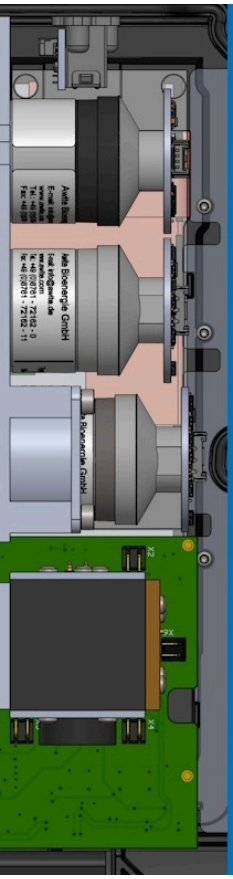


PRODUCT DESCRIPTION AND OPERATION

AWI2GO

Usage information

(Version:2.1)

Contact and Imprint

Contact

Contact the appropriate service partner/local point of contact: www.awi2go.de/en/service

Please find the latest information online at www.awi2go.com .

Imprint

Awite Bioenergie GmbH

Grünseiboldsdorfer Weg 5

85416 Langenbach/Niederhummel, Germany

Table of Contents

1 Preface

PLEASE READ THE INSTRUCTION MANUAL AND SAFETY INSTRUCTIONS CAREFULLY BEFORE INSTALLATION AND OPERATION!

This Instruction Manual provides you with information to assist you in using the mobile gas analysis system. The Instruction Manual is part of the product and has to be kept throughout the service life of the product. Even if the device is subsequently passed on by the customer, the Instruction Manual must be passed on with it and the new owner must be instructed with regard to the respective regulations. If you receive an amendment to the Instruction Manual at a later stage, this amendment is also part of the Instruction Manual.

The device may only be used in a technically perfect condition and for its intended use, with awareness of safety aspects and possible hazards and in full adherence with the Instruction Manual. Please operate and service your gas analysis system based on the information in this Instruction Manual.

1.1 Product Liability

Awite does not assume liability for damages caused by faulty measuring values.

Please take notice of the General Terms and Conditions (AGB), which are available in their current version at www.awite.de/Agb.

2 General Information

2.1 Safety-related information

⚠ DANGER

The suitability of the device for explosive Zone 1 (IIA) does not apply to the charging process. An error can lead to ignition and explosion of the surrounding atmosphere. Charge the device outside hazardous explosive atmospheres.

⚠ WARNING

The device case is made of non-conductive plastics. Rubbing can cause the case to become electrostatically charged and generate a spark which may ignite a hazardous atmosphere. When using the device in zone 1, it may only be brought into the zone without the case.

⚠ WARNING

Only suitable devices may be used in potentially explosive atmospheres. The USB stick supplied is not explosion-proof. Failure to observe this warning may result in an explosion. Always carry out updates and data backups outside of a dangerous explosive zone.

⚠ WARNING

The device measures combustible and harmful gases and can be used in corresponding atmospheres (gases IIA). Improper use can lead to explosion or health hazards. Only use the device as intended.

⚠ CAUTION

Damaged batteries have an increased risk potential due to gas or liquid leakage. Fire hazard, harmful to health, environmental pollution. Do not continue to use damaged batteries. Dispose of damaged batteries properly at collection points. Damaged batteries must not be sent by air freight.

⚠ CAUTION

Measuring and calibration gas can be flammable and cause a **risk of explosion** . An explosion can lead to further damage, injury, and even death. Install sampling openings in well-ventilated areas and close them again after the measurement is complete.

⚠ CAUTION

Measuring and calibration gas can **be toxic** . Poisoning can lead to damage to health and even death. Install sampling openings in well-ventilated areas and close them again after the measurement is complete.

⚠ CAUTION

The maximum inlet and outlet pressure is 100 mbar. Possible consequences are leakage and damage. Ensure the specified pressure.

NOTE

Loosely stored batteries can cause short circuits. This poses a risk of fire and explosion. Pack batteries individually and securely, or tape the contacts.

NOTE

Small quantities of measuring gas are released during measurement. In closed rooms, this can lead to unpleasant odours and even health hazards. Exhaust the gas into the open air.

NOTE

This is an approved and tested device designed for explosion protection. The device must only be opened and parts be replaced by authorized and trained persons. The intrinsic safety of the device may be impaired if the work is carried out incorrectly. This may result in an explosion when used in an Ex zone.

NOTE

The hoses, filters and demand pressure regulators supplied with this device have been subjected to an ignition hazard analysis and can also be used in zone 1, gas group IIA. An additional calibration gas cylinder required for calibration weighs at least 5 kg and can therefore generate an impact spark when dropped. Calibrate outside hazardous atmospheres to prevent an explosion being caused by a spark.

NOTE

The device is only designed for situations of intended use. Improper use can lead to incorrect measured values, shortened service life, and damage to the device. Only use the device as intended.

NOTE
Due to the possible formation of sparks if the calibration gas cylinder falls, calibration outside Ex zone 1 is recommended.

2.2 Compliance with standards

The device complies with the following standards:

Standard number	Designation	Date of issue
IEC 60079-0:2017	Explosive atmospheres – Part 0: Equipment – General requirements	July 2018
IEC 60079-11:2011 + Cor.: 2012	Explosive atmospheres Part 11: Equipment protection by intrinsic safety 'i'	January 2012
ISO/IEC 80079-34:2018	Explosive atmospheres – Part 34: Application of quality systems for ex product manufacture	March 2020
IEC 61010-1:2010 + COR:2011 + A1:2016, modified + A1:2016/ COR1:2019	Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements	April 2019

2.3 Marking and symbols

The following markings and symbols are affixed to the device.

Marking / Symbol	Meaning
	Charging cable connection
	Gas inlet, connection for sample gas line or calibration gas
	Gas outlet, exhaust air pipe connection

Connection for optional temperature sensor

USB connection

Manufacturer's declaration: Product meets all EU-wide requirements for safety, health protection and environmental protection

Explosion protection marking

Do not dispose of product as unsorted waste.
Dispose of at separate collection points for reuse and recycling. Observe country-specific requirements.

Battery recycling; return of used (Li-ion) batteries

Serial number

Date of manufacture/production

The warnings contained in the usage information have the following meanings

Marking	Meaning
DANGER	Danger to persons. The consequences are serious injury or death.
WARNING	Danger to persons. The consequences can be serious injury or death.
CAUTION	Danger to persons. The consequences can be injury or a health risk.
NOTE	Tips and important information.

For further symbols see Chapter 4.1, "Symbols and marking".

2.4 Abbreviations & Terms

Abbreviation	Explanation
IR	Infrared
EC	Electrochemical
ATEX	**AT**mosphères **EX**plosives (explosive atmosphere)
CH_4	Methane
CO_2	Carbon dioxide
O_2	Oxygen
H_2	Hydrogen
CO	Carbon monoxide
USB	Universal Serial Bus
EU	European Union
IEC	International Electrotechnical Commission
ISO	International Organisation for Standardisation
IECEx	International Electrotechnical Commission Explosive

2.5 Explosion protection

Applies only within the EU and in countries in which the ATEX Directive (2014/34/EU) also applies.

The following labelling can be found on the label on the back of the Awi2GO.

Labelling according to 2014/34/EU and EN 60079-0:

II 2G Ex ib IIA T1 Gb

BVS 24 ATEX E 045

Explanation:
II: no mining
2G: Zone 1 & 2, for gas
ib: ignition protection type 'intrinsic safety', Zone 1 & 2
IIA: Gas group (suitable for CH_4 and up to 25 vol-% H_2)

T1: Temperature class (max. surface temperature < 450°C)

Gb: Device protection level, Zone 1 & 2

BVS: Identification number of inspection authority, type examination
(**MiningTestS**ection)

24: Year of issue of test certificate

E 045: Certificate number

CE 0123

Explanation: *0123 Identification number of inspection body QMS*

Related EU type examination certificate: BVS 24 ATEX E 045

Marking per IECEx:

Ex ib IIA T1 Gb IECEx BVS 25.0015

Explanation:

ib: ignition protection type 'intrinsic safety', Zone 1 & 2

IIA: Gas group (suitable for CH_4 and up to 25 vol-% H_2)

T1: Temperature class (max. surface temperature < 450°C)

Gb: Device protection level, Zone 1 & 2

BVS: Identification number of inspection body

25: Year of issue of test certificate

0015: Certificate number

Associated IECEx certificate number: IECEx BVS 25.0015

2.6 Hazards from gas

The sample gas may be flammable or explosive and the area surrounding the measuring point may contain hazardous gas concentrations. The sample gas may also contain harmful or toxic components.

Only use suitable accessories in potentially explosive atmospheres, including the sample gas line.

NOTE

The hoses, filters and demand pressure regulators supplied with this device have been subjected to an ignition hazard analysis and can also be used in zone 1, gas group IIA. An additional calibration gas cylinder required for calibration weighs at least 5 kg and can therefore generate an impact spark when dropped. Calibrate outside hazardous atmospheres to prevent an explosion being caused by a spark.

Make sure that the sampling opening is closed again after each measurement in order to avoid an increased risk of constantly escaping gas.

⚠ CAUTION

Measuring and calibration gas can be flammable and cause a **risk of explosion** . An explosion can lead to further damage, injury, and even death. Install sampling openings in well-ventilated areas and close them again after the measurement is complete.

⚠ CAUTION

Measuring and calibration gas can **be toxic** . Poisoning can lead to damage to health and even death. Install sampling openings in well-ventilated areas and close them again after the measurement is complete.

The amount of gas escaping during measurement is limited by the time period and the flow rate. We recommend discharging the exhaust gas to the outside or to a suitable area.

NOTE

Small quantities of measuring gas are released during measurement. In closed rooms, this can lead to unpleasant odours and even health hazards. Exhaust the gas into the open air.

3 Product information

3.1 Intended Usage

NOTE

The device is only designed for situations of intended use. Improper use can lead to incorrect measured values, shortened service life, and damage to the device. Only use the device as intended.

The device is suitable for analysing the main components of biogases, i.e. methane, carbon dioxide and oxygen. Depending on the equipment, trace concentrations of hydrogen, hydrogen sulphide and carbon monoxide can also be measured. The device may be used for hand-held measurements in hazardous explosive Zones 1 and 2 of group IIA gases (methane). However, it must not be charged in an Ex zone and, due to a lack of earthing, it must not be operated there permanently either. When using accessories (gas sampling hoses, filters, pressure reducers, calibration gas cylinders) in a hazardous atmosphere, the risk of ignition due to electrostatic charge or spark formation must be assessed and, if necessary, prevented by suitable measures.

Suitable measures may include, for example: Earthing of conductive and dissipative fittings and hoses, limiting the surface (filter) of insulating plastics or their diameter (hoses), carrying out calibrations with calibration gas cylinders outside hazardous atmospheres.

⚠ DANGER

The suitability of the device for explosive Zone 1 (IIA) does not apply to the charging process. An error can lead to ignition and explosion of the surrounding atmosphere. Charge the device outside hazardous explosive atmospheres.

⚠ CAUTION

The maximum inlet and outlet pressure is 100 mbar. Possible consequences are leakage and damage. Ensure the specified pressure.

NOTE

Due to the possible formation of sparks if the calibration gas cylinder falls, calibration outside Ex zone 1 is recommended.

The device is neither part of explosion protection nor a warning device.

It is used without any additional pressure reducing measures for measuring gas with a maximum of -200mbar of underpressure or 100mbar of overpressure. The suitability for use in safety-critical applications must be assessed by the user for each case.

Operating temperature: 20°C … +40°C

The gas analysis system is not intended for use in private households.

It is assumed that persons are appropriately trained in handling gases.

The Awi2GO may **not be used as**:

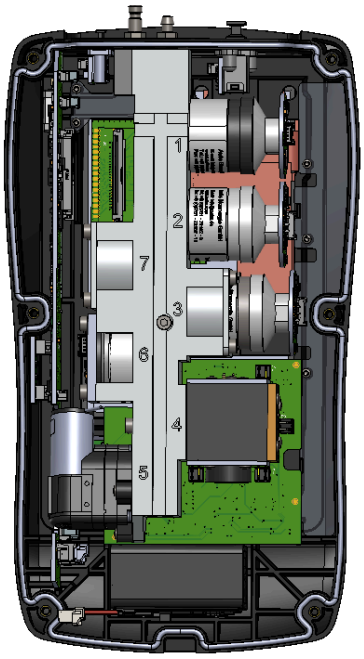
- personal protection
- to warn of toxic or flammable gases

.

3.2 Product description

The mobile gas analysis system 'Awi2GO' is designed for the measurement of gas mixtures that can arise during biological processes, such as landfill gas or biogas. The Awi2GO can be used to measure the concentrations of several gases simultaneously.

Figure 1: Awi2GO



item 1: O_2sensor
item 2: H_2S sensor
item 3: CO sensor (optional)
item 4: IR sensor (CH_4 & CO_2)
item 5: Gas pump
item 6: H_2sensor (optional)
item 7: not used
below: Battery

Figure 2: Interior view

3.2.1 Sensors – General description

Gas	Measuring range	Unit	Measuring principle	Equipment
CH_4	0–100	%	IR	Standard
CO_2	0–100	%	IR	Standard
O_2	0–25	%	EC	Standard
H_2S	0–10,000[1]	ppm	EC	Standard
H_2	0–2,000	ppm	EC	Optional
CO	0–2,000	ppm	EC	Optional, only in conjunction with H_2sensor possible

Other gases may influence the measurement result or the service life of the device and must therefore only be present in trace amounts.

[1] 3,000ppm on factory delivery, switchable to various measuring ranges

3.2.1.1 Accuracy and lifespan of the sensors

Table 1: Measuring uncertainties without uncertainty of the calibration gas. The uncertainty was determined at the calibration point. Values that have been conservatively extrapolated to the measuring range end value are indicated in brackets (worst case)

Measured component	physical unit	Calibration point (measuring range end value)	Standard uncertainty u2 at delivery +/- 10°C	Standard uncertainty u3 after 1 year +/- 10°C	Standard uncertainty u4 right after calibration +/- 0°C
Methane	vol% CH_4	55 (100)	0.10 (1.02)	1.0 (2.8)	0.03 (1.0)
Carbon dioxide	vol% CO_2	45 (100)	0.46 (1.03)	1.38 (3.07)	0.45 (1.0)
Oxygen, electro-chem.	Vol.-% O_2	1 (25)	0.05 (0.9)	0.11 (1.5)	0.03 (0.28)
		21 (25)	0.8 (0.9)	1.3 (1.5)	0.23 (0.28)
Hydrogen sulphide	vol.-ppm H_2S	1,000 (3,000)	35 (105)	87 (262)	18.3 (54)
Hydrogen electro-chem.	vol.-ppm H_2	1,000 (2,000)	33 (33)	87 (87)	14 (14)
Carbon monoxide	Vol.-ppm CO	150 (2,000)	n. b.	n. b.	n. b.

