AFRISO

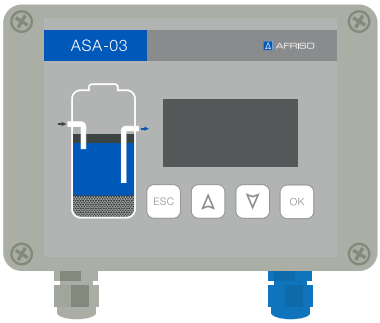
CONTENTS:

Save this manual for future reference!

Version 1.0, 31.10.2024

ASA-03

Separator alarm



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MORE INFO

CE 2460

1 About these Instructions for Use

These instructions describe the ASA-03 separator alarm and associated probes. These instructions are part of the product.

- You may only use the product if you have read and fully understood the instructions for use.
- Make sure that this manual is always available for all types of work performed on or with the product.
- Hand over these Instructions for Use and all other product related documents to all owners of the product.
- If you believe that these instructions for use contain errors, inconsistencies, ambiguities or other problems, contact the manufacturer before using the product.

The manufacturer may not be held liable in any way for direct or consequential damages resulting from a failure to comply with these instructions or from a failure to comply with directives, regulations and standards and any other statutory requirements applicable at the place of installation of the product.

2 Safety information

2.1 Safety notices

These instructions contain safety notices to alert you to potential hazards and risks. In addition to the instructions in this manual, you must comply with all directives, standards and safety regulations that apply at the product's installation site. Verify that you are familiar with all directives, standards and safety regulations and ensure that they are followed before using the product. Safety notices in this manual are marked with warning symbols and warning text.

2.2 Safety symbols

SYMBOL	DESCRIPTION
	**Critical warning, risk of injury**
	**Warning: risk of damage to equipment or personal injury**
Note !	**Attention required**
	**Things to consider if there is a risk of explosion**

2.3 Regulations in effect for ASA

SYMBOL	DESCRIPTION
Note !	**Read instructions before installation**
	**Installation must only be carried out by an authorised installation technician**
	**The intrinsically safe circuit must not be connected to earth.**
	**When connecting within an Ex area, observe regulatory requirements**

2.4 Intended use

This separator alarm is an associated apparatus designed to be placed outside the hazardous area. Its relay outputs and power supply are internally galvanically isolated from the intrinsically safe output to which external sensors in one intrinsically safe circuit are intended to be connected.

Any use other than the application explicitly permitted in these operating instructions is not permitted and causes hazards.

Verify that the product is suitable for the application planned by you prior to using the product.

In doing so, take into account at least the following:

- All directives, standards and safety regulations applicable at the installation site of the product
- All conditions and data specified for the product
- The conditions of the planned application

In addition, perform a risk assessment in view of the planned application, according to an approved risk assessment method, and implement the appropriate safety measures, based on the results of the risk assessment. Take into account the consequences of installing or integrating the product into a system or a plant.

When using the product, perform all work and all other activities in conjunction with the product in compliance with the conditions specified in the operating instructions and on the nameplate, as well as with all directives, standards and safety regulations applicable at the installation site of the product.

2.5 Predictable incorrect application

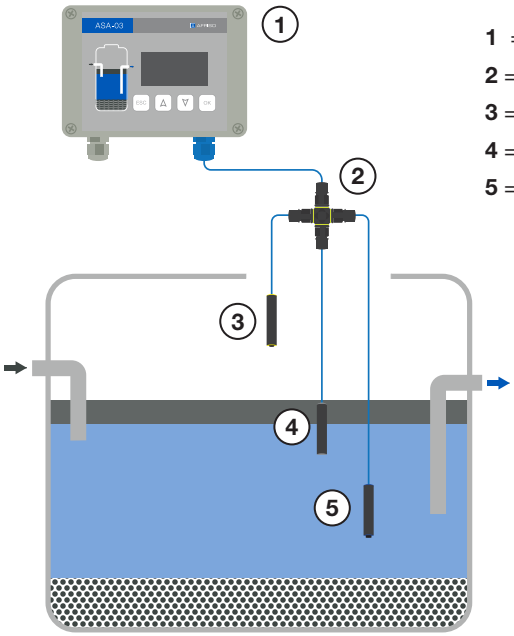
The product must never be used in the following cases and for the following purposes:

- Hazardous area (applicable to control unit)
  - If the product is operated in hazardous areas, sparks may cause deflagrations, fires or explosions.
- In rooms that are subject to high humidity (such as bathrooms)
- Interconnection of product and signal transducer whose intrinsic safety parameters do not match

3 Product description

ASA-03 is an EX-classified grease and oil separator alarm consisting of an control unit that can be connected to 1 to 3 digital probes. The control unit is designed to be mounted directly on a wall and it is equipped with an IP65 enclosure. Do not install the unit in rooms with an explosive atmosphere.

3.1 Application examples



1 = Separator alarm ASA-03
2 = Junction box
3 = High level probe (HLP)
4 = Layer probe (LP)
5 = Sludge probe (SP)

- Separator alarm ASA-03 (1) with an intrinsically safe design and probes that is EX-approved for installation and use in areas with an explosion risk.
  The unit has three potential-free relay outputs that can be connected to external alarms or external monitoring. These are individually programmable.
- Junction box (2) for connection of 1-3 probes. IP68
- High level probe (HLP) (3) is an ultrasonic level probe used to detect a rising level of fluid
- Layer probe (LP) (4) is a capacitive layer probe that triggers an alarm when the oil/grease layer exceeds the preset alarm level
- Sludge probe (SP) (5) is an ultrasonic level probe that triggers an alarm when the level of sludge, sand and other solids exceeds the predetermined level

On the control unit there is a display for system status, alarm texts and navigation keys to navigate on display.

4 Checklist

4.1 Before installation

- Do you have the skill sets required for performing electrical installation? Observe relevant Ex regulations and regulatory requirements, especially EN60079-14 and EN60079-17.
- All-pole switches should not be installed to prevent disconnection of the alarm function
- Extension cables for probes, at least 2 x 0.75 mm², max. 500 metres
- Be sure to check the regulations and assembly instructions for your specific facility

4.2 After installation

- Check the wiring of the control unit and the cable area.
- Flatlist for lid mounted on control unit and lid closed
- Check the mounting position of the probes according to the separator manual
- Make sure that the separator is filled with water according to the separator manual before performing the probes functional check
- Turn on the power and follow the instructions on the display and in the manual
- Do a functional check according to the commissioning instructions

4.3 Important information

These instructions for use form the basis for certification of the explosion protection of type ASA separator alarms according to certificates DNV 23 ATEX 86944X and IECEx DNV 23.0056X.

The unit comes supplied with a cable gland or knock-outs. Only use a cable with an appropriate outer diameter in conformity with the installation regulations. Unused connections must be suitably plugged.

4.4 Repair

It is not permitted to repair the control unit in the event of a fault. The unit must either be replaced or sent to Afriso Ema AB for fault diagnostics/examination.

4.5 Disassembly, waste disposal

Dispose of the product pursuant to all applicable directives and standards and safety regulations. Do not discard control components together with normal household waste.

5 Mounting

5.1 Mounting the control unit

Note ! Read installation instructions

Installation must only be carried out by an authorised installation technician

Do not place the control unit in a room with an explosive atmosphere

- Mount the control unit on a level wall at eye level.
- Make sure that the control unit is easily accessible and easy to monitor.
- Make sure the control unit is protected from water and splashes.
- Make sure the control unit is out of direct sunlight.

1. Unscrew the 4 plastic screws on the lid
2. Carefully loosen the cable running between the lid and bottom part
3. Hold the unit against the wall.
4. Mark out the four drill holes on the wall with a pencil.
5. Drill 4 holes in the wall.
6. Screw the unit to the wall.
7. Connect the inputs as described in the chapter “Electrical connection”

