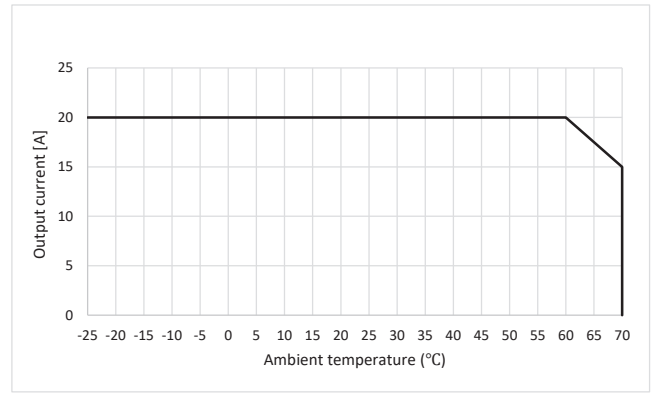


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CP-S.1 24/20.0

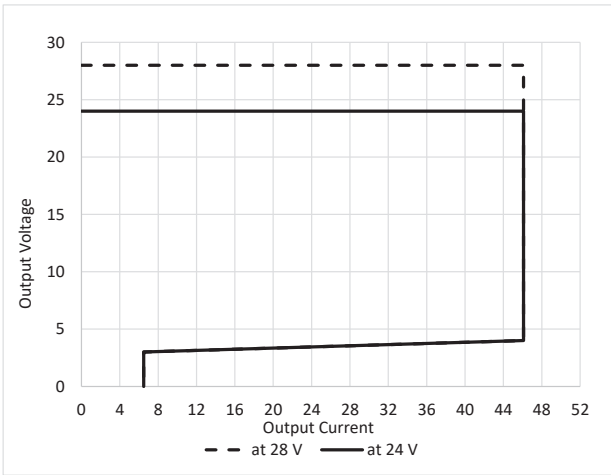


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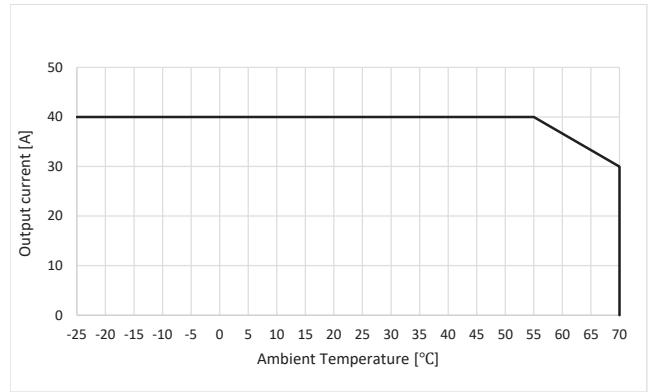


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CP-S.1 24/40.0



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Mounting:

1. Fasten the DIN rail (TH 35-15 or TH 35-7.5 acc. IEC/EN 60715) as shown in Fig. I on the mounting plate, mounting position with input terminals on the bottom (standard mounting position), respect the minimum distance to other units (see Fig. I)
2. Snap on DIN rail as shown in Fig. II
 - 1) Tilt the unit slightly upwards and fit the unit on the DIN rail
 - 2) Lift it downward until it hits the stop
 - 3) Press against the bottom front side for locking
 - 4) Shake the unit slightly to check the locking
3. Remove the unit from the DIN rail as shown in Fig. III. Use a screwdriver for the unlocking.

Electrical connection:

Input side [L, N, ⊕]

Connect the input terminals L, N, ⊕ (Fig. I).

Cable cross sections, stripping length of the cable, tightening torque etc. - see page 2.

The protective earth conductor must be connected (class of protection I).

The installation must be executed acc. to IEC/EN 61010-1.

Provide a suitable disconnecting device (e.g., line protection switch) in the supply line.

Fuse protection of the input side - see technical data.

Output side [L+, L-]

Rate the lines for the maximum output current or provide a separate fuse protection.

Fuse protection of the output side - see technical data.

We recommend choosing the cable cross section as large as possible in order to minimize voltage drops.

Observe the polarity.

The power supplies are overload, short-circuit and no-load proof (see characteristic curve).

The secondary side of the power supplies is electrically isolated from the input and internally not earthed (SELV) and can therefore be earthed by the user according to the needs with L+ or L- (PELV).

Operating/Function:

Adjustment of the output voltage:

The output voltage can be adjusted in the range of 24 to 28 V by means of the potentiometer "OUTPUT Adjust".

Parallel operation:

In order to increase power and to enable redundancy, devices of the same type can be connected in parallel.

For a symmetric current distribution it is advisable to execute the line connections with the same cross sections and same lengths.

Parallel operation, increased power: (see Fig. IV)

For n parallel connected devices, the output current can be increased to $n \times I_R$.