Table 2: Errors in measurement and the standard measurement uncertainties without taking into account the calibration gas. The values are listed as absolute values with the specified unit.

Measured component	Physical unit	Measuring range (0 - MBE)	Resolution	Standard uncertainty 1 (u1) (*)	Drift per year (DY)	Deviation per °C (DT)
Methane	vol% CH_4	100	0.1	0.05	1.5	0.01
Carbon dioxide	vol% CO_2	100	0.1	0.05	1.5	0.01
Oxygen, electro-chem.	vol% O_2	25	0.01	0.03 at 1 0.12 at 21	0.10 at 1 or 1.0 at 21	0.04 at 1 or 0.08 at 21
Hydrogen sulphide	vol.-ppm H_2S	2,000	1	25	160	3

Measured component	Physical unit	Measuring range (0 - MBE)	Resolution	Standard uncertainty 1 (u1) (*)	Drift per year (DY)	Deviation per °C (DT)
Hydrogen electro-chem.	vol.-ppm H_2	2,000	1	25	80	3
(*) Standard measurement uncertainty under lab conditions during successive measurements (repeatability)						

3.2.2 Battery

⚠ CAUTION

Damaged batteries have an increased risk potential due to gas or liquid leakage. Fire hazard, harmful to health, environmental pollution. Do not continue to use damaged batteries. Dispose of damaged batteries properly at collection points. Damaged batteries must not be sent by air freight.

NOTE

Loosely stored batteries can cause short circuits. This poses a risk of fire and explosion. Pack batteries individually and securely, or tape the contacts.

The Awi2GO may only be operated with the specially designed and tested “Battery Pack Awi2GO”.

Key data for lithium-ion battery pack:

- Nominal voltage: 7.2 V
- Charging voltage: 8.4 V
- Energy: 15.8 Wh
- Capacity 2.2 Ah
- max. charging current: 1.0 A
- max. discharging current: 0.5 A
- Peak discharging current (< 100 µs): 2.0 A
- Operating temperature charging +10°C to +45°C
- Operating temperature discharging –20°C to +60°C

The battery may only be replaced by service partners or by Awite!

The Awi2GO may only be charged using the supplied power supply unit. We cannot guarantee that the Awi2GO will charge properly if used with a different power supply unit.

3.2.3 HW interfaces

DANGER

The suitability of the device for explosive Zone 1 does not apply to the charging process. An error can lead to ignition and explosion of the surrounding atmosphere. Charge the device outside hazardous explosive atmospheres.

The Awi2GO has 2 hose connections, as well as 2 data interfaces:

1. USB-C port: for charging Not in the Ex-area
2. Gas inlet (sample gas/calibration gas): Connection for sample gas hose incl. particle filter with water protection function or connection for calibration gas
3. Gas outlet: Connection for exhaust gas hose
4. USB-A port: for data transfer or port for external temperature sensor (PT100) The USB is not to be used in the Ex zone

3.2.4 Special conditions of use

There are no special conditions of use for the Awi2GO. There are no restrictions on the Ex marking.

3.2.5 Specifications

The technical data can be found in the technical data sheet.

The mobile gas analysis system Awi2GO will not be connected to any electronics in the Ex-area. Consequently, no electrical parameters are of relevance for the safety concept, nor are there any special requirements for installation, for maintenance while energized, or for use.

The maximum external voltage Um is not subject to any limit. Therefore, according to EN60079-11 an alternating voltage of 250 V can be assumed. The USB charging option is protected accordingly. Data exchange is only possible via a USB stick.

⚠ DANGER

The suitability of the device for explosive Zone 1 (IIA) does not apply to the charging process. An error can lead to ignition and explosion of the surrounding atmosphere. Charge the device outside hazardous explosive atmospheres.

⚠ WARNING

Only suitable devices may be used in potentially explosive atmospheres. The USB stick supplied is not explosion-proof. Failure to observe this warning may result in an explosion. Always carry out updates and data backups outside of a dangerous explosive zone.

3.2.6 Modifications

The Awi2GO is available in three versions. A conversion from one version to the other is not possible.

Versions

1. "S": Basic configuration with the gases methane (CH_4), Carbon dioxide (CO_2), oxygen (O_2), and hydrogen sulphide (H_2S)
2. 'M': in addition to 1. with hydrogen (H_2)
3. 'L': in addition to 2. with carbon monoxide (CO)

Any modifications to the Awi2GO are prohibited. This may result in the loss of the explosion protection.

Any unauthorized opening of the device will void the warranty. The device may only be repaired by trained persons.

NOTE

This is an approved and tested device designed for explosion protection. The device must only be opened and parts be replaced by authorized and trained persons. The intrinsic safety of the device may be impaired if the work is carried out incorrectly. This may result in an explosion when used in an Ex zone.

3.3 Supplied accessories, consumables, spare parts

3.3.1 Supplied accessories

⚠ DANGER

The suitability of the device for explosive Zone 1 (IIA) does not apply to the charging process. An error can lead to ignition and explosion of the surrounding atmosphere. Charge the device outside hazardous explosive atmospheres.

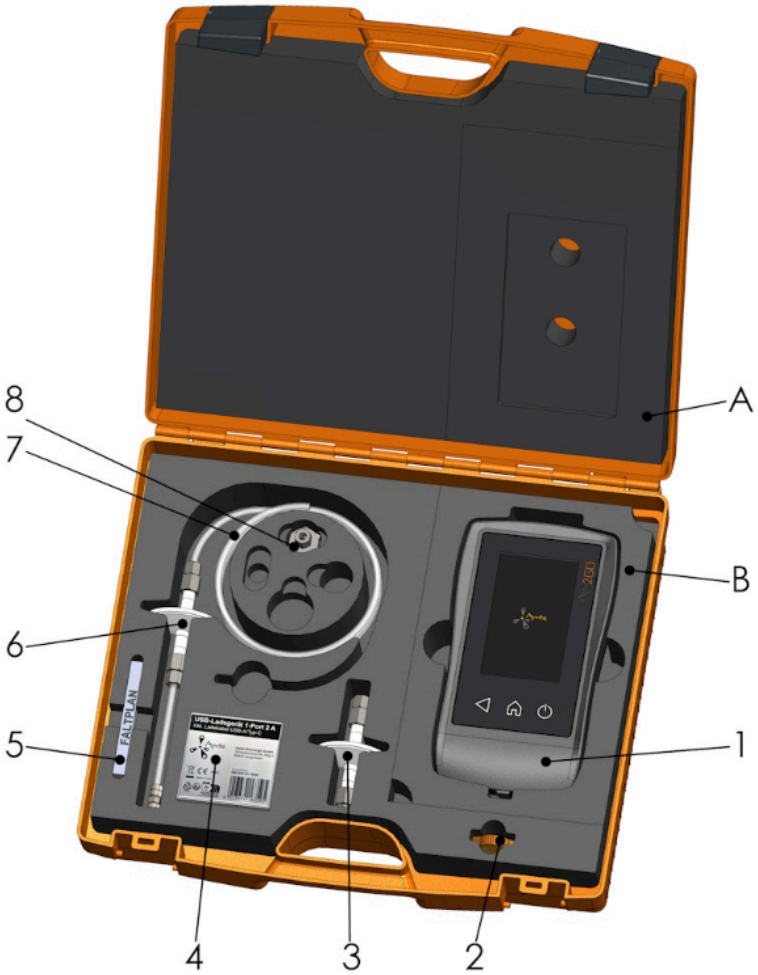
⚠ WARNING

The device case is made of non-conductive plastics. Rubbing can cause the case to become electrostatically charged and generate a spark which may ignite a hazardous atmosphere. When using the device in zone 1, it may only be brought into the zone without the case.

⚠ WARNING

Only suitable devices may be used in potentially explosive atmospheres. The USB stick supplied is not explosion-proof. Failure to observe this warning may result in an explosion. Always carry out updates and data backups outside of a dangerous explosive zone.

The following **Accessories** are included with the product **on delivery**:



1. Awi2GO incl. carrying strap
2. Awite USB incl. usage information
3. Replacement particle filter with water protection function
4. USB power supply unit 5V/2A incl. charging cable
5. Safety instructions
6. Particle filter incl. water protection function incl. screw connections, hoses and quick-release coupling
7. Exhaust air hose
8. Measuring point connection 6/4-G1/2" VA

► A: Upper part Inlet for returning Awi2GO

► B: Lower part Inlet for returning Awi2GO

Figure 3: Awi2GO case incl. standard accessories

The Awi2GO may only be charged using the supplied power supply unit. We cannot guarantee that the Awi2GO will charge properly if used with a different power supply unit.

3.3.2 Consumables

NOTE
This is an approved and tested device designed for explosion protection. The device must only be opened and parts be replaced by authorized and trained persons. The intrinsic safety of the device may be impaired if the work is carried out incorrectly. This may result in an explosion when used in an Ex zone.

The following **consumables** are available for the Awi2GO:

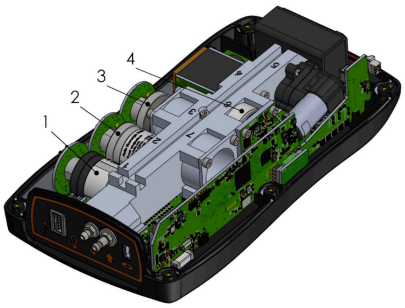


Figure 4: Consumables "sensors" Awi2GO

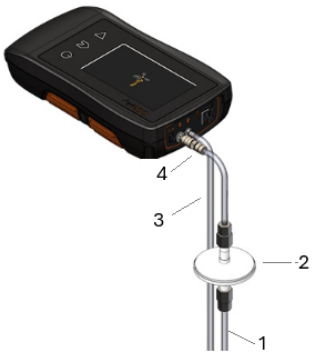


Figure 5: Suction hose plus particle filter, as well as exhaust hose

Figure 6: Calibration gas cylinder with demand regulator incl. hose

Designation	Recommended replacement interval	Item Number	Illustration	Replacement through	Cause for replacement
ETP suction hose Awi2GO (2m)	if necessary	021 701 169 8692	No. 2, Legend 1	Customer	Ageing
ETP exhaust hose Awi2GO (1m)	if necessary	021 701 169 8693	No. 2, Legend 3	Customer	Ageing
ETP particle filter water protection function Awi2GO (filter incl. screw connections)	1 year	021 701 169 8483	No. 2, Legend 2	Customer	Contaminated filter surface
Calibration gas 1 Awi2GO [2]	Use-by date has been exceeded	060 100 390 8493	No. 3	Customer & service partner [3]	Use-by date according to the label
Calibration gas 2 Awi2GO [4]	Use-by date has been exceeded	060 100 390 8699	No. 3	Customer & service partner [5]	Use-by date according to the label

[2] 1,000 ppm H_2S; 1,000 ppm H_2, 55% CH_4, Rest CO_2

[3] Order from Awite EU-wide

[4] 500 ppm CO in N_2

[5] Order from Awite EU-wide

Designation	Recommended replacement interval	Item Number	Illustration	Replacement through	Cause for replacement
ETP O_2sensor Awi2GO (measuring cell incl. electronics)	2 years	030 125 169 8305	No. 1, Legend 1	Service partner	Ageing
ETP H_2S sensor Awi2GO (measuring cell incl. electronics)	2 years	030 122 169 8307	No. 1, Legend 2	Service partner	Ageing
ETP CO sensor Awi2GO (measuring cell incl. electronics)	2 years	030 126 169 8311	No. 1, Legend 3	Service partner	Ageing
ETP H_2sensor Awi2GO (measuring cell incl. electronics)	2 years	030 121 169 8309	No. 1, Legend 4	Service partner	Ageing

Observe the country-specific requirements when disposing of consumables.

3.3.3 Spare parts and optional accessories

The operating safety of the mobile gas analysis system can only be maintained by using original parts or approved spare parts for every repair operation that is carried out and by adhering closely to the instructions in this manual and the repair instructions. The procedure for replacing a component can be found in the corresponding instructions (SOP).

⚠ DANGER

The suitability of the device for explosive Zone 1 (IIA) does not apply to the charging process. An error can lead to ignition and explosion of the surrounding atmosphere. Charge the device outside hazardous explosive atmospheres.

⚠ WARNING

The device case is made of non-conductive plastics. Rubbing can cause the case to become electrostatically charged and generate a spark which may ignite a hazardous atmosphere. When using the device in zone 1, it may only be brought into the zone without the case.

⚠ WARNING

Only suitable devices may be used in potentially explosive atmospheres. The USB stick supplied is not explosion-proof. Failure to observe this warning may result in an explosion. Always carry out updates and data backups outside of a dangerous explosive zone.

⚠ CAUTION

Damaged batteries have an increased risk potential due to gas or liquid leakage. Fire hazard, harmful to health, environmental pollution. Do not continue to use damaged batteries. Dispose of damaged batteries properly at collection points. Damaged batteries must not be sent by air freight.

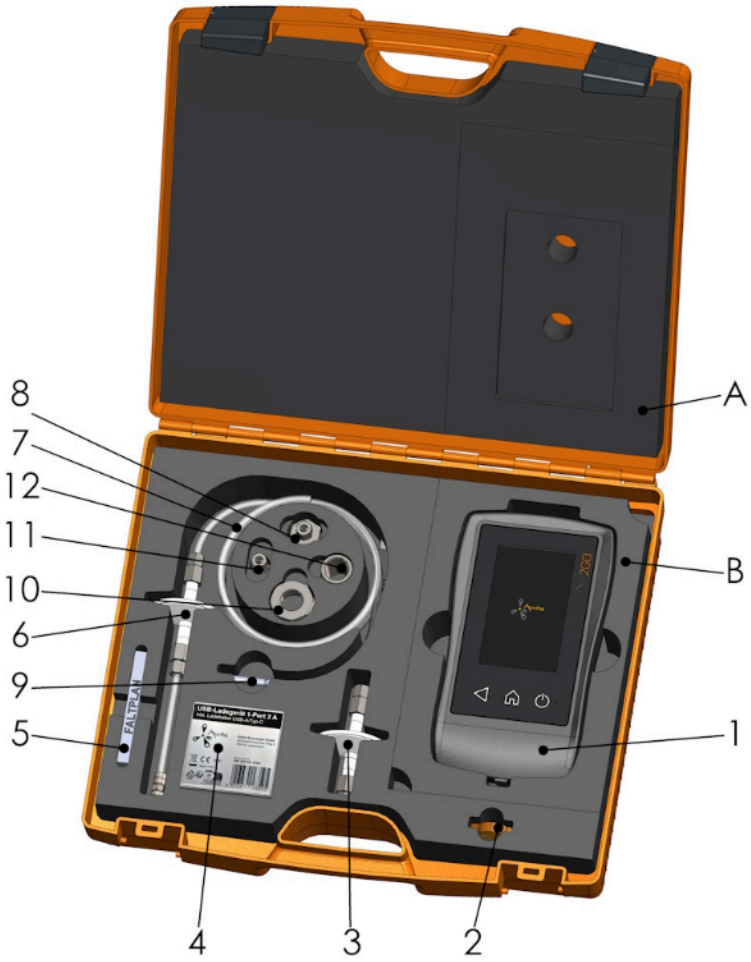
NOTE

This is an approved and tested device designed for explosion protection. The device must only be opened and parts be replaced by authorized and trained persons. The intrinsic safety of the device may be impaired if the work is carried out incorrectly. This may result in an explosion when used in an Ex zone.

