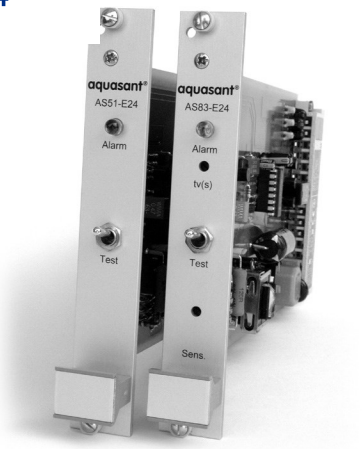
Control device AS51-E24 / AS83-E24



General

The AS51-E24 / AS83-E24 is a self-monitoring control unit with an intrinsically safe sensor circuit. Two zero potential switch-over contacts are available as an output. The level of any liquid can be recorded, controlled and monitored using the AS51-E24 / AS83-E24 control unit and a corresponding liquid sensor. The control unit's function can be checked by pressing the test key. The alarm system of the AS51-E24 / AS83-E24 can be delayed and its sensitivity can be adjusted. The patented self-monitoring system activates an alarm signal in the event of a malfunction in the liquid sensor, in the connecting cables between the liquid sensor and the control unit, or if there is a fault in the control unit itself. The following Aquasant® IR liquid sensors can be used for explosion-hazard applications.
AF1S, AF21, AF22, AF23, AF33, AF35, AF42.

The following Aquasant® IR liquid sensors can be used for all other applications.
AF6, AF24, AF26, AF31, AF32, AF36

Field of use

Almost any liquid can be monitored using the control unit if the appropriate material for the liquid sensor is selected. The system can be used in explosion-hazard areas. The liquid levels of petrol, mineral oils, acids, caustic solutions, solvents and other chemicals can be monitored. It can also be used for most liquids in the foodstuffs industry without any problems. Application possibilities: containers, tanks, oil tankers, drainage shafts, effluent treatment plants, sewage treatment plants, storage basins and pools, weighing tanks, pipelines, filling equipment, water supply plants, water overflows, oil traps, leakage monitoring of collecting tanks, space monitoring, dry-run protection for pumps etc. The AS83-E24 is used as a preference for foaming liquids.

Design / characteristics

The control unit is fully transistorised and possesses an independent output circuit which acts as a working connection with the liquid sensor. The patented self-monitoring system triggers an alarm signal in the event of a malfunction in the liquid sensor, in the connecting cables between the liquid sensors and the control unit, or if there is a fault in the unit itself.

The alarm LED, as well as the test keys for the sensor and control unit function check, are all fitted at the front of the AS51-E24 control unit. The AS83-E24 control unit is additionally fitted with a potentiometer for sensor sensitivity and a potentiometer for the alarm delay. The relay alarm report cannot be acknowledged.

The control unit is housed on a Europa-board 100 x 130 mm in size. The control unit can be fitted into a 19″-rack by means of the two screws located on the front plate.

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Safety Directions

Danger! Electricity can kill!

Never allow live components to come into contact with water: Short-circuit hazard!
For your own safety, and that of others, please strictly adhere to the safety regulations.

Please read through the operating manual attentively before putting the control unit into commission. It provides important notes regarding the safety, use and maintenance of the control unit.

Store the operating manual carefully in a safe place and, if applicable, hand it on to the successive owner.

The control unit is designed exclusively for operation with Aquasant® on-site electronics equipment and/or associated liquid sensors. Technical alterations and any misuse are most strictly forbidden on account of the associated dangers!

Only competent personnel may connect the control unit. Persons not familiar with the operating instructions, children and persons acting under the influence of alcohol or medication, as well as untrained personnel, may not operate the control unit.

Never touch live components! These can cause an electric shock which can lead to serious injury or even death. The control unit may only be connected to an operational voltage which complies with that specified in the data sheet or on the rating plate. Wherever possible use electrical leads fitted with pre-switched power -surge safety cut-outs (nominal size of activating current no greater than 30 mA).

The control unit may only be connected to that operating voltage specified in the data sheet or on the rating plate.

Never submerge the control unit in water.

Make absolutely sure that the mains plug is disconnected before cleaning. Rub down the unit with a damp cloth only. Do not force your way into the unit with an object of any kind.

Do not mount the control unit in close proximity to a heat source. Mount the unit in a safe location in order to prevent people from touching it and injuring themselves. Do not expose the mains cable to direct heat (e.g. naked flames or furnaces). Never use damaged mains cables and/or power cables. Have any such cables replaced immediately by trained personnel. Do not pull or clamp power leads over corners or sharp edges. Never carry or pull the unit by the power lead. Never touch the power lead with wet hands and never unplug the unit by pulling on the lead. The unit must only be unplugged from the socket by pulling on the plug itself.