If a power supply unit can not handle the current requirement of the most powerful load, it is advisable to increase power by parallel connected power supplies. Otherwise the loads should be spread among individual devices independent of one another.

A maximum of 3 devices of the same type can be connected in parallel.

Parallel operation, redundancy: (see Fig. V)

Redundant circuits are used to increase the operational reliability in case of errors (e.g., wrong wiring, blow of the fuses in the primary circuit, failure of single devices). If a fault occurs in the first power supply circuit (called initial fault), power to all loads is then supplied by the second, redundant supply circuit. For this reason the power supply units to be connected in parallel must be sized in such a way that the total current requirement of all loads can be completely covered by one power supply unit.

True redundancy gives higher system availability compared to simple redundancy. In a true redundancy setup the power supplies are decoupled from each other with decoupling diodes. This protects the individual power supplies from affecting each other in case of failure of one unit or short circuit on the secondary side or in the wiring. For two inputs of up to 30 A and one output up to 60 A the ABB redundancy unit CP-C.1-A-RU (available as an accessory) can be used. The inputs of this unit are connected to the terminals L+ and L- of the power supplies. The loads are supplied directly from the outputs of the redundancy unit.

Thermal overload protection:

To avoid destruction of the unit by overtemperatures, the unit switches off in case of thermal overload. After cooling down, the unit restarts automatically and is again ready for operation.

Technical data

Data at $T_a = 25\text{ °C}$, $U_{in} = 230\text{ V AC}$ and rated values, unless otherwise indicated

Type	24 V / 3.0 A	24 V / 5.0 A	24 V / 10.0 A	24 V / 20.0 A	24 V / 40.0 A	
Input circuit - Supply circuit						
L, N						
Rated input voltage U_{in}	100-240 V AC / 100-250 V DC				110-240 V AC / 110-250 V DC	
Input voltage range	85-264 V AC / 90-277 V DC				99-264 V AC / 99-277 V DC	
Operational frequency range	AC 45-65 Hz					
Input current range at rated output power	at 100-240 V AC	0.95-1.46 A	0.67-1.45 A	1.25-2.80 A	2.55-5.80 A	-
	at 110-240 V AC	-	-	-	-	5.0-11.50 A
	at 100-250 V DC	0.35-1.00 A	0.58-1.63 A	1.12-3.15 A	2.28-6.40 A	-
	at 110-250 V DC	-	-	-	-	4.48-13.50 A
Typ. input current	at 115 V AC	1.38 A	1.24 A	2.45 A	4.85 A	9.50 A
	at 230 V AC	0.95 A	0.67 A	1.25 A	2.55 A	5.00 A
Typ. power consumption	82 W	132 W	258 W	517 W	1022 W	
Recommended backup fuse for wire protection at 1.5 mm ²	1 pole miniature circuit breaker ABB type S 200, with B or C characteristic, max. rating 16 A. For USA/CAN: Use appropriate branch circuit 20 A fuse acc. regional and national regulations.					
Output circuit - Power output						
L+, L-						
Rated output power	72 W	120 W	240 W	480 W	960 W	
Rated output voltage	24 V DC					
Adjustment range of the output voltage	24-28 V DC					
Rated output current I_r	-25 °C ≤ T_a ≤ 60 °C	3.0 A	5.0 A	10.0 A	20.0 A	-
	-25 °C ≤ T_a ≤ 55 °C	-	-	-	-	40.0 A
Power reserve current (5 s)	-25 °C ≤ T_a ≤ 60 °C	4.5 A	7.5 A	15.0 A	30.0 A	-
	-25 °C ≤ T_a ≤ 55 °C	-	-	-	-	60.0 A
Current limiting at short circuit	< 5.2 A	< 8.62 A	< 17.25 A	< 34.5 A	< 70 A	
Derating of the output current	2.5 %/K				2.0 %/K	
Resistance to reverse feed	≤ 35 V DC					
General data						
Efficiency	> 89 %	> 90 %	> 93 %	> 93 %	> 94 %	
Degree of protection (IEC/EN 60529)	Housing / terminals: IP20					
Protection class (IEC/EN 61140)	I					
Environmental data						
Ambient temperature range	operation	-25...+70 °C (-13...+158 °F)				
	rated output power	-25...+60 °C (-13...+140 °F)				-25...+55 °C (-13...+131 °F)
	storage	-40...+85 °C (-40...+185 °F)				
Max. humidity	Test DB: 55 °C, 2 cycles					
Wet location	Not suitable for wet locations					
Isolation data						
Pollution degree	2					
Environment (CAN/CSA 22.1 No. 107.1)	Controlled environment					
Overvoltage category (IEC/EN 62477-1)	< 2000 m	III				
	2000-5000 m	II				
Overvoltage category (IEC/EN 61010-1, IEC/EN 61010-1-201)	< 2000 m	II				

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Further information:



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