Check after every repair that the device continues to meet all requirements according to the approval (type examination certificate)!

Repairs carried out by Awite on the Awi2GO are documented accordingly. Necessary verifications regarding explosion protection are carried out and recorded at the factory before delivery.

The following **accessories** are included with the product **(1–8; A & B) on delivery** or **can be ordered as an option** (9–12):

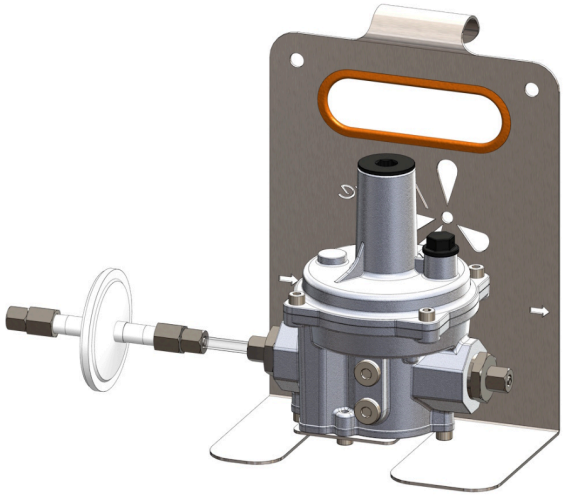


1. Awi2GO incl. carrying strap
2. Awite USB incl. usage information
3. Replacement particle filter incl. screw connections
4. USB power supply unit 5V/2A incl. charging cable[6]
5. Safety instructions
6. Particle filter incl. water protection function incl. screw connections, hoses and quick-release coupling
7. Exhaust air hose
8. Measuring point connection 6/4-G1/2" VA[7]
9. External temperature sensor
10. – 12. Measuring point connection[8]

► A: Upper part inlet for returning the Awi2GO

► B: Lower part inlet for returning the Awi2GO

Figure 7: Awi2GO case incl. standard accessories and optional accessories



- Process pressures at gas extraction point from >100mbar to max.2bar
- Includes upstream particle filter with water protection function
- Practical for mobile use: with carrying handle and hanging device
- Process connections for 4/6mm hose (on gas inlet and outlet side)
- Dimensions: H x W x D = 225 x 140 x 130mm

Figure 8: Mobile pressure reducer Awi2GO

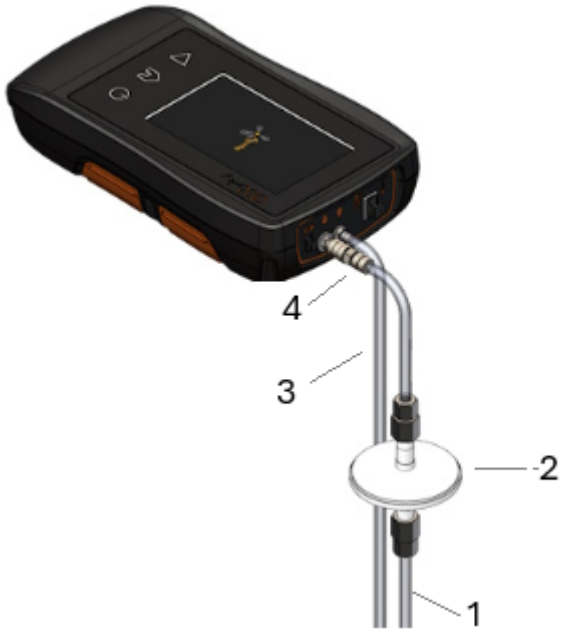
6 The Awi2GO may only be charged using the supplied power supply unit. We cannot guarantee that the Awi2GO will charge properly if used with a different power supply unit.

7 not included when ordering the NPT connection set.

8 available as BSP or NPT version

(optional accessory)

- Weight: 1.3kg
- In compliance with safety regulations, also suitable for use in Ex Zone1



1. ETP suction hose
2. ETP particle filter
3. ETP exhaust hose[9]
4. ETP quick coupling

Figure 9: Spare parts Awi2GO

[9] Nos. 1–3 see Chapter 3.3.2, "Consumables"

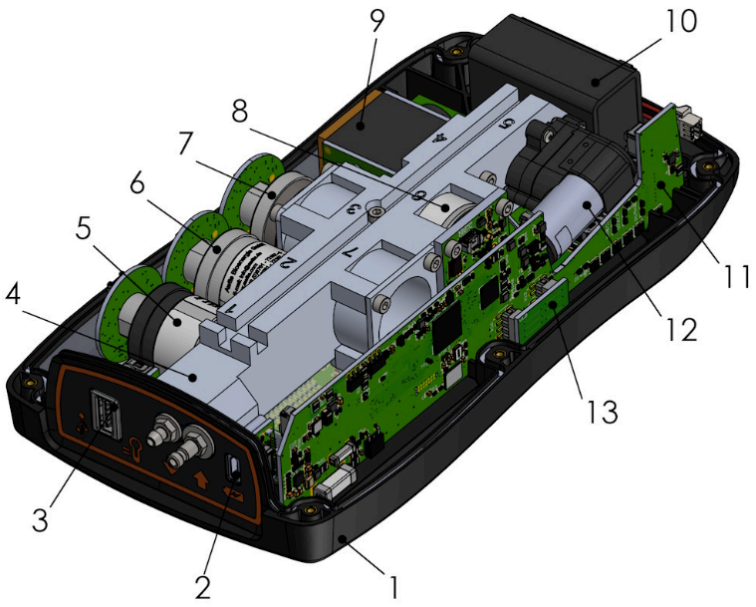


Figure 10: Spare parts Awi2GO (cannot be ordered or replaced by the customer)

1. ETP upper housing cover with display
2. ETP USB-C port Awi2GO
3. ETP USB-A port Awi2GO
4. ETP sensor base Awi2GO
5. ETP O_2sensor Awi2GO
6. ETP H_2S sensor Awi2GO
7. ETP CO sensor Awi2GO
8. ETP H_2sensor Awi2GO[10]
9. ETP InfraFRED Awi2GO
10. ETP Battery Pack Awi2GO
11. Mainboard Awi2GO
12. ETP Measuring gas pump Awi2GO
13. Fuse board Mainboard Awi2GO

The following **Spare parts and accessories** are available for the Awi2GO:[11]

Designation	Item Number	Replacement permitted by
Carrying strap	070 200 440 8200	Customer & service partner
Transport case	090 400 564 8484	Customer & service partner
USB charger 5V/2A[12]	090 545 541 8288	Customer & service partner
Awite USB Monster	021 701 169 8744	Customer & service partner
straight screw-in fitting 6/4-G1/2" VA (measuring point connection)	090 621 041 7332	Customer & service partner
Awi2GO measuring point connection set (BSP; stainless steel)[13]	021 701 169 8485	Customer & service partner

[10] Nos. 5–8 see Chapter 3.3.2, "Consumables"

[11] Consumables are listed separately, see Chapter 3.3.2, "Consumables"

[12] The Awi2GO may only be charged using the supplied power supply unit. We cannot guarantee that the Awi2GO will charge properly if used with a different power supply unit.

[13] suitable for customer-supplied 1/8" female thread connection to 6/4 hose; adapter 1/2" male to female; adapter 1" female to 1/2" female

Designation	Item Number	Replacement permitted by
Awi2GO measuring point connection set (NPT; polypropylene)[14]	021 701 169 8727	Customer & service partner
Mobile pressure reducer Awi2GO[15]	020 430 169 8700	Customer & service partner
Temperature probe Awi2GO	030 300 253 8202	Customer & service partner
Calibration gas 1[16] Awi2GO	060 100 390 8493	Customer & service partner
Calibration gas 2[17] Awi2GO	060 100 390 8699	Customer & service partner
On-demand flow controller for calibration gas	060 201 247 7461	Customer & service partner
Calibration gas set[18]	021 701 169 8684	Customer & service partner
ETP quick coupling Awi2GO[19]	021 701 169 8486	Customer & service partner
ETP Gas connection Awi2GO[20]	021 701 169 8487	Customer & service partner
Inlay service shipment Awi2GO[21]	090 400 564 8696	Customer & service partner
Shipping set service Awi2GO[22]	090 400 169 8697	Customer & service partner
ETP filter measuring gas inlet Awi2GO[23]	060 203 169 8705	Service partner
ETP InfraFRED Awi2GO	021 701 169 8488	Service partner
ETP Measuring gas pump Awi2GO	021 701 169 8489	Service partner
ETP Battery Pack Awi2GO	090 545 169 8695	Service partner Do not send back!
ETP sensor base Awi2GO	/	only through Awite
ETP upper housing cover with display	/	only through Awite
ETP USB-A port Awi2GO	/	only through Awite

14 suitable for customer-side 1/8" female thread connection; 1/4" female thread connection; 1/2" female thread connection, each on 6/4 hose)
15 100 mbar – 2 bar
16 1,000ppm H_2S+1,000ppm H_2+55% CH_4 in CO_2
17 500ppm CO in N_2; only required for device variant 'L'
18 comprising calibration gas 1 and flow regulator
19 comprising quick coupling and 0.1m hose
20 comprising two screw-in connections
21 comprising upper and lower part
22 comprising inlay service shipment plus cardboard box
23 PU = 10 pcs.

Designation	Item Number	Replacement permitted by
ETP USB-C port Awi2GO	/	only through Awite
Mainboard Awi2GO	/	only through Awite
Fuse board Mainboard Awi2GO	/	only through Awite

Observe the country-specific requirements when disposing of spare parts and accessories.

4 Operating concept

4.1 Symbols and marking

Glass panel

Symbol	Designation	Meaning
◁	back	Navigation back one menu level
⌂	Home	Navigation to the home screen
⏻	On/Off	Press the button for approx. 2 seconds in order to switch on the device. To switch off, press the button until the switch-off process is displayed[1].
LED	Display battery capacity	Lights up as follows when switched on or switched off when charging at the same time: Red = battery capacity < 95% Green = battery capacity ≥ 95%

[1] Switch-off process can be cancelled with 'Home' or 'Back'

Status bar in the display

Symbol	Designation	Explanation	Display status
hh:mm:ss	Time	Display time 24hr format	always
hh:mm a.m./p.m.	Time	Display time 12hr format	
	Message error	There is a relevant error. The symbol is red to indicate that it is a new (not yet checked) error.	At least one unseen error message
	Message error	There is a relevant error. The symbol is white when the error message has been read/seen.	At least one active error message
	Message information	A information message has been received. The symbol is blue to indicate that it is new (not yet checked) information.	At least one unseen notification message
	Message information	A information message has been received.	At least one non-archived notification message

Symbol	Designation	Explanation	Display status
		The symbol is white when the information message has been read/seen.	
	Pump operation	Pump is running. For sample gas, orange symbol.	During measurement
	Pump operation	Pump is running. For medium "air", symbol white.	During air measurement / during warm-up / when switching off
	Measuring process active	Device in measuring mode	During a measurement or calibration process
	Warm-up phase	During the switch-on process	For 30 seconds after switching on
	Data upload (back-up)	Data transfer from Awi2GO to another medium	During active data transmission
	Data download (Update)	Data transmission to Awi2GO	During active data transmission
	USB connection active	Data memory connected	With inserted data memory
xx %	Battery capacity	Displays the current battery capacity	always
	Full + charging	Battery is charging, capacity > 95%	Charging procedure
	Empty + charging	Battery is charging	Charging procedure
	Empty	Battery capacity < 20 %	Always (according to charge status)
	Half-full	Battery capacity between 20 and 95%	Always (according to charge status)
	Full	Battery capacity > 95%	Always (according to charge status)
 / 	Partial discharge	flashing between 'Empty' and 'Half-full'	'Partial discharge' process started

Symbol	Designation	Explanation	Display status
	Service user active	When entering the access code for user “Service”, this user type is active for 60 minutes	After entering the access code for ‘Service’

Menu Navigation

Symbol	Meaning
	Menu ‘Measurement’
	Menu ‘Setup’
	Menu ‘Calibration’
	Menu ‘Messages’
	Unseen messages present
	Menu ‘Archive’
	Menu ‘System’
	Menu ‘Data Management’
	Menu ‘Sensors’
	Menu ‘Info’
	Menu ‘Userr’
	Menu ‘Measuring Values’
	Next (during initialisation phase)
	Add (system or measuring point)

Symbol	Meaning
	Confirm
	Cancel
	Search[24] (System)
	Perform calibration with air
	Calibrate with air and calibration gas / Menu ‘Calibration Values’
	Move message to archive. Message is removed at the same time under menu item ‘Messages’.
	Start measurement / calibration process
	Cancel measurement / calibration process
‘---’	no measuring values available
	Selection confirmed
	Selection deselected
	Device is warming up, no measurement possible yet
	Switch-off process started

Tiles

with “measurement” or “Calibration”

- grey: Initial state
- blue: Measurement active / started
- green: Measurement successful
- red: Measurement failed

Messages

- blue: Note
- red: current error, not fixed

[24] with more than five systems

- yellow with check mark: Error fixed (only visible in the ‘Messages’ menu)
- white with check mark: Error fixed and moved to the archive (only visible in the ‘Archive’ menu) → ‘Messages’)
- Error number: # followed by a 6-digit code

Buttons

- orange: selected/active (e.g. under ‘Language’ (‘Language’))

4.2 Operation

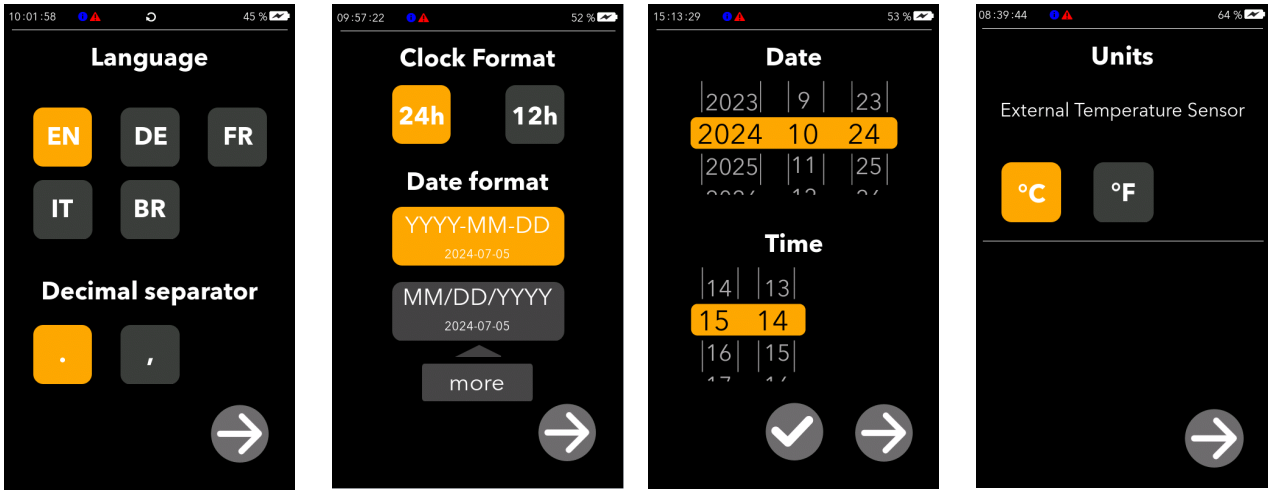
The Awi2GO can be operated via touch display. Three more functions are available on the glass panel below the display.

