Alarm unit for oil-water separators NivOil® / 230 V AC







- Synoptic board of alarms on the front
- Automatic sensor recognition: Hydrocarbons, sludge, overfill
- 3 Output relays, change-over contacts
- Audible alarm (buzzer)
- Intrinsic safety Ex II (1) G [Ex ia] IIB

APPLICATIONS

 Oil-water separator monitoring: Meets the requirements of EN 858-1 and 2, for light liquid separators, sewage treatment.

DESCRIPTION

The alarm unit NivOil-CU (BVS 07 ATEX E 090) monitors levels in oil/water separators, up to three detection probes.

The oil layer thickness probe NivOil-OP/.. (BVS 07 ATEX E 091 X) detects the thickness of hydrocarbons fluids layer floating over the water.

The overfill probe NivOil-HP/.. (BVS 07 ATEX E 092 X) detects the overfill level in the separator.

This alarm can inform that drainage is blocked.

The sludge level probe NivOil-SP/.. (BVS 09 ATEX E 021 X) detects the highest permissible level of sludge layer. As soon as the sludge level has reached the too high level an alarm signal is triggered.

All detection loops are automatically set up (self recognition).

Therefore it is possible to connect any of the three intrinsically safe NivOil probes to any of the three intrinsically safe channels of the NivOil alarm unit. The alarm unit NivOil-CU detects for each channel which probe is connected and indicates the corresponding LED on the front panel. If a channel is not assigned, its LEDs remain dark during operation. The unit has a built-in audible alarm (piezo); If necessary, it can be disabled through a DIP switch.

CABLE EXTENSION

Coupler CET02 for cable extension

The cable between the probe and the alarm unit can be extended up to 300m (Total length depends of cable capacitance and inductance). For this purpose, the use of our Ex-approved cable coupler CET02 is recommended.



