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GA-1

Grease Separator Alarm Device

Installation and Operating Instructions

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SYMBOLS

⚠ Warning / Attention

⧈ Device is protected by double or reinforced insulation

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1 GENERAL

GA-1 is an alarm device for monitoring the thickness of the grease layer accumulating in a grease separator.

The system consists of GA-1 control unit, GA-SG1 sensor and a cable joint.

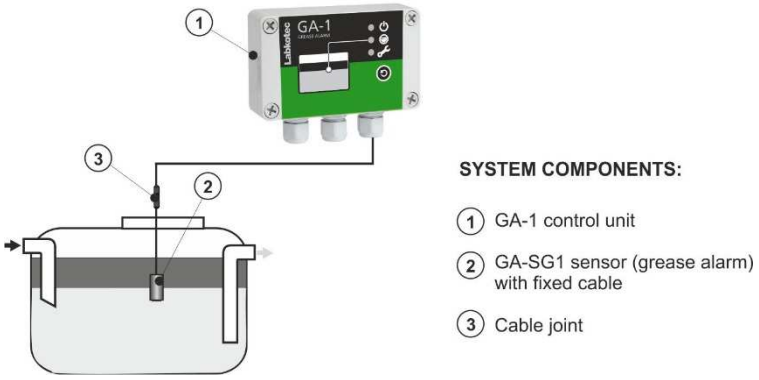

Figure 1. Grease separator supervision with GA-1 alarm device

GA-SG1 sensor is installed into the grease separator and it supervises thickness of grease layer.

The LED indicators, push button and interfaces of the GA-1 control unit are described in figure 2.

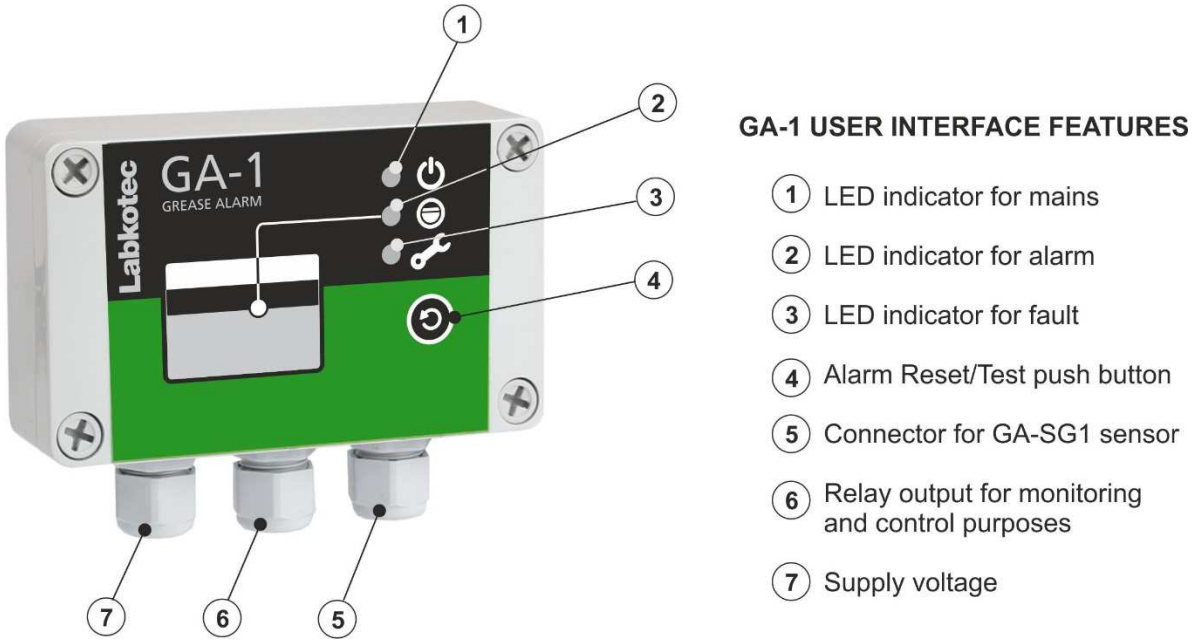

Figure 2. GA-1 control unit – features

2 INSTALLATION

2.1 GA-1 control unit

GA-1 control unit can be wall-mounted. The mounting holes are located in the base plate of the enclosure, beneath the mounting holes of the front cover.

The cover of the enclosure must be tightened so, that the edges touch the base frame. Only then does the push button function properly and the enclosure is tight.

Before installation, please read the safety instructions in chapter 6!

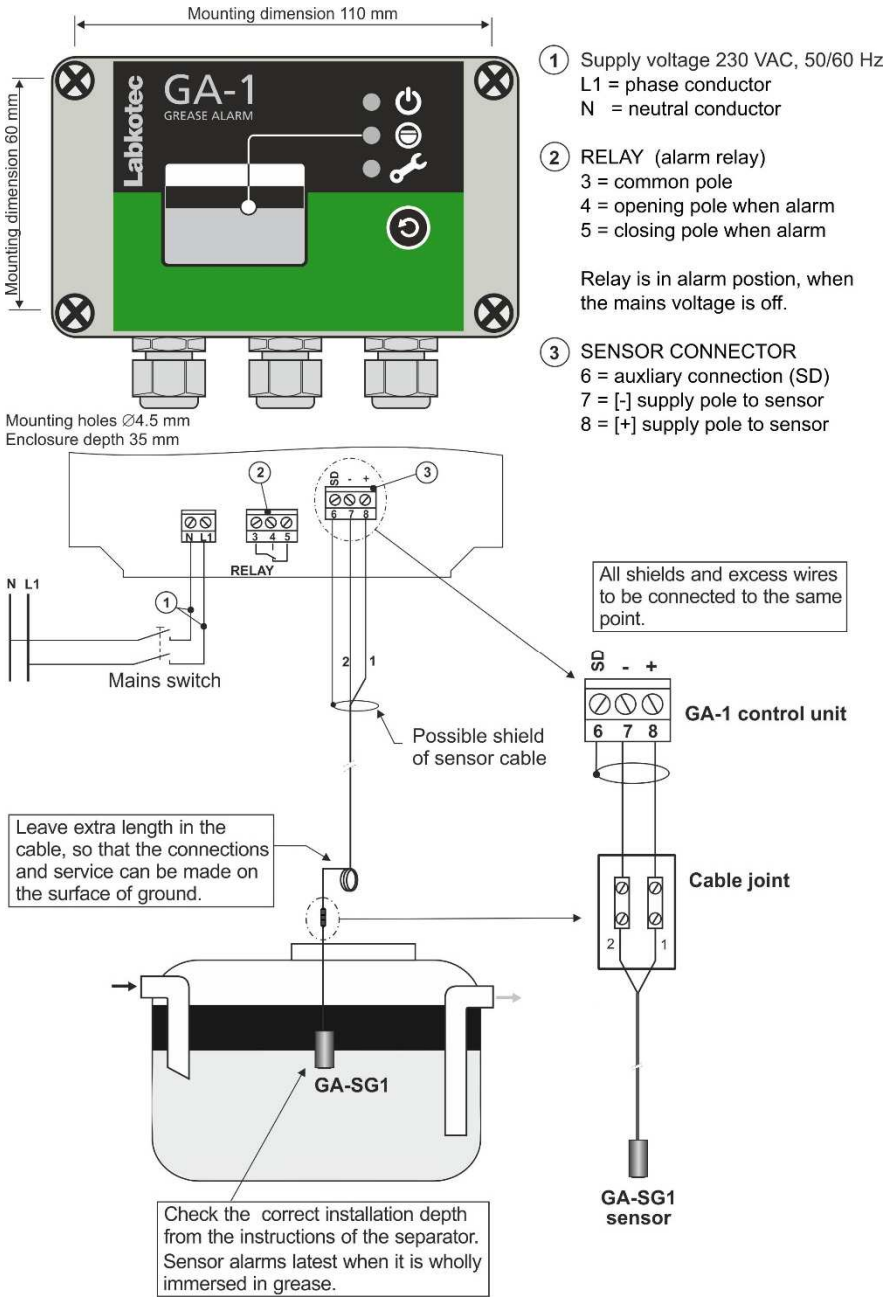

Figure 3. GA-1 alarm device installation.

2.2 GA-SG1 sensor

GA-SG1 sensor should be installed as described in figure 3.

The sensor gives an alarm latest when it is wholly immersed in grease.

Please check the correct installation depth also from the instructions of the grease separator.

2.3 Installation Accessories

The delivery includes a cable joint (figure 4), fixing accessories (figure 5) for installation of the control unit and the sensor. In figure 6 is an installation example of cable with suspension hook.

Connections of the sensor cable inside the cable joint are explained in figure 3. If shielded cable is used cable shields and possible excess wires need to be connected to the same point in galvanic contact.

IP rating of the cable joint is IP68. Make sure, that the cable joint is closed properly.

Figure 4 Cable joint

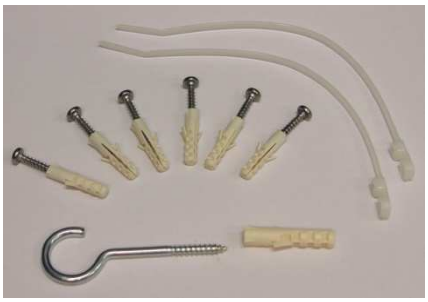

Figure 5. Fixing accessories

Figure 6. Cable installation example

3 OPERATION

The operation of the alarm device should be checked always after the installation. Also check the operation always when emptying the separator or at least once every six months.

Functionality test

1. *Immerse the sensor into water. The device should be in normal mode.*
2. *Lift the sensor up in air or grease. A grease alarm should be generated (see chapter 3.1 for more detailed description).*
3. *Clean up the sensor.*
4. *Immerse the sensor back into water. The alarm should go off after a delay of 10 sec.*

A more detailed description of the operation is provided in chapter 3.1.
If the operation is not as described here, check connections and cabling. If necessary contact a representative of the manufacturer.

3.1 Modes of operation

Normal mode – no alarms

Sensor is totally immersed in water.

Mains LED indicator is on.
Other LED indicators are off.
Relay is energized.

Grease alarm

Sensor is immersed in grease. (the sensor gives an alarm latest when it is wholly immersed in grease).

Mains LED indicator is on.
Grease Alarm LED indicator is on.
Buzzer on after 10 sec delay.
Relay de-energize after 10 sec delay.
(Note. The same alarm takes place when GA-SG1 sensor is in the air.)

After removal of an alarm, the Grease Alarm LED indicator and buzzer will be off, and relay will be energized after 10 sec delay.

Fault alarm

Sensor cable break, short circuit or a broken sensor.

Mains LED indicator is on.
Sensor circuit Fault LED indicator is on after 10 sec delay.
Buzzer is on after 10 sec delay.
The relay de-energize after 10 sec delay.

Reset of an alarm

When pressing the Reset/Test push button.

Buzzer will go off.
Relay and LED indicator will not change their position until the alarm or fault situation is removed.
If the buzzer is not reset, it goes off automatically after three days.

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TEST FUNCTION

Test function provides an artificial alarm, which can be used to test the function of the GA-1 alarm device and the function of other equipment, which are connected to GA-1 via its relay.

Attention! Before pressing the Reset/Test button, make sure that the change of relay status does not cause hazards elsewhere!

Normal situation	*When pressing the Reset/Test push button:* *Grease Alarm and Fault LED indicators are immediately on.* *Buzzer is immediately on.* *Relay de-energize after 2 sec of continuous pressing.* *When the Reset/Test push button is released:* *LED indicators and buzzer go immediately off.* *Relay energize immediately.*
Alarm on	*When pressing the Reset/Test push button for the first time:* *Buzzer will go off.* *When pressing the Reset/Test push button after that:* *Fault LED indicator is immediately on.* *Grease Alarm LED indicator remains on.* *Buzzer remains on. If it has been reset earlier, it will return to be on.* *When the Reset/Test push button is released:* *The device returns right away to the preceding status.*
Fault alarm on	*When pressing the Reset/Test push button:* *The device does not react to the test at all.*

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4 TROUBLE-SHOOTING

Problem:	***No alarm when sensor in grease or air, or the alarm will not go off***
Possible reason:	*Sensor is dirty.*
To do:	*1. Clean-up the sensor and check the operation again.*

The following operations must be performed only by a qualified electrician!

Problem:	***MAINS LED indicator is off***
Possible reason:	*Device doesn't get supply voltage.*
To do:	*1. Check that power separation switch is not switched off.* *2. Measure the voltage between poles N and L1. It should be 230 VAC + 10 %.*

Problem:	***FAULT LED indicator is on***
Possible reason:	*Current in sensor circuit too low (cable break or out of connector) or too high (cable in short circuit). The sensor might also be broken.*
To do:	*1. Make sure, that the sensor cable has been connected correctly to the GA-1 control unit.* *2. Measure the voltage separately between the poles 7 and 8. The voltages should be between 7,0 - 8,5 V. Note! The voltage alternates between the sensor connectors in 1 second intervals.* *3. Measure sensor current when the sensor is in the air or in grease. The measured current should be 7,0 – 8,5 mA.* *4. Measure current when the sensor is in the water. Measured current should be 2,5 – 3,5 mA*

If the problem can not be solved with the above instructions, please contact Labkotec Oy's service.

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5 REPAIR AND SERVICE

The sensor should be cleaned and the operation should also be tested when emptying or maintaining the grease separator or at least once every six months. The easiest way to check the operation is to lift the sensor up in the air and to put it back to the separator. The operation is described in chapter 3.

For cleaning, a mild detergent (e.g. washing-up liquid) and a scrubbing brush can be used.

In case of queries, please contact Labkotec Oy's service:

service@labkotec.fi.

6 SAFETY INSTRUCTIONS

The device does not include a mains switch. A two pole mains switch (250 VAC 1 A), which isolates both lines (L1, N) must be installed in the main power supply lines in the vicinity of the unit. This switch facilitates maintenance and service operations and it has to be marked to identify the unit.

If opening of housing's cover is needed, only a qualified electrician is allowed to install or to maintain the device.

If the device is used against the manufacturer's instructions, the protection provided by the device may be damaged.

The device is not allowed to install in hazardous areas.

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7 TECHNICAL DATA

GA-1 control unit	
Dimensions	125 mm x 75 mm x 35 mm (L x H x D)
Weight	250 g Package 0,8 kg (control unit + sensor + cable joint)
Enclosure	IP 65, material polycarbonate Cable glands adjustment range is 6 – 10mm
Operation temperature	-30 ºC…+50 ºC
Supply voltage	230 VAC ± 10 %, 50/60 Hz The device is not equipped with a mains switch
Power consumption	5 VA
Sensors	GA-SG1 sensor
Relay output	Potential-free relay output 250 V, 5 A Operational delay 10 sec. Relay de-energize at trigger point.
Electrical safety	IEC/EN 61010-1, Class II ⧈, CAT II
EMC Emission Immunity	 IEC/EN 61000-6-3 IEC/EN 61000-6-1
Manufacturing year: Please see the serial number on the type plate	xxx x xxxxx xx **YY** x where YY = manufacturing year (e.g. 14 = 2014)

GA-SG1 sensor	
Principle of operation	Capacitive
Material	POM, PUR, AISI 316
Weight	350 g (sensor + fixed cable)
IP-classification	IP68
Operation temperature	0 ºC…+90 ºC
Cable	Fixed cable 2 x 0.75 mm^2. Standard length 5 m, other lengths optional. The max. length of the fixed cable is 15 m, can be extended. Maximum cable loop resistance is 75 Ω.
EMC Emission Immunity	 IEC/EN 61000-6-3 IEC/EN 61000-6-1
Manufacturing year: Please see the serial number from the bottom of sensor	GAxxxxx**YY** where YY = manufacturing year (e.g. 14 = 2014)

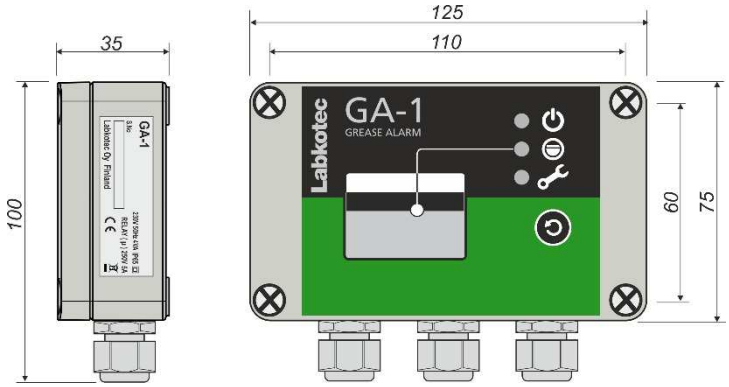

Figure 7. GA-1 control unit

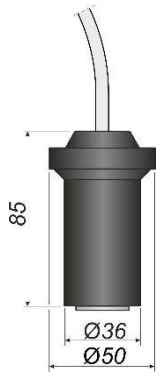

Figure 8. GA-SG1 sensor

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Declaration of Conformity

This declaration certifies that the below mentioned apparatus conforms to the essential requirements of the EMC directive 2004/108/EY and Low-Voltage directive (LVD) 2006/95/EC.

Description of the apparatus:	Measuring and control unit with sensor
Type:	GA-1 Grease Alarm control unit with GA-SG1 sensor GA-2 Grease Alarm control unit with two GA-SG1 sensors
Manufacturer:	Labkotec Oy Myllyhaantie 6 FI-33960 Pirkkala FINLAND

The construction of the appliance is in accordance with the following standards:

EMC:	
EN 61000-6-1 (2007)	Electromagnetic compatibility, Generic standards – Immunity for residential, commercial and light-industrial environments.
EN 61000-6-3 (2007) +A1 (2011)	Electromagnetic compatibility, Generic standards – Emission standard for residential, commercial and light-industrial environments.
EN 61000-3-2 (2006) +A1+A2 (2009)	Electromagnetic compatibility, Product family standard: Harmonic current emissions.
EN 61000-3-3 (2008)	Electromagnetic compatibility, Product family standard: Voltage changes, fluctuations and flicker sensation.
LVD:	
EN 61010-1 (2010)	Safety requirements for electrical equipment for measurement, control and laboratory use. Part 1: General requirements.

This product is CE-marked since 2013.

Signature

The authorized signatory to this declaration, on behalf of the manufacturer, and the Responsible Person based within the EU, is identified below.

Pirkkala 20.5.2013

Ari Tolonen
CEO
Labkotec Oy

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