User Manual

VentilationAlarm EP1

LSCONTROL

VentilationAlarm EP1 Highlights

VentilationAlarm EP1 is a universal alarm with light and audible signal. It can be used for monitoring of pressure, 0-10V signal or temperature, where an alarm is requested at exceeded set point. It is also a possibility to connect external equipment such as an external alarm lamp, rotating light or other external equipment.

The alarm has a green «operating» LED, which is lit when operation is monitored. It also has red LEDs, which flash at alarm, a sounding body that beeps with 85dBA @ 10cm at alarm and a button to mute the sound at alarm.

VentilationAlarm EP1 is also equipped with battery back-up at voltage supply failure. At voltage supply failure the battery activates the alarm, both visually and audible in a cycle indicating supply voltage failure (see last page of manual). The warning of supply voltage failure continues in approx. 6-8 hours depending on battery type.

Factory setting is pressure guard function.

Table of Content

Manufacturer Information.

LS Control A/S (CVR: 15288205)
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Safety Instructions

Read the entire manual before installation and use of VentilationAlarm EP1.
If the instructions in this manual are not followed it may cause damage to the product and invalidate the warranty.

This manual is primarily intended for the use of technical personnel who is to mount and install the VentilationAlarm EP1.

It is a precondition that personnel mounting and installing the product possess the necessary practical experience and education within the area of product use and also possess any necessary authorization for installing electric wiring material.

Contact hazard.
Take care of live parts (230V AC) in the device during installation and setting.

Be careful not to damage the product during unpacking.

Make sure to follow common directions for tools used during mounting.

Do not touch product with wet hands.

Do not store or use product outside recommended temperature area.

Do not wash product with water or any other liquids.

Do not wash product with water or any other liquids.

Product must not be exposed to direct sunlight or any other UV-light.

Make sure to be ESD-discharged before installing the product.

Product must not be disposed of in refuse collection.

Product must be disposed of according to local regulations regarding disposal of small electronic products.

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Standards and Directives

VentilationAlarm EP1 complies with the standards and directions below.

- DS/EN 60730-1:2016 - Automatic electrical controls - Part 1: General requirements.

- EN 60730-1:2016/A1:2019 - Appendix: Automatic electrical controls - Part 1: General requirements.

- EN 61000-6-1:2007 - Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments

- EN 61000-6-3:2007 - Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments

- EN 61000-6-3/A1:2011 - Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments

This product complies with the RoHS directive, Directive 2011/65/EU
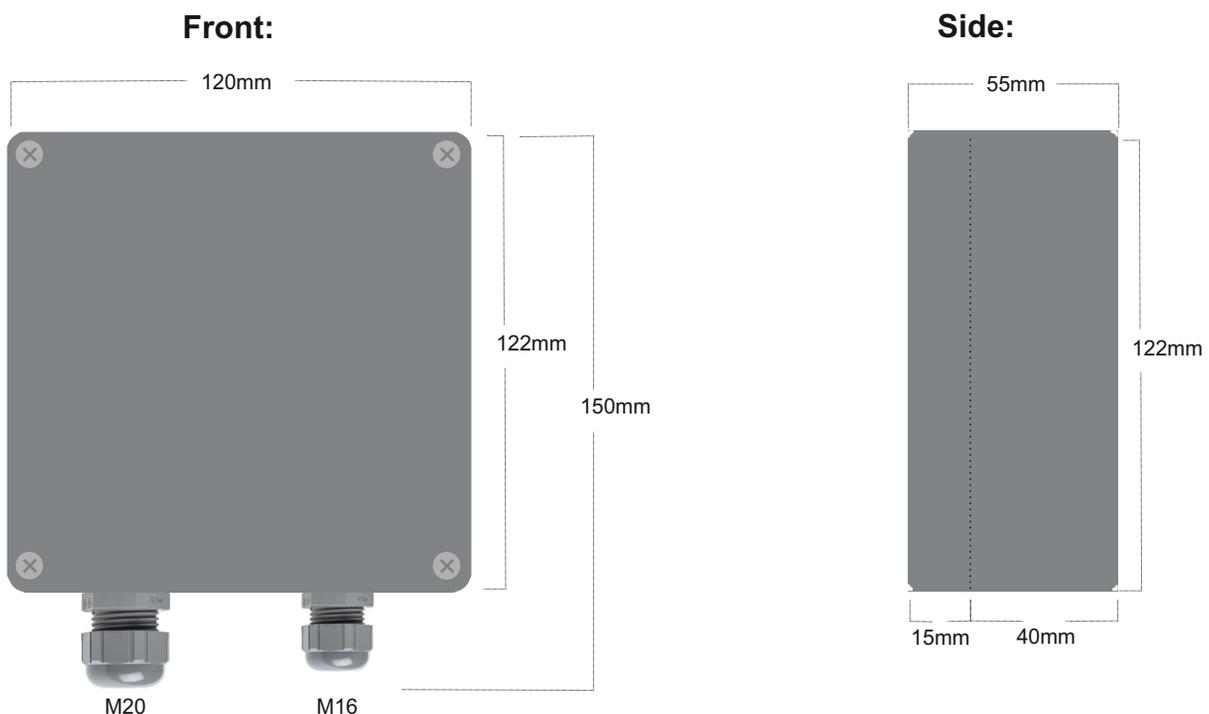
The manufacturer of this product is registered with the statutory return system under the WEEE directive.
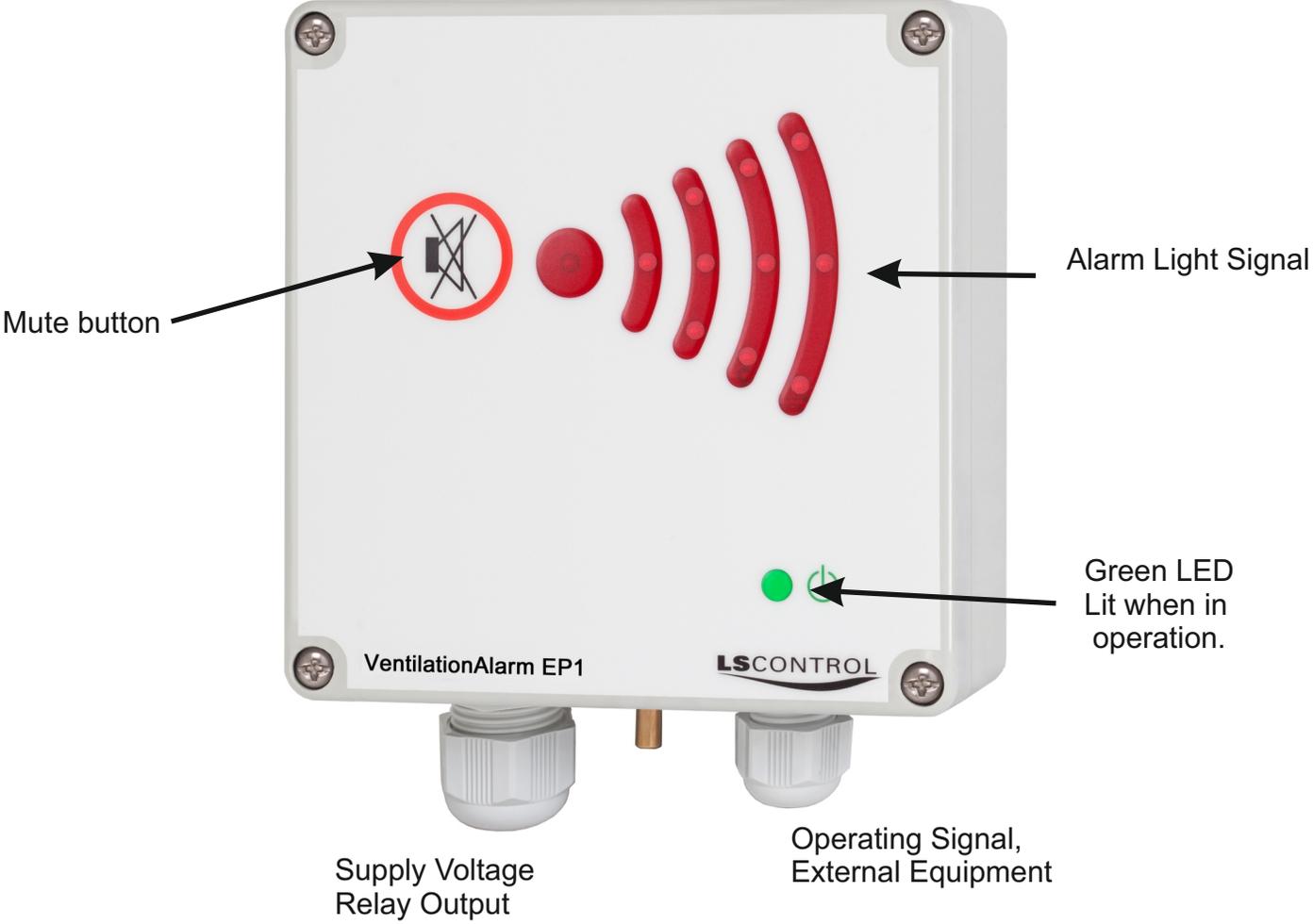
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Technical Specifications

Supply Voltage:	230V AC ±10%	Measurement Area Pressure: Hysteresis Pressure:	20-2000Pa 15Pa +10%
Main Fuse: 16A			
Frequency:	50-60Hz	Measurement Area Signal: Hysteresis Signal:	Approx 0-10V 0,3V
Relay:	5A Ac1	Measurement Area Temperature: Hysteresis Temperature:	-30 to +30°C 1°C
Power Consumption:	3,5-5W		
Enclosure:	IP 53	Sensor Type:	NTC resistance 22K Ohm
Dimension HxWxD:	120x122x55 mm	Battery:	9V 6LR61 (alkaline is recommended)
Operating Temperature: 0-50°C			
Humidity:	0-80% RH Non-condensing	Enclosed Accessories: Battery, tube fitting and 1m PVC plastic tube.	
Voltage Output:	12-15V DC max. 50 mA		
Sound Level:	>85dBa @ 10cm		

Size and Measurements

Front:

120mm

122mm

150mm

M20   M16

Side:

55mm

122mm

15mm   40mm

Mute button

Alarm Light Signal

Green LED
Lit when in
operation.

VentilationAlarm EP1

Supply Voltage
Relay Output
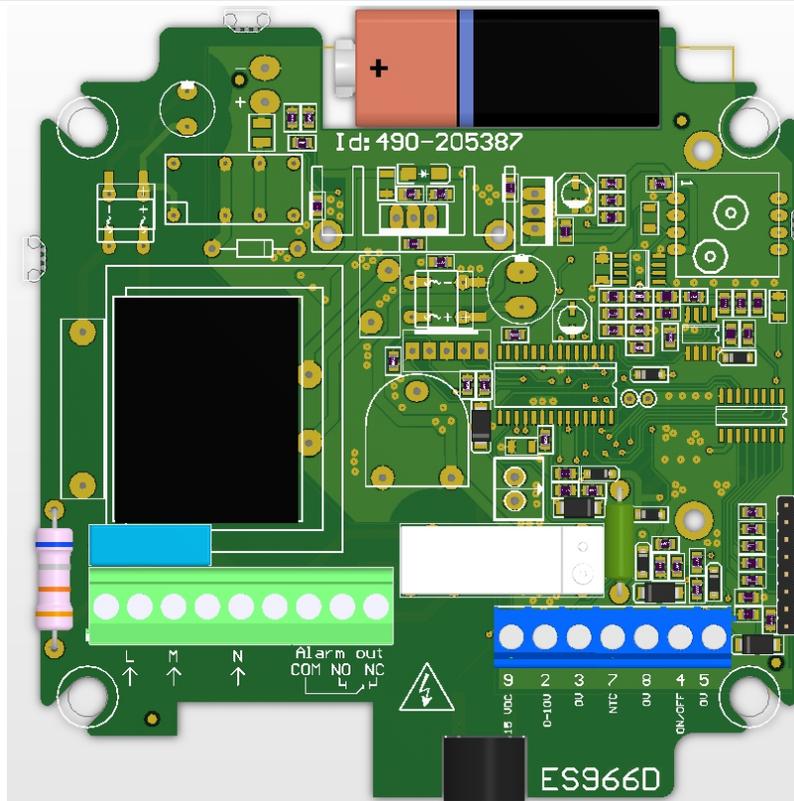
Operating Signal,
External Equipment

Mounting

Alarm EP1 must be mounted on a vertical, fixed and non-vibrating surface with screws through the deep screw holes in each corner of the box.

Please also pay attention to the section on Safety Instructions.

Overview of Terminals

Terminal	Description	Comment
(L)	Supply Voltage Connection (L)	230V AC ± 10%
(M)	Operating Signal Connection (M)	230V AC ± 10%
(N)	Supply Voltage connection (N)	230V AC ± 10%
(COM)	Alarm Out	COMMON
(NC)	Alarm Out	Closed to COM during normal operation / and missing supply voltage
(NO)	Alarm Out	Closed to COM at alarm
9 (15 VDC)	15V DC	12-15V for supply of external sensor max 50mA
2 (0-10V)	0-10V	0-10V signal input
3 (0V)	0V/GND	GND
7 (NTC)	NTC	For NTC 22K Sensor/Resistor
8 (0V)	0V/GND	For NTC 22K Sensor/Resistor
4 (ON/OFF)	ON/OFF	Operating Signal
5 (0V)	0V/GND	Operating Signal

Electrical Connection

VentilationAlarm EP1 should be connected so it turns on and off with the monitored system. It is therefore an advantage to also use the switch turning on the system as an operating switch for the alarm. However, it is also possible instead to use a low voltage operation switch (an auxiliary contact). Both options are shown below. 9V battery must be connected to the battery clips.
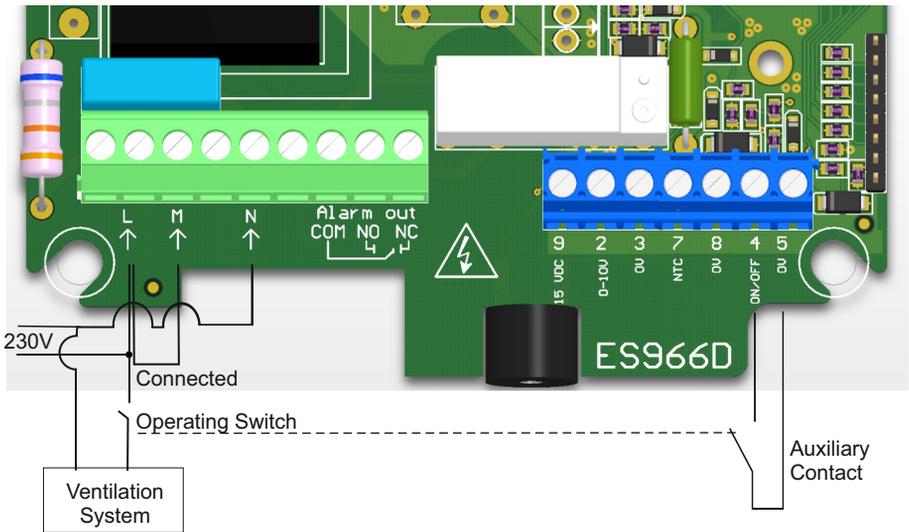
Operating Signal Phase

Constant supply voltage on L and N, phase on M when monitoring is to be activated, e.g. when exhaustion is turned on. Terminal 4 and 5 must be connected.
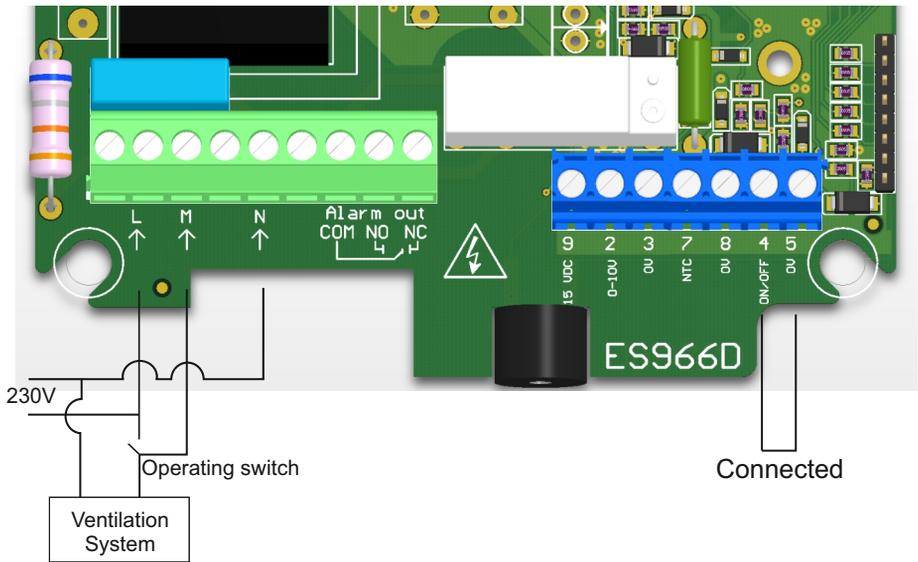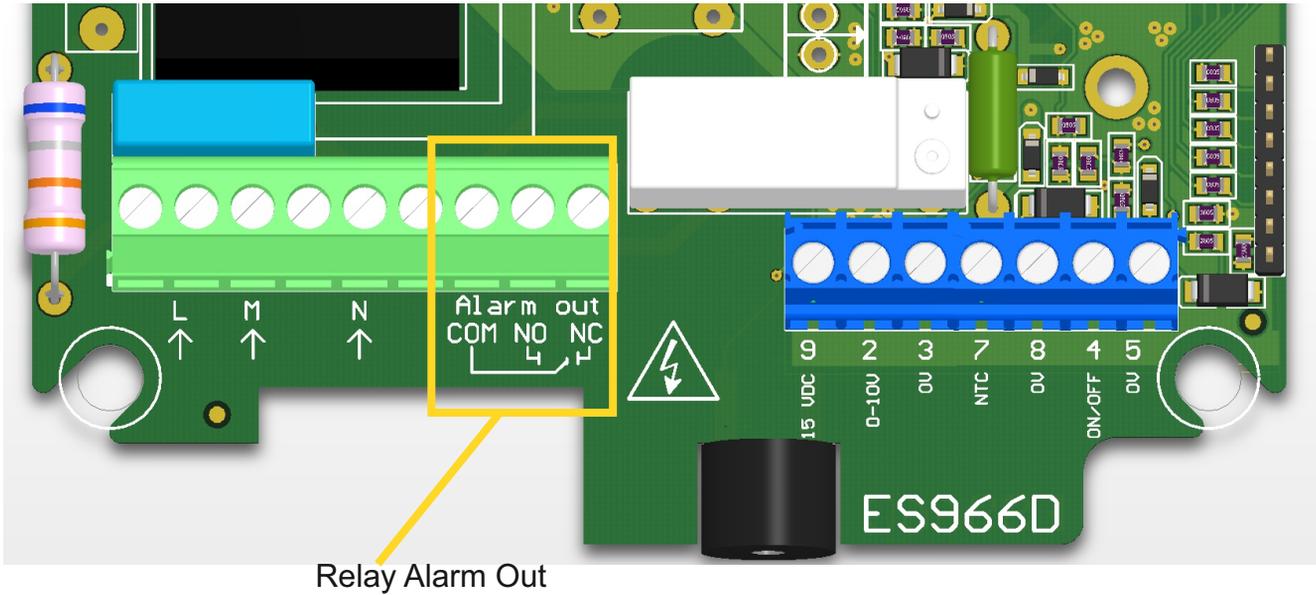

Operating Signal Low Voltage:

Constant supply voltage on L, phase on N, L and M must be connected. Operating switch (potential free contact) must be connected to terminal 4 and 5.

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Description of Relay Alarm Out

Relay Alarm Out

State of VentilationAlarm EP1	Light Signals	Terminals Closed
In operation and OK	Green LED constant lit Red LEDs turned off	Terminal COM and NC connected
In operation and alarm	Green LED constant lit Red LEDs flash (Audible alarm beeps)	Terminal COM and NO connected
Supply Voltage turned off	Green LED turned off Red LEDs flash (Audible alarm gives 1 beep approx. every 12th second)	Terminal COM and NC connected
Out of operation	Green LED turned off Red LEDs turned off (no audible alarm)	Terminal COM and NC connected

Choosing Function of VentilationAlarm EP1

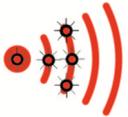Factory setting of VentilationAlarm EP1 is monitoring of pressure (pressure guard).

To choose one of the other functions:

Press the button ›Mute‹ for 10 seconds until the first 2 LEDs in the alarm signature flash
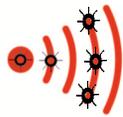

For each push on ›mute‹ the VentilationAlarm changes function and acknowledges with below light signal in the alarm signature..
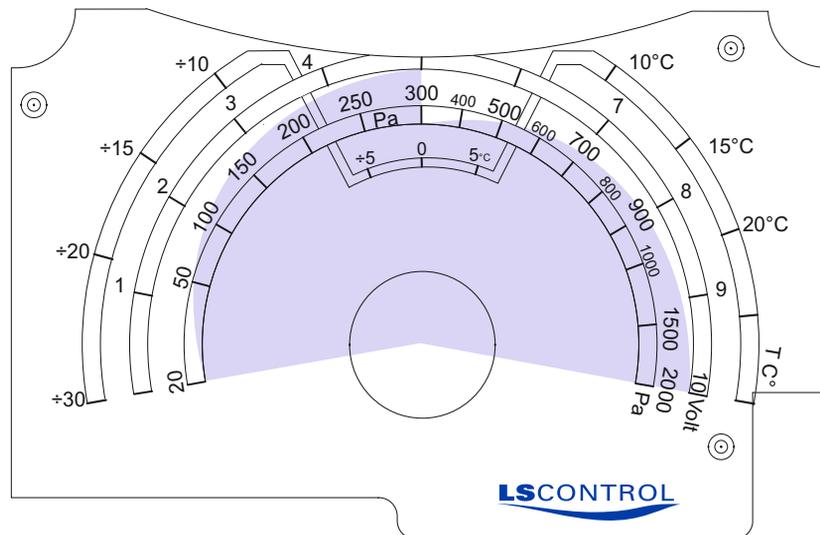
Pressure Guard	Signal Guard (external sensor)	Temperature Guard (external NTC 22K)

☀ = light

When light signal flashes according to the required function just avoid pushing any buttons for 10 seconds whereafter the set function is saved and the LEDs stop flashing.

Set Point Setting of VentilationAlarm EP1

Set point is easily set on VentilationAlarm EP1 using the disc under the lid.

Outer circle shows the temperature scale in °C, middle circle is the 0-10V signal and inner circle shows pressure in pascal. Due to the shape of the disc the temperature scale -5 to +5°C is placed in the middle under the pascal scale.

The arrow must be set to point at the required set point - just like setting a parking disc in a car.

VentilationAlarm EP1 Set to Monitor Pressure (Pressure Guard)

When the function pressure guard is chosen the VentilationAlarm EP1 monitors if the pressure falls below the set point.

Alarm with both light and audible signal is activated when pressure is too low compared to set point. Audible signal can be muted, while the light signal will continue to flash until the pressure exceeds the set point.

The VentilationAlarm EP1 resets the mute function automatically when pressure is normalized. This ensures that in case pressure again falls below set point both light and audible signal will again be activated.

Setting the set point
When VentilationAlarm EP1 is mounted the set point is set according to the PA scale. If the system is in operation this can be done by turning the arrow on the disc clockwise till alarm starts. Then the arrow is very slowly turned counter clockwise until the alarm stops. Set point is now set so alarm stops at normal pressure and starts if pressure gets too low.
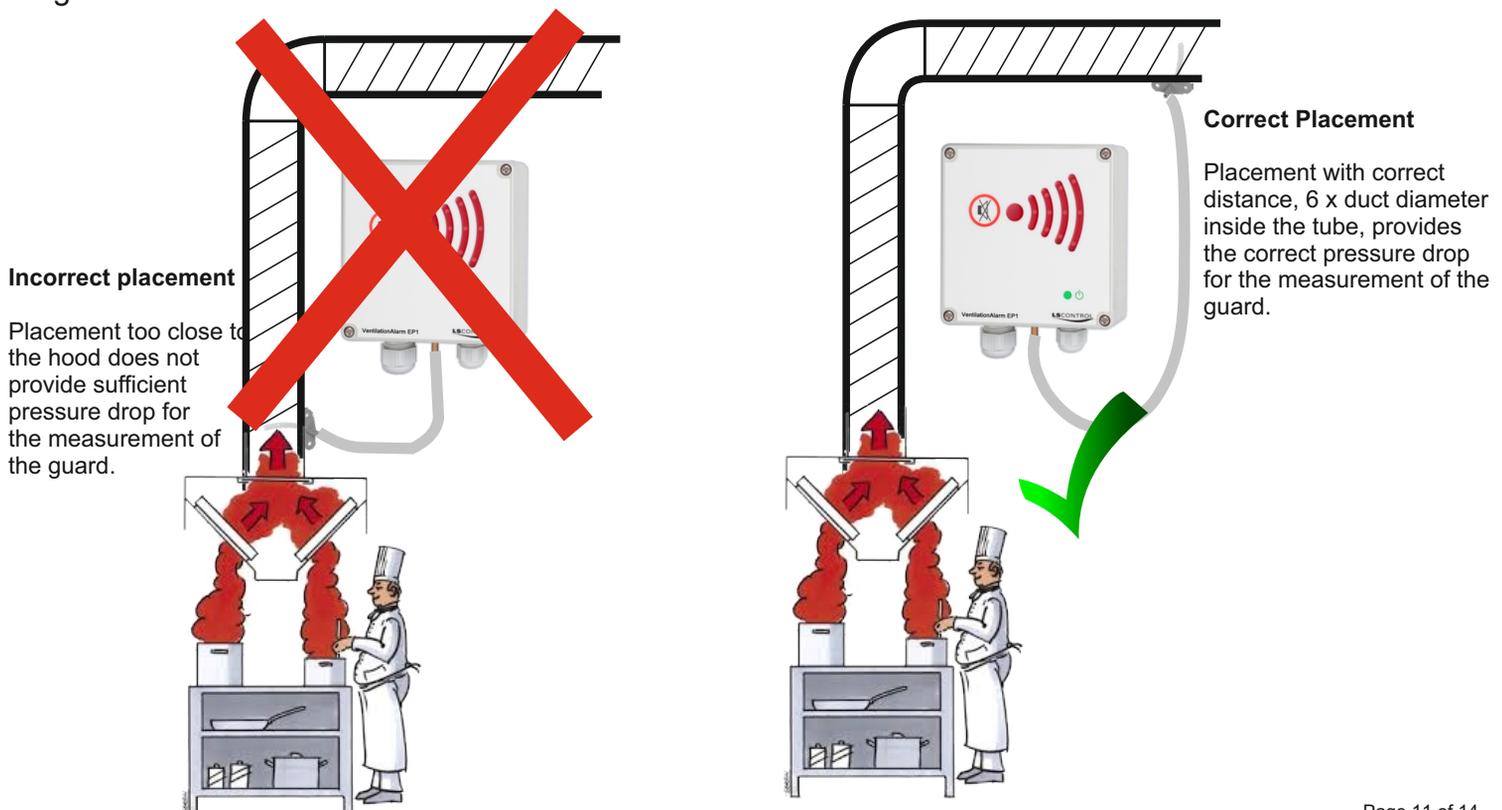
If the alarm is not in operation it is necessary that the supplier of the ventilation system provides measurement schemes over pressure drops. The set point is then to be set according to these schemes.

Power-up
When VentilationAlarm EP1 is put into operation, as described in this manual, the red alarm LEDs flash, while the audible alarm is deactivated the first 30 seconds to avoid audible alarm when powering-up the system.

Mounting of Tube
1m PVC plastic tube is included. A longer tube may if necessary be used . Please also refer to below drawing for correct placement of tube fitting (point of measurement) to get the most optimal monitoring using VentilationAlarm EP1.

Incorrect placement

Placement too close to the hood does not provide sufficient pressure drop for the measurement of the guard.

Correct Placement

Placement with correct distance, 6 x duct diameter inside the tube, provides the correct pressure drop for the measurement of the guard.
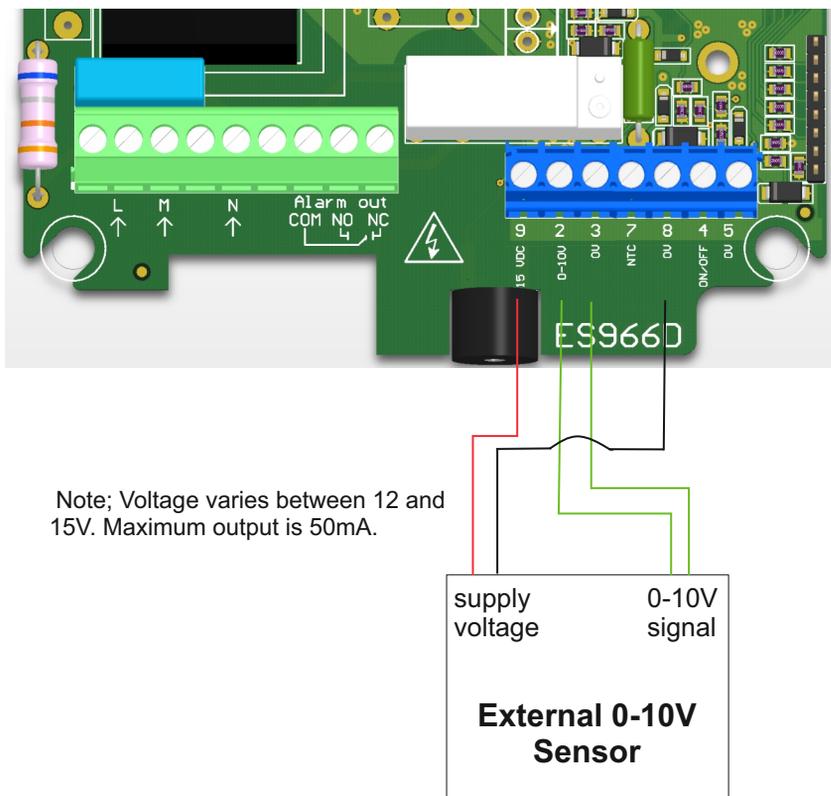
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VentilationAlarm EP1 Set to Monitor a 0-10V signal (Signal Guard)

When function Signal Guard is chosen, the VentilationAlarm EP1 monitors if the 0-10V signal from external sensor falls below the set point.

Alarm with light and audible signal is activated when signal value is lower than the set point. Audible signal can be muted while light signal continues to flash until signal from the external sensor has exceeded the set point by 0,3V.

The VentilationAlarm EP1 resets the mute function automatically when signal is correct. This ensures that in case signal again falls below set point both light and audible signal will again be activated.

Connection of External Sensor

Note; Voltage varies between 12 and 15V. Maximum output is 50mA.

supply voltage	0-10V signal
External 0-10V Sensor	

Setting the set point
When VentilationAlarm EP1 is mounted the set point is set by the arrow on the disc according to the Volt scale. Then the VentilationAlarm EP1 monitors that the signal does not fall below the chosen set point. And if it does, VentilationAlarm EP1 alarms with both light- and audible signal.

Power-up
When VentilationAlarm EP1 is put into operation, as described in this manual, the red alarm LEDs flash, while the audible alarm is deactivated the first 30 seconds to avoid audible alarm when powering-up the system.
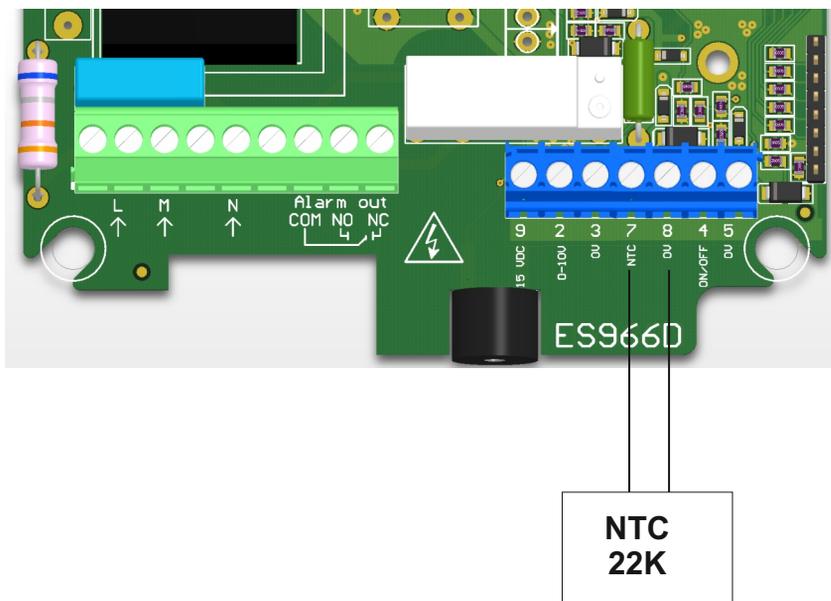
VentilationAlarm EP1 Set to Monitor Temperature (Temperature Guard)

When the function temperature guard is chosen the VentilationAlarm EP1 monitors if the temperature, measured by an external NTC 22K resistor, is exceeding the set point. The function is a cooling guard alarming if temperature is too high in the measured.

Alarm with light and audible signal is activated when temperature exceeds set point. Audible signal can be muted while light signal continues to flash until temperature has fallen 1°C under the set point.

The VentilationAlarm EP1 resets the mute function automatically when temperature is correct. This ensures that in case temperature again raises above the set point both light and audible signal will again be activated.

Connection of NTC 22K resistor

Setting the set point
When VentilationAlarm EP1 is mounted the set point is set by the arrow on the disc according to the temperature scale. Then the VentilationAlarm EP1 monitors that the temperature does not exceed the chosen set point. And if it does, alarms with both light and audible signal.

Power-up
When VentilationAlarm EP1 is put into operation, as described in this manual, the red alarm LEDs flash, while the audible alarm is deactivated the first 30 seconds to avoid audible alarm when powering-up the system.

Alarm due to pressure, temperature or sensor signal
Light signal follows the below pattern in a constant cycle, each lasting 1,4 second before repeated.
Audible signal is loud beeps each lasting 100ms followed by 200ms pause. Audible signal can be muted.
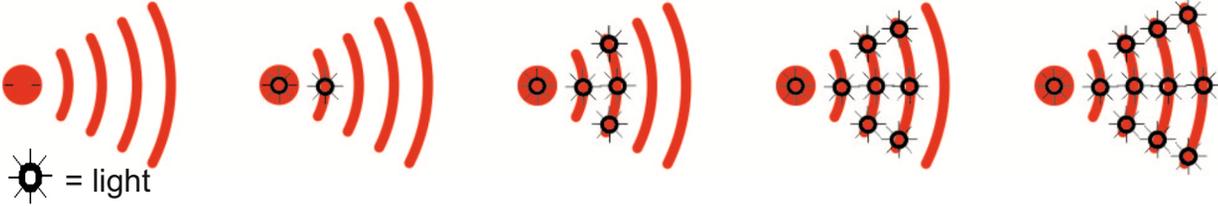
= light

Alarm due to missing supply voltage
Light signal follows the below cycle.
Audible signal is a short beep every approximate 12 seconds. Audible signal *cannot* be muted.

= light