



# **GEOVENT**

## USERMANUAL



## Geovent PowerSmart II

with built-in 24V transformer for  
direct connection of motordamper

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## General safety measures

**IMPORTANT!**- Read entire manual before installing and using the Geovent PowerSmart II.

Keep this manual for future reference and instruct all users how the PowerSmart works and how operate the device.

Please refrain from dismantling factory mounted parts as this may render the ventilation installation flawed.

## Usage

Geovent PowerSmart II with a built-in 24 volt transformer for direct connection to motor damper.

PowerSmart is a powerful power outlet with a built-in automatic start/stop function controlled for e.g. motor damper and/or fans for process extraction.

When a device connected through the PowerSmart II consumes more power than its idle consumption both relays are activated, and can be used to activate a motor damper or a fan.

By using ventilation only when needed, the running costs can be reduced significantly.

The electrical control is built in to a power outlet and makes for easy installation.

PowerSmart II is supplied with two internal trimmers for adjusting sensitivity and afterrun.

Afterrun is the period the connected device - fan or motor damper will remain activated after connected machine has returned to idle.

Inside the power outlet is a sensor coil that the connected phases passes through.

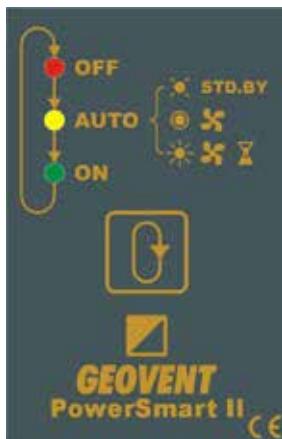
This sensor register changes above the idle power consumption of the connected machine.

Sensitivity can be adjusted for consumption between 0,2 amps and 10 amps. If the connected phase is led through the sensor coil twice, the sensitivity is increased further.

PowerSmart II is equipped with a button on the front panel for easy adjustment.

## Technical Data:

- Supply: 3x230 volts or 4x400 volts ac  
Afterrunning time: Adjustable from 2 sec. and 4 minutes in the standard version.  
Longer times available on request.
- Sensitivity: From 0.2 to 16 amp.  
Triggertime: 0.4 sec.  
Output: 24 volts ac. Max. load 1.5 A  
Sensor mode: Flux measurement.  
Indicator: Tricolored LED in lid shows the current mode. (Stand, manual, automatic, automatic adjustment of set point and afterrunning)
- Set point: With rough adjustment in top position, the set point is automatically adjusted to a idle consumption of the connected machine between ca. 0.2 and 4 A. For idle consumption between 4 and 16 A, the built-in trimmer for gross adjustment of sensitivity is first set on lowest position.
- Furthermore: Connection of external manual switch, for example in suction funnel.



- LED: Red: Off.  
Yellow: Auto - on.  
Yellow/flashing: Auto - standby.  
Yellow/flashing rapidly: Auto - afterrunning.  
Green: Automatic- on.  
Green/flashing: Automatic afterrunning.

## Touch options front panel:

Short press: PowerSmart is in manual mode (the damper is open continuously) and the yellow LED

will light.

Short press again: PowerSmart goes into the afterrunning mode and the LED flashes amber during the preset time.

Long press: PowerSmart turns off.

Short press again: PowerSmart goes into standby mode and the LED lights red.

Long press after off: PowerSmart goes in automatically set point adjustment-mode and a yellow LED lights momentarily when the adjustment occurs and then turns red.

## Adjustment:

When connecting power to the PowerSmart outlet, it goes in standby-mode. LED lights red. Turn the sensitivity adjustment all the way up (clockwise). The timer is preset to app. 10 seconds.

Turn on the connected welder or machine. Turn off PowerSmart with a long press on the foil. Wait a moment and press a long pressure again until the LED light is yellow and let go.

When the LED lights turns red shortly after, PowerSmart is adjusted for the current idle consumption of the connected welder / machine.

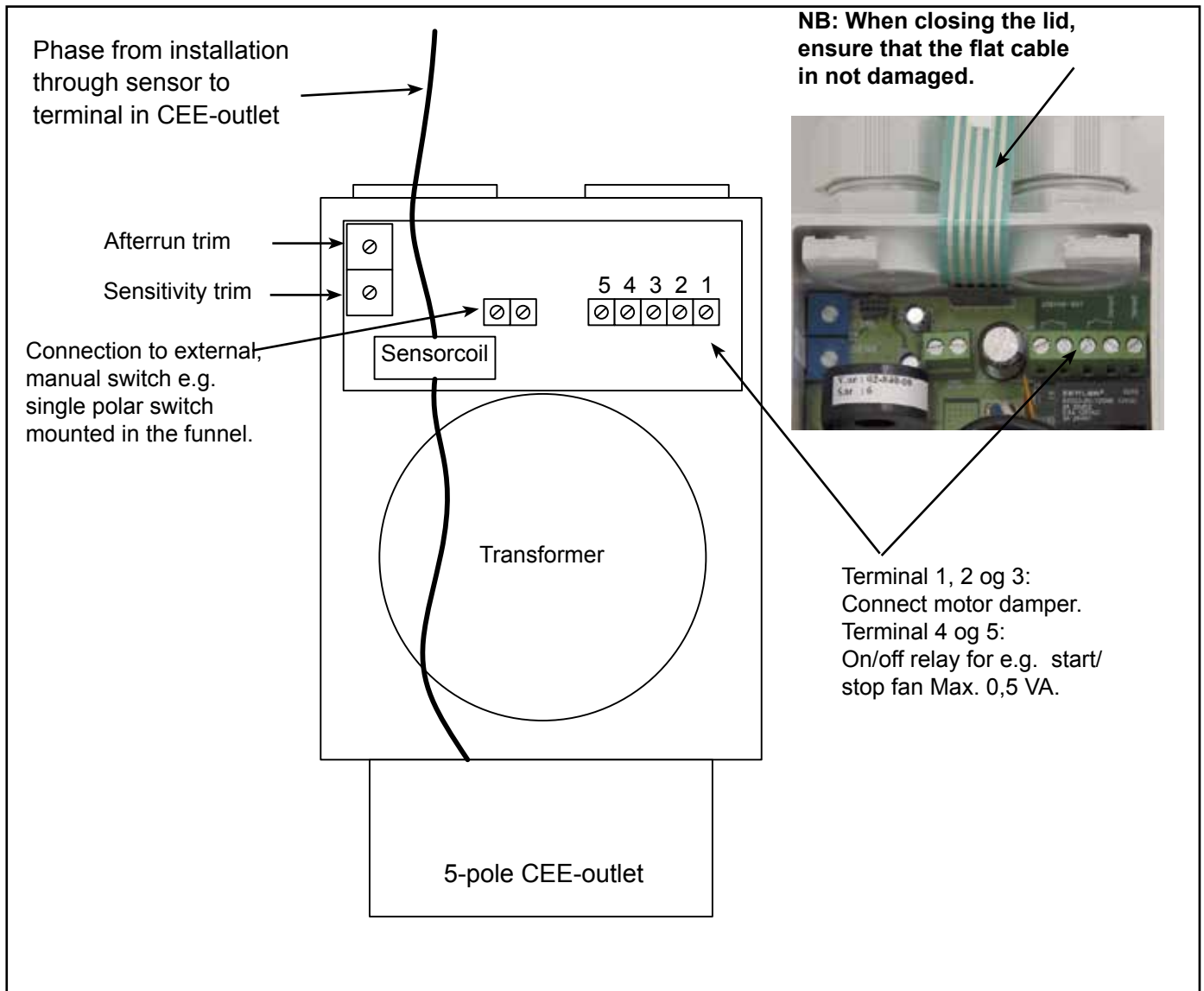
With an additional consumption of the connected machine on at least 0.2 amps, the relay is activated and LED lights are now green. When the additional consumption stops, the green diode flashes in the set afterrunning. If this is not long enough, the afterrunning time is adjusted with the trimmer (time increases clockwise).

NB: If the LED, after set point adjustment is green, and there is no consumption of the connected machine beyond idle consumption, this is higher than 4 amps. This is attenuated as the trimmer for sensitivity.

## Daily use:

When the power is connected the diode red lights and when welded lights are green. At the end of the welding flashes green until afterrunning time is over. With a brief touch on the button on the front, the PowerSmart goes in manual mode and the diode light is yellow. (used eg. if welded with gas). By re-touching the foil, the diode begins to flash yellow until afterrunning time is over. LED lights then turns red again.

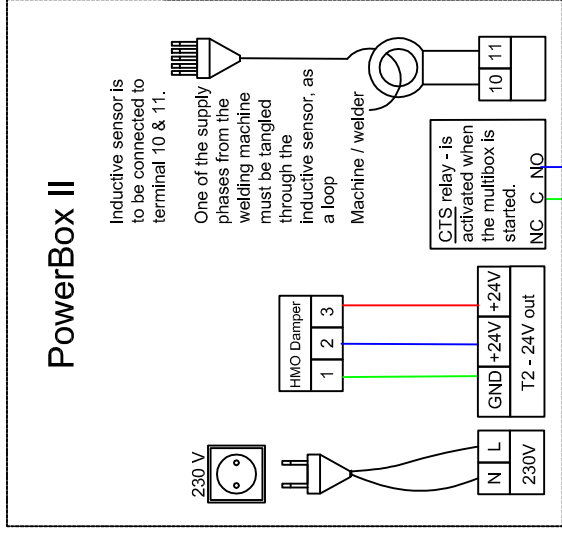
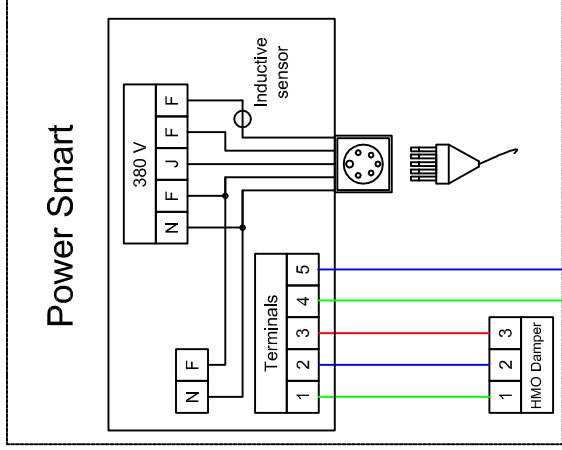
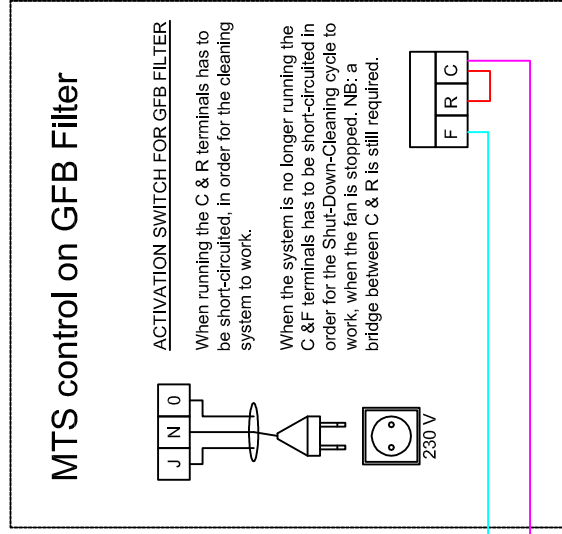
If the foil is touched in app. 2 seconds the PowerSmart is turned off and switched back again by pressing the button briefly.



Connected with the wires from the installation in the CEE aside  
 Blue = zero = black phase. This phase should not be connected to the same phase which goes through the sensor. Except for machines which are only connected to one phase.

**When attaching the lid, please ensure that the flat cable is not crushed and damaged.**

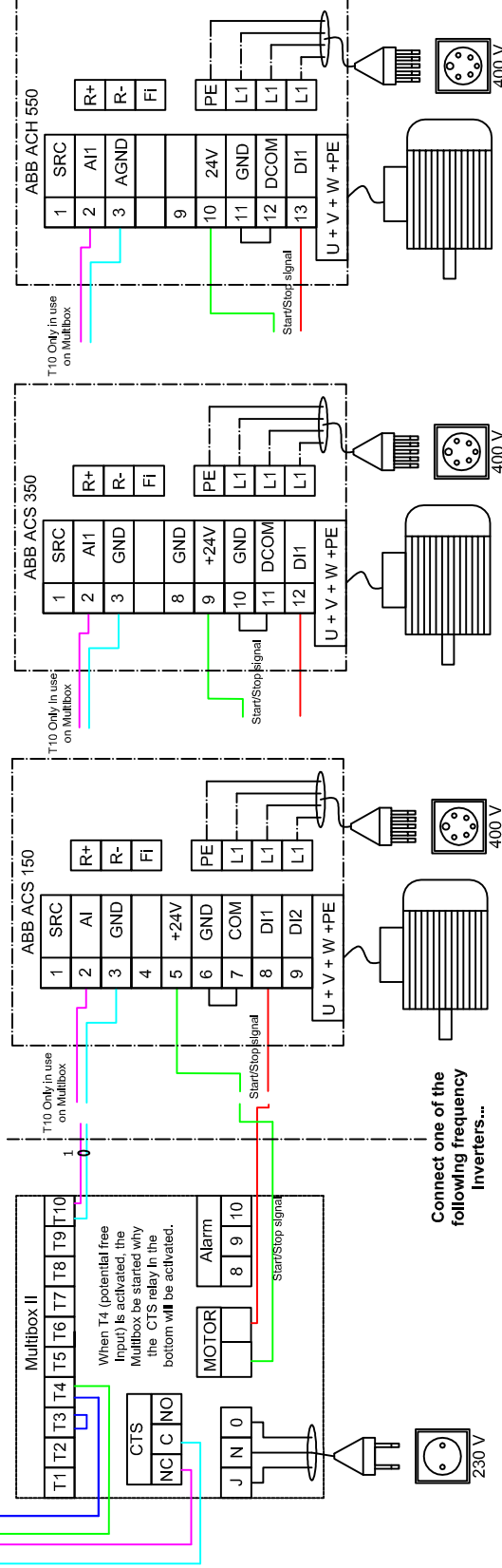
# MULTI WIRING DIAGRAM FOR VARIOUS INVERTERS, MULTIBOX & SWITCHES



ETC.

START/STOP SIGNAL FOR FAN/MULTIBOX - To be coupled in parallel

NB: In case of error, switch the wires on terminal 2 & 3 on the frequency inverter - will typically solve the problem, since the 0V signal was sent to the AI terminal (analogue input)



**Frequency min.:** Group 20 - 03 - [Hz] NB: Minimum frequency can be set down to 15Hz. If set below 15 Hz, both motor and frequency inverter may be damaged.

**Max Amp consumption:** Group 20 - 07. [A]. From the type shield on the motor, please check the stated amp consumption for the motor, which is then typed into the frequency inverter. If the direction on the impeller has to be changed, this can be done on the motor or on the frequency inverter in group 13 - 09.

NB: The ABB "Standard Makro" will in most cases be fine for most typical "Geovent applications", why the frequency inverter should start, when given a signal from the Multibox.

**Settings for Frequency inverter:**

Quick guide - for details see manual

**Ramp up:** Group 22 - 02 [S] (How fast shall the fan de-accelerate up to the requested set point - i.e. 30s.)

**Ramp down:** Group 22 - 03 [S] (How fast shall the fan de-accelerate down to the requested set point - i.e. 30s..)

**Frequency max:** Group 20 - 02. [Hz] Here it's very important to use the supplied instruction manual for the fan, & from the supplied model, to determine the max. frequency from the curves. Never set the frequency higher than the impeller allows, since this might damage or lead to serious injuries.

NB: Max rpms & amp load on motor/impeller must not be exceeded.

**NB - IMPORTANT**

In case that the frequency inverter shall give signal to main control center (AHU), the jumper in the bottom has to be moved (S1) from "I" to "U". You there by change the output from current to voltage.

**Settings on Multibox:**

Quick guide - Please also see manual

**P0:** Version selection - choose 530 (often)

**P1:** Set point for regulation [Pa]

**P2:** Min. Alarm [Pa] lower pressure limit

**P3:** Max. Alarm [Pa] upper pressure limit

**P10:** Shows the actual pressure

## Setup

The PowerSmart II outlet is set to OFF mode (red LED lights continuously). Set the connected machine (welder/fan) to standby. It must be in standby mode and not running.

Press the button on the front panel for 5 seconds to set the idle consumption level for the PowerSmart.

The red LED will flash rapidly. The calibration will be complete by pressing the button again for 5 seconds. When the calibration is finished, the PowerSmart will enter OFF mode and the red LED will light up continuously.

If the calibration was initiated by mistake, the process can be aborted by pressing the button briefly.

Now the PowerSmart can be adjusted with regards to the size of the increase in power consumption is needed before the relay is activated.

Example: PowerSmart is set to a idle setpoint at 3,4 A

Turning the sensortrimmer all the way counter clockwise the relay will activate the connected machine at an increase of  $0,2A = 3,6A$

Turning the sensortrimmer all the way clockwise the relay will activate the connected machine at an increase in power consumption of  $10A = 13,4A$

The period of afterrunning can be adjusted using the Afterrun trimmer. From two seconds with the trimmer turned all the way counter clockwise to up to 4 minutes by turning the trimmer all the way clockwise.

## Calibrating the PowerSmart II

When using, press the button just briefly. Pressing the button for longer time will initiate the calibration process.

By pressing the button the PowerSmart II will cycle between different modes of operation as shown on the panel.

After about 2 seconds the actual mode will be saved in the internal memory.

After power outage the PowerSmart will return to the mode it was in prior to the putage.

**OFF:** The red LED will light continuously and the PowerSmart is turned off. It will not activate any connected machine. Neither will it activate any manually operated machines.

**AUTO:** Yellow LED. PowerSmart II is activated and sensing if there are changes to the powerconsumption.

Dependant of this, the PowerSmart II Have three different modes.

**AUTO - STD.BY**

Yellow LED will flash slowly. The PowerSmart II is on standby and will open the damper if the relay is activated.

**AUTO - ON**

Yellow LED will light continuously. PowerSmart II have registered an increase in power consumption and activated the machine connected to the PowerSmart.II

**AUTO - TIMER**

Yellow LED will blink rapidly. The power smart have registered a drop in power consumption below the set idle and is running the attached machine on afterrun. The damper or fan will stop after the duration of the afterrun.

ON: The green LED lights continuously.  
The PowerSmart II has been manually started by either pressing the button or by using an external switch which is optional.

The damper/fan is activated and will remain activated.

ON - TIMER: The green LED flashes. PowerSmart II has been stopped by pressing the button or the external switch and is running on afterrun.

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## Daily usage.

Normally the PowerSmart II is in Auto-mode and will flash the yellow LED. When the machine is activated the yellow LED will light continuously and flash until the set afterrun is over.

Pressing the button will put the PowerSmart in manual mode and override the relay activation.

Pressing the button again will cancel the override and initiate the set afterrun time.

## Troubleshooting

The protective fuse in the PowerSmart II can be blown. Change if needed. The fuse is 200mA.

## Warranty

Geovent A/S grants a warranty for products, which are defective; when it can be proved that the defects are due to poor manufacture or materials on the part of Geovent.

The warranty comprises remedial action (repairation or exchange) until one year after date of shipment. No claims can be made against Geovent A/S in relation to loss of earnings or consequential loss as a result of defects on products from Geovent.

## User liability

In order for Geovent to be capable of granting the declared warranty, the user/fitter must follow this Instruction Manual in all respects.

Under no circumstances may the products be changed in any way, without prior written agreement with Geovent A/S.



# **GEOVENT**

## **GEOVENT A/S**

HOVEDGADEN 86 • DK-8831 LØGSTRUP


hereby declares that:

The product: Geovent PowerSmart II

has been manufactured in compliance with the directions of the Directive Council of 14 June 1989 in common approximation to the legislation of the member states regarding machine safety (89/392/EEC amended by the directive 91/368/EEC) with special reference to appendix 1 in the Directive regarding basic health and safety requirements in connection with the construction and manufacturing of machinery.

Date: 01.09. 2012

Managing director  
Thomas Molsen



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# **CE**

[www.geovent.com](http://www.geovent.com)