

# Powersink 500 Manual

[350 W version]

SE0711ZE – SE0711ZF



Variant A for 200 mF to 20 F\*<sub>refer to 4.4</sub>

Variant B for 10 mF to 200 mF

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## 1. Safety notes



Please read the instructions carefully before you make any connection of the power sink.

If something is not clear, please contact our support team

[support@schulz-electronic.de](mailto:support@schulz-electronic.de)

(+49) 7223/9636-63



If you may provide dangerous voltages to the Powersink 500, please ensure the protection against contact.

If the device has to be open for cleaning, the auxiliary power-supply and all other voltage sources must be disconnect.



All case- and chassis-parts are connect to the safety earth bold on the rear side according to the safety class 1.



If the inductivity of the connection between Powersink 500 and power supply is too high, this can cause damage on the power sink

## 2. Intendet use:

The Powersink 500 is designed for keep the supply-voltage of a power-supply constant through absorbing the surplus energy and transform into heat, if the output-voltage of a power-supply rises above the preset value because of back-emf, for example. Overheating will switch the power sink off until the heat sink temperature is in the normal value range.

## 3. Specifications:

### 3.1 Electrical data

- 350 W continuous load, peak load 1 kW@10 V, 6 kW@ 60 V (dep. on operating voltage)
- Input voltage range: 10 – 70 V (Depending on factory setting, see appendix)
- Transients up to 100 V
- Maximum sinking Current: > 100 A
- Continuous load up to 36 °C, de-rating with 10 W/K, over temperature-protected
- Automatic limiting of maximum load
- Suitable for all Delta-Elektronika power-supplies
- Programming voltage: 0 - 5 V
- Adjustable threshold Level:  
0,5 – 5 % above programming level
- Activity monitor on front side
- 2 Versions for optimized pulse response:  
Variant 1 for load capacitance > 200 mF to 15 F  
Variant 2 for load capacitance 10 mF to 100 mF
- Temperature controlled fan speed
- Well-suited for:
  - PWM applications
  - reducing back-emf
  - shorts voltage fall-time
- Isolation case to GND: 150 V

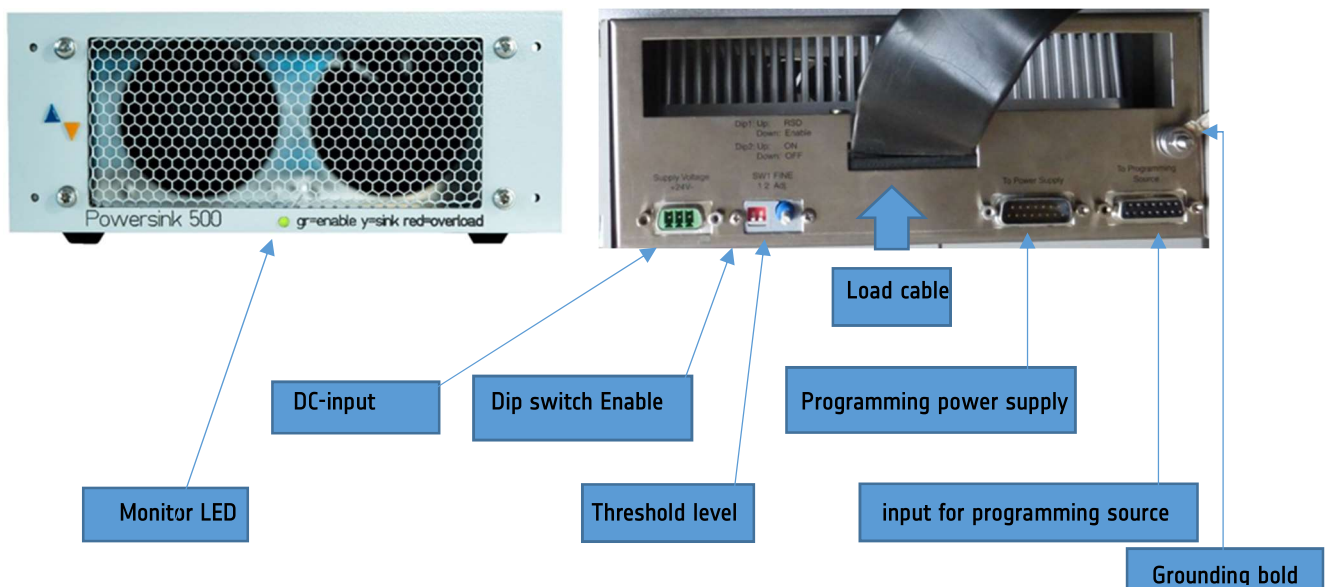
### 3.2. Mechanical Data

- 2 U x 1/2 19" x 450 mm
- Strip line output cable: 350 mm

### 3.3 Environmental conditions

- The Powersink 500 can work until 36 °C with no limits, above this temperature there is a de-rating of 10 W/K
- Up to 2000 m over sea level

## 4. Operation



## 4.1 Operation modes

### Programming mode:

To operate the power sink, a programming voltage is necessary. As long as there is the same scaling of the programming voltage for the power-supply, the power sink can be looped in programming path.



Please make sure that the scaling of voltage is the same for Powersink 500 and power supply, they using the same input

### Standalone mode:

To operate the Powersink 500 in stand-alone-mode, there is a 5 V-reference at pin 9 of the sub-d15. Use a voltage divider or a potentiometer to adjust the programming level for pin 11 at the programming input.

### Threshold level:

For both modes, you can adjust the threshold level. Turn to left to set down to 0,5 % over programming level and right for up to 5 % over programming level.

## 4.2 Connections

Grounding: The earth connection is located at the rear right.

### Auxiliary 24 V-supply:

To operate the Powersink 500, an isolated 24 V/750 mA power supply is required. The auxiliary power-supply connector is located at rear left side at the green 3-pin connector.

### Planar load cable:

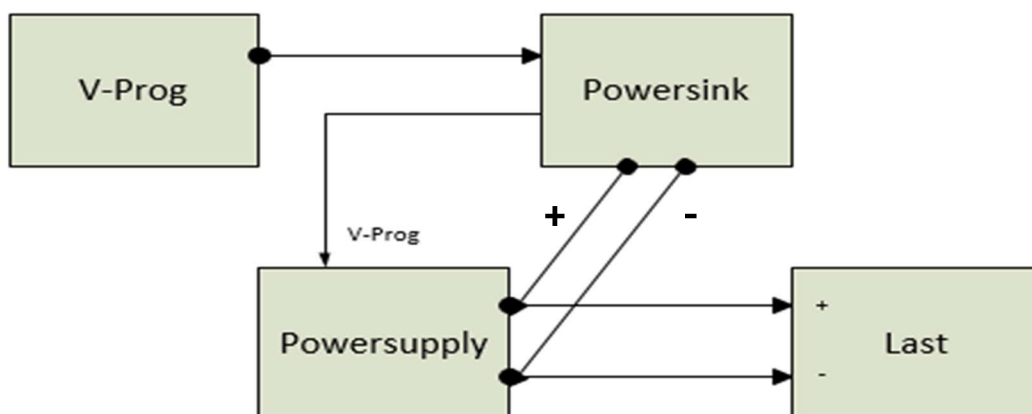
The cable, connected to the power supply is a low-inductive planar cable. The open end - conducted to a connector-box - is intent to conduct the Powersink 500 directly to the power supply. Please keep the cable from connector-box to the power supply shorter than 20 cm.



Attention! A connection cable that is too long can lead to the destruction of the Powersink 500 due to the line inductance.

### Polarity:

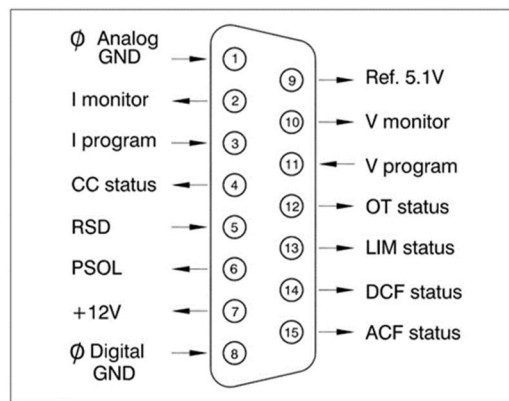
Please have a look on the polarity! The shorter end at the connection box is the negative pol.



## Programming in/output:

At the backside are two sub-d15 connectors (one male, one female) to loop the Powersink 500 in program path of the power-supply. These connectors are suited for Delta Elektronika power-supplies.

Interface description:



Providing an RSD-Signal from the programming source will also deactivate the power sink

PSOL output means power sink overload. The power sink will work again after cooling down.

## Load connection:

Please connect the Powersink 500 only while it and the power supply is switch off.

The airflow is from front to back. Please make sure that the airflow is undisturbed. The air output temperature can reach 85 ° and leads to the unit switching off in the event of a jam.



## Load cable

Polarity: The shorter part is the negative pole, the longer one is the positive pole.

The load cable is a low-inductive planar cable. A short connection to the minus-pole is essential, because this is the negative reference-level for the control loop. A too long connecting cable may interfere the proper function. The connecting cable from the grey connection box on the load side to the power supply connected in parallel should have a cross-section of 10 - 16 mm<sup>2</sup> - twisted if possible - and a **maximum length of 20 cm must not be exceeded.**

### **4.3 Controls:**

There are two dip-switches on rear. One is for enabling power sink function, the other is for future function and now inactive.

