

Micro Modules

MicroPowerSwitch

**Windows, MAC, Smart Phone
V 1.05 / March 2015**

Not suitable for children under the age of 14 !



Neuhaus Electronics

The **MicroPowerSwitch** module is not only an **ON/OFF switch**, it also monitors the voltage of the model battery in order to prevent deep discharges. The model can be adapted to any battery up to a max. 11V due to the adjustable warning and cut-off thresholds. The current is also checked. The max. constant current runs at 8A, the permissible peak current may reach 15A. Both values can be selected freely down to 3A, the duration of the peak current can be adjusted up to 1 second.

The **MicroPowerSwitch** commands up to 2 branches. One is activated via an additional “enable” outlet. The other one is permanently active.

MicroPowerSwitch Index Card

The screenshot displays the MicroModules software interface. On the left, a search bar and a list of modules are visible. The 'MicroPowerSwitch' module is selected, showing its details: 'Bagger 1', 'Power', and '49 | 1.02'. The main area is divided into 'General' and 'Settings' sections.

General

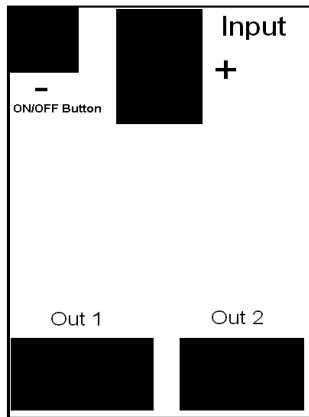
Module ID	49	Power values	
Module Name	Power	Voltage	5.00 V
Model name	Bagger 1	Current	0.05 A
Version	1.02		

Settings

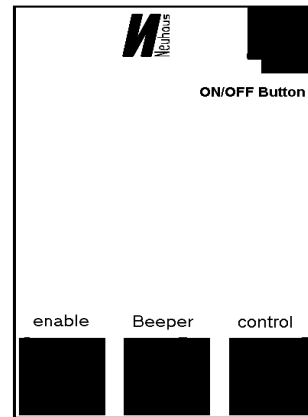
Voltages		Flows	
Warning threshold	0.00 V	Max continuous current	5.0 A
Shut-off threshold	0.00 V	Max peak current	7.0 A
		Max peak current duration	1.0 sec

At the bottom, there are buttons for 'Remove', 'Duplicate', 'Open module', 'read settings', 'Write settings', and 'All operations ...'.

Hardware Description



Top



Bottom

Inputs on top:

+

Here, the plus pole of the battery is connected directly. The entire power runs through this connection. The wire must be soldered. The MicroPowerSwitch can be imagined as a switch, which turns the plus pole on and off.

On/Off button :

Of course, the electronics require a supply current. The minus pole of the battery is soldered here. A thin wire is sufficient, as the only flowing current here supplies the switch incl. the beeper and the warning light. The connection should be established at the minus pole of the battery directly. At the same time one side of the on/off switch is connected here.

Input bottom:

button+:

The second pole of the on/off button is attached here.

Enable:

If this output is connected to the minus pole, the output of the second branch “Out2” is interconnected and will be switched off if the set current value is exceeded and/or the voltage threshold is undercut. The enable-output facilitates the activation/deactivation via the receiver (which is connected to Out1). Hence, several models can be selected via the remote control.

Outputs top:

Out1:

As soon as the on/off button has been pressed the transistor of the first branch is interconnected, still without support of the processor. The processor starts up and takes over control of the current and power as soon as the button is released.

Important note: as long as the button is being pressed, shutdown is not possible.

Out2:

See enable

Outputs bottom:

Pilot light:

This connection is switched to minus as long as the warning threshold is not undercut nor the power max is exceeded; i.e as long as the operating data remains within the preset range, a light or LED connected to the + of the other pole is lit. The LED will blink once the preset range has been abandoned. In addition, an electro-mechanical beeper is selected via the output.

Beeper:

So an acoustic warning is also emitted.