Alarm unit for oil-water separators NivOil® / 230 V AC 16-04-2021 D-531.01-EN-AD

Non-contractual document: Subject to amendments due to improvements

NIV

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22, Rue de la Voie des Bans · Z.I. d	INTERNATIONAL de la gare · 95100 ARGENTEUIL	Alarm unit for oil-water separators NivOil® / 220 V AC	NIV
			-
EC Conformity: The instrumer	its meet the legal requirements of	the current European Directives	
Intrinsic safety	Annex to the BTA (BVS 07 ATEX E Ex II 1 G Ex ia IIB T4	U21 X § 15.3.1).	
Ex loop impedance	The maximum permissible values (I	Jo, Io, Po and Co, Lo) of the intrinsically safe detection	loop are given in
Temperature limits	20 +60 °C BVS 09 ΔΤΕΧ Ε 021 Χ (Ear zono 0)		
Detection principle	Ultrasonic sensor		
Protection	IP 68 according EN 60529		
	The sistent to hydrocarbon fluids, $2x$ Other lengths on request; Extension [C] line ≤ 200 nF/km and [L] line ≤ 1	i mm ⁻ ; blue colour; standard length: 10 m, i: up to 300 m, mH/km	
Probe body	PVC	1 mm²: blue colour: standard length; 10 m	
Probe NivOiL-SP/10 for settled (For use only with our alarm unit	d sludge level detection <i>NivOiL CU/220)</i>		
Intrinsic safety	Ex II 1 G Ex ia IIB T3	L 00L & 10.0.1).	
Ex loop impedance	The maximum permissible values (I	Jo, Io, Po and Co, Lo) of the intrinsically safe detection E 092 & 15.3 1)	loop are given in
EC-Type Examination Certificate	BVS 07 ATEX E 092 X (For zone 0)		
Temperature limits	-20 +60 °C		
Protection principle	IF 68 according EN 60529 PTC sensor bested		
Dimensions	About O.D. 32 mm; Height: 195 mm	1	
	Other lengths on request; Extension [C] line \leq 200 nF/km and [L] line \leq 1	n: up to 300 m, mH/km	
Sensor	Besistant to hydrocarbon fluids 2x	1 mm ² ; blue colour; standard length: 10 m.	
Probe NivOiL-HP/10 or 15 for ((Only for use with our alarm units) Probe body	overfill detection : <i>NivOiL</i>) _Antistatic PE 		
Intrinsic safety	Ex II 1 G Ex ia IIB T4	· · · · · · · · · · · · · · · · · · ·	
Ex loop impedance	The maximum permissible values (I Annex 2 to the BTA (BVS 07 ATFX	, Jo, Io, Po and Co, Lo) of the intrinsically safe detection E 091 / item 15.3.1).	loop are given in
I emperature limits	20 +60 °C 		
Detection principle	Capacitive detection, high frequenc	У	
Protection	IP 68 according EN 60529		
Dimensions	Other lengths on request; Extension [C] line $\leq 200 \text{ nF/km}$ and [L] line ≤ 1 About O.D. 32 mm; Height; 230 mm	n: up to 300 m, mH/km n: With marks each 5 cm for height adjustment	
Cable	Resistant to hydrocarbon fluids, 2x	1 mm ² ; blue colour; standard length: 10 m,	
(Only tor use with our alarm units Probe body Sensor end	Antistatic PE Stainless steel 316 L		
Probe NivOiL-OP/10 or OP/15	for hydrocarbons layer thickness	detection	
Protection Front panel, interface	IP 65 according EN 60529 2 push buttons for diagnostic test ar	nd alarm clearance	
EC-Type Examination Certificate	IN ANNEX 1 TO THE BIA (BVS 07 ATE probes. BVS 07 ATEX E 090 (The alarm un	EX E U90 / § 15.3.2) per channel and in conjunction with it must be installed in a non-hazardous area)	I THE NIVOII
Ex loop impedance	The maximum permissible values (I	Jo, Io, Po and Co, Lo) of the intrinsically safe input circu	uits can be found
I emperature limits Intrinsicaly safe unit	20 +60 °C Ex II (1) G [Ex ia] IIB		
Tana and an Parks	1 alarm LED (red) on each channel Built-in audible alarm, disabled by D	DIP switch	
Display and signals	1 Operating channel LED (green) or	n each channel	
Outputs	Alarm unit NIVOII-CO Is equipped w 3 Relay outputs, 230 V AC, 3A' Pote	nui a broken or short circuit control on each detection lo ential free changeover contact	oh
Monitoring	Probe NivOil-SP for settled sludge I	evel detection	2 2
	Probe NivOil-HP for overfill detection	ayer michness delection	
Probe inputs	3 inputs with automatic probe recog	nition, indifferently:	
Consumption:	About 9 VA (with 3 probes connected	ed)	
NivOiL-CU/220 – Alarm unit	230 V AC - 50 Hz		

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CODE NUMBERS AND REFERENCES

Code	Reference	Description
531 050	NivOil-CU/220	Alarm unit, 220 V AC; IP65
531 102	NivOil-OP/10	Layer thickness probe, 10 m long cable
531 200	NivOil-HP/10	Overfill probe, 10 m long cable
531 301	NivOil-SP/10	Settled sludge probe, 10 m long cable
531 550	NivOil-CET-02	IP65 Coupler for cable extension (cable ≤4 mm ²)
532 502	SK-PVC-2x1	Extension cable, 2-wire, for 1 detection ATEX probe

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Other versions: on request

DIMENSIONS





NivOil-CU/220

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16-04-2021

NivOil® / 230 V AC

Alarm system for oil-water separator NivOil[®] / 12 V DC





5 cm

- Low power consumption
- 10...27 V DC power supply input
- Zone 0 ATEX certified (Zone 2 for the alarm device location)
- Solar powered or standard electric battery
- Energy saving mode adjustable (control frequency adjustable from 6 min up to 9 days)
- 3 inputs, for any NIVOIL probes
- Automatic recognition of type probe
- 3 relay outputs with audible alarm

DESCRIPTION

Designed for the monitoring of hydrocarbon fluids separators, the alarm device NIVOIL may be connected to 1, 2 or 3 sensors.

- Hydrocarbon layer thickness sensor to detect when the maximum thickness is reached.
- Overfill sensor to detect when the fluids are on the highest level.
- · Sludge layer sensor for alarming when maintenance is necessary.

