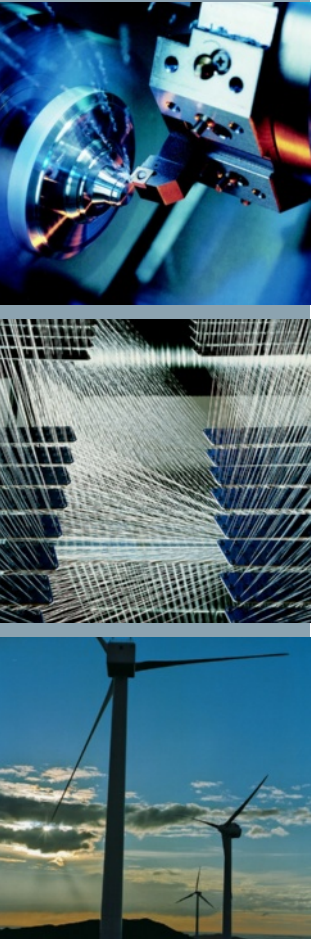


SITOP PSU400M 24 V/20 A

Efficient DC/DC converter for drive and battery systems

August 2011



The compact DC/DC converter enables a cost-effective network failure concept at the DC link of frequency-controlled drive systems. The 20 A switching power supply uses the kinetic energy of decelerating motors to buffer the 24 V supply until the machine has completed a controlled shutdown. Its high efficiency ensures an extremely effective use of the energy reserve. And because the available charge of capacitors is voltage-dependent, the wide input voltage range enables particularly high energy generation. In addition to capacitors, batteries are ideally suited as a DC source. The high degree of overload capability, functionality, and robustness of the DIN rail device permit its use in many applications, even under harsh conditions.

The benefits at a glance

- Wide-range input for 200 to 900 V DC
- High energy generation from capacitors
- High degree of efficiency up to 96%
- Robust and compact design with only 90 mm width
- 50% "extra power" for connection of loads with high current demand
- Integrated signaling contact "24 V DC OK"
- 3 LEDs for different operating states
- Adjustable startup delay, e.g. for operation at the DC link of SINAMICS frequency converters
- Wide temperature range from -25 to +70 °C
- High shock and vibration resistance
- Expandable with the following add-on modules: redundancy module, selectivity module and DC UPS

SITOP modular

Answers for industry.

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Low-cost power failure concept for drives

Frequency converters work with a DC link, which can be used as a power source for 24 V loads. The compact DC/DC converter is optimized for this use. For example, start-up of the DC/DC converter can be delayed to avoid overloading the DC link when the frequency converter powers up. After the drive system starts up, the SITOP PSU400M efficiently transforms the high DC link voltage into constant 24 V DC regulated. Controlled equipment shutdown is made possible because the DC link energy is still available even in the event of power failure and thus, control and other loads continue to be supplied. Rotating centrifugal masses or falling axes in particular have plenty of kinetic energy, which flows back into the DC link during deceleration and cannot be fed back into the grid during a power failure. In machine tools, this makes an emergency retraction possible, i.e. tool and workpiece are separated from each other in a controlled manner. The cost-

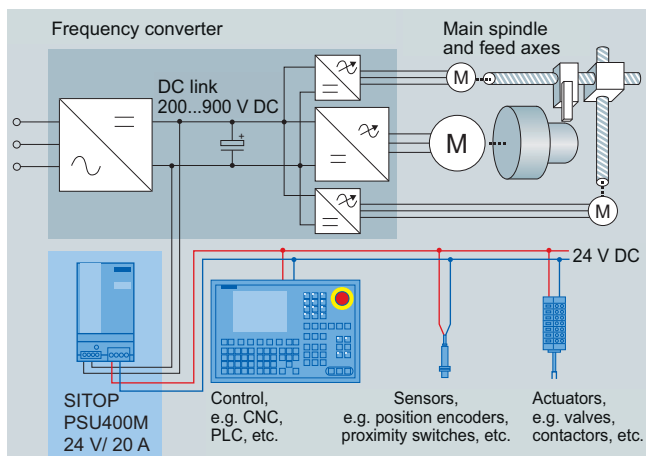
effective power failure concept also saves time and money in printing and paper machines, textile machines, high-bay warehouses, and cranes. In applications without significant kinetic energy, the buffer time can be extended by means of additional capacitors at the DC link, e.g. for pure actuators.

