

ES3

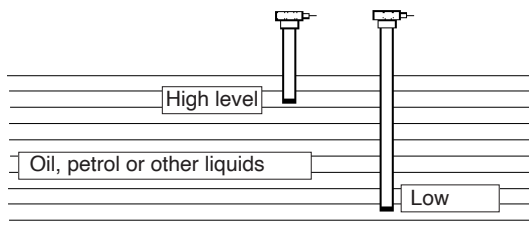
Level monitoring

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Keep this manual for future use!

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Level monitoring systems Type ES31 and ES32

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Description

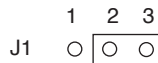
System components:

Electronic unit ES3 is a universal control unit to be connected to type approved thermistor probes.

Description:

The electronic unit ES31 is designed for wall mounting. When the unit is connected to a thermistor it may be configured to either a high level alarm (e.g as an overflow prevention) or a low level alarm (e.g as a tank leak indication).

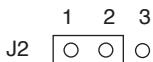
The unit may be configured either as a type ES31 for "cold products" (-25°C to +50°C e.g. petrol or diesel), or as type ES32 for "hot products" (+20°C to +80°C e.g. crude oil). The selection of the "cold" or "warm" ranges is achieved via links on the PCB. The cold range (-25°C - +50°C) is selected by linking pins 1 and 2 on connector block J1. The warm range (+20°C to +50°C) is selected by linking pins 2 and 3 on connector block J1.



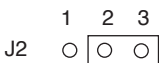
Function:

The sensor output is intrinsically safe. The unit is fitted with a link on the PCB (inaccessible from the outside) for changing between high level and low level signals.

High level signal: link fitted between 1 and 2 on J2. Red LED on : The sensor is cold either through being immersed in oil, petrol or other liquids or due to an open or short circuit in the sensor leads. The output relay is de-energized. Green LED on : The sensor is uncovered. The output relay is energized.




Low level signal: link fitted between 2 and 3 on J2. Red LED on : The sensor is either uncovered, or there is an open or short circuit in the sensor leads. The output relay is de-energized. Green LED on : The sensor is cold through being immersed in oil. The output relay is de-energized.



Specifications

ES3

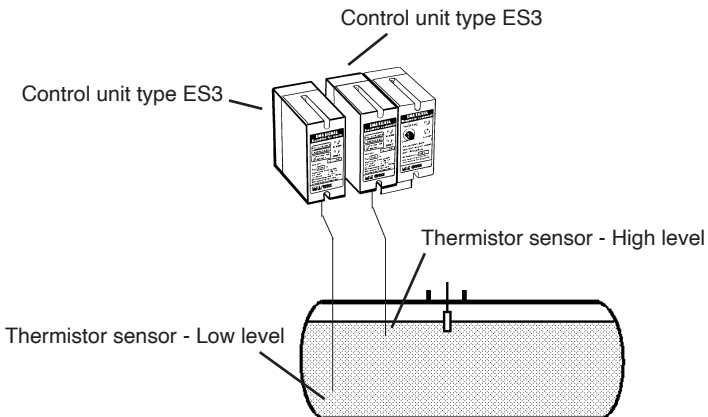
ATEX standard	EN IEC 60079-0 (2018) EN 60079-11 (2012)
Certificate number	DNV 23 ATEX 96444X DNV 23 UKEX 06408X
Intrinsically safe	 II (1) G [Ex ia Ga] II B
I.S Parameters	C_0 : 0,80 μ F, L_0 : 5,0 mH, I_0 : 170 mA U_0 : 25,0 V, P_0 : 1,1 W
Supply	230 V, 50 Hz
Relay output	U_{max} 230 V I_{max} 4 A max 100 VA
Ambient temperature	$\pm 0 - +50^{\circ}$ C
Housing	IP 40

Note: The above intrinsically safe parameters (C_0 and L_0) apply under the following conditions:

1. The combined concentrated inductance (L_i) and capacitance (C_i) of the external intrinsically safe circuit does not exceed 1% of the above values or
2. Inductance and capacitance are distributed as in a cable or
3. The external intrinsically safe circuit does not contain either concentrated inductance on its own or concentrated capacitance in combination with a cable.

In other cases involving combined concentrated capacitance (C_i) and concentrated inductance (L_i) in the intrinsically safe circuit, up to 50% of the value of L_0 is permitted and up to 1 μ F.

Mounting example



Installation ES3

Generally:

The ES3 units's housing has a protection rating of IP40 and must only be mounted in dry rooms. If moisture is present, the unit must be mounted in an weatherproof enclosure with a protection rating of at least IP 55.

The unit has 2 fixing holes for mounting directly onto the wall with screws.

Wiring:

All wiring between the sensor and the ES3 must comply with regulations EN 60079-14, EN 60079-20. If the sensor has an integral cable this must be connected in accordance with the wiring diagram. If the cable between the sensor and the ES3 unit has to be extended then a 1,5 mm 2 two-core screened cable should be used. The intrinsically safe circuit is not allowed to be grounded.

Make the connections according to the wiring diagram on page 8. The power supply connection on terminal 11 and 12, where 11 is phase and 12 is neutral. The probe is connected on terminal 1 and 2, where blue cable or cable marked '2' is connected to terminal 1. The brown cable or cable marked '1' is connected to terminal 2.

Commissioning checks:

Check that all wiring to the ES3 unit is in accordance with the wiring diagram. An open circuit or short circuit in the sensor cable will give an alarm signal when the unit is switched on. Check that cable of the correct type and rating has been used.