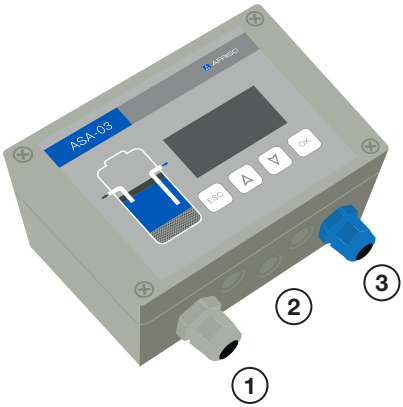
5.1.2 Electrical connection

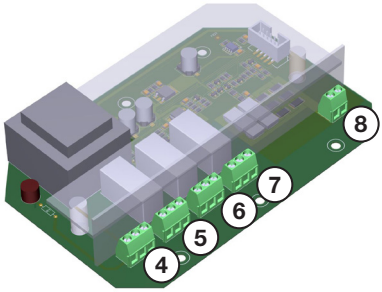
Risk of electric shock

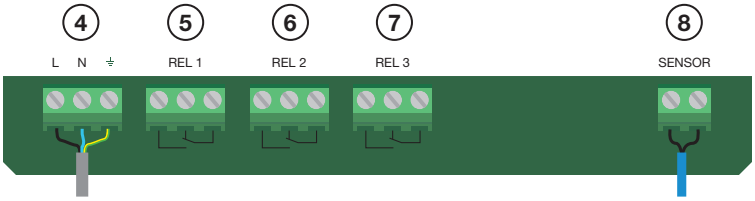
- Disconnect the mains power supply before working on the unit and make sure that the unit cannot be switched on.

Note !

- Connect the control unit to a AC power with a suitable, fixed installed cable 3 x 1.5 mm².
- Properly secure the power supply to the control unit (16A max.).
- Make sure that the partition between the terminals and other control is in place.







5.1.3 Connection overview

1 = Cable gland for supply voltage - power cable type 3 x 1.5 mm²

2 = 3 knock-outs for mounting cable glands (if relays are to be used)

3 = Cable gland for connection of probe cable – type 2 x 0.75 mm²

4 = Terminal for connecting 230 VAC

5 = Relay 1 terminal - Potential-free switch (symbol shown in alarm mode)

6 = Relay 2 terminal - Potential-free switch (symbol shown in alarm mode)

7 = Relay 3 terminal - Potential-free switch (symbol shown in alarm mode)

8 = Terminal for connecting probes cable from junction box

5.2 Mounting the probes

Lay the cables within EX area so they are mechanically protected

The probes may be installed in areas with an explosive atmosphere (Zone 0)

Note ! When installing the sludge probe, the installer must ensure tha the probe has clear vision from its position, and down to the bottom of the separator. Check the drawing of the separator or feel with a stick or similar that nothing is in the way.

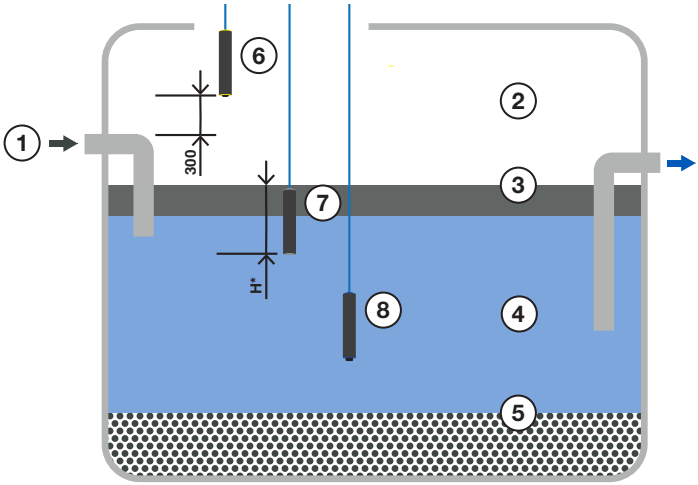
The illustration below is an example of how to mount the probes, but the exact appearance of the separator type will vary from one model to another. Check your separator manual for more accurate details.

5.2.1 Suspending the probes

The layer probe (7) is mounted so that its bottom plug is fixed at level H* (approx. 150-500 mm) below the static water level (3). Corresponding to 80% of the storage capacity for oil/fat, the exact level is indicated in the respective separator model's product sheet. The probe's bottom plug must be in water to NOT trigger an alarm. The layer probe has a gray top and bottom plug.

The high level probe (6) is mounted so that its underside is located 300 mm above the top of the separator inlet pipe. The probe must be in air (2) to NOT trigger an alarm. The high level probe has a yellow top and bottom plug.

Mount the sludge probe (8) so that its underside is 600 mm above the actual bottom of the separator, or as an alternative 300 mm above the recommended sludge discharge height (5), specified in the separator manual. The sludge probe has a blue top and bottom plug.



For the secure suspension of probe in separators, a stainless-steel probe bracket with a spring lock, plastic thimble and cable ties are included.

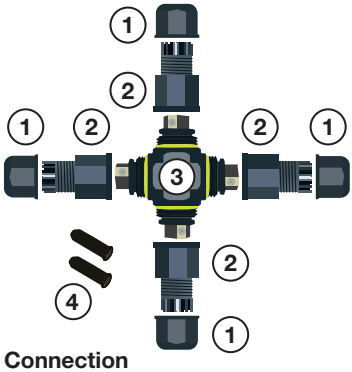
1. Screw the probe bracket into the appropriate position in the separator riser.
2. Immerse the probe in the separator so that it is positioned as recommended in the picture in this paragraph
3. Make a loop on the cable at the level of the probe bracket and insert the thimble into it. Finish by using cable ties to hold the loop together.
4. Hang the loop in the probe bracket, which now ensures that the probe is always in the same position.
5. Twist excess cable together in a ring and secure this with cable ties.
6. Then connect the probe cable to the junction box.
7. Repeat the steps above if additional probes need to be installed.

It is important to leave enough cable to be able to lift up probes for cleaning and when it is time to empty the separator.

5.2.2 Electrical connection of the probes

It is advisable to use a 2 x 0.75 mm² cable between the control unit and the separator. Connect this cable in the separator to the junction box, where the probes are also connected (see overview image under the item “Product description”).

4-way box for the connection of 1 to 3 probes



Product description

1 = Lock nut

2 = Cable bushing

3 = Switch cover

4 = End plug
(for sealing in cases where bushing is not used)

Connection

1. Unscrew locknut (1) and cable gland (2) from switch cover (3)
2. Thread the cable through the lock nut and cable gland
3. Peel off approx. 30 mm of the cable’s jacket and approx. 8 mm of the conductor’s insulation.
4. Connect the conductors to screws one and two (polarity independent)
5. Screw the cable gland and the switch cover together. Then tighten the locknut.

6 Commissioning

Note ! Make sure that the control unit and probes are installed according to the instructions in previous points.

Note ! The oil/grease detector will only trigger an alarm if there is a distinct layer differentation has formed between the water and the oil/grease. The unit does not work in emulsion or where the grease or oil has been dissolved by chemicals.

Handling for start-up
The following buttons are located on the device:

- Use “ESC” to reverse or return one step in the menu.
- Use the “UP” and “DOWN” buttons to move the cursor on the display.
- Use “OK” to confirm menu selection and acknowledge alarms.

Backlight on display
Illuminates when one of the buttons is used.

Buzzer
A built-in buzzer emits an audible signal when alarms are triggered and error messages arrive. The buzzer sound will automatically return after 20 hours if the relay is not set up for an acknowledgement function.

Check the following before starting up the control unit
Make sure that all connections and installations are correctly done before connecting power.

- Turn on the power for the control unit

The screen lights up and the automatic set-up function starts.
The first step is to select the language, date and time. The unit then does a probe input check and automatically registers connected probes.

Note ! Alarm level, probes level and any offset must be entered to complete the installation of the probes.

When the unit is ready, the probes with the current status are presented directly in the display.

The next step is to perform a function check as described in the Maintenance chapter.

If a probe is not found, or added after set-up has already been completed, the central unit can be factory reset by holding the ”DOWN” button for 10 seconds. Then the set-up sequence starts over as described above.

7 Operation

After commissioning, check the function and, if no status diodes light up red, the separator alarm is ready for use. No special handling is required except that the unit must normally be energised to detect alarms from the probes. During normal operation, the probes status is shown on the display and no alarms are active.

7.1 Menu functions

In normal operation, the status view is displayed with the probes connected to the control unit. The status of each probe is displayed using symbols in front of the probe.

! = Alarm or error status
X = Alarm acknowledged
✓= Alarm reset/OK

In case of alarm or fault status (!) - check the cause in the Troubleshooting chapter.

✓ Layer probe ✓ Sludge probe ✓ High-level probe

Press the “ESC” button to enter the menu, then proceed using the “UP” or “DOWN” buttons to the desired selection followed by the “OK” button

Probes Alarm log Settings

7.2 Probes

All connected probes are listed, then proceed using the “UP” or “DOWN” buttons to the desired selection followed by the “OK” button

Menu for layer probe LP
• Probe On/Off

Menu for sludge probe SP
• Probe On/Off

Menu for high level probe HLP
• Probe On/Off

7.3 Alarm log

The device automatically logs any alarm changes in the background.
Alarms are saved with the date and time of each status change.
Storage is done cyclically, which means that when the memory becomes “full”, the oldest values are overwritten with new values.

The following events are logged:
- Measurement error probe (meas) (!), Probe alarm (!), probe alarm acknowledged (X), probe alarm reset (✓)
- Measurement error probe (meas) (!)
- Communication error probe (com) (!)

7.4 Settings

Profile
Relay function
Inspection
Alarm settings
Date - time
Language
About

Proceed using the “UP” or “DOWN” buttons to the desired selection followed by the “OK” button

7.4.1 Profile

To facilitate the selection of settings, there are profiles available:

	Profile 1	**Profile 2**
Relay 1	Layer alarm	Layer alarm
Relay 2	High level alarm	High level alarm
Relay 3	Sludge alarm	Sludge alarm
Relay acknowledgeable	No	No
Alarm signal	Yes	No
Alarm repeat 20h	Yes	Yes
Alarm acknowledge button	Yes	Yes

7.4.2 Relay function

The control unit has three relays that can be set individually.
Active selection is indicated by ✓, and non-active selection by -.

Relay X
- Layer (Yes/No)
- High level (Yes/No)
- Sludge (Yes/No)
- Relay acknowledgeable (Yes/No)

Relay 1
✓ Layer probe
- Sludge probe
- High level probe
- Relay acknowledgeable

7.4.3 Inspection

To remember when it's time for an inspection, you can activate one or more inspection reminders that count down and emit a local alarm when it's time. Active selection is indicated by✓, and inactive selection by -. The number of days left until the reminder is shown in brackets after the active alarm in the list.

Inspection
- 1 month (Yes/No)
- 6 months (Yes/No)
- 5 years (Yes/No)

Inspection
- 1 month
- 6 months
- 5 years

7.4.4 Alarm setting

The following selections can be made for alarms
(Active selection is indicated by ✓,
and non active selection with -).
- Alarm signal (Yes/No)
- Alarm repeat 20h (Yes/No)
- Alarm acknowledge button (Yes/No)

Alarm setting
✓ Alarm signal
✓ Alarm repeat
- Alarm acknowledgement

7.4.5 Date and time

Change with the "UP" or "DOWN" buttons to the desired selection followed by the "OK" button

7.4.6 Language

Available languages are listed, proceed using the "UP" or "DOWN" buttons to the desired selection followed by the "OK" button

7.4.7 About

Overview of serial number and software

8 Maintenance

The separator alarm must be functionally tested every 6 months, and sensors must be cleaned in connection with emptying and in the event of an alarm.

8.1 Function test

Before function testing, activate the unit's Test Mode so that alarms can be detected without delay/filtration.

Press and hold the "DOWN" button for 5 seconds. The display now says TEST. The unit will remain in Test Mode for 60 minutes, after which it automatically returns to normal operation.
To return to normal operation before 60 minutes have passed, press and hold the DOWN button for 5 seconds.

- Lift the layer probe out of the water to trigger an alarm.
- Lower the high level probe to approach the surface to trigger an alarm.
- Lower the sludge probe to approach the bottom of the separator to trigger an alarm.

Alarms can be acknowledged on the display. After resetting the probes to the correct height, the unit returns to normal operation.

8.2 Probes maintenance

Probes may need to be wiped off at regular intervals, as coating may trigger alarms unnecessarily. If wiping is not sufficient, it is advisable to clean the unit with washing-up liquid and a brush.

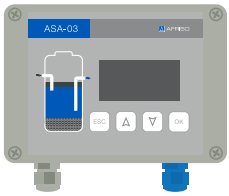
8.3 Troubleshooting

Problem	Check	Cause/action
Display does not react	Make sure that the unit is energised	Unscrew the lid and measure on the terminal for the connection of 230 VAC. Also check the cable between the enclosure's control and the lid.
Layer alarm triggered	Check the thickness of the oil/grease layer	Order emptying
Sludge alarm triggered	The sludge level has reached the preset alarm level (normal alarm)	Normally this means that the sludge layer in the tank is too big. Emptying of separator should be ordered.
High level alarm triggered	Blockage at outlet to separator (critical alarm). Could also be condensation on the sensor.	Clear blockage or determine the cause, alternatively, wipe off condensation on the bottom part of the probe.
Measurement error probe (meas) layer/high level/ sludge	The probe is outside its measuring range.	Check the installation height of the probe and ensure that nothing is in the way of the measurement.
Communication error (com) layer/high level/ sludge	Probe cable is short-circuited, damaged or has become detached in the junction box/ control unit.	Check the connection in the junction box/control unit and then the probe cable.

When the ASA control unit is connected to intrinsically safe circuits leading into an area with an explosive atmosphere, be extremely cautious when performing fault diagnostics.
The only live parts in the unit that may be touched (with a tool or instrument) are the intrinsically safe connection blocks' connections. Only measuring instruments that do not have a detrimental effect on the intrinsically safe characteristics may be used. EN 60079-17 must be adhered to during fault diagnostics/ maintenance. If problems persist, contact the manufacturer.

9 Spare parts

Separator alarm, ASA-03
Control unit
Part no.: ASA-03
RSK no.: 5141018

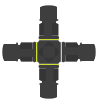


Layer probe LP
Capacitive probe that triggers an alarm in the event of a thick layer of oil/grease in the separator.
5 metres of cable.
Part no.: ASA-LP

High level probe HLP
Ultrasonic probe that triggers a high-liquid level alarm in a separator.
5 metres of cable.
Part no.: ASA-HLP

Sludge probe SP
Ultrasonic probe that triggers an alarm when the level of sludge is high in a separator.
5 metres of cable.
Part no.: ASA-SP

Junction box
For connection of 1-3 probes
Part no.: 1207



10 Technical data

10.1 Separator alarm, ASA-03

Specific Terms of Use:
Specifications under “Intrinsically Safe Parameters”, “Operating Voltage” and “Relay Outputs” must be followed

Intrinsically safe circuit is galvanically separate from earth.

Intrinsically safe execution	⟨Ex⟩ II (1) G [Ex ia Ga] IIA
Intrinsically safe parameters	Uo: 14.3 VDC, Io: 0.3 A, Po: 1.1 W, Co: 16 µF, Lo: 3.1 mH
Operating voltage	230 VAC, 50 Hz
Relay outputs, switch data	Um 250 VAC, Im 5 A, max 100 VA, potential free
Ambient temperature, control	-20 - +60°C
Enclosure	175 x 125 x 75 mm (W x H x D), 0.75 kg, ABS plastic, IP 65

Note ! : The above intrinsically safe parameters (Co and Lo) apply under the following conditions:
1. The combined concentrated inductance (Li) and capacitance (Ci) 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 (Ci) and concentrated inductance (Li) in the intrinsically safe circuit, up to 50% of the value of Lo is permitted and up to 1 µF.

10.2 Probes, ASA

Must be connected to a barrier that is galvanically separate from the earthing.

Intrinsically safe execution	⟨Ex⟩ II 1 G Ex ia IIA T4 Ga
Intrinsically safe parameters	Ui: 14.3 VDC, Ii: 0.3 A, Pi: 1.1 W, Ci: 120 nF, Li: 0 µH
Ambient temperature, probes	-20 - +40°C
Enclosure	150 mm, Ø30 mm, PEHD plastic, IP68
Cable	Oil resistant, 5 metres, 2 x 0.75 mm²

11 Appendix

11.1 EU Declaration of Conformity (DoC)

AFRISO

EU Declaration of Conformity (DoC)

We

Afriso Ema AB
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Sweden

declare that this DoC is issued under our sole responsibility and belongs to the following product(s):

ASA-01, ASA-02, ASA-03, ASA-04, ASA-05 (Control units)
ASA-MLP, ASA-HLP, ASA-MSP, ASA-LP, ASA-SP (Probes)

to which this declaration relates is in conformity with the following standards and directives.

Directive		**Harmonized Standard**
Low Voltage Directive	2014/35/EU	EN IEC 61010-1 (2010)/A1(2019)
EMC Directive	2014/30/EU	EN IEC 61000-6-1 (2019) EN IEC 61000-6-3 (2021) EN IEC 61326-1 (2021) (ASA-MLP)
RED Directive	2014/53/EU	ETSI EN 300 328 v.2.2.2 (Parts of) ETSI EN 301 893 v.2.1.1 (Parts of) ETSI EN 301 908-1 v.13.1.1 (Parts of) ETSI EN 301 908-13 v.13.2.1 (Parts of) ETSI EN 303 413 v.1 (Parts of)
ATEX Directive	2014/34/EU	EN IEC 60079-0 (2018) EN 60079-11 (2012) EC Type examination certificate: DNV 23 ATEX 86944X Notified Body: DNV, Notified body number 2460

Signed for and on behalf of Afriso Ema AB

Date of issue: 2024-07-09

Signature of authorized person:

Jonas Ericson Nihlstorp, CEO

Notes

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Afriso EMA AB 23.10.2025