Ensure that the control unit's live components do not come into contact with water droplets, or water in general. Make sure that air can flow around the unit unhindered. An air gap of at least 2 cm should be left around the unit for that purpose. This prevents any possible heat build-up.

Damaged units must be taken out of operation immediately. If the mains plug, mains cable or the housing is faulty, or if the unit has been dropped or damaged in any other way, please hand over the unit for repair or inspection to your local Aquasant® sales point.

Electrical repairs may only be carried out by one of Aquasant Messtechnik AG time-served electricians. No liability will be accepted for possible damage resulting from improper repairs. All warranty claims lapse in this case.

Assembly instructions

When assembling control units, sensors or senders, the relevant requirements and regulations of Aquasant Messtechnik AG, SEV, the general rules of technology applicable to safety features for filling processes, SUVA, SAEL, and EMT guidelines etc. are to be observed.

The location in which Aquasant® monitoring systems are fitted must be reported to Aquasant Messtechnik AG or to an Aquasant® franchisee, as well as to the locally responsible authorities.

The sensor and unit types must match each other and be suitable for the intended use (product-related use, explosion-hazard zones, lightning protection etc.). The system must undergo a function check using the original liquid (or a non-hazardous replacement liquid) when it is put into commission and during service checks.

The system is to be checked or serviced in accordance with the regulations of TTV, SEV etc.. Safety features for special filling processes are to be checked every 3 years (leakage monitoring every 2 years) by Aquasant Messtechnik AG or its franchisee.

In the event of product changes, functional suitability is to be clarified in consultation with Aquasant Messtechnik AG, and installation functions are to be checked.

Power feed connection values, which can be taken from the technical data or connection diagrams, are to be strictly observed. If the mains power supply is subject to extreme fluctuation, then a mains filter or stabiliser will possibly have to be connected into the circuit before the control unit.

Probe and sensor circuits must be fed in separately and spaced during control cabinet assembly. According to regulations, intrinsically safe sensor circuits (blue) must be spaced at a distance of at least 30 mm of lead length.

The control unit relay outputs are galvanically separated and shown as having zero current. The zero current state and the alarm state are the same (relay released). The relays are in a closed state (self monitoring) in operation, and not in an alarm state,.

In order to prevent malfunctions caused by short-term power failures, Aquasant® control units are to be possibly connected to a battery or interruption-free power supply.

All cables must be assembled in accordance with the regulations of SAEL (the Swiss Agency for the Environment, Forests and Landscape), SEV, SUVA and Aquasant Messtechnik AG. Cables are to be fitted with anti-kink protection, as well as with tension-relieving equipment.

The probe and sensor connection leads must be laid in such a way that they are kept clearly separate and at a distance from high voltage and high frequency leads. The probe and sensor cables must be provided with a blue sleeve (identification) in the case of intrinsically safe systems.

The cross-sectional area of probe and sensor cables should be at least 0.75 mm². In the case of cable lengths exceeding 100 m, the cross-sectional area should be at least 1.50 mm². Sheathed cables must be used if probe and sensor cables cannot be laid in such a way that they are kept clearly separate and at a distance from high voltage and high frequency leads. The sheath should be of the woven type and connected to a good earth on the control cabinet or control unit side.

Wherever possible, probe and sensor cables must be fed via a suitable, watertight socket with screwed connections (max. distance from probe or sensor = 5 m). It must be possible to check the probe or sensor. Care must be taken to ensure that the insulation of individual wires or flex is not damaged when stripping sleeve insulation (short-circuit hazard).
A wiring diagram must be drawn up if cables are fed via distribution sockets. A suitable, watertight, authorised socket with screwed connections is to be used.

Aquasant Messtechnik AG accepts no liability for damage incurred as a result of non-compliance with this operating manual

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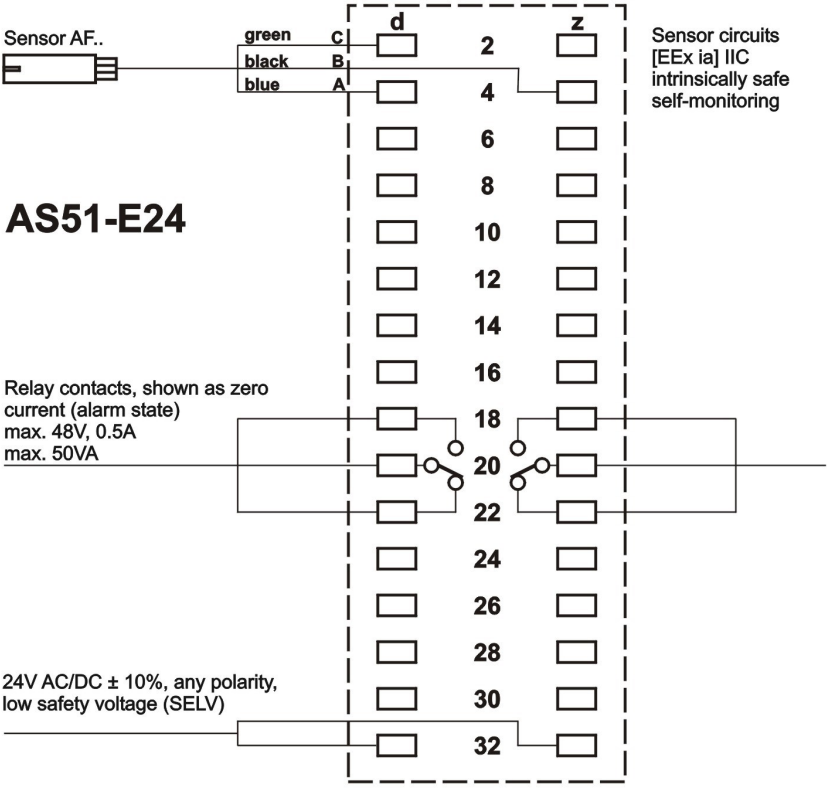
Technical Data

Auxiliary power Ub:	24VAC/DC ± 10%, polarity safe low safety voltage (SELV)
Power consumption:	approx. 3VA
Sensor circuit:	[Ex ia Ga] IIC (intrinsically safe self-monitoring) Uo = 7.2V Io = 65 mA Lo = 2.0mH Co = 1.5.5µF C_i=3.6nF
Relay-switching current circuit:	1 limit value relay with 2 zero potential switch-over contacts
Breaking capacity:	max. 48VAC / 0.5A / 50VA
Switching function:	When the limit value is reached, the relay is released The same relay state as when there is no operating voltage The LED alarm lights up
Response delay:	AS51-E24 1.0 sec. ± 50% AS83-E24 0.5 … 20 sec. / -25 … + 50%
Switching state:	When the limit value is reached, 1 red LED lights up.
Protection type:	IP20
Ambient temperature:	-20°C to +55°C
Weight:	approx. 170g
Dimensions:	H x W x D: 128 x 20 x 190 mm
Variants:	AS51-E24 Basic variant AS83-E24 Transmitter current regulated by sensor, alarm relay output with time delay

Notes:

1. AS51-E24 and AS83-E24 control units must be fitted into a housing which at least guarantees protection category IP20.
2. AS51-E24 and AS83-E24 control units must be installed outside the explosion-hazard area
3. The sensor circuits are to be galvanically separated from all other electrical circuits up to a maximum nominal voltage value of 90V
4. The highest permitted ambient temperature is +55°C
5. During installation of the control unit, either a partition is to be deployed between those connections which are intrinsically safe and those which are not, in such a way that a minimum gap of 50mm (cord dimension) is maintained, or each individual connection is to be covered with a non-slip hose-type sleeve (shrink hose). Crimping techniques may be employed as an alternative.
6. The control unit is only designated for operation with Aquasant® liquid sensors

Connection diagram



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AS51-E24 ☐ H-Alarm ☐
AS83-E24 ☐ L-Alarm ☐

CE 1254

Um : 24VAC/DC±10% (SELV)
Relay output AC: 230V, 5A DC: 30V, 5A

Swiss made aquasant.com ⚠ see Manual

Ex II (1) G
[Ex ia Ga] IIC

SEV 18 ATEX 0118 X
U_0=7,2V / I_0=65mA / C_i=3.6nF

IIC: C_0=1.5µF / L_0=2.0mH
IIB: C_0=9.6µF / L_0=5mH

Serial No. 00586 -18

01/2004

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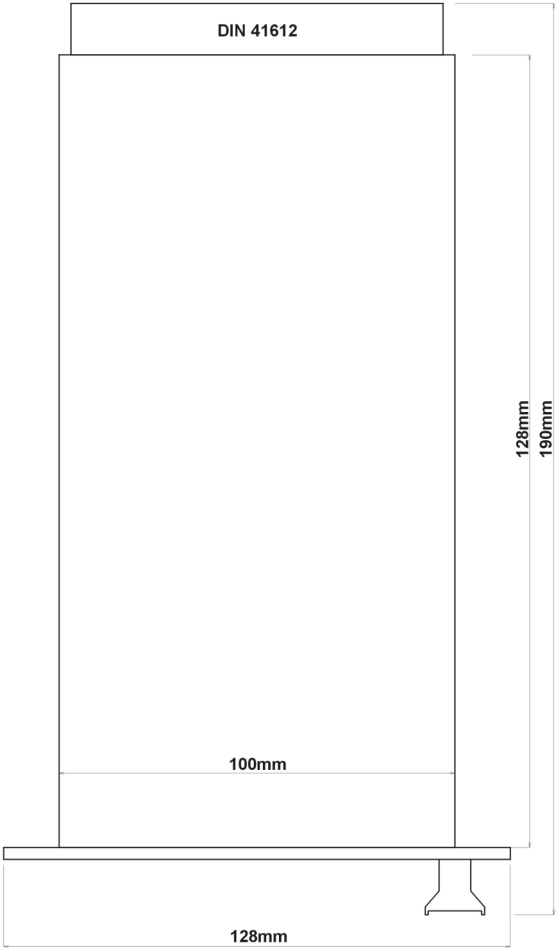
Unit dimensions / rating plate



Cleaning / storage

Cleaning

The unit must be switched off and disconnected at the mains before cleaning (pull out the mains plug).
Forcing one's way into the unit with any kind of object and opening the housing is strictly forbidden.
The housing can be cleaned using a fine brush or damp cloth. A vacuum cleaner may also be used for cleaning if the unit is very dirty. Never submerge the unit in water or pour water over the unit. Also, never allow the unit to come into contact with any kind of solvent. If required, cleaning can be carried out by Aquasant Messtechnik AG.
However, this work is not covered by the manufacturer's warranty obligations.

Storage

The unit must always be installed or stored out of reach of children. The unit should be protected against dust and dirt if it is not used over a long period.

Disposal

Disposal permit

Take worn-out units out of commission immediately. Unplug the unit and disconnect the mains cable. The unit may not be disposed of along with household waste, but must be taken to a special waste facility.

We, together with our suppliers, will assume responsibility for disposing of your control unit in a proper environmentally-controlled manner in exchange for a small contribution to cover our expenses. You can send back your worn-out control unit to the place of purchase or direct to Aquasant Messtechnik AG

Warranty

Aquasant Messtechnik AG guarantees a standard quality of supplies for a period of 2 years from the date of delivery. At the written request of the customer, Aquasant Messtechnik AG undertakes, as quickly as possible and in accordance with the customer's choice, to either repair or replace all parts supplied by Aquasant Messtechnik AG which can be proven to have been damaged or rendered unusable as a result of poor materials or faulty execution. Replaced goods become the property of Aquasant Messtechnik AG. The warranty shall lapse prematurely if the customer or any third party carries out improper changes or repairs to the unit, or if, in the event that a fault occurs, the customer does not immediately take all appropriate measures to avoid damage and does not give Aquasant Messtechnik AG any opportunity to rectify the fault. With the exception of those specifically expressed in this clause, the customer has no rights and claims with respect to shortcomings in materials and execution.

Damage which cannot be proven to have arisen as a result of poor materials, faulty manufacture or incorrect execution, e.g. as a result of natural wear and tear, improper or incorrect handling, and including other reasons for which blame cannot be attributed to Aquasant Messtechnik AG , is excluded from the warranty and liability of Aquasant Messtechnik AG. All cases of contract violation, as well as all customer claims, are regulated conclusively within these conditions. On no account shall there exist any customer claim to compensation for damages not directly produced by the supplied product itself, such as loss of orders, loss of profits, or any other direct or indirect damages. This liability exclusion does not apply in the case of any illegal intent of gross negligence on the part of Aquasant Messtechnik AG. In general, we would like to refer you to our General Conditions of Sale and Supply.

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EU-DECLARATION OF CONFORMITY

CE

Manufacturer:	Aquasant Messtechnik AG, Hauptstrasse 22, 4416 Bubendorf, Switzerland
Brand:	**aquasant®**
Notified body:	N° 2813, CSA Group Netherlands B.V.
Description:	AS-Control units for electro-optical AF liquid sensors for limit values, overfill 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:	**AS51-E24 / AS83-E24 / AS9-E24**
EU-Type Examination Certificate Number:	SEV 18 ATEX 0118 X Eurofins Electrosuisse Produkt Testing AG n°.: 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
EMV RL 2014/30/EU	EN 61000 EN 61326
RoHS RL 2011/65/EU	EN IEC 63000:2018
SVTI (Switzerland) **Water protection suitability according to KVU**	KVU 302.004 KVU 321.003

The standards listed may deviate from those in the type examination certificate. In this case Aquasant Messtechnik AG declares that the product complies with the updated standards and that the basic safety and health requirements are met.

Bubendorf, 24.09.2021

Roger Inauen
Head Manufacturing

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