

DCP2

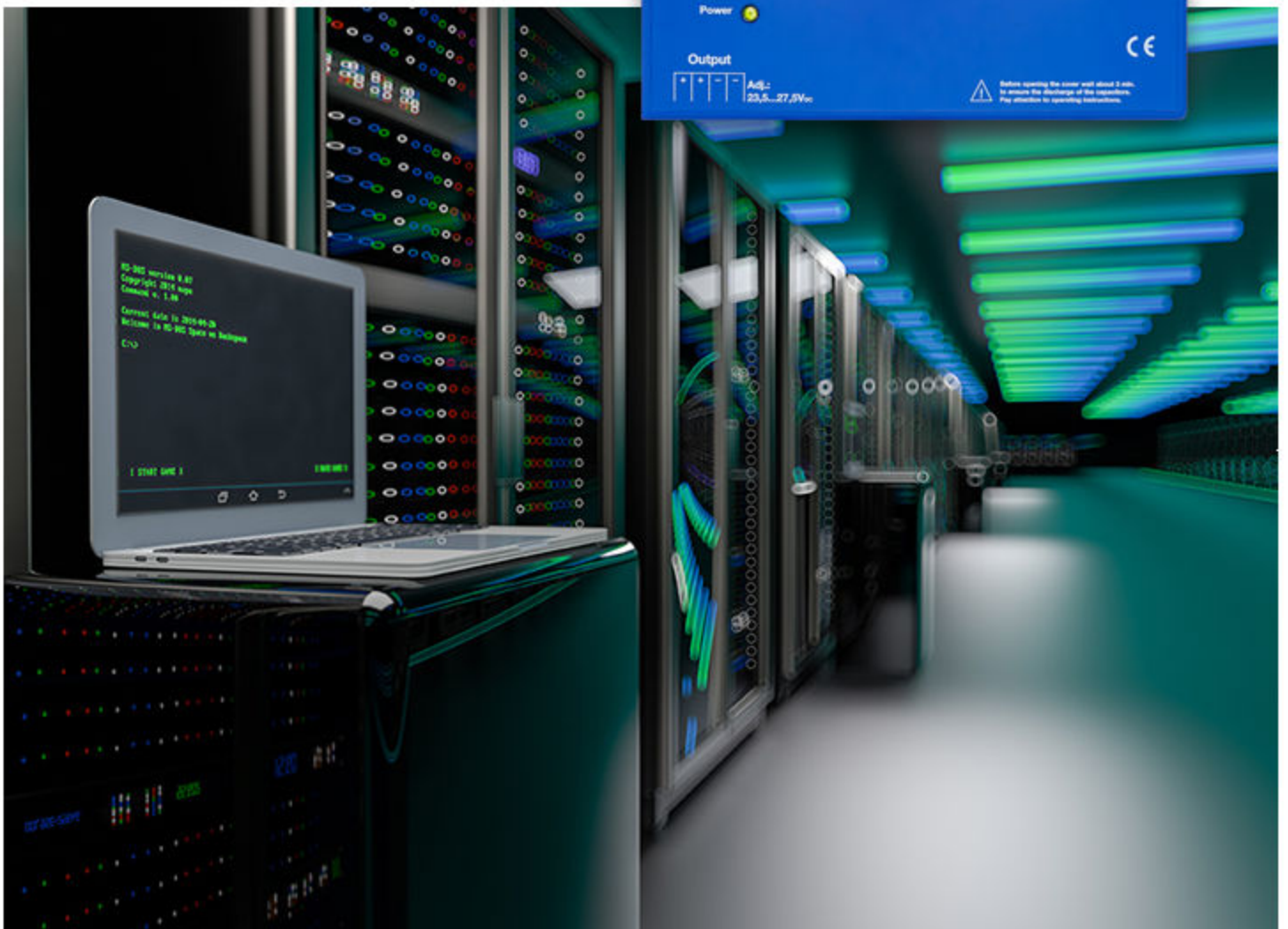
Battery charger/Power supply

Data sheet

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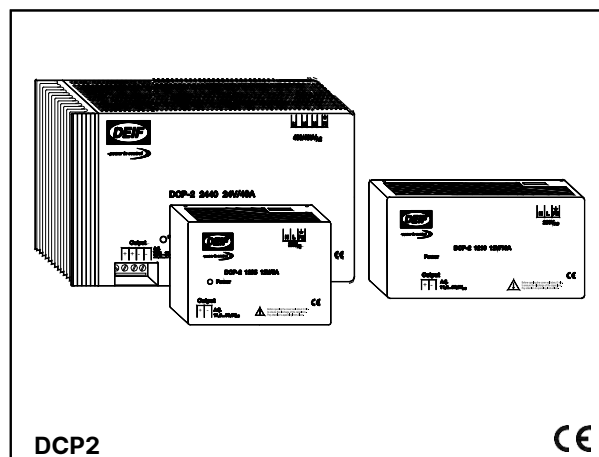
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Type DCP2

Battery charger/Power supply

- **Easy installation - DIN-rail mounting**
- **Automatic recovery from overload conditions**
- **20-40A types**
- **Switch mode power technology**
- **Extremely low ripple <100mV**



Application

The DCP2 can be applied as battery charger or stabilized network component as a universal DC voltage supply. As battery charger parallel operation with other DC consumers is possible.