General settings → refer to User Manual

General Display Current Values

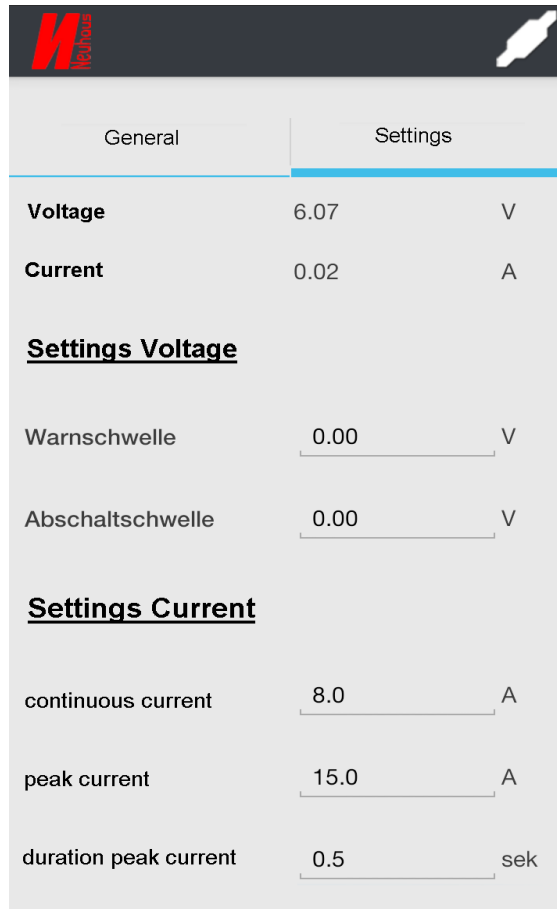
The screenshot shows a software interface with a dark header bar containing a dropdown arrow and the text 'General'. Below the header, the interface is divided into two columns. The left column contains four rows of text labels followed by input fields: 'Module ID' with the value '49', 'Module Name' with 'Power', 'Model name' with 'Bagger 1', and 'Version' with '1.02'. The right column is titled 'Power values' and contains two rows: 'Voltage' with a value of '5.00' and the unit 'V', and 'Current' with a value of '0.05' and the unit 'A'.

The current voltage and current values are displayed in the right half of the window when the module is open.

Specific settings MicroPowerSwitch PC

The screenshot shows a software interface with a dark header bar containing a dropdown arrow and the text 'Settings'. Below the header, the interface is divided into two columns. The left column is titled 'Voltages' and contains two rows: 'Warning threshold' with a value of '0.00' and a unit 'V', and 'Shut-off threshold' with a value of '0.00' and a unit 'V'. Each value has a small up/down arrow icon to its right. The right column is titled 'Flows' and contains three rows: 'Max continuous current' with a value of '5.0' and a unit 'A', 'Max peak current' with a value of '7.0' and a unit 'A', and 'Max peak current duration' with a value of '1.0' and a unit 'sec'. Each value has a small up/down arrow icon to its right.

Specific settings Smart Phone



General	Settings
Voltage	6.07 V
Current	0.02 A
<u>Settings Voltage</u>	
Warnschwelle	0.00 V
Abschaltchwelle	0.00 V
<u>Settings Current</u>	
continuous current	8.0 A
peak current	15.0 A
duration peak current	0.5 sek

Current monitor:

Branch 1, Out1 (permanently active):

Acoustic and visual warning when the warning threshold is undercut. Power cut-off will only happen after 30 seconds, once the shutdown threshold has been undercut. This allows the user to connect with the PC or smart phone to correct any possible falsely set thresholds. Without the time delay it might happen that a module shuts down immediately after it has been turned on without any possibility of changing the parameters. Once the connection to the PC/smart phone is active it will also not be interrupted after 30 seconds, the second branch will remain on permanently as long as the connection via the infrared Datalink exists.

Branch 2, Out 2 (enable-outlet):

Acoustic and visual warning once the warning threshold has been undercut. Shut down after undercutting of shutdown threshold.

Power monitor:

The constant current can be set from 3 to 8A in order to prevent an overload. The temporarily permissible peak current, set between 0-1 second, can run up to 15A. If the time limit of the peak current is exceeded both branches will be shut down. **The power module is not designed to absorb short circuits. Here, we recommend inserting a fuse into the supply circuit.**

Technical data:

- small dimensions: 10.5x 15.9mm
- 3 – 11V input Voltage
- adjustable warning and shutdown thresholds
- up to 8A constant current (adjustable)
- up to 15A peak current (adjustable)
- duration of peak current adjustable to between 0 – 1 second
- displays current values of voltage and current on the PC/smart phone/tablet
- 2 separate branches, whereas one can be actively switched on and off via the “enable“ input.
- acoustic warning through a beeper
- max. current at the outputs of beeper and warning light 500mA each