4.3 Switching on and device initialisation

After switching on, the warm-up phase takes place.

The following queries appear during **initial commissioning / delivery status**, as well as after the **reset to factory settings**[25]:

[25] The factory setting is always in ‘EN’ (English).

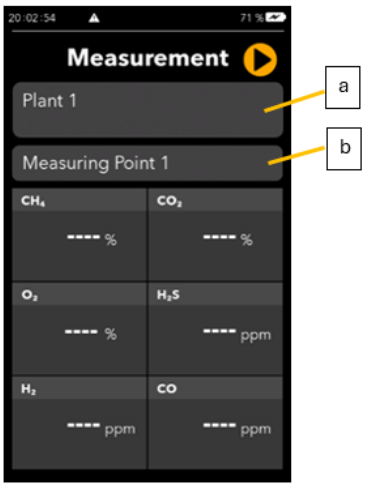


4.4 Measurement

Procedure

1. Menu ‘Measurement’

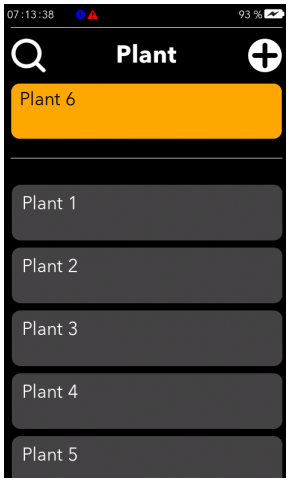
2. Plant and Measuring point select



a: opens the "System" menu[26]

b: opens the "Measuring points" menu[27]

The selected object has an orange background. A new object can be added (‘+’) for both functions.



3. Check: Hose ‘IN’ connected to extraction point
4. Check: Exhaust hose connection connected to ‘OUT’ of the Awi2GO
5. Open manual valve extraction point
6. Start measurement

[26] If there are more than five systems, a magnifying glass appears as a search function

[27] The system must always be selected first, then the corresponding measuring point

7. Confirmation: Sample gas connected
8. Measurement running[28] [29]
9. After completing the measurement, close the hand valve at the extraction point
10. Confirmation: Sample gas connected (Disconnect the hose at the measuring point, NOT at the device! Hose section with filter must remain on the device.)
11. Automatic air purge[30]

Display suppression and measured values below the zero point

NOTE
Measured values below the zero point are displayed as 0. An error is output for measured values below –5% of the measuring range.

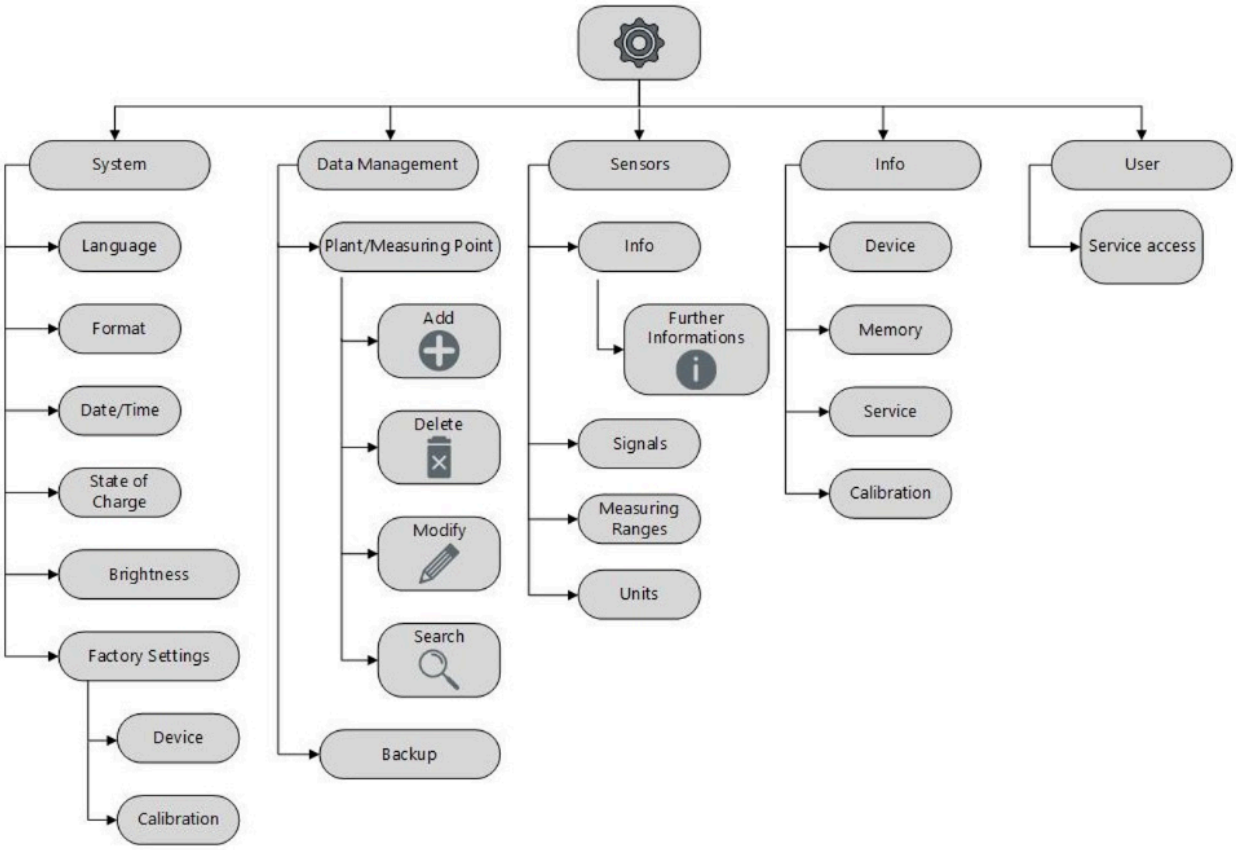
NOTE
Measurement is not possible if the internal temperature of the device is too low. Where this is the case, no 'Play' button is displayed, so that no measurement can be started.

[28] When starting a measurement, the pressure is checked first

[29] the tile colour is blue at the start of a measurement. Tile colour changes to green if measurement is successful and to red if measurement fails

[30] the displayed values refer to the last gas measurement

4.5 Setup



4.5.1 System settings

Language/Decimal/Date and Time

The menu navigation can be set to English under “Language” (‘EN’), German (‘DE’), French (‘FR’), Italian (‘IT’) or Brazilian Portuguese (‘BR’) under ‘‘Language’.

The comma or the period can be used for the “Decimal Separator”.

The “Clock Format” can be set to 12h or 24h. There are various display options for the date format.

When changing the date or time, the new setting must be confirmed with a tick.

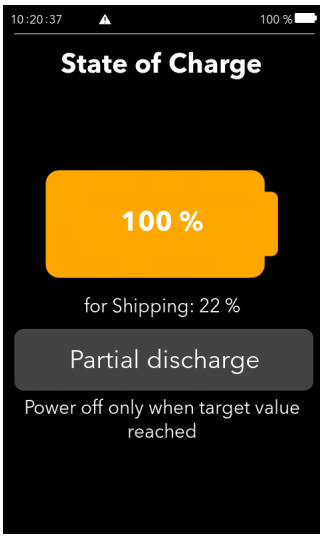
State of Charge

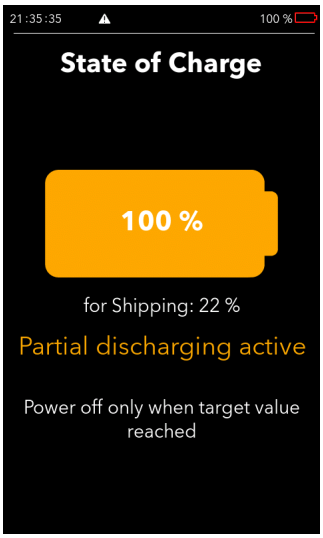
⚠ CAUTION

Damaged batteries have an increased risk potential due to gas or liquid leakage. Fire hazard, harmful to health, environmental pollution. Do not continue to use damaged batteries. Dispose of damaged batteries properly at collection points. Damaged batteries must not be sent by air freight.

When shipping the Awi2GO, a maximum charge level of 22% must be ensured. Press the “Partial discharge” button to start the process. The brightness of the display is automatically set to 100%. It is not possible to switch off the Awi2GO after the partial discharge process has started. Once the 22% limit is reached, the device is automatically switched off. The device can still be used during the partial discharge process. During the process, the battery icon in the status bar flashes from half full to empty.

Do not charge the device during the partial discharge process!





Brightness

The "Brightness” of the display can be adjusted using a slider.

Factory Settings

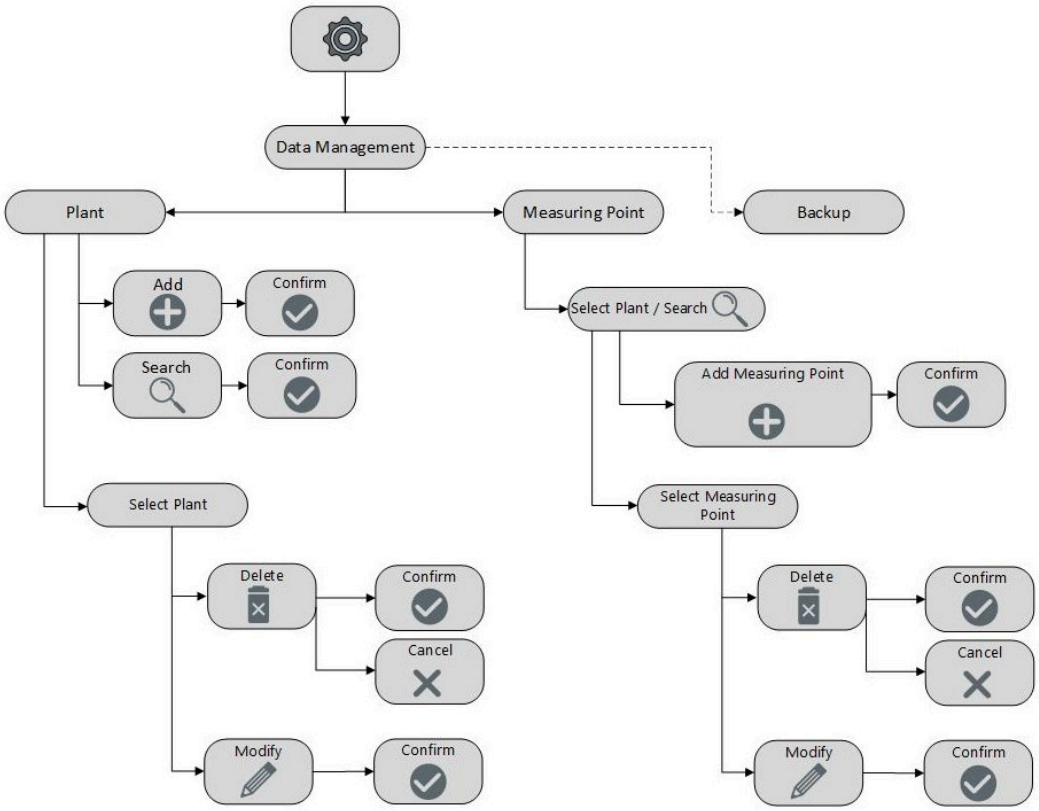
Reset to Factory Setting is possible for the entire “Device”, or for the “Calibration”. When the device is reset, all measured values, messages and settings are deleted. When resetting the calibration, all calibration data is reset. In both processes, the device is then switched off.

4.5.2 Data Management & backup

Data Management

Under "Data Management”, both systems and measuring points can be added, deleted or changed (renamed). A search function is available for systems.

A backup is possible via the menu item “Backup”.



Backup

For further information on downloading/uploading, see chapter 8.4 "Measured value transmission and data analysis".

⚠ WARNING

Only suitable devices may be used in potentially explosive atmospheres. The USB stick supplied is not explosion-proof. Failure to observe this warning may result in an explosion. Always carry out updates and data backups outside of a dangerous explosive zone.

4.5.3 Sensors

Info

Under "Sensors" → 'Info" the following information is listed for all built-in sensors:

- Gas type
- Measuring range
- Serial number (S/N)

- Software version (SW)
- Information on the transducer

Further sensor details on the individual sensors can be found under the corresponding information symbol.

Gas type	Parameters	Explanation
General Information	Signal	Current measurement signal of the sensor
	Scaled	Current measured value at the sensor; calculated from signal, pressure and calibration data
	Pressure	Current pressure (used for pressure compensation of the measured value)
	temperature	Temperature in or near the sensor or measuring cell
	current calibration	Current calibration data of the sensor
	Factory calibration	Copy of calibration data that was previously saved under Factory calibration[31]
Gas type	Parameters	Explanation
$CH_4/CO_2/CO$	Initial IR-resistance	Key figure that correlates with the radiation intensity of the infrared source in its original state
	Current IR-resistance	Key figure that correlates with the current radiation intensity of the infrared source
Gas type	Parameters	Explanation
$O_2/H_2S/H_2$	Cell current	Electrical signal of the sensor (depending on the sensor type, one of the two is not equal to 0)
	Cell voltage	
Gas type	Parameters	Explanation
$T_{(ext)}$ *External temperature sensor*	Signal	
	Scaled	

NOTE

When the sensor is replaced, the system automatically recognises the new sensor. A confirmation of the correct date is necessary after installation.

[31] Contents empty if no calibration data has been stored

Signals

The corresponding sensor signals are displayed under 'Sensors' → 'Signals".

Before a measurement

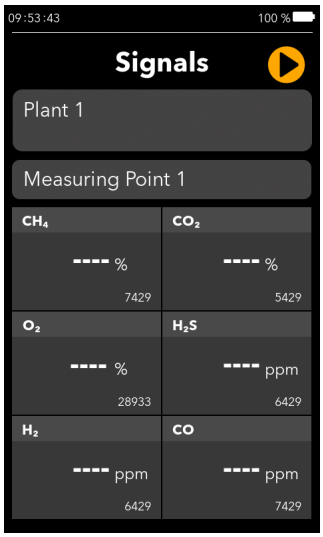
- current sensor signal: in the tile at the bottom right
- Signal fluctuations possible

During a measurement

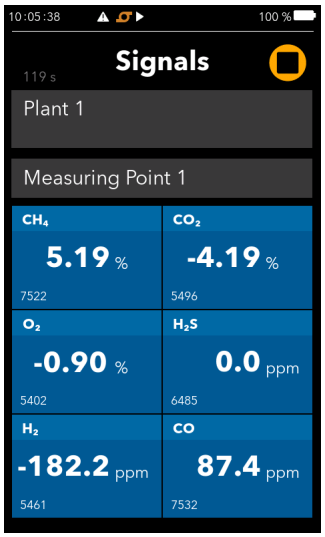
- Current sensor signal: in the tile at the bottom left, changes according to the current measured value

Ending a measurement

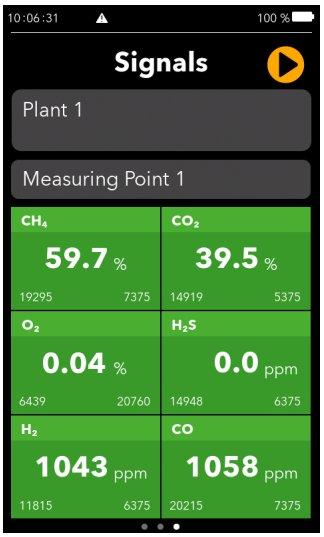
- 'frozen' sensor signal: in the bottom left-hand tile, according to the last measured value. Remains unchanged until the next measurement
- Current sensor signal: in the tile at the bottom right; [32]



Signals before a measurement



Signals during a Measurement



Signals after a measurement

NOTE

Display suppression and measured values below the zero point

Display suppression is deactivated in the 'Signals' view. Measured values below the zero point are displayed as negative values. An error is output for measured values below –5% of the measuring range.

[32] changes (e.g. after an air purge)

Measurement Ranges

Several measuring ranges are available for the hydrogen sulphide sensor (H_2S). After switching the measuring range, the date of the last valid calibration is displayed. Calibration at the new measuring area is recommended.

Units

The unit of the external temperature sensor can be individually set to '°C' (degrees Celsius) or 'F' (Fahrenheit).

4.5.4 Info

Further details on the following points are available under 'Info':

- Device: Device number, software version, configuration status
- Memory: occupied/free memory capacity
- Service: last service carried out, next recommended service
- Calibration: Date of the last complete calibration or, in the case of partial calibration, the date of the respective sensor/gas type

4.5.5 User

Under "User" service employees have the option to activate various service options. This function is not intended for users.

The service date can be updated accordingly after entering the service access code and completing the service, and factory calibrations or factory settings can be stored.

4.6 Calibration

NOTE
Due to the possible formation of sparks if the calibration gas cylinder falls, calibration outside Ex zone 1 is recommended.

Recommended calibration: Once a year or more frequently, depending on the measurement accuracy requirements.

Calibration can be carried out directly on-site.

It is necessary to use certified test gases (for the right composition please contact Awite)[33].

Also use the particle filter for calibration.

[33] Please ensure to order new calibration gases well in advance, as the production of individual mixtures takes several weeks. Delivery only possible within the EU. The appropriate gas cylinder regulator can be ordered at the same time

Calibration with air

The ‘Air Calibration’ serves to adjust the oxygen sensor to the oxygen content in the air.

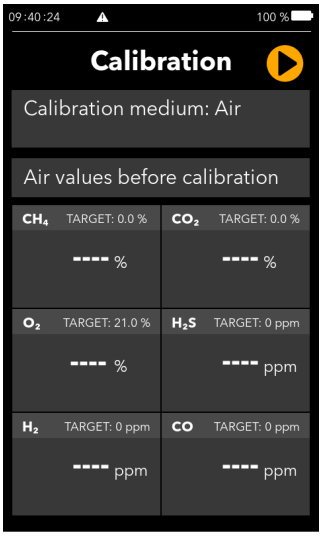
The target concentrations are specified during air calibration. Customised adjustment is not possible.

Air Calibration

1. ‘Calibration’

2. ‘Air’
3. Ensure that no gas is connected to the input of the Awi2GO
4. “Start”

5. Calibration runs automatically[34]



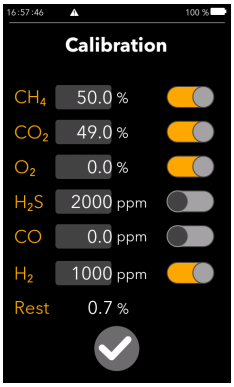
Calibration with air and gas

When calibrating with air and gas, various calibration runs are carried out with air or with the connected calibration gas.

To calibrate with gas, screw the demand regulator onto the calibration gas cylinder and connect it to the inlet of the particle filter using the calibration hose.

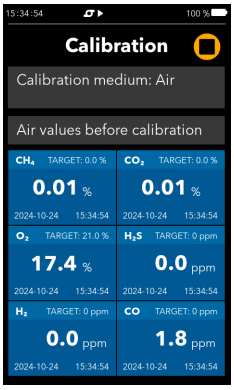
[34] The values of the individual calibration runs are stored in the ‘Archive’ under ‘Calibration values’

Gas Calibration



1. ‘Calibration’

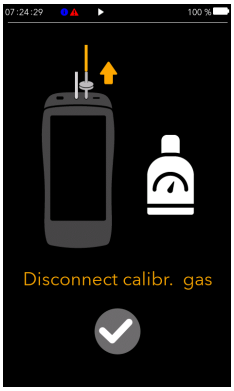
2. ‘Air and Gas’
3. Enter the concentrations of the calibration gas
4. Deselect gas type/sensor not to be calibrated[35], [36]



5. Confirm

6. Attach the hose with filter to the gas inlet of the Awi2GO and hang it in the ambient air
7. Ensure that no gas is connected to the input of the Awi2GO
8. Connect the exhaust gas hose to the ‘OUT’ connection point and place it in the exhaust air
9. “Start”

10. Calibration runs automatically in part. After calibration with air, it is necessary to change to the calibration gas.
11. Connect calibration gas to "IN" of the gas analysis device[37]
12. Open calibration gas cylinder
13. Confirm
14. Automatic calibration run is carried out
15. Unplug calibration gas[38]
16. Confirm
17. Automatic air purge is performed
18. Reconnect calibration gas to ‘IN’ of the gas analysis device
19. Confirm
20. Automatic calibration run is carried out
21. Unplug calibration gas



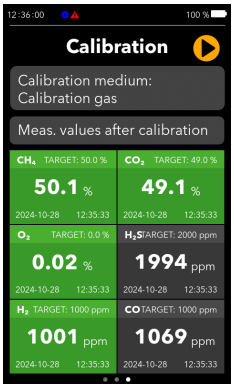
[35] A gas type that has not been deselected must not have the value ‘zero’. Exception: O_2.

[36] The O_2sensor should always be selected, even if the calibration gas does not contain oxygen. This serves as the zero point for the oxygen calibration.

[37] Leave the hose with filter connected while doing so

[38] Leave the hose with filter connected while doing so

22. Confirm
23. Automatic air purge and check is carried out
24. Reconnect calibration gas to ‘IN’ of the gas analysis device
25. Confirm
26. Automatic calibration run is carried out
27. Unplug calibration gas
28. Confirm
29. Automatic air purge and check is carried out
30. Close the calibration gas cylinder after completing the calibration



The calibration takes several minutes[39].

NOTE

Display suppression and measured values below the zero point

Display suppression is deactivated during the calibration. Measured values below the zero point are displayed as negative values. No error is output if the measured value is in the negative range during calibration.

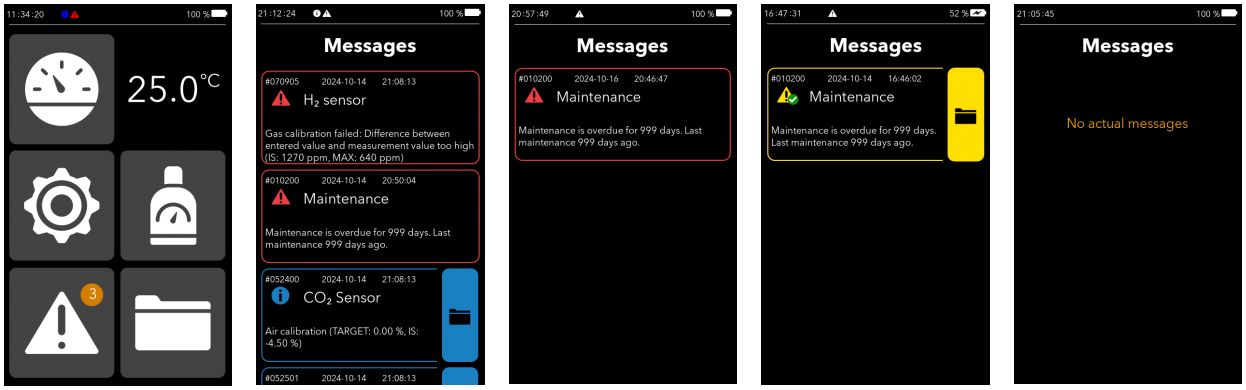
4.7 Messages

Unread and unarchived reports are listed under ‘Messages’.

Number of unseen messages shown by orange circle.

Move messages from the current messages to the message archive using the archive icon.

[39] The values of the individual calibration runs are stored in the “”Archive‘ under ‘Calibration valuesafter finishing the calibration



4.7.1 Error and info messages

Possible information messages are listed below. Possible error messages and solutions are listed in Chapter 11.5, "Troubleshooting" .

Table 3: Info messages

Error code[40]	Heading	Message text
#012800	Service	Maintenance due in <value> days. Last maintenance <value> days ago.
#182600	Measuring process	Measurement is simulated
#182700	Measuring process	Measurement cancelled: <value>, <value>
#242701	Update	cancelled
#242702	Update	Cancelled: Config version <value> not bigger than <value>
#242703	Update	Cancelled: Wrong device id <value> versus <value>
#242705	Update	Read config cancelled, wrong magic bytes (is: <value>, expecrted: <value>)
#242708	Update	Cancelled because of wong CRC checksum (<value> wrong, <value> ok)
#242901	Update	Configuration successfully executed
#242902	Update	Factory defaults loaded
#242903	Update	Config Memory Erased
#242905	Update	Factory defaults erased

[40] in top left of corresponding message

Error code[40]	Heading	Message text
#242915	Update	Reconfiguration partly executed (<value> OK, <value> fail)
#243006	Update	Firmware successfully replaced
#243009	Update	Wrong CRC checksums replaced (<value> wrong, <value> ok)
#252701	Backup	cancelled
#252900	Backup	Successfully executed
#252916	Backup	Partly executed (<value> OK, <value> fail)
#262300	Measuring point	<value> of <value> measuring points used.
#272300	System	<value> of <value> plants used.
#282300	Measured value memory	Memory is occupied by <value> %.
#282707	Measured value memory	Restore from bakup cancelled
#283007	Measured value memory	Firmware successfully replaced
#292300	Event memory	Memory is occupied by <value> %.
#302904	Config memory	Set to factory defaults
#372701	Reading in measuring points	cancelled
#372706	Reading in measuring points	Rows have been removed, therefore data not taken over.
#372912	Reading in measuring points	Data was taken over (modified: <value> plants, <value> places)
#372913	Reading in measuring points	Data was taken over, but <value> duplicate plants and <value> places (check places.csv)
#372914	Reading in measuring points	No plants or measurment places modified.

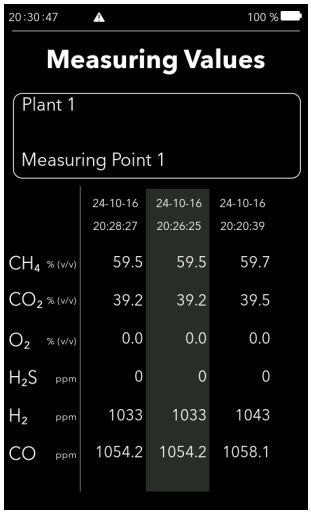
[40] in top left of corresponding message

Table 4: Info messages SENSOR

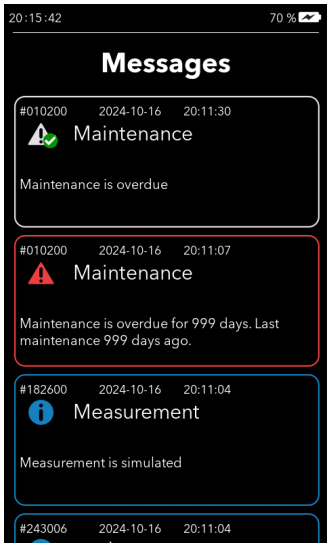
Error code	Heading	Message text
#042400	*SENSOR NAME*	Air calibration (TARGET: <valve> %, IS: <valve> %)
#042501	*SENSOR NAME*	Gas calibration (TARGET: <valve> %, IS: <valve> %)
#042709	*SENSOR NAME*	Import/Restore of calibration data cancelled: wrong number of parameters at index <value>: <value>
#042906	*SENSOR NAME*	Adjustment of calibration curve executed (setpoint: <value> % (v/v), rotation point: <value> % (v/v))
#042907	*SENSOR NAME*	Adjustment of calibration curve (IS: <value> % (v/v) -> setpoint: <value> % (v/v))
#042908	*SENSOR NAME*	Calibration imported (CRC new: <value>, before: <value>)
#042909	*SENSOR NAME*	Calibration modified, CRC recalculated (CRC new: <value>)
#042910	*SENSOR NAME*	Calibration set to factory defaults
#042911	*SENSOR NAME*	Calibration modified
#043002	*SENSOR NAME*	Sensor was replaced
#043003	*SENSOR NAME*	Board was replaced (Checksum SN new: <value>, old: <value>)
#043004	*SENSOR NAME*	Software was updated (checksum of version new: <value>, old: <value>)
#043005	*SENSOR NAME*	Device type was updated (new: <value>, old: <value>)
#043102	*SENSOR NAME*	Calibration data on sensor is different from device. Recalibration suggested.

4.8 Archive

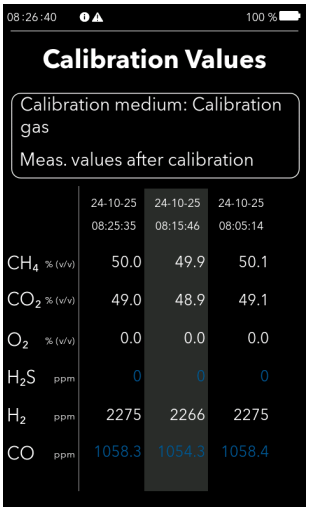
Archived measured and calibration values, as well as archived messages, are contained under "Archive".



All measured values for the individual measuring points per system.



All information and errors in chronological order.



All calibration data for the respective media[41], [42].

4.9 Temperature measurement

Connect an external temperature sensor for temperature measurement. The measured value only appears on the home screen. A measured value recording/archiving of the temperature value is not possible.

[41] Blue measured values mean that the value was not used (e.g. sensor deselected during calibration).

[42] Red measured values (not shown) are invalid values (e.g. measurement canceled or calibration failed).

5 Transport and Storage

⚠ CAUTION

Damaged batteries have an increased risk potential due to gas or liquid leakage. Fire hazard, harmful to health, environmental pollution. Do not continue to use damaged batteries. Dispose of damaged batteries properly at collection points. Damaged batteries must not be sent by air freight.

The mobile gas analysis system must be protected from impermissible strain or damage, e.g. from moisture, vibration or shock. In the event of mechanical defects, the mobile gas analysis system must not be put into operation.

Storage temperature 0°C – 40°C

Transport: –10°C – 40°C

Air transportation – shipping of new devices

The following applies to devices with a built-in battery, with no other batteries in the package:

The devices are to be sent only in the original packaging (case) intended for this purpose and in accordance with the requirements. The devices with original packaging (case) are to be packed in the rigid, resistant outer packaging (cardboard box) provided for this purpose and are then considered to be individual packages.

The package must be labeled with the name, address and country of the shipper and consignee.

Two individually packaged and labeled devices can be shipped bundled in an outer package. The provisions for individual delivery shall apply in this case. The shipping packages must be secured inside the outer packaging. Each overpack must be labeled with the shipper and consignee.

NOTE

It is not necessary to attach the lithium battery label. Not even if both packages are combined in an overpack.

NOTE

Loosely stored batteries can cause short circuits. This poses a risk of fire and explosion. Pack batteries individually and securely, or tape the contacts.

The mobile gas analysis system contains lithium-ion batteries. When transporting, especially when airlifting, observe and comply with the relevant safety regulations and labeling for lithium batteries. Observe country-specific requirements.

Air transportation – shipping defective devices or batteries

The following applies to devices with a built-in battery, with no other batteries in the package:

Defective devices with built-in lithium-ion batteries, e.g. with damage caused by falling; devices that can no longer be switched on or off; whose charge state or operating mode is unknown; and batteries that cannot be charged, show discoloration or mechanical changes; must **NOT** be sent by air freight.

In this case, the batteries must be removed before sending the device. Contact the service center before removing the battery! (www.awi2go.de/en/service). The batteries must be disposed of in accordance with local regulations.

Removed batteries must never be sent by air freight.

Road, rail, sea freight – shipping of new devices

The devices are to be sent only in the original packaging (case) intended for this purpose and in accordance with the requirements. The devices with original packaging (case) are to be packed in the rigid, resistant outer packaging (cardboard box) provided for this purpose and are then considered to be individual packages.

SP 188 allows the omission of labeling for "packages with a maximum of 4 installed cells or two installed batteries; provided that the shipment contains no more than two such packages".

The packages may be voluntarily marked with the lithium battery label ADR 7.1.C UN 3481.

Multiple individually packaged devices can be shipped bundled in an overpack. The provisions for individual delivery shall apply in this case. The shipping packages must be secured inside the outer packaging.

When packages are placed in an overpack, the label for lithium batteries must either be clearly visible or repeated on the exterior of the overpack, and the overpack must be marked with the word "OVERPACK".

NOTE
The letters of the word 'OVERPACK' must be at least 12 mm high.

NOTE
The overpack must be marked with the lithium battery marking ADR 7.1.C UN 3481.

Road, rail, sea freight – shipping defective devices or batteries

Special provision 376 applies.

Defective devices with built-in lithium-ion batteries, e.g. with damage caused by falling; devices that can no longer be switched on or off; whose charge state or operating mode is unknown; and batteries that cannot be charged, show discoloration or mechanical changes; may only be shipped if **the rules for defective lithium batteries are observed.** .

The battery must be packed in packaging that complies with P908 or P911, hazard label 9a must be attached to the package and labelled with the correct UN number and the words 'Damaged/defective lithium-ion battery'.

In addition, a transport document with the entry 'Transport in accordance with special provision 376' must be created. Furthermore, this may only be created by persons who have been trained in dangerous goods legislation.

The battery must be removed before sending in the defective device. Contact the service center before removing the battery! (www.awi2go.de/en/service).

6 Assembly, installation and setup

Assembly

DANGER

The suitability of the device for explosive Zone 1 (IIA) does not apply to the charging process. An error can lead to ignition and explosion of the surrounding atmosphere. Charge the device outside hazardous explosive atmospheres.

WARNING

Only suitable devices may be used in potentially explosive atmospheres. The USB stick supplied is not explosion-proof. Failure to observe this warning may result in an explosion. Always carry out updates and data backups outside of a dangerous explosive zone.

The Awi2GO has 2 hose connections, as well as 2 data interfaces:

1. USB-C port: for charging Not in the Ex-area
2. Gas inlet (sample gas/calibration gas): Connection for sample gas hose incl. particle filter with water protection function or connection for calibration gas
3. Gas outlet: Connection for exhaust gas hose
4. USB-A port: for data transfer or port for external temperature sensor (PT100) Not in the Ex-area

When using the Awi2GO, it **is essential** to use the supplied sample gas hose including the particle filter with water retention function. This must be plugged into pos. 2.

Plug the exhaust hose into position 3.

Installation and setup

NOTE

The device is only designed for situations of intended use. Improper use can lead to incorrect measured values, shortened service life, and damage to the device. Only use the device as intended.

The Awi2GO is not intended for stationary operation. For this reason, there is no potential equalisation, no shield earthing and no overvoltage protection.

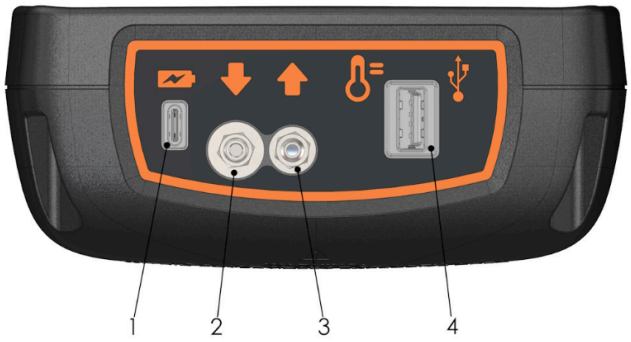
There are no flameproof enclosures on the Awi2GO.

7 Initial operation and parametrisation

Initial Operation

DANGER

The suitability of the device for explosive Zone 1 (IIA) does not apply to the charging process. An error can lead to ignition and explosion of the surrounding atmosphere. Charge the device outside hazardous explosive atmospheres.



1. USB-C connection For charging in the non-ex area

Charge the battery **before** initial operation in the **non-EX area** .

No parametrisation or verification required for explosion protection during (initial) operation.

Parametrisation

The following parametrisations have no influence on explosion protection and can be set during initial commissioning (initialisation phase):

- Language/Decimal
- Time-Date format
- Date/Time
- Units

For the H_2S sensor, you can choose between different measuring ranges.

There is no need for the customer to parametrise heating devices.

8 Normal operation

The mobile gas analysis system can be used in potentially explosive atmospheres up to and including Zone 1, IIA, 2G. It is assumed that the device is not used in a private household but by instructed persons. Observe the safety instructions in this document as well as the safety regulations on the system.

8.1 Ambient conditions

The following requirements must be met with regard to ambient conditions in order to ensure a high level of measurement accuracy and to avoid damaging components:

The device is designed for an ambient temperature of –20°C to +40°C. An internal temperature of +5°C should be maintained in order to guarantee an exact measurement of the sensors and not to damage the electronic components. The mobile gas analysis system is calibrated at 25°C. All detailed specifications refer to this temperature (25°C), any deviations that occur under significantly changed ambient temperature conditions are sensor-related.

The gas analysis system complies with IP 67 protection class and is therefore dust-proof and protected against temporary immersion.

NOTE

Measurement is not possible if the internal temperature of the device is too low. Where this is the case, no ‘Play’ button is displayed, so that no measurement can be started.

8.2 Measuring gas

⚠ CAUTION

Measuring and calibration gas can be flammable and cause a **risk of explosion** . An explosion can lead to further damage, injury, and even death. Install sampling openings in well-ventilated areas and close them again after the measurement is complete.

⚠ CAUTION

Measuring and calibration gas can **be toxic** . Poisoning can lead to damage to health and even death. Install sampling openings in well-ventilated areas and close them again after the measurement is complete.

NOTE

Small quantities of measuring gas are released during measurement. In closed rooms, this can lead to unpleasant odours and even health hazards. Exhaust the gas into the open air.

Measuring gas pressure

⚠ CAUTION

The maximum inlet and outlet pressure is 100 mbar. Possible consequences are leakage and damage. Ensure the specified pressure.

The pressure applied to the measuring gas inlet of the device must not exceed 200 mbar underpressure and 100 mbar overpressure. Pressure outside this range is not allowed because the sensors may be damaged and measured values may be changed. Appropriate measures must be taken for higher or lower pressures.

A mobile pressure reducer from Awite is available for process pressures of > 100 mbar to max. 2 bar at the gas extraction point. For more information see Chapter 3.3.3, "Spare parts and optional accessories".

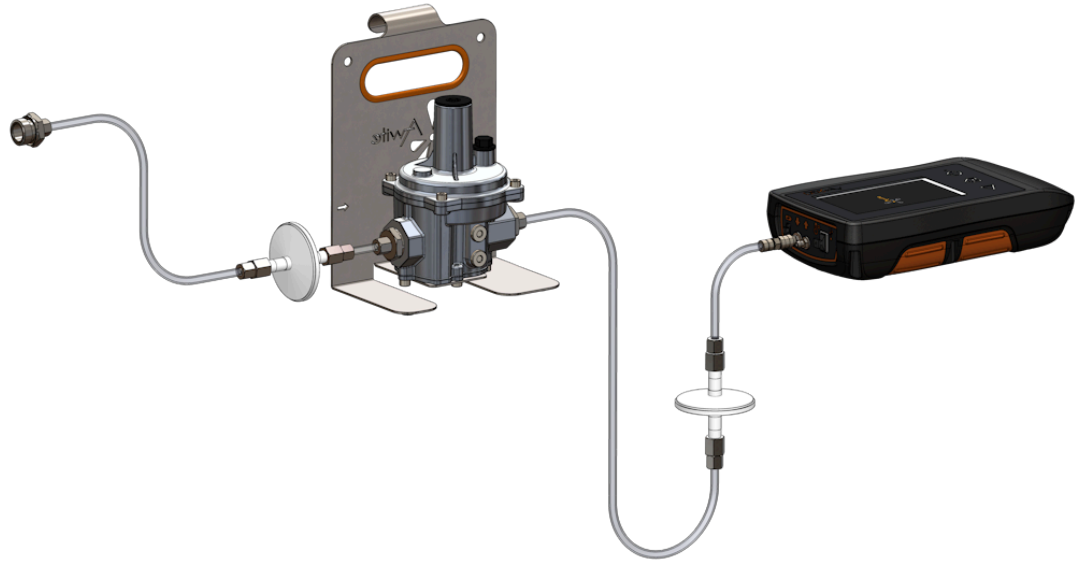


Figure 11: mobile pressure reducer

Observe gas flow direction![43]

Connect the hose from the measuring gas connection to the particle filter of the pressure reducer. Connect the pressure reducer outlet to the particle filter of the Awi2GO.

[43] The particle filter is marked 'IN' and 'OUT'

Extraction points measuring gas

NOTE

The hoses, filters and demand pressure regulators supplied with this device have been subjected to an ignition hazard analysis and can also be used in zone 1, gas group IIA. An additional calibration gas cylinder required for calibration weighs at least 5 kg and can therefore generate an impact spark when dropped. Calibrate outside hazardous atmospheres to prevent an explosion being caused by a spark.

If measurements are taken regularly at a measuring point, we recommend setting up a sampling point.

Please take into account the following important points when designing and setting up the measuring gas extraction points:

Position: If possible, it should be installed on the top side of the gas-carrying line or on the side, so as to prevent condensate from being sucked into the analysis gas lines. By no means should an extraction point be located at the bottom half of a gas pipe.

Exhaust line of the measuring gas

NOTE

Small quantities of measuring gas are released during measurement. In closed rooms, this can lead to unpleasant odours and even health hazards. Exhaust the gas into the open air.

The pump that sucks out the gas has a capacity of approx. 0.7 l/min. Up to 2 l of measuring gas are drawn in per measuring point. A connection for the exhaust line is provided on the Awi2GO. A corresponding exhaust air hose is included with the delivery of the Awi2GO.

8.3 Charging

⚠ DANGER

The suitability of the device for explosive Zone 1 does not apply to the charging process. An error can lead to ignition and explosion of the surrounding atmosphere. Charge the device outside hazardous explosive atmospheres.

The Awi2GO comes with a charger. Only use this charger to charge the mobile gas analysis system.

The LED on the glass panel next to the on/off button indicates when the device is charging. When the Awi2GO is switched on, the charging process can also be seen in the status bar.

8.4 Measured value transmission and data analysis

⚠ WARNING

Only suitable devices may be used in potentially explosive atmospheres. The USB stick supplied is not explosion-proof. Failure to observe this warning may result in an explosion. Always carry out updates and data backups outside of a dangerous explosive zone.

Upload and download

Data can be backed up by uploading from the Awi2GO to a USB stick. An automatic download function is available for uploading data to the Awi2GO.

Measured value transmission procedure:

1. Switch off Awi2GO
2. Insert storage medium
3. Switch on Awi2GO

A corresponding info message is generated.

A data backup with the following file structure is automatically generated on the USB: "Awi2GO/0831X-YYYYY (0831.-..... = serial number of the device)

‘Awi2GO/0831X-YYYYY” (= Serial number of the device)

- File “BACKUP"
- File “EXPORT"
- File “SNAPSHOT"
- File “UPDATE"
- File “MYDATA.CSV"

Archived measured and calibration values, as well as archived messages, are contained under ‘BACKUP’ as well as ‘EXPORT’ and all backups are under ‘SNAPSHOT“, which is effectively an archive of the backup.

The ‘BACKUP’ directory contains all the data necessary to restore the secured state, for example when replacing the device. The ‘CONFIG.JSN’ File contains the device configuration data including measuring points. The ‘MEASVAL.DAT’ File contains the backup of the measured values.

The ‘EXPORT’ directory stores the recorded measured values and messages in a form that allows this data to be viewed and further processed with external software (csv file).

The folder ‘SNAPSHOT’ contains all data backups in a separate subfolder coded according to the following method:

Coding	Folder name	Year 23–99		Month A ... L	Day 01 ... 31		Hour A ... X	Minute 0 ... 59	
2023-01-01 0:00	23A01A00	2	3	A	0	1	A	0	0

Coding	Folder name	Year 23-99		Month A ... L	Day 01 ... 31		Hour A ... X	Minute 0 ... 59	
2099-12-31 23:59	99L31X59	9	9	L	3	1	X	5	9

The folder 'UPDATE' is empty when backing up data.

In order to restore an old backup status. copy the backup files (CONFIG.JSN, MEASVAL.DATfrom the corresponding snapshot directory to the update folder on the USB stick. Insert USB stick into Awi2GO. The data will be automatically transferred to the Awi2GO.

Data analysis / Export measured data

Programmes such as Microsoft Office or OpenOffice can be used to analyse the CSV files. Before transferring data, set the appropriate format for the date, time and decimal point in Awi2GO under 'Settings'.

The ISO format for the date is recognised by most software, regardless of the country setting of the computer used for the analysis.

Measured values in readable form that can be imported into a spreadsheet are automatically stored in the ".MYDATA.CSV" file.[44]

Differentiation MYDATA.CSV as compared to MEASVAL.CSV

- Calibration measurements are hidden
- A falling below zero point is displayed as 0
- Measurements that have completely failed / were cancelled are not displayed
- Deleted measuring points / systems are not displayed
- Only a maximum of 6 gas sensors are displayed[45], pressure and temperature are missing
- The quality of the measured value is not displayed, invalid measured values are not displayed
- Column headers in local language
- Number of decimal places rounded as on the display

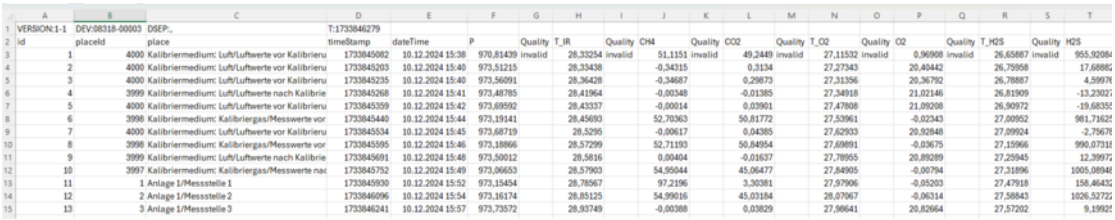
[44] The measured values are also stored in 'EXPORT/MEASVAL.CSV' with more detailed information.

[45] depending on the equipment, even less

Table 5: MYDATA

	A	B	C	D	E	F	G
1	Anlage/Mess-Stelle	Datum und Uhrzeit	CH4	CO2	O2	H2S	H2
2	Launsdorf/Messstelle 1	28.02.2023 11:54	0,1	0	21,6	7	0
3	Launsdorf/Messstelle 1	01.03.2023 12:32	0,1	0	20	138	0
4	Launsdorf/Messstelle 1	01.03.2023 12:33	0,1	0	20	143	0
5	Launsdorf/Messstelle 1	01.03.2023 12:34	0,2	0	20	147	0
6	Launsdorf/Messstelle 1	01.03.2023 12:35	59	39,2	0	235	75
7	Launsdorf/Messstelle 1	01.03.2023 12:40	0,1	0,1	20,5	167	0
8	Launsdorf/Messstelle 1	01.03.2023 13:53	49,7	49,7	0	0	27
9	Launsdorf/Messstelle 1	01.03.2023 13:56	57,1	42,6	0	0	19
10	Replach/BHKW	01.03.2023 14:00	51	45,2	0,6	0	12
11	Replach/BHKW	01.03.2023 14:09	0,1	0	21,1	0	0
12	Replach/BHKW	01.03.2023 14:10	0,1	0	21,1	0	0
13	Launsdorf/Messstelle 1	01.03.2023 15:18	52,5	47,3	0	22	38
14	Launsdorf/Messstelle 1	01.03.2023 15:20	51,6	47	0,2	11	36
15	Frauental/BHKW	01.03.2023 17:02	42,8	46,2	1,9	5	8
16	Güssing/HF	02.03.2023 18:19	47,2	51,3	0,2	2509	212
17	Güssing/NFF	02.03.2023 18:22	48,1	49,5	0,4	2188	128
18	Tobaj/HF	02.03.2023 18:52	59,4	34,8	0,9	1791	26
19	Tobaj/BHKW	02.03.2023 18:57	52	44,2	0,5	0	45
20	MINICHMAIR/HF	16.03.2023 08:54	53	44,9	0,2	0	35
21	MINICHMAIR/BHHKW	16.03.2023 08:56	64,5	34,5	0	0	36
22	EUGENDORF/F1	16.03.2023 10:49	51,1	47,8	0	0	0
23	EUGENDORF/F2	16.03.2023 10:52	50,7	48,6	0	0	39
24	EUGENDORF/F3	16.03.2023 10:55	52,2	47,7	0	0	0

Table 6: MEASVAL



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	VERSION:1-1	DEV:08318-00003	DSEP:.		T:1733846279															
2	id	placeId	place	timeStamp	dateTime	P	Quality	T_IR	Quality	CH4	Quality	CO2	Quality	T_O2	Quality	O2	Quality	T_H2S	Quality	H2S
3	1	4000	Kalibriermedium: Luft/Luftwerte vor Kalibrieru	1733845082	10.12.2024 15:38	970,81439	invalid	28,33254	invalid	51,1151	invalid	49,2449	invalid	27,11532	invalid	0,96908	invalid	26,65887	invalid	955,9208
4	2	4000	Kalibriermedium: Luft/Luftwerte vor Kalibrieru	1733845203	10.12.2024 15:40	973,51215		28,33438		-0,34315		0,3134		27,27343		20,40442		26,75958		17,6888
5	3	4000	Kalibriermedium: Luft/Luftwerte vor Kalibrieru	1733845235	10.12.2024 15:40	973,56091		28,36428		-0,34687		0,29873		27,31356		20,36792		26,78887		4,5997
6	4	3999	Kalibriermedium: Luft/Luftwerte nach Kalibrie	1733845268	10.12.2024 15:41	973,48785		28,41964		-0,00348		-0,01385		27,34918		21,02146		26,81909		-13,2302
7	5	4000	Kalibriermedium: Luft/Luftwerte vor Kalibrieru	1733845359	10.12.2024 15:42	973,69592		28,43337		-0,00014		0,03901		27,47808		21,09208		26,90972		-19,6835
8	6	3998	Kalibriermedium: Kalibriergas/Messwerte vor	1733845440	10.12.2024 15:44	973,19141		28,45693		52,70363		50,81772		27,53961		-0,02343		27,00952		981,7162
9	7	4000	Kalibriermedium: Luft/Luftwerte vor Kalibrieru	1733845534	10.12.2024 15:45	973,68719		28,5295		-0,00617		0,04385		27,62933		20,92848		27,09924		-2,7567
10	8	3998	Kalibriermedium: Kalibriergas/Messwerte vor	1733845595	10.12.2024 15:46	973,18866		28,57299		52,71193		50,84954		27,69891		-0,03675		27,15966		990,0731
11	9	3999	Kalibriermedium: Luft/Luftwerte nach Kalibrie	1733845691	10.12.2024 15:48	973,50012		28,5816		0,00404		-0,01637		27,78955		20,89289		27,25945		12,3997
12	10	3997	Kalibriermedium: Kalibriergas/Messwerte nac	1733845752	10.12.2024 15:49	973,06653		28,57903		54,95044		45,06477		27,84905		-0,00794		27,31896		1005,0894
13	11	1	Anlage 1/Messstelle 1	1733845930	10.12.2024 15:52	973,15454		28,78567		97,2196		3,30381		27,97906		-0,05203		27,47918		158,4643
14	12	2	Anlage 1/Messstelle 2	1733846096	10.12.2024 15:54	973,16174		28,85125		54,99016		45,03184		28,07067		-0,06314		27,58843		1026,5272
15	13	3	Anlage 1/Messstelle 3	1733846241	10.12.2024 15:57	973,73572		28,93749		-0,00388		0,03829		27,98641		20,82664		27,57202		9,1992

MEASVAL.CSVMEASVAL.CSV

The file MEASVAL.CSV starts with 3 bytes (0xEF 0xBB 0xBF), which is the so-called BOM (Byte Order Mark) – this enables programs such as MS Excel to recognise that the encoding is UTF-8. This is not displayed in Excel.

The first line displays the device number (DEV:08318-00005), the version of the data format of this file (VERSION:1-1, the one described here), the decimal separator (DSEP:, or DSEP:.) as well as the timestamp (POSIX-Timestamp; seconds since 1970-01-01) of the creation of this file.

As is common practice and also used by Excel, a ‘,’ or a ‘;’ is used as the column separator, depending on the decimal separator. Semicolon “;” as column separator when “,” is set as decimal separator, “,” as column separator when “.” is set as decimal separator.

The second row displays the table header and the following rows display the table rows. The columns contain the record ID (id), measurement point ID (placeId), measurement point name (place), Measurement time as POSIX timestamp (timeStamp), Measurement time formatted as date/time according to the default setting (Date/Time), Pressure in mbar (P), validity (Quality) as

well as the measured values of the gas sensors and their temperatures (always in °C). For normal, good,Qualityempty, questionable or invalid measured values,questionable' or 'invalid', in some cases with additional information about the reason. For calibrations in which the corresponding sensor was deselected, "reserved" is displayed here.

The first line displays the device number (DEV:08318-00005), the version of the data format of this file (VERSION:1-1, the one described here), the decimal separator (DSEP:, or DSEP:.) as well as the timestamp (POSIX-timestamp; seconds since 1970-01-01) of the creation of this file.

As is common practice and also used by Excel, a ',' or a ';' is used as the column separator, depending on the decimal separator. Semicolon ";" as column separator when "," is set as decimal separator, "," as column separator when "." is set as decimal separator.

The second row displays the table header and the following rows display the table rows. The columns contain the record ID (id), measurement point ID (placeId), measurement point name (place), measurement time as POSIX timestamp (timeStamp), measurement time formatted as date/time according to the default setting (Date/Time), pressure in mbar (P), validity (Quality) as well as the measured values of the gas sensors and their temperatures (always in °C). For normal, good,Qualityempty, questionable or invalid measured values,questionable' or 'invalid', in some cases with additional information about the reason. For calibrations in which the corresponding sensor was deselected, "reserved" is displayed here.

Export of events

Info and error messages are exported as "EVENTS.CSV". Importing events () is not possible.

Data import

Systems and measuring points can also be set up e.g. on a PC and then transferred to the Awi2GO.

To do this, open the file "PLACES.CSV" in the folder "EXPORT" and add/rename systems or measuring points:

- !do not delete or insert any rows/columns!
- System name in first column
- Measuring points in the second and subsequent columns
- Change of designation by overwriting
- Delete a system or measuring point by replacing the name with an asterisk "*" [46]
- Adding a new system in an empty line
- Add measuring points by entering the name in the right-hand cell next to the last measuring point

After configuring the file, save it and copy it under 'UPDATE'. Insert the storage medium into Awi2GO. Upload and download are performed automatically. Corresponding info messages are generated.

8.5 Calibration

How to perform the calibration is described in Chapter 4.6 .

[46] When a system is deleted, the associated measuring points are deleted as well

Calibration interval

The calibration intervals depend on the sensors being used, the composition of the measuring gas and the measuring interval. Normally, after the initial check of the system, one calibration per year is sufficient.

If you require a higher accuracy of results, or in case of heavy use, a calibration interval of 3–6 months is recommended.

The calibration can be carried out directly on site by the operator, by Awite, or by an Awite (service) partner. Please contact Awite for further information.

Calibration gas

Calibration gas cylinders have much higher pressures than the rated pressure at the device port. Therefore a sufficiently safe pressure control section has to be implemented.

NOTE

Calibration gas is under high pressure. The device is designed for a maximum rated pressure of 100 mbar . Excessive pressure can lead to leakage and thus risk of explosion. Set pressure regulator before the precision pressure regulator to max. 100 mbar . Install the whole calibration gas system (calibration gas cylinders, connection lines, fittings, and process analysis device) in a sufficiently large room or with sufficient ventilation. Check the calibration gas system for tightness.

8.6 Information security and data protection

Information security

Measuring points can be changed or deleted by anyone, and the device can be reset to factory settings as well.

Anyone who has access to the device can export the data/backup to a USB stick. No restriction is planned.

Privacy policy

A data backup is made each time a USB stick is inserted into a new ‘Snapshot’ directory created for each backup. A recovery can be carried out on any of these “snapshots”.

9 Extraordinary and emergency situations

Unexpected warming, smoke or fire:

1. Remove device from Ex zone
2. Immerse the device in water for several hours
3. Contact Service

Damage to the glass front, the glass front detaching from the housing or severe damage to the housing:

1. Remove device from Ex zone
2. Send the device back to Awite for repair

9.1 Error messages and signals from warning devices

Not applicable for Awi2GO.

9.2 Meanings of signals

The LED next to the on/off button indicates the charging status.

- red LED: Charging status <95%
- green LED: Charging status ≥ 95%

10 Training

Users do not require any special training to use the Awi2GO. Read the instructions for use before use and observe the safety-related information. The maintenance and repair work allowed to be carried out by the user is described in Chapter 11, "Maintenance, troubleshooting, repair and replacement" . The corresponding SOP is sent with the delivery of spare parts.

Service technicians must be trained accordingly before maintenance or repair work. Corresponding SOPs are available for the replacement of components.

11 Maintenance, troubleshooting, repair and replacement

NOTE

This is an approved and tested device designed for explosion protection. The device must only be opened and parts be replaced by authorized and trained persons. The intrinsic safety of the device may be impaired if the work is carried out incorrectly. This may result in an explosion when used in an Ex zone.

Repairs and/or exchanging components must only be carried out by Awite or by an Awite service partner. The same holds true for the necessary maintenance. **Returning the Awi2GO to your corresponding service partner.** (www.awi2go.de/en/service)

Return despatch procedure

1. Ensure that the maximum charge level is not exceeded (see Chapter 4.5.1, "System settings"). If the battery is damaged, it must be removed from the Awi2GO **and disposed of properly** . Contact our service team before removing the battery!
2. Remove the detached case insert
3. Insert the Awi2GO into the removed case insert
4. Place Awi2GO in the enclosed return shipping box
5. Attach shipping label with information on “Shipper” and “Consignee”
6. Observe the relevant national and international shipping regulations

⚠ CAUTION

Damaged batteries have an increased risk potential due to gas or liquid leakage. Fire hazard, harmful to health, environmental pollution. Do not continue to use damaged batteries. Dispose of damaged batteries properly at collection points. Damaged batteries must not be sent by air freight.

11.1 Regular maintenance work

Recommended calibration: Once a year or more frequently, depending on the measurement accuracy requirements. Calibration can be carried out directly on-site. Certified calibration gases must be used (please consult Awite).

Replacement of particle filter with water protection function: when the filter surface is contaminated.

No maintenance work is necessary to ensure compliance with explosion protection.

11.2 Non-trained personnel

The display screen may only be cleaned externally with suitable cleaning agents and cleaning cloths. The casing may only be cleaned with acid-free cleaning agents.

11.3 Trained personnel

Trained personnel are authorised to replace the spare parts components according to the list ("Consumables" and "Spare parts and optional accessories"). The categorisation 'Service partner' or 'Awite' must be observed here. All components that are not further specified may be replaced by the user. The corresponding SOP must be taken into account.

11.4 Complex systems

Not applicable for Awi2GO.

11.5 Troubleshooting

The following table shows possible errors, their causes and how to rectify them.

Table 7: Error Messages

Error code[47]	Heading	Message text	Possible cause	Resolution
#010200	Service	Maintenance is overdue for <value> days. Last maintenance <value> days ago.	Exceeding the set maintenance interval	Have maintenance carried out[48]
#150401	flow rate	Timeout	large pressure fluctuations	Carry out air measurement without gas lines
#160503	Pressure	Inlet pressure too high or exhaust air blocked (IS: <value> mbar, MAX: <value> mbar)	Exhaust air blocked / pressure at tapping point or in exhaust gas line too high	Check exhaust air for blockage / excess pressure. Check pressure at tapping point (observe max. input pressure).[49]
#160603	Pressure	Inlet or Outlet pressure too low (IS: <value> mbar, MIN: <value> mbar)	Negative pressure in the exhaust air line	Carry out measurement without exhaust air[50]

[47] in top left of corresponding message

[48] Error disappears when maintenance is confirmed and the next maintenance date is set

[49] Error disappears after a measurement with normal pressure conditions

[50] Error disappears when measurement is repeated with the line open / without negative pressure

Error code[47]	Heading	Message text	Possible cause	Resolution
#170504	flow rate	Relative pressure too high during fushing with air: Exhaust air blocked (IS: <value> mbar, MAX: <value> mbar)	Exhaust air blocked	Check exhaust air for blockage / excess pressure. Carry out air measurement without gas lines[51]
#170906	flow rate	Flow too low or measuring point blocked or pump defective (IS: <value> mbar , MIN: <value> mbar)	Particle filter blocked or wet / gas inlet blocked / pump defective / pressure at gas inlet too high / temperature too low (below freezing).	Check/replace particle filter. Carry out air measurement without gas lines. Check gas pipe for any blockage [52]
#170911	flow rate	Flow too low during flushing with air: opening blocked or pump defective (IS: <value> mbar , MIN: <value> mbar)	Pump defective / negative pressure on exhaust air line / exhaust air was connected before measurement and was slightly overpressured	Carry out air measurement without gas lines [53]
#180402	Measuring process	Measurement(s) not taken over (<value>, <value>)	One or more sensors could not be measured in the specified maximum time. Unstable gas supply or individual sensor defective.	Start the check at a different measuring point or in air / Check gas pressure and gas flow

[47] in top left of corresponding message

[51] Error disappears after a purge with normal pressure conditions

[52] The error disappears if the pump is not defective and the temperature is not very much below 0°C.

[53] The error disappears if the pump is not defective and the temperature is not very much below 0°C.

Error code[47]	Heading	Message text	Possible cause	Resolution
#190103	Air calibration	Completely failed	No sensor could be calibrated in air[54]. The error can occur if the ambient conditions change rapidly, e.g. if the device is moved from –20 °C to room temperature.	When **Gas calibration** select all sensors for gas calibration and then **start the air calibration.**[55]. Allow the device to acclimatise. If the error occurs with all sensors: contact Support.
#200103	Gas calibration	Completely failed	Wrong gas / leak / defective pump / corrupted calibration data / incorrect adjustment	Carry out air calibration. If this is successful, calibrate again with gas. Reset to factory calibration and restart calibration process.
#210401	Gas connection	Timeout	Request to connect gas was not confirmed	Confirm message within 300 seconds[56]
#220401	Gas disconnection	Timeout	Request to disconnect gas was not confirmed	Confirm message within 300 seconds[57]
#241102	Update	Read or write failure USB	USB stick defective / USB stick removed during data access / unsuitable USB stick	Switch off device and repeat process / use USB stick supplied by Awite[58]
#241404	Update	Invalid JSON file at pos <value> (type <value>)	json configuration file defective	Use a different configuration file / contact Support
#251102	Backup	Read or write failure USB	USB stick unsuitable, defective or removed during data transfer	Switch the device off and on again. Repeat the process with the supplied USB stick

47 in top left of corresponding message

54 If only one sensor is selected for gas calibration, this error message will appear if the calibration of the individual sensor fails.

55 As soon as a single sensor is successfully calibrated in air, this error will disappear

56 This error will disappear if the next measurement is successful

57 This error will disappear if the next measurement is successful

58 Use a USB stick with low power consumption. Do not use USB 3.0 or higher

Error code[47]	Heading	Message text	Possible cause	Resolution
#261200	Measuring point	Maximum number reached (<value>)	Too many measuring points created	Delete unnecessary systems / measuring points
#271200	System	Maximum number reached (<value>)	Too many systems created	Delete unnecessary systems
#281200	Measurement data memory	Measurement value storage is <value> % full. Oldest values are overwritten.	There are too many measured values	Make a backup, then reset the device to the factory settings
#291200	Event memory	Message storage is <value> % full. Oldest values are overwritten.	There are too many messages	Make a backup, then reset the device to the factory settings
#310403	Runtime monitoring	Duration of device cycle was too long (MAX <value> s)	Problem with unsuitable USB stick / Problem with data import or configuration update via USB stick	Switch the device off and on again. Error still present: Contact Support
#310404	Runtime monitoring	Duration of device cycle was much too long (MAX: <value> s)	Problem with unsuitable USB stick / Problem with data import or configuration update via USB stick	Switch the device off and on again. Error still present: Contact Support
#320100	Safety check	Safety test failed (detail: <value>)	Hardware defect or memory bit error	Switch the device off and on again. Error still present: Contact Support
#330101	Internal interface	No connection to sensors (after <value> of <value> attempts).	Hardware defect	Switch the device off, charge. Error still present: Contact Support
#341401	Device	Invalid value	Defect / data loss	Switch the device off and on again. Error still present: Contact Support

[47] in top left of corresponding message

Error code[47]	Heading	Message text	Possible cause	Resolution
#351104	USB	Storage media canot be mounted	USB stick unsuitable, defective or removed during data transfer	Switch the device off and on again. Repeat the process with the supplied USB stick[59].
#351105	USB	Storage media canot be unmounted	USB stick unsuitable, defective or removed during data transfer	Switch the device off and on again. Repeat the process with the supplied USB stick.
#351106	USB	Storage driver cannot be unlinked	USB stick unsuitable, defective or removed during data transfer	Switch the device off and on again. Repeat the process with the supplied USB stick.
#351113	USB	Storage drive/driver cannot be mounted/unmounted/unlinked	USB stick unsuitable, defective or removed during data transfer	Switch the device off and on again. Repeat the process with the supplied USB stick.
#360406	Rechargeable battery	Fuelgauge: timeout error during init (detail: <value>)	Hardware defect in device or battery	Switch off. Connect to power supply / recharge. Switch on. Error still present: Contact Support
#361109	Rechargeable battery	Communication error fuel gauge	Hardware defect in device or battery	Switch off. Connect to power supply. What until charged. Switch on. Error still present: Contact Support

Table 8: Error messages SENSOR

Error code	Heading	Message text	Possible cause	Resolution
#040301	*Sensor name*	External error: <value>		
#040302	*Sensor name*	Error at infrared source	Infrared light source defective	Restart and warm-up phase. Error still present: Contact Support
#040502	*Sensor name*	Signal too high (IS: <value>, MAX: <value>)	Sensor defective or configuration data corrupted	Contact Support

[47] in top left of corresponding message

[59] Use a USB stick with low power consumption. Do not use USB 3.0 or higher

Error code	Heading	Message text	Possible cause	Resolution
#040602	*Sensor name*	No signal or signal too low (IS: <value>, MIN: <value>)	Sensor defective / configuration data corrupted / communication with sensor delayed due to update	Restart and warm-up phase. Error still present: Contact Support
#040902	Sensor name	Air calibration failed: Difference between both measurement values too high (IS: <value> %, MAX: <value> %)	Device too cold and not warmed up / overload during previous gas / calibration gas measurement	Allow device to acclimatise. Repeat calibration.
#040903	Sensor name	Gas calibration failed: Difference between both measurement values too high (IS: <value> %, MAX: <value> %)	Leak / device too cold and not warmed up / overload during previous measurement	Check the calibration gas fitting and hose for leaks. Allow device to acclimatise. Repeat calibration.
#040904	Sensor name	Air calibration failed: Difference between entered value and measurement value too high (IS: <value> %, MAX: <value> %)	Sensor defective / current calibration incorrect	Repeat the process. Reset the calibration to the factory settings. Contact Support.
#040905	Sensor name	Gas calibration failed: Difference between entered value and measurement value too high (IS: <value> %, MAX: <value> %)	Sensor defective / gas concentration entered incorrectly or incorrect calibration gas / current calibration incorrect	Check gas composition. Repeat the process. Reset the calibration to the factory settings. Contact Support.
#040907	Sensor name	Air calibration: Deviation at validation too high (IS: <value> %, MAX: <value> %)	Device too cold and not warmed up / overload during previous gas / calibration gas measurement	Repeat air calibration.
#040908	Sensor name	Gas calibration: Deviation at validation too high (IS: <value> %, MAX: <value> %)		

Error code	Heading	Message text	Possible cause	Resolution
#040913	Sensor name	Calibration: Deviation too high		
#041003	*Sensor name*	Calibration data: wrong number of pairs: <value>	Calibration data incorrect or defective	Contact Support
#041004	*Sensor name*	Calibration data: setpoints for calibration media too close (<value> and <value>)	Concentration in calibration medium for the sensor is similar to that in air	Deselect sensor or correct/change calibration medium
#041103	*Sensor name*	Internal communication with sensor failed	Communication error with the sensors	Restart the device Remove the USB stick before doing this. Error still present: Contact Support
#041302	*Sensor name*	Wrong checksum during import calibration data	Calibration data defective	Use a suitable USB stick. Contact Support
#041402	*Sensor name*	Air calibration failed: Takeover of measurement not possible (measurement value 1: <value> % / measurement value 2: <value> %)	Calibration measured value in air invalid / measurement was cancelled	Repeat calibration. Contact Support
#041403	*Sensor name*	Gas calibration failed: Takeover of measurement not possible (measurement value 1: <value> % / measurement value 2: <value> %)	Calibration measured value calibration gas invalid / measurement cancelled / empty or leaking gas cylinder	Check gas pressure in cylinder. Check for leaks. Repeat calibration. Contact Support
#041405[60]	*Sensor name*	Adjustment of calibration curve failed (setpoint: <value> % (v/v), rotation point: <value> % (v/v))		Repeat process with correct parameters
#041510	*Sensor name*	Measurement range different (Device: <value>, Sensor: <value>)	Loss of data or new sensor with different measuring range	Update configuration via USB stick. Contact Support.

[60] only for Service

12 Dismantling, recycling and waste disposal

12.1 Dismantling and decommissioning

There are no measures to be taken for dismantling or decommissioning the Awi2GO.

12.2 Recycling and waste disposal

Rechargeable battery/battery

⚠ CAUTION

Damaged batteries have an increased risk potential due to gas or liquid leakage. Fire hazard, harmful to health, environmental pollution. Do not continue to use damaged batteries. Dispose of damaged batteries properly at collection points. Damaged batteries must not be sent by air freight.

Do not dispose of product as unsorted waste.
Dispose of at separate collection points for reuse and recycling. Observe country-specific requirements.

Battery recycling; return of used (Li-ion) batteries

The buyer is legally obliged to return used batteries. Batteries must not be disposed of in household waste.

After use, either return the batteries to us or return them free of charge in the immediate vicinity (e.g. in shops or municipal collection points). Only return batteries to the collection centres when they are discharged or take precautions against short circuits (e.g. by insulating the terminals with adhesive tape). The costs for the return shipment are borne by the buyer.

Awi2GO measuring device

Do not dispose of product as unsorