



aquasant[®]

Electro optical overfilling, "Filling and
leakage" for petro products





CERTIFICATE

Certificate no. 6972

aquasant 

Aquasant Messtechnik AG
Hauptstrasse 22
CH-4416 Bubendorf

QS ZÜRICH AG certifies that the management system of the above mentioned company and location(s) has been evaluated and meets the requirements established by the following rules:

ISO 9001: 2015

The management system includes:

Development, manufacturing and sales of measuring-, monitoring- and controlling-equipment for the chemical industry, the biotechnology, the food industry and the petrochemistry

During the period of validity of this certificate, the management system of the company must always comply with the requirements of the certified standards.

For updated amendments within the scope of certification of the present certificate, please refer to <http://www.quality-service.ch/>



First certification date: 01.03.1996
Date of issue: 25.05.2021
Expiration date: 01.07.2024
Subject to successful surveillance audit

QS ZÜRICH AG
P.O. Box 6335
CH-8050 Zürich
info@quality-service.ch




Management



1 **PRODUCTION/PRODUCT QUALITY ASSURANCE NOTIFICATION**

2 **Equipment and protective systems intended for use in potentially explosive atmospheres Directive 2014/34/EU**

Conformity to Type based on Quality Assurance of the Production Process/Product Quality Assurance

3 Notification No. **KIWA 19ATEXQ1234**

4 Equipment, protective system or components as listed:

Controllers and sensors for Impedance measuring technique of parting, threshold, level;	Flameproof Enclosures (d)
Electro-optical fluid overflow protection;	Increased Safety (e)
Electro-optical turbidity measurement;	Non-electrical equipment (h)
Treshold conductivity sensor technique;	Intrinsic Safety (i)
Radar level measurement	Encapsulation (m)
	Optical Radiation (op is)
	Dust Ignition Protection by Enclosure (t)

5 Manufacturer or
Authorised Representative:

Aquasant Messtechnik AG
Hauptstr. 22
4416 Bubendorf
Switzerland

6 Manufacturing locations: As above

7 CSA Group Netherlands B.V., notified body number 2813 in accordance with Article 17 of the Council Directive 2014/34/EU, notifies that the manufacturer has a quality system which complies with the requirements of Annexes IV & VII of Directive 2014/34/EU.

8 This notification is based upon Report No. 191001279-2 issued on 15. September 2021. This notification can be withdrawn if the manufacturer no longer satisfies the requirements of Annexes IV/VII. Results of periodical assessment of the quality system form part of this notification.

9 According to Article 16 [3] of Directive 2014/34/EU the CE marking shall be followed by the identification number 2813 of CSA Group Netherlands B.V., as the Notified Body involved in the production control stage.

Date of Initial Certification: 06. November 2019

Date of Issue: 15. October 2021

Date of Expiry: 24. October 2022

James May

On behalf of CSA Group Netherlands B.V.



Notification No. **KIWA 19ATEXQ1234**

This certificate remains valid subject to the company maintaining its system to the required standards, which will be monitored by CSA. The use of this certificate, marks and logos are subject to the Regulations Applicable to Holders of CSA Group Netherlands BV certificates
CSA Group Netherlands B.V. Utrechtseweg 310, Building B42, 6812AR, Netherlands



1 Mitteilung über die Anerkennung der Qualitätssicherung Produktion

2 Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen - Richtlinie 2014/34/EU

Konformität mit dem Baumuster auf der Grundlage einer Qualitätssicherung bezogen auf den Produktionsprozess / der Qualitätssicherung bezogen auf das Produkt

3 Notifizierung Nr. **KIWA 19ATEXQ1234**

4 Geräte, Schutzsysteme oder Komponenten gemäß nachfolgender Aufstellung:

Steuergeräte und Sensoren zur Impedanzmesstechnik für Trennschicht, Grenzwert und Füllstand;	Druckfeste Kapselung (d)
elektrooptische Flüssigkeitsüberfüllsicherungen;	Erhöhte Sicherheit (e)
elektrooptische Trübungsmessung;	Nicht-elektrischer Explosionsschutz (h)
Grenzwert Leitsensortechnik;	Eigensicherheit (i)
Radar Füllstandsmessung	Vergusskapselung (m)
	Inhärent sichere opt. Strahlung (op is)
	Schutz durch Gehäuse (t)

5 Hersteller oder Bevollmächtigter:

Aquasant Messtechnik AG
Hauptstr. 22
4416 Bubendorf
Schweiz

6 Fertigungsstandorte: Siehe 5

7 Die CSA Group Netherlands B.V., notifizierte Stelle Nr. 2813 gemäß Artikel 17 der Richtlinie 2014/34/EU des europäischen Parlaments und des Rates, erklärt, dass der Hersteller ein Qualitätssicherungssystem unterhält, welches den Anforderungen der Anhänge IV & VII der Richtlinie 2014/34/EU entspricht.