Beside these tiny switches, there is a potentiometer for increasing the threshold value of the Powersink500. By turning right, the whole 270° the threshold level will rise at about 5 % of absolute value.

### **4.4 Functional description**

The Powersink 500 measure the voltage on the power supply output. If the voltage becomes higher than the setting + threshold level, the power sink will take energy from the output capacitor of the connected power supply, transform it to heat and convey it to the air.

The two fans rotate at minimum speed after connecting the 24 V supply. If a cooler temperature > 35 °C is reached through sink operation, the speed increases until they reach the maximum value at 60 °C. If the internal heat sink becomes too warm due to ambient temperature or too high continuous sink power, the sink power is reduced (derating). From a limit value of 85 °C, the Powersink 500 goes into error mode to avoid overheating. A shutdown of the unit due to over temperature is output with the OT status signal at the interface on pin 12. The fans continue to dissipate the heat. If the heat sink is again below this limit, energy can be absorbed again. An error acknowledgement is not necessary.

#### **4.4.1 Variants:**

- A. Variant for standard application up to 20 F output capacitance. Higher values are possible at request
- B. Variant for high-speed application and low output capacitance of 10 mF to 100 mF)

The Powersink 500 is designed for Delta-Elektronika power supplies, but can also be combined with any other power supply. It is obligatory to use the same voltage scaling for both -power-supply and the power sink - to get best performance (see 4.1).

#### **4.4.2 Sink power in standalone mode**

Depending on the factory setting, the power sink can to be set fix from 10 V up to 70 V and can withstand transients up to 100 V. The sink current can reach 120 A peak, but after about 30 ms the sink power will be limited to max. 350 W

#### **4.4.3 Sink power in programming mode**

In a down programming situation the sink current can reach up to 200 A

#### **4.4.4 Deactivated power sink:**

The standby current is about 100 mA. If the power sink is deactivated but connected to the power supply, the power sink acts like a 7,5 kOhm resistor and a 2 µF cap.

To deactivate the power sink, use dip-switch1 on the rear side

#### **4.4.5 Switch off / maintenance:**

After no-load condition, it takes 3-5 minutes to cool down the Powersink 500 heatsink.

The Powersink 500 electronic is separate from the cooling airflow. Therefore, there is no need for fan filters. There is an easy access to the heat sink by open the top cover if you need to clean it.

#### 4.4.6 Sensing:



Due to the higher voltage on the power supply output in compare with the setting signal, the sensing option from the power supply do not work together with the Powersink 500. Sensing must be inactive!

4.4.7 Parallel mode: It's prohibited to use two power sinks in parallel in this version.

4.4.8 LED indicator:

The front LED can indicate three situations:

**Green:** power sink enabled, no sinking

**Yellow:** Sink mode

**Red:** power sink overload mode

#### 4.5 Example for power sink behavior:



Blue: Indicate reverse energy

Magenta: Voltage

Red: Sink power

Green: Sink current

After 12 ms the peak power mode turns into the power regulated mode. Since the reverse power is higher than the sink power, the voltage raise up in this moment.



Setting: 12 V and input of 15 V/128 A



Setting: 60 V and input of 64 V / 114 A

## 5. Service and Support

Special application / variants:

If you have a question about the unit or a special application, not described in the manual, please contact:

[vertrieb@schulz-electronic.de](mailto:vertrieb@schulz-electronic.de) or [support@schulz-electronic.de](mailto:support@schulz-electronic.de)

## 6. WEEE

This product should not be disposed with other wastes at the end of its working life, but should be collected separately. Schulz-Electronic takes this product back, if requested and recycles it, responsible to promote the sustainable reuse of material resources.

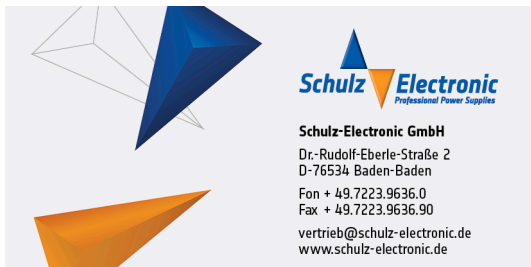
Please refer in this case to:

[support@schulz-electronic.de](mailto:support@schulz-electronic.de)

## 7. CE-Declaration

Please see appendix

## 8. Address





# Appendix

## Order Information

Power supply		Variant 1* 200mF – 15F	Variant 2* 10mF – 200mF
0 – 15 V	->	SE0711ZG	SE0711ZK
0 – 30 V	->	SE0711ZH	SE0711ZL
0 – 52 V	->	SE0711ZI	SE0711ZM
0 – 60 V	->	SE0711ZE	SE0711ZN
0 – 66 V	->	SE0711ZF	SE0711ZO

**Please contact us!**

We'll help you to make the optimal choice and if necessary, we may create a special edition for your needs.