A wide input range opens up many possibilities

The wide DC input range of the SITOP PSU400M also permits the connection to many different DC networks and battery systems. It provides a special advantage if capacitor batteries are used. Because the capacitor charge is disproportionately dependent on the voltage ($Q = \frac{1}{2} \times C \times U^2$), the larger the operating range of the power supply, the more stored energy can be used. With the same amount of usable energy, it might be possible to reduce the number of capacitors.

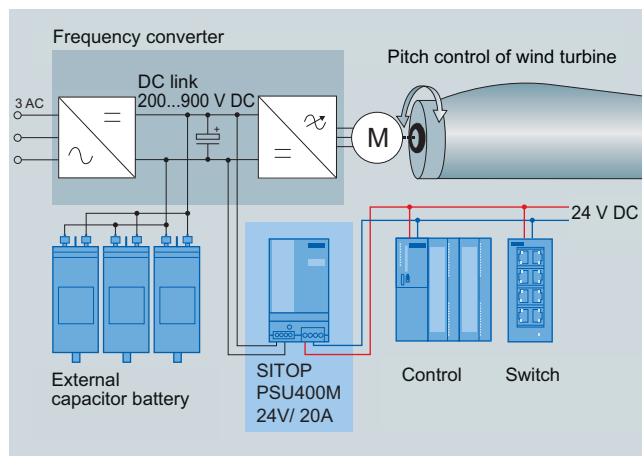
Technical specifications	SITOP PSU400M
Order No. ¹⁾	6EP1536-3AA00
Input voltage	600 V DC/200 ... 900 V DC > 400 V DC
Input current	0.85 A/approx. 8 A
Startup delay	10 seconds, selectable
Output voltage	24 V/24 ... 28.8 V
Signaling via LEDs	Green: 24 V DC OK Flashing green: delayed start Yellow: overload Red: latching shutdown Flashing red: overtemperature
Signaling via a signaling contact	24 V OK (NO contact, contact rating 30 V AC/0.5 A, 30 V DC/1 A, 60 V DC/0.3 A)
Output current	20 A 9 A 10 A 20 ... 16 A or 20 A for 1 min/10 min 20 A for 10 s/10 min
Efficiency at rated values	95 %
Switching in parallel	Selectable characteristic for symmetrical load distribution
Overload response (with $U_{in} = 300 \dots 820$ V DC)	Extra Power: 30 A for 5 s/min
Electronic short-circuit protection	Yes, constant current (approx. $1.15 \times I_{rated}$) or latching shutdown.
Radio interference suppression (EN 55022)	Class A (radiated emission)
Degree of protection (EN 60529)	IP20
Ambient temperature	-25 ... +70 °C
Vibration resistance (EN 60068-2-6)	5 ... 8.4 Hz: 2 g
Shock resistance (EN 60068-2-27)	15 g/11 ms
Dimensions (W x H x D), in mm	90 x 125 x 125
Weight	approx. 1.2 kg
Certification	CE, cULus

1) You will find up-to-date ordering data and prices as well as our terms of sale and delivery on the Internet at: www.siemens.com/industry



Application example for turning machine:

On power failure, the kinetic energy of the main spindle is used for the emergency retraction of the axes. If the converter requires 24 V to start up, an AC/DC power supply can be connected as well.



Application example for pitch control of a wind turbine:

Additional capacitors at the DC link buffer the 24 V on power failure; the rotor blade pitch is guaranteed at all times.

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