The 3 sensors may be connected to any input of the alarm device NIVOIL. Any combination of the sensors can be wired. The instrument recognizes automatically the sensor type. A LED indicates the sensor type on the diagram on the front board. The alarm device NIVOIL has a built-in buzzer; it is possible to disable its function.

Low power consumption

This model working with a 10 to 27 V DC power supply has low energy consumption. It is designed for the use of a solar powered battery or any standard electric battery (consumption is 0.1 W - 12 V DC - with 3 sensors connected with one complete control cycle per hour).

Sleep mode

This mode is adjustable by modifying the frequency of control cycle (from 6 minutes up to 9 days). A continuous control mode could be switched on when there is no limit on consumption.

ATEX certified

All the components are ATEX certified. The sensors are for a location in zone 0 and the alarm device corresponds to a zone 2.

CODE NUMBERS AND REFERENCES

Code	Reference	Designation
531 040	NIVOIL-CU/12	Alarm device, 12 V DC, Housing IP 65
531 102	NIVOIL-OP/10	Hydrocarbon fluid layer thickness sensor,
		10 m long cable
531 205	NIVOIL-HPS/10	Overfilling sensor U-S, 10 m long cable
531 301	NIVOIL-SP/10	Sludge layer sensor, 10 m long cable
531 550	NIVOIL-JT	Cable coupling, IP 65 for cable $\leq 4 \text{ mm}^2$
532 502	SK-PVC-2x1	Extension cable 2 wires, for 1 ATEX sensor





TECHNICAL FEATURES NivOiL[®] CU/12 – Alarm device 10...27 V DC Main power supply: Power consumption: 0.1 W / 12 V DC (3 sensors connected and 1 control cvcle per hour) Housing protection: IP65, according EN 60529 Temperature limits: -20...+60°C 3 inputs with automatic sensor type detection Sensor inputs: for hydrocarbon fluids layer thickness, overfill level, sludge layer level 240 The alarm device NIVOIL has an auto-diagnostic of measuring loop Monitoring: An alarm signal occurs in case of dysfunction due to a short circuit or a broken cable. 20 Display and signals: 1 function signal LED (green) on each channel 1 alarm signal LED (red) on each channel Built-in audible alarm, disabled by DIP switch configuration 2 push buttons for diagnostic test and alarm clearance Front panel: Outputs: 3 relay outputs, Power switch 250 V AC as a maximum / 3A, Potential free change over contacts ATEX Certificate: BVS 10 ATEX E 011 / The alarm device may be mounted in Ex area, zone 2 Ex protection class: (Ex) II 3 (1) G Ex nAC [ia Ga] IIB / IIA T4 Gc (Intrinsic safety) **CE Marks** According to EC directives (72/23/EEC), Low Voltage Guidelines: RL 2006/95/EG & RL93/68/EWG, EMV Guidelines: RL 89/336/EWG (EN 61326) ATEX RL 94/9/EG (ATEX 95) EN 60079-0 (General requirements) - EN 60079-11 (Intrinsic safety) - EN 60079-26 (Group II; category 1G) NivOiL® -OP/10 – Hydrocarbon fluid layer thickness sensor (Only for use with an alarm device NIVOIL) Capacitive, high frequency Sensor type: Antistatic PE stem; Stainless steel end probe Wetted parts: Cable: Elastomer resistant to oils and hydrocarbon fluids, blue colour; wires 2x 1mm², connections to the alarm device NIVOIL on screw connectors; 10 m long cable (other lengths on request - maximal length is 300 m) Protection: IP68 acc. EN 60529 220 10 cm -20...+60°C Temperature limits: 5 cm ATEX certificate: BVS 07 ATEX E 091 X / This sensor is suitable for location in zone 0 Ex protection class: (Ex) II 1 G Ex ia IIB T4 (Intrinsic safety) Ø 32 NivOiL[®] -HPS/10 – Overfilling sensor (Only for use with an alarm device NIVOIL Ultrasonic detection type Sensor type: Wetted parts: PVC; Elastomer cable Cable: Elastomer resistant to oils and hydrocarbon fluids, blue colour; wires 2x 1mm², wiring on screw connectors; 10 m long cable (other lengths on request - maximal length is 300 m) Protection: IP68 acc. EN 60529 Temperature limits: -20...+60°C ATEX certificate: BVS 09 ATEX E 021 X / This sensor is suitable for location in zone 0 25 Ex protection class: (Ex) II 1 G Ex ia IIB T4 (Intrinsic safety) NivOiL-SP/10 - Sludge layer sensor (Only for use with an alarm device NIVOIL) Sensor type: Ultrasonic detection type Wetted parts: PVC; Elastomer cable Cable: Elastomer resistant to oils and hydrocarbon fluids, blue colour; wires 2x 1mm², wiring on screw connectors; 10 m long cable (other lengths on request - maximal length is 300 m) Protection: IP68 acc. EN 60529 Temperature limits: -20...+60°C BVS 09 ATEX E 021 X / This sensor is suitable for location in zone 0 25 ATEX certificate: Ex protection class: (E) II 1 G Ex ia IIB T4 (Intrinsic safety) Alarm system for NIV MESURE