Check that the correct alarm level has been selected. For high level alarms pins 1 and 2 on connector J2 on the PCB must be linked, and for low level alarms pins 2 and 3 must be linked.

Carefully plug the ES3 unit into the base ensuring that the PCB edge connector makes correct contact with and does not damage any of the terminals.

Operation:

High level alarm:

Switch on the supply voltage to the ES3 unit. If the sensor is immersed in liquid the red LED will come on immediately, and will remain on so long as the sensor is immersed in liquid.

If the sensor is in air, then after a sensor warm-up of around 15 seconds, the red LED will go out and the green LED will light up.

For a low level alarm setting the operation will be the reverse of the above.



Warning!

The supply voltage must be switched off prior to unplugging the ES3 unit from its base.

Failure to do so may result in damage to the electronic circuitry, and will also expose the user to dangerous voltages present in the base of the unit.

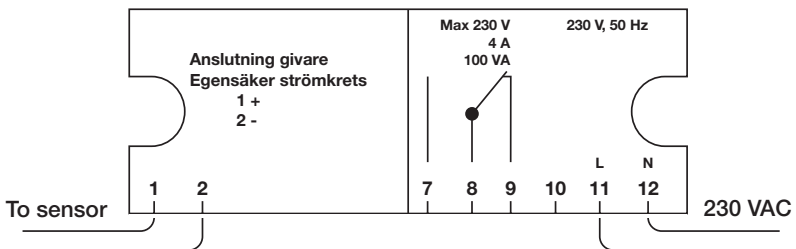
The electronic unit must be mounted in the safe area.

Service and maintenance

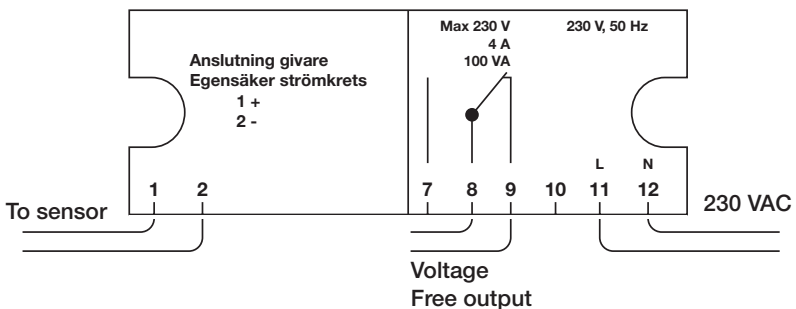
There are no user-serviceable parts, if either repairs or maintenance are required the units must be returned to the supplier.

System wiring diagrams:

ES 31 / ES 32 without extra alarm output



ES 31 / ES 32 with voltage free output for alarm panel etc.



EU Declaration of Conformity

This declaration certifies that the below mentioned apparatus conforms to the essential requirement of the EMC directive 2014/30/EU, Low-Voltage directive (LVD) 2014/35/EU and ATEX directive 2014/34/EU.

Description of the apparatus: Level Surveillance Equipment type ES31, ES32 and ES33

Manufacturer: Afriso Ema AB
Kilvågen 2
SE-232 37 Arlöv
Sweden

The construction of appliance in accordance with the following standards:

EMC:

EN 61000-6-2 (2019) Electromagnetic compability, Generic standards - Immunity for industrial environments.
EN 61000-6-3 (2007)/A11(2011) Electromagnetic compability, Generic standards - Emission standard for residential, commercial and light-industrial environments.

LVD:

EN 61010-1 (2010)/A1(2019) Safety requirements for electrical equipment for measurement, control and laboratory use. Part 1 : General requirements

ATEX:

EN IEC 60079-0 (2018) Explosive atmospheres - Part 0 : General requirements
EN 60079-11 (2012) Explosive atmospheres - Part 11 : Equipment protection by intrinsic safety 'i'

EC Type examination certificate: DNV 23 ATEX 96444X
Ex-classification Ⓜ II (1) G [Ex ia Ga] IIB, Ta 0..+50°C

Product Quality Assurance: Presafe 18 ATEX 12341Q
Notification

Notified Body DNV; Notified body number 2460

Afriso Ema AB declares under our sole responsibility, that the equipment specified above conforms to the above mentioned Directives and Standards.

Date: 2023-04-18

Signed:



Jonas Ericson Nihlstorp
CEO

UK Declaration of Conformity

This declaration certifies that the below mentioned apparatus conforms to the essential requirement of the Electromagnetic Compatibility Regulations (S.I. 2016:1091), Electrical Equipment (Safety) Regulations 2016 (S.I. 2016:1101) and Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres Regulations 2016 (S.I. 2016:1107).

Description of the apparatus: Level Surveillance Equipment type ES31, ES32 and ES33

Manufacturer: Afriso Ema AB
Kilvägen 2
SE-232 37 Arlöv
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The construction of appliance in accordance with the following standards:

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ATEX:

EN IEC 60079-0 (2018) Explosive atmospheres - Part 0 : General requirements
EN 60079-11 (2012) Explosive atmospheres - Part 11 : Equipment protection by intrinsic safety 'i'

UK Type examination certificate:
Ex-classification DNV 23 UKEX 06408X
Ⓜ II (1) G [Ex ia Ga] IIB, Ta 0...+50°C

Product Quality Assurance:
Notification DNV 22 UKQAN 40051

Notified Body DNV; Notified body number 8501

Afriso Ema AB declares under our sole responsibility, that the equipment specified above conforms to the above mentioned Directives and Standards.

Date: 2023-04-18

Signed:



Jonas Ericson Nihlstorp
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Notes



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