DCP2 as battery charger

As battery charger, the DCP2 is applied to charge and to maintain the full-charge condition of closed or gastight 24V Pb batteries.

In parallel operation with a battery and other consumers the nominal power for the consumers is given until interruption from the battery, e.g. for the reason of recharging/maintenance.

DCP2 as network component (power supply)

As stabilized network component, the DCP2 supplies connected consumers with a stabilized DC voltage.

Protection

The DCP2 is protected against continuous short circuit as well as continuous no-load operation. Further characteristics of the DCP2 are the high efficiency and the high voltage stabilization.

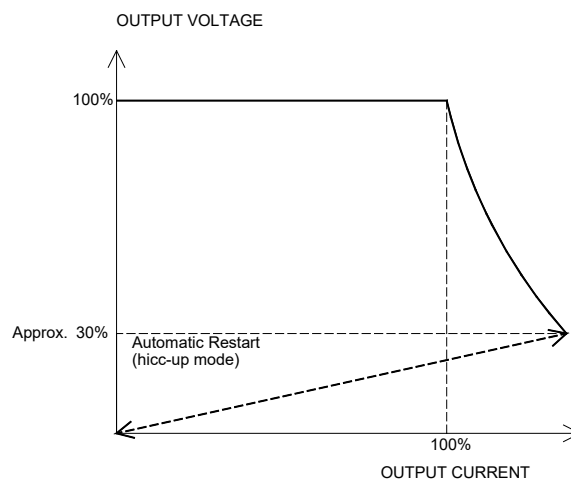
Principle/operation

Application as stabilized net unit (supply)

The DCP2 supplies a constant output voltage, according to setting, in the range of 23.5-27.5V DC respectively 11.8-13.8V DC (stabilized network component).

The output voltage is held constant as long as the load does not exceed the nominal current. A load exceeding the current limitation will automatically reduce the output voltage (see the curves in the next column). Typical current limit for each type is specified under Technical specifications, section Output current.

For 20A and 40A types:



Type DCP2

Application as battery charger

When charging of a discharged battery is initiated, a high charging current will flow, which is limited and controlled by the DCP2. Voltage will immediately jump to approx. 2.1V per cell (25.2V for 24V types).

Normally it is recommended from manufacturers of Pb batteries to obtain 2.25V per cell at temperatures up to 30°C, before the battery is fully charged and trickling can start. For a 24V battery this gives a trickle charging voltage of 27V.

According to information from battery manufacturers, the charging voltage must be reduced by higher ambient temperatures and increased by low temperature.

For that reason it is important to adjust the DC voltage output to the correct level according to the specification for connected batteries. In case the voltage is adjusted too high according to ambient temperature, gassing might occur and cause damage to the sealed battery. As opposed to this, a too low adjustment will cause an insufficient charging.

Factory setting of the output voltage is 26.8V DC for 24V types.

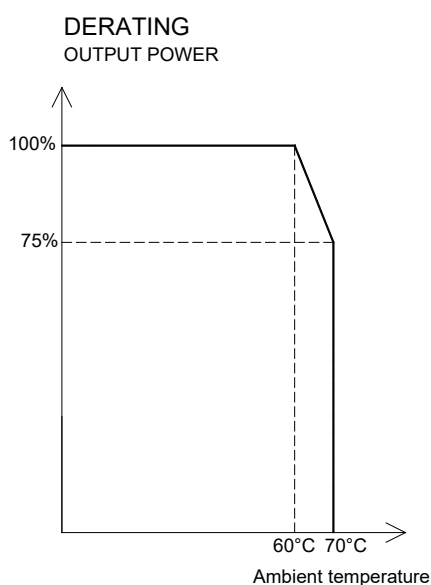
Charging

Charging is carried out according to an I/U characteristic.

When the charging voltage has reached the set value, charging will be with constant voltage. The charging current drops to trickle charging current in addition to the current for other connected consumers.

When reaching the trickle charging voltage the current drops, which prevents overcharge of the battery (no gassing).

At an ambient temperature >60°C the load capacity of the unit drops as illustrated below.



To prevent overheating of the unit, the consumer load must be reduced equivalently.

Type DCP2

Technical specifications

General data:

Duty ratio:	Continuous duty is allowed
Cooling:	Convection
Maintenance:	None
Short circuit:	Protected against continuous short circuit
No-load operation:	Protected against continuous no-load operation
Mounting:	DIN-rail, EN 50022-35
Installation:	Wall mounted, input terminals placed at the top and output terminals at the bottom

Input voltage: DCP2-2420 and -2440:
3 x 400/480V AC $\pm 15\%$

Input current: 4.20A at 230V AC DCP2-2420
3 x 1.50A at 3 x 400V AC DCP2-2420
3 x 3.00A at 3 x 400V AC DCP2-2440

Peak inrush current: <50A DCP2-2420, -2440

Freq. range: 47...63Hz (supply)

Power factor $\cos \varphi$:

DCP2-2420:
0.53 capacitive at 230V AC

DCP2-2420, -2440:
0.53 capacitive at 400V AC

Fuse: DCP2-2420:
5 x 20 mm T10A/250V internal

DCP2-2420, -2440:
Three poles, C-fuse or motor circuit breaker
Switch - external (setting 3A)

Output voltage: DCP2-24XX:
24V DC (adjustable 23.5...27.5V DC)
Factory setting 26.8V DC $\pm 1\%$

Output current: DCP2-2420:
20A (typical current limit 25A)

DCP2-2440:
40A (typical current limit 45A)

Power output: DCP2-2420 480W (1 phase supply)
Attention: Max. output power 480W at adjustment 27.5V max. 17.4A

DCP2-2420 480W
Attention: Max. output power 480W at adjustment 27.5V max. 17.4A

DCP2-2440 960W
Attention: Max. output power 960W at adjustment 27.5V max. 34.8A

Output ripple: <100 mV_{pp}

Efficiency (typical):

DCP2-2420	88%	(1 phase supply)
DCP2-2420	90%	
DCP2-2440	90%	

Regulation:

Line regulation: <0.2% of output voltage at $U_{in} \pm 15\%$

Load regulation: <1% of output voltage between 0 and rated current

Dynamics: <2 ms at a load distribution of 10 to 90% from rated current, peaks <2%

Hold-up time: DCP2-2420 >15 ms at $U_{in} = 230V$ AC
DCP2-2420 >5 ms at $U_{in} = 400V$ AC
DCP2-2440 >5 ms at $U_{in} = 400V$ AC

The determined time, during which a power supply/charger's output remains within a specified voltage range after its input ceases.

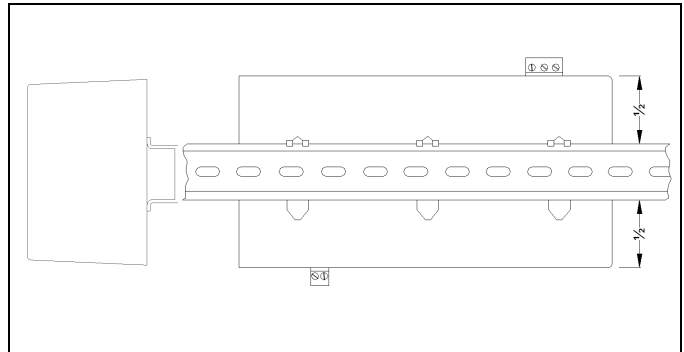
Type DCP2

Technical specifications, cont.

EMC:	EN 61000-6-3 EN 61000-6-4 EN 61000-6-1 EN 61000-6-2 EN 61000-6-5
RFI suppression:	According to VDE0875 T11/EN55011 class B
Static discharge ESD:	8kV contact discharge
IEC 1000-4-2:	15kV free air discharge
Electromagnetic fields:	10V/m according to IEC 1000-4-3
Burst IEC 1000-4-4:	4kV input 2kV output AC-coupled
Surge IEC 1000-4-5:	4kV asymmetrical 4kV symmetrical
Galvanic separation:	Between AC voltage, output and protective earth (PE): 3.11kV DC between terminals Prim./Sec. 3.11kV DC between terminals Prim./PE 0.78kV DC between terminals Sec./PE
Safety:	VDE0805/EN60950/IEC950/EN61010-1
Protection:	Class I
Deg. of protection:	IP20
Leakage current:	<0.75mA (47-63Hz line frequency) (DCP2-2420 3 phase supply and DCP2-2440 <3.5mA)
Temperature:	-10...70°C (operating, free convection) -25...85°C (storage)
Reduction of output power:	2.5%/K above +60°C
Terminals:	DCP2-2420: Primary max. 2.5 mm ² Secondary 4.0 mm ² DCP2-2440: Primary max. 2.5 mm ² Secondary 10.0 mm ²
Indication:	Green LED – operating indication
Housing:	
Materials:	All plastic parts are self-extinguishing to UL94 (V0) DCP2-2440 is encapsulated in a metal housing

Dimensions: 240 x 153 x 86 mm (DCP2-2420)
W x H x D 292 x 185 x 130 mm (DCP2-2440)

Mounting: DIN-rail, EN 50022-35



Distance for con-
vection: 100 mm above and below the DCP2
30 mm to each side

Weight: DCP2-2420 1.9 kg
DCP2-2440 3.6 kg

Order specifications

Type – output voltage – output current – supply
Example: DCP2 – 24V DC – 5A DC – 1 x 230V AC

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