3 Diese Mitteilung basiert auf dem Auditbericht Nr. 191001279-2 vom 15. September 2021. Die Mitteilung kann zurückgezogen werden, wenn der Hersteller die Anforderungen der Anhänge IV/VII nicht mehr erfüllt. Die Ergebnisse der regelmäßigen Begutachtung des Qualitätssicherungssystems sind Bestandteil der Mitteilung.

9 Gemäß Artikel 16 [3] der Richtlinie 2014/34/EU hat der CE Kennzeichnung die Identifizierungsnummer 2813 der CSA Group Netherlands B.V., als für die Fertigungsüberwachung verantwortliche notifizierte Stelle, zu folgen.

Erstzertifizierung: 06. November 2019
Gültig von: 15. Oktober 2021
Gültig bis: 24. Oktober 2022

James May
Im Namen der CSA Group Netherlands B.V.



Achtung – Rechtlich verbindlich ist ausschließlich die englische Sprachfassung. Die vorliegende deutsche Übersetzung dient ausschließlich Informationszwecken.

Notification No. **KIWA 19ATEXQ1234**

This certificate remains valid subject to the company maintaining its system to the required standards, which will be monitored by CSA. The use of this certificate, marks and logos are subject to the Regulations Applicable to Holders of CSA Group Netherlands BV certificates
CSA Group Netherlands B.V. Utrechtseweg 310, Building B42, 6812AR, Netherlands

EU-DECLARATION OF CONFORMITY



Manufacturer: Aquasant Messtechnik AG, Hauptstrasse 22, 4416 Bubendorf, Switzerland
Brand: aquasant®
Notified body: N° 2813, CSA Group Testing UK Ltd
Description: Electrooptical rod liquid sensor for overflow protection with electronics within the sensor sleeve for connection to AS*/-AN*-Aquasant control units, according to ATEX 16 type code.


We hereby declare under our sole responsibility that the products:

Product: Liquid sensor (Special fill safety leaks)
Model: AF21* / AF23* / AF26* / AF33* / AF42*
EU-Type Examination Certificate Number: SEV 16 ATEX 0151 X Electrosuisse SEV Nr.: 1258

comply with the following European guidelines under the harmonised standards or normative documents:

ATEX RL 2014/34/EU	EN IEC 60079-0:2018 EN 60079-11:2012 EN 60079-26:2015 EN 60079-28:2015
EMV RL 2014/30/EU	EN IEC 61000-6-2:2019 EN IEC 61000-6-4:2019 EN 61000-6-2:2005 EN 6100-6-4:2007+A1:2011
RoHS RL 2011/65/EU	EN IEC 63000:2018
SVTI Special fill safety leaks SM 312836 Water protection suitability according to KVV	KVV 302.004 KVV 321.003

Bubendorf, 15.03.2021



Roger Inauen
Head Manufacturing



EU-DECLARATION OF CONFORMITY



Manufacturer: Aquasant Messtechnik AG, Hauptstrasse 22, 4416 Bubendorf, Switzerland
Brand: aquasant®
Notified body: N° 2813, CSA Group Testing UK Ltd
Description: AS-Control units for electro-optical AF liquid sensors for limit values, overflow protection and leakage monitoring, according to ATEX 16 type code.

We hereby declare under our sole responsibility that the products:

Product: Sensor control unit
Model: AS1* / AS8* / AS9* / AN3 / AN9*
EU-Type Examination Certificate Number: SEV 18 ATEX 0118 X
Electrosuisse SEV Nr.: 1258

comply with the following European guidelines under the harmonised standards or normative documents:

ATEX RL 2014/34/EU	EN IEC 60079-0:2018 EN 60079-11:2012
Low Voltage Directive 2014/35/EU	EN 61010
EMV RL 2014/30/EU	EN 61000 EN 61326
RoHS RL 2011/65/EU	EN IEC 63000:2018
SVTI Special fill safety device SM 312836 Water protection suitability according to KVV	KVV 302.004 KVV321.003

Bubendorf, 15.03.2021



Roger Inauen
Head Manufacturing





(1) **EU-Type Examination Certificate**

(2) Equipment or protective system intended for use in potentially explosive atmospheres - **Directive 2014/34/EU**

(3) Certificate number: **SEV 16 ATEX 0151 X**

(4) Product: Liquid detector Type AF1IR*, AF*

(5) Manufacturer: Aquasant Messtechnik AG

(6) Address: Hauptstrasse 22, 4416 Bubendorf, SWITZERLAND

(7) The equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) Electrosuisse SEV, notified body No. 1258, in accordance with article 17 of Directive 2014/34/EU of the European parliament and of the council, dated 26 February 2014, certifies that this product has been found to comply with the essential health and safety requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report no 16-Ex-0082.01

(9) Compliance with the essential health and safety requirements has been assured by compliance with:

EN 60079-0:12 + A11:13 EN 60079-11:12 EN 60079-26:15
EN 60079-28:15

Except in respect of those requirements listed at item 18 of the schedule.

(10) If the sign «X» is placed after the certificate number, it indicates that the product is subjected to special conditions for safe use specified in the schedule to this certificate.

(11) This EU type examination certificate relates only to design and construction of the specified product. Further requirements of this directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

(12) The marking of the product shall include the following:

 **II 1 G Ex ia op is IIC T4 Ga**
II 1/2 G Ex ia op is IIC T4 Ga/Gb

Electrosuisse
Notified Body ATEX

Martin Plüss
Product Certification



(13)

Appendix

(14)

EU-Type Examination Certificate

(15) **Description of product**

AF1IR L for safety level switch for tank trucks (filling monitoring):

The liquid probe AF1IR is determined for home, basement and underground tanks as well as cisterns and external tanks monitoring. Combined with a level switch it is impossible to overflow the tanks. The AF1IR is almost insensitive to changes in temperature, dirt, foam, condensate etc. Compared to liquid probes with passive monitoring elements it is absolutely stable and reliable. Probe available in diverse versions.

AF1SL special level switch & leak detection system

For the general monitoring of non-aggressive and noncorrosive liquids as diverse oils, fuels, kerosene and waste waters etc. Materials in contact with the medium: Cabelec® and DURAN glass.

Applications: Drain channels, clarification plants, sewage processing plants, cable shafts, pools, weighing tanks, pipelines, filling devices, leakage monitoring. Probe available in diverse versions.

AF35SL special level switch

Version with fibre optics cable.

AF21

For the monitoring of aggressive, cold and hot liquids (-190...+350°C) such as oils, acids, bases and solvents etc. Materials in contact with the medium: 1.4404 and quartz glass. Inline-sterilization possible.

Can be applied in: All liquids as solvents, chemicals, acids, bases and petroleum products.

AF23 P1

For monitoring of diverse conductible chemicals. Stain-resistant, high durability against external influences (acids).

Materials in contact with the medium: Teflon PTFE, distance tube 1.4435; FEP coating.

AF26

For the monitoring of liquids in glass bottles via a fused in optical nose for aqueous or alcoholic solvents, diverse oils, acids, bases and solvents etc. Materials in contact with the medium: Quartz glass. For use in laboratories, mini plants and for sterile filling.

AF23 / AF 23 U748

Probe stainless steel 1.4404. Inline-sterilization possible. Durable in petroleum, cooking oils, petrol, kerosene, acids, bases and solvents etc. Can be applied in: petro chemistry, water supply facility, sewage processing plant, storage tanks, pool, tankers etc. Particularly suitable as safety level switch and leak warning protection.

AF33

Mechanical structure as AF23. Useable in: exposed zones as with petrol and solvents tanks. No electric connections. Signal transmission by fibre optics cable. Useable without lightning protection.

AF33 P1

For monitoring of diverse conductible chemicals. Stain-resistant, high durability against external influences (acids). Material in contact with the medium: Teflon PTFE, distance tube 1.4435; FEP coating. No electric connections. Signal transmission by fibre optics cable. Useable without lightning protection.

AF42

Execution in 1.4404. Self-monitoring in submerged status (FSL). Minimal-level monitoring. Useable in: Insulator oil of transformers, dry-running protection of large pumps, lubricant monitoring for the protection of machines and plants. Ensure the fuel and propellants supply.

Functional principle of the Aquasant liquid probes:

The optically active part of the liquid probe is designed as a 90° glass cone. According to the refraction law the infrared light beam striking on the boundary surface (glass / medium) will be totally reflected (Totalreflexion). This is given by the geometry of the probe's cone, as long as a gaseous medium surrounds the probe's cone. By means of the twice total reflection the infrared light beam will be conducted to the receiver (Empfänger). This signal will be interpreted as low-level indication.

When the probe's cone immerses into the liquid the infrared light beam will be broken on the boundary surface (glass / medium) and shines into the liquid. The infrared light beam will not reach the receiver. This signal will be interpreted as high-level indication.