22, Rue de la Voie des Bans - Z.I. de la Gare - 95100 ARGENTEUIL **Tél : (+33) 01 30 25 83 20 - Web : www.bamo.fr** Fax : (+33) 01 34 10 16 05 - E-mail : info@bamo.fr Alarm system for oil-water separator NivOil[®] / 12 V DC 531 |1 02 B



Solar powered alarm unit for oil-water separators BAMOBOX SOLAR (BBS)



- Monitoring of oil-water separators
- Autonomous complete system
- Field installation
- Alarm signal: or flashing light or GSM
- Battery protection against discharge and overload

APPLICATIONS

Autonomous alarm unit for monitoring oil-water separators according to EN 858.

DESCRIPTION

A BBS system includes alarm unit NivOil CU/12 and a Solar panel to charge a battery, protected against excessive discharge or overload. NivOil is powered hourly, for 3 minutes, to check for a fault and alarm condition. In case of occuring an alarm, signal is emitted or through a flashing light or through a GSM module.

The working time without sunlight is about 12 days at any period of the year for a reliable monitoring even without sun shining days (referring to Greenwich latitude).

• Option: Flashing light

With the option flashing light, an alarm corresponds to an intermittent light emission (of a Xenon bulb) on the outside of the cabinet. This option is recommended to avoid connecting the NivOIL contact outputs far-away minimizing the cost of installation.

Option: GSM

With the option GSM, the alarm is transmitted on long distance through a SMS message: idoneous when the system is installed in a remote location. The message SMS sent, indicates the BBS identification, the alarming channel (probe) and a pre-recorded message.

Installation:

The cabinet may be mounted on a wall or on a poll (Yoke U-Bolt Kit provided). The solar panel, with its own fixing system, is adjustable regardless of the position of the cabinet.

The BBS must always be mounted outside the hazardous area. Only NivOiL probes can be installed in the hazardous area.

CODE NUMBERS AND REFERENCES

Code	Reference	Description
531 600	BBS-STD	Standard BBS
531 620	BBS-GYR	BBS with flashing light device
531 640	BBS-GSM	BBS with GSM module
Associate	Associated probes:	
531 102	NIVOIL-OP/10	Hydrocarbon thickness sensor, 10 m long cable
531 205	NIVOIL-HPS/10	Overfill sensor, 10 m long cable
531 301	NIVOIL-SP/10	Sludge layer sensor 10 m long cable



Solar powered alarm unit for oil-water separators BAMOBOX SOLAR (BBS) 03-08-2018 D-531.03-EN-AA

NIV

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Details of supply for each version

BBS-STD includes :

- A wall mount cabinet, 300 x 380 x 130 mm
- A yoke U-Bolt Kit for pole mounting
- An alarm unit NivOil
- A battery, 7 Ah
- A controller module to protect the battery against excessive discharge or overload.
- A solar panel, 5 Wc, on adjustable holder

BBS-GYR includes:

- A complete system BBS-STD
- A flashing light device on the front of the cabinet

BBS-GSM includes:

- A complete system BBS-STD
- A GSM module, inside the cabinet

TECHNICAL FEATURES

CABINET

Operating temperature	-25 +60 °C
Dimensions	300 x 380 x 130 mm
Protection	IP 56
Mass	5.8 kg

SOLAR PANEL

Power	5 Wc
Technology	Polycrystalline multi panel
Dimensions	365 x 195 mm
Mass	1.8 kg



Power7 AhDimensions150 x 100 x 65 mm

FLASHING LIGHT DEVICE Dimensions Ø 75 x 45 mm

GSM MODULE Dimensions

75 x 45 x 25 mm Refer to data-sheet 248-02

EC Conformity: The instrument meets the legal requirements of the current European Directives

NivOil sensors: All features on data-sheet 531-02



Solar powered alarm unit for oil-water separators BAMOBOX SOLAR (BBS) 03-08-2018 D-531.03-EN-AA

NIV

531-03/2

Level detection for oil-water separators RAC 531



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- Survey of oil-water separator
- Wall mounting cabinet, IP 65
- Easy fitting, intuitive configuration
- Detection of highest hydrocarbon layer thickness
- Relay output, changeover contact
- Audible and lighting alarm
- OEM version on request
- Certification: ATEX certified

APPLICATION

- Monitoring of hydrocarbon level in oil-water separators.

PRINCIPLE

RAC 531 is designed for the monitoring of hydrocarbon fluids separators. With sensor, OP/10 (OP/5) the alarm device detects when the maximum thickness is reached.

Status display, from LED, on front panel:

- - Green LED / -> Normal monitoring status
 - Red LED Ala
- -> Alarming status
- The alarm device has a built-in buzzer. A jumper may disable its function; in this configuration, the lighting alarm and relay output inform the current ALARM status to operator. The alarm device has an auto-diagnostic of measuring loop and of device integrity. An alarm signal occurs in case of dysfunction.

Pictograms (front panel)

There are three marks on the sensor for an easy fitting according to highest hydrocarbon layer thickness.

CODE NUMBERS AND REFERENCES

Code	Reference	Designation
531 950	RAC 531	Alarming unit, 230 V AC, Wall mounting, IP 65, 120x80x55 mm
531 101	OP/5	Hydrocarbon fluid layer thickness sensor, 5 m long cable
531 102	OP/10	Hydrocarbon fluid layer thickness sensor, 10 m long cable



RAC 531 – Alarming unit	
Main power supply:	230 V – 50/60 Hz ±10 %
Power consumption:	~ 2 W
Housing protection:	IP65, according EN 60529
Temperature limits:	-20+60°C
Housing material:	Polycarbonate cabinet; 120x80x55 mm
Sensor input:	For 1 sensor, detection for hydrocarbon fluids layer thickness
Monitoring:	The alarm device NIVOIL has an auto-diagnostic of measuring loop and system integrity.
Display and signals:	Green LED for normal status
	Yellow LED when alarm occurred and not yet reset
	Red LED for alarming status
	Built-in audible alarm, disabled with a jumper
Operating:	Through 1 push button for diagnostic test and alarm clearance
Output:	1 relay output, 230 V AC, 3A, potential free change over contact
Ex protection class:	⟨͡x⟩ II (1) G [Ex ia Ga] IIB/IIA
ATEX Certificate:	BVS 12 ATEX E 019 / This cabinet must be fitted in the safe area
CE Marks:	According to Low Voltage Guidelines: 2006/95/CEE) and EMV Guidelines: 89/336/CEE

To use, only, with OP/5 or OP/10 sensor (BVS 07 ATEX E 091 X)



OP/5 – Hydrocarbon layer thickness sensors

Sensor type: Capacitive, high frequency Wetted parts: Antistatic PE stem; Stainless steel end Cable: Elastomer resistant to oils and hydrocarbon fluids, blue colour; wires 2x1 mm², connections on screw connectors; 5 or 10 m long cable (other lengths on request - maximal length is 300 m) Protection: IP68 acc. EN 60529 Temperature limits: -20...+60°C **Ex** protection class: (Ex) II 1 G Ex ia IIB T4 ATEX certificate: BVS 07 ATEX E 091 X / This sensor may be fitted in zone 0 15 cm 220 10 cm 5 cm Ø 32 Level detection **NIV** MESL for oil-water separators 22, Rue de la Voie des Bans - Z.I. de la Gare - 95100 ARGENTEUIL **RAC 531** 531-04/2 Tél : (+33) 01 30 25 83 20 - Web : www.bamo.fr 17-03-2014 531 I1 04 A Fax : (+33) 01 34 10 16 05 - E-mail : info@bamo.fr

Level detection for grease-water separators **GAD 531**



GAD 531

- Monitoring of grease-water separators
- Compact and economical model
- Detection of grease layer thickness overpassed
- Relay output; Changeover contact
- LEDs signals and audible alarm

APPLICATION

Alarm unit for monitoring of grease separators in conformity with EN 1825

DESCRIPTION

GAD 531 and probe GP/10 are designed for monitoring grease-water separators. The probe GP/10 detects when the thickness of floating greases over water, is greater than the permitted max. thickness.

GAD 531 displays the system status through 3 LEDs:



The alarm unit has an auto-diagnostic of system integrity.

A relay output and an audible alarm inform the operator. The buzzer may be deactivated with a simple jumper if necessary.

- Components of one system:
- Alarm unit GAD 531
- Detector: Probe GP/10 (cable output, 10 m long)

Caution:

Not suitable for the detection of greases in emulsion, or greases cured in aggregate!

CODE NUMBERS AND REFERENCES

Code	Reference	Description
531 960	GAD 531	Alarm unit, 230 V AC - 50/60 Hz; Wall mounting; IP65
531 980	GP/10	Probe for grease layer detection; 10 m long cable



Probe GP/10

Grease

Level detection for grease-water separators GAD 531 31-05-2018 D-531.05-EN-AC

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GAD 531

GP/10

GAD 531 – Alarm unit

Main power supply	230 V AC +/- 10 % ; 50/60Hz
Power consumption	~2 W
Housing protection	IP65, according EN 60529
Operating temperature	-20 +60 °C
Monitoring	The device has an auto-diagnostic of measuring loop integrity (broken cable, short-circuit)
Signals and alarm	Audible alarm (Buzzer)
-	Green LED for normal status
	Yellow LED when alarm occurred and not yet reset
	Red LED for alarming status
Control	Through 1 push button for diagnostic test and alarm acknowledgement
Relay output	1 Relay, 230 V AC, 3 A
	Changeover contact; Potential free
Cabinet	Housing: Polycarbonate; 120x80x55 mm; IP 65; Wall mounting

GP/10 – Grease layer probe Only for use with an alarm unit GAD 531

Materials	PP, PE and stainless steel
Cable	10 m long; Elastomer resistant to oils; 2-wire cable (2 x 1 mm ²)
Max. length	300 m (adding an extension with a junction connector)
Dimensions	Ø 32 mm; Stem length: 200 mm
Protection	IP 68 acc. EN 60529
Measuring principle	Capacitive, high frequency
Measuring principle	Capacitive, high frequency
Operating temperature	-20 °C +60 °C

CE Conformity

The instruments meet the legal requirements of the current European Directives.

DIMENSIONS

C L



Measurement

Principle	Optic-luminescent technology
Measurement range	From 0.00 up to 20.00 mg/l
-	0.00 20.00 ppm
	0 200 %
Resolution	0.01
Accuracy	± 0.1 mg/l
-	± 0.1 ppm
	±1%
Response time	60 seconds for 90 % of the final value
Fluid environment	Not necessary circulation
Operating temperature	0 +50 °C
Temperature compensation	Through a built-in NTC sensor
	Temperature compensation in the range 0 to 40 °C
Accuracy	± 0.5 °C
Interface	For connection to BAMOWIZ 452
Voltage supply	5 12 V
Probe	
Mass	AISI 316 version: 450g (including cable)
	Titanium version: 300 g (including the cable)
Materials	Wet parts: AISI 316 L passivated, or, Titanium
Pressure limit	5 bar

Da Cable 6-wire shielded cable; External PUR sheath Protection IP 68

EC Conformity: The instrument meets the legal requirements of the current European Directives.

DIMENSIONS

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