Factory settings:

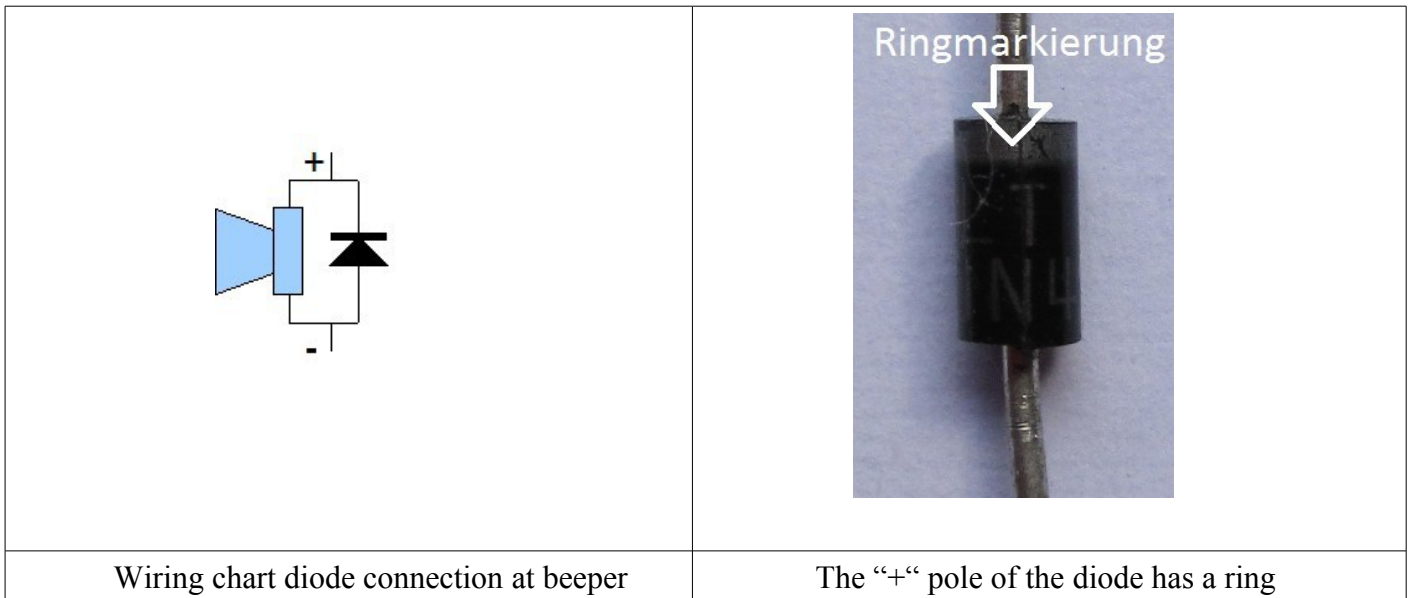
Warning threshold:	0 V
Shutdown threshold:	0 V
Constant current:	8 A
Peak current:	15 A
Duration peak current:	1 s

Beeper:

Electromagnetic elements are used as beepers. These act like coils and have to feature a flyback diode. Otherwise the selection transistor may be destroyed during shutdown through the induced voltage peaks. The diode has to be switched in the lock direction or it may melt off and possibly take the transistor with it. The beeper also requires a resistor, depending on the operating current. 5.6 Ohms for values > 6 V have proven to be adequate. The beeper features poles. Beware of + and – during assembly. There are 2 different types of beepers. The ones used for modules features a functioning internal clock generator. The signal is produced through the processor, the other one produces its own cycle.

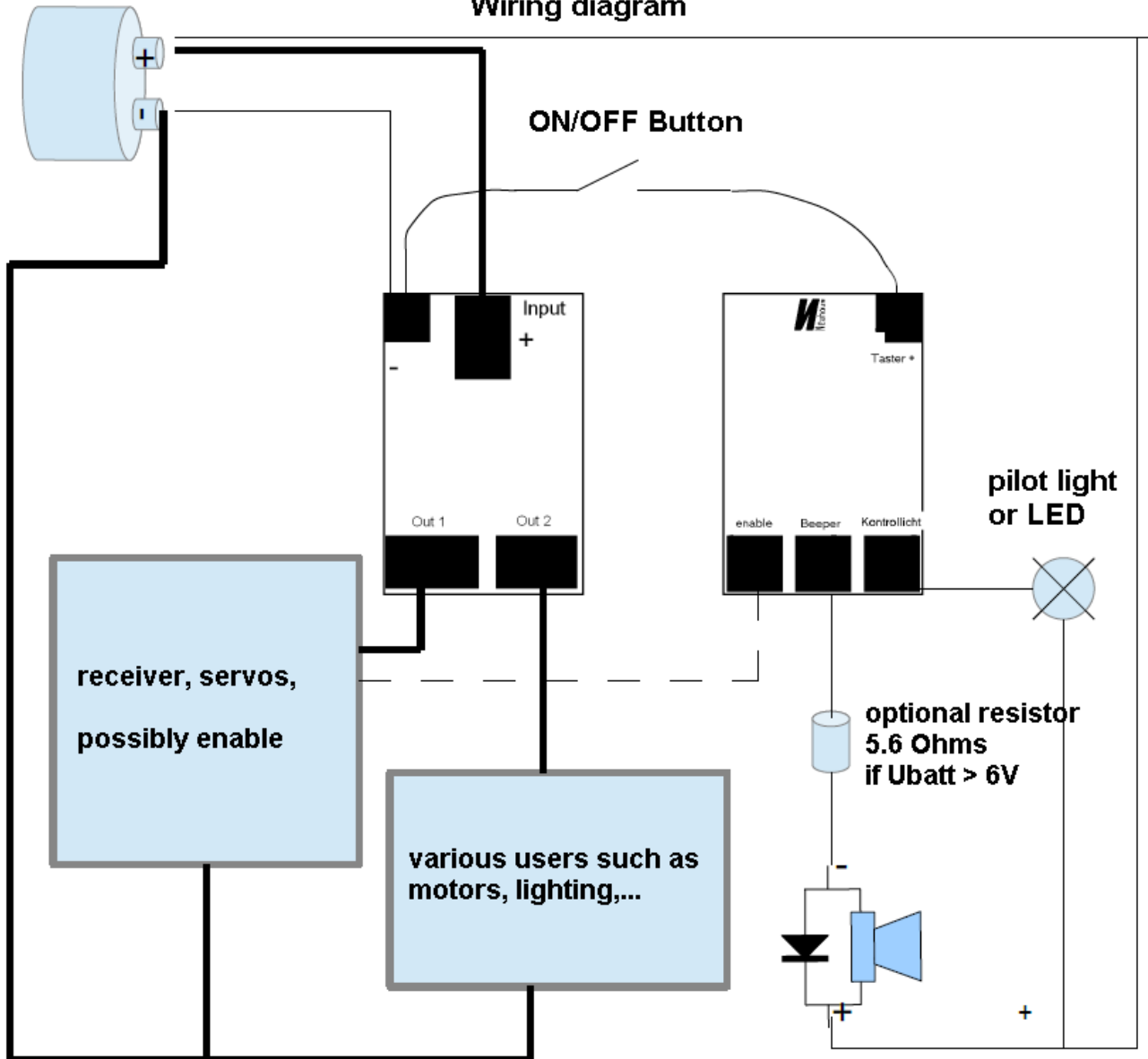


Diode:



The diode should be mounted as close as possible to the beeper.

Wiring diagram



Note on assembly:

If the full current of up to 8A shall be used permanently the supply and leakage wires should feature a minimum profile of 1mm². The negative connection only needs to supply the module, the beeper and the pilot light. Depending on the components used the 500mA will probably not be exceeded, therefore clearly thinner profiles will suffice.

TIP: We recommend keeping the supply wires to the battery as short and thick as possible. If the supply wires are too long and thin the voltage may collapse momentarily leading to a shutdown during peak currents. In said event the problem may be alleviated or resolved by adding a “large” capacitor (>1000µF) to the input.

Items included:

- MicroPowerSwitch module
- Beeper + flyback diode
- resistor 5.6 Ohm
- button
- CD

Imprint

Neuhaus Electronics
Dr. Karl Vetter von der Lilie
A-8223 Stubenberg am See 55
www.neuhaus-electronics.at
0043 650 26 42 721