Ratings:

Liquid detectors AF*

Sensor circuit

with type of protection intrinsic safety Ex ia IIC
only for connection to a certified intrinsically safe circuit.

Maximum values:

$U_i \leq 7.2 \text{ V}$

$I_i \leq 96.0 \text{ mA}$

$P_i \leq 692 \text{ mW}$

$C_i = 0$

$L_i = 0$

Liquid detectors AF1IR*

Sensor circuit A-C

with type of protection intrinsic safety Ex ia IIC
only for connection to a certified intrinsically safe circuit.

Maximum values:

$U_i \leq 24.0 \text{ V}$

$P_i \leq 25 \text{ mW}$

$C_i = 0$

$L_i = 0$

Sensor circuit B-C

with type of protection intrinsic safety Ex ia IIC
only for connection to a certified intrinsically safe circuit.

Maximum values:

$U_i \leq 7.2 \text{ V}$

$I_i \leq 90 \text{ mA}$

$C_i = 0$

$L_i = 0$

Classification of installation and use: stationary
Ingress protection: IP64
Rated ambient temperature range (°C): -30 °C ...+70 °C

(16) **Report number** 16-Ex-0082.01

(17) **Specific conditions of use**

- The AF***Z***** Liquid detector with zirconium housing must be installed protected against impact and friction.
- For protection level Ga the AF*****BV****, AF*****AKK**** or AF*****AKS**** Liquid detector with aluminium head must be installed protected against impact and friction.
- The AF***P1*****; AF*****S**** AF*****BV**** Liquid detector with housings consisting of Teflon, Polyamide or Polyester the electrostatic charge must be prevented. Warning of potential electrostatic charging hazard see instructions.

(18) **Essential health and safety requirements**

In addition to the essential health and safety requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
None	

(19) **Drawings and Documents**

See test report "Manufacturer's Documents"



(1) **EU-Type Examination Certificate**

(2) Equipment or protective system intended for use in potentially explosive atmospheres - **Directive 2014/34/EU**

(3) Certificate number: **SEV 18 ATEX 0118 X**

(4) Product: Control unit
Type AS **, AS**-** **, AN*

(5) Manufacturer: Aquasant Messtechnik AG

(6) Address: Hauptstrasse 22, 4416 Bubendorf, SWITZERLAND

(7) The equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) Eurofins, notified body No. 1258, in accordance with article 17 of Directive 2014/34/EU of the European parliament and of the council, dated 26 February 2014, certifies that this product has been found to comply with the essential health and safety requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report no 17-Ex-0016.01

(9) Compliance with the essential health and safety requirements has been assured by compliance with:

EN 60079-0:12 + A11:13 EN 60079-11:12

Except in respect of those requirements listed at item 18 of the schedule.

(10) If the sign «X» is placed after the certificate number, it indicates that the product is subjected to special conditions for safe use specified in the schedule to this certificate.

(11) This EU type examination certificate relates only to design and construction of the specified product. Further requirements of this directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

(12) The marking of the product shall include the following:



II (1) G [Ex ia Ga] IIC

**Eurofins Electrosuisse Product Testing AG
Notified Body ATEX**

Martin Plüss
Product Certification

(13)

Appendix

(14)

EU-Type Examination Certificate no. SEV 18 ATEX 0118 X
(15) **Description of product**

The control units AS* and AN* are used as the evaluation and power unit for the liquid sensor AF*. In order to meet the different application requirements, three product types are offered in different options. The following tables provide an overview of the different types and options:

aquasant® control unit AN

The control unit type AN* contains an integrated min/max-automatic system with security control, a self-monitoring function allowing a continuous and reliable evaluation of aquasant® liquid sensors. The control unit AN9*, when connected with the modules VE9 resp. LW9, is compatible to a 2-wire connection.

Type / Art.-No.	Description	Operating voltage	Alarm type	Number of measuring loops	To be used with VE9 / LW9	Number of relay contacts
AN3	<ul style="list-style-type: none"> - Two point control with safety monitoring - Operation and alarm-LED - Full signal test functionality - Sturdy plastic housing for wall mounting 	230 V	H	3		2
AN9	<ul style="list-style-type: none"> - Two point control with safety monitoring - 2-wire connection with sensor - Operation and alarm-LED - Full signal test functionality - Sturdy plastic housing for wall mounting 	230 V	H	3	X	2

aquasant® control unit AS

The self-monitoring control units of the type AS* ensure a continuous and reliable evaluation of the aquasant® liquid sensors.

The control unit AS9*, when connected with the modules VE9 resp. LW9, is compatible to a 2-wire connection.

Type / Art.-No.	Description	Operating voltage	Alarm type	Number of measuring loops	To be used with VE9 / LW9	Number of relay contacts
AS1.3	- Operation and alarm-LED - Selectable alarm buzzer with confirmation button - Full signal test functionality - Sturdy plastic housing for wall mounting	230 V	H	1		2
AS8.2	- Two point control with safety monitoring - 2-wire connection with sensor - Operation and alarm-LED	230 V	H	2		1
AS8.3	- Full signal test functionality - Sturdy plastic housing for wall mounting	230 V	H	3		1
AS9.1	- 2-wire connection to sensor	230 V	H	1	X	1
AS9.2	- Operation- and signaling LED - Full signal test functionality	230 V	H	2	X	2
AS9.3	- Sturdy plastic housing for wall mounting	230 V	H	3	X	3
AS9-E24 2H	Plug in board for 19" rack - 2-wire connection to sensor - Alarm-LED - Full signal test functionality - Plug in board for DIN 41612 connector for rack installation	24 V	H	1	X	2
AS51-E24 2H	Plug in board for 19" rack - Alarm-LED	24 V	H	1		2
AS51-E24 2L	- Full signal test functionality - Plug in board for DIN 41612 connector	24 V	L	1		2
AS83-E24 2H	Plug in board for 19" rack for the safe record of degassed liquids - Configurable time delay [0.5 - 20] s	24 V	H	1		2
AS83-E24 2L	- Configurable switching sensitivity [-25 - 50] % - Alarm-LED - Full signal test functionality - Plug in board for DIN 41612 connector	24 V	L	1		2

Rating:			
Type:	AS1.3, AS8.*, AN3, AS9.*, AN9		
Nominal values:	Um: 230 VAC ±10 % / 50 Hz		
Relay output:	AC: 5 A @ 230 V DC: 5 A @ 30 V		
Sensor circuit	Maximum output voltage	Uo	= 7.2 V
	Maximum output current	Io	= 89 mA
	Linear characteristic		
	Maximum internal capacity	Ci	= 3.6 nF
	Group	IIC	IIB
Capacitance Co	1.5 µF	9.2 µF	
Inductance Lo	1.6 mH	5.0 mH	
Type:	AS9-E24		
Nominal values:	Um: 24 VAC ±10 % (SELV) Um: 24 VDC ±10 % (SELV)		
Relay output:	AC: 5 A @ 230 V DC: 5 A @ 30 V		
Sensor circuit	Maximum output voltage	Uo	= 7.2 V
	Maximum output current	Io	= 99 mA
	Linear characteristic		
	Maximum internal capacity	Ci	= 3.6 nF
	Group	IIC	IIB
Capacitance Co	1.5 µF	9.2 µF	
Inductance Lo	1.6 mH	5.0 mH	
Type:	AS51-E24, AS83-E24		
Nominal values:	Um: 24 VAC ±10 % (SELV) Um: 24 VDC ±10 % (SELV)		
Relay output:	AC: 5 A @ 230 V DC: 5 A @ 30 V		
Sensor circuit	Maximum output voltage	Uo	= 7.2 V
	Maximum output current	Io	= 65 mA
	Linear characteristic		
	Maximum internal capacity	Ci	= 3.6 nF
	Group	IIC	IIB
Capacitance Co	1.5 µF	9.6 µF	
Inductance Lo	2.0 mH	5.0 mH	

(16) **Report number** 17-Ex-0016.01

(17) **Specific conditions of use**

- The ambient temperature range of the apparatus is $-20\text{ °C} \leq T_{amb} \leq 60\text{ °C}$.
- For calculation of the intrinsic safe circuit the internal capacitance of $C_i = 3.6\text{ nF}$ must be regarded.
- The AS9-E24, AS51-E24 and AS83-E24 control units must be installed in a housing which guarantees at least degree of protection IP20.
- When installing the AS9-E24, AS51-E24 and AS83-E24 control units, either use a partition between the intrinsically safe and non-intrinsically safe connections, so that the minimum distance is 50 mm (thread size), or each individual connection must be covered with a non-slidable hose nozzle (heat shrink tubing). Alternatively, the crimping technique is permissible.

(18) **Essential health and safety requirements**

In addition to the essential health and safety requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
None	

(19) **Drawings and Documents**

See test report "Manufacturer's Documents"

Overview application aquasant® type AF1*

overflow prevention:

Temperature sensor for all types of storage tanks;
for organic to aqueous liquids.

Overflow prevention:

Level indicator for organic to aqueous liquids,
against the overfilling of truck refueling

Leaks:

Surveillance tank equipment, collection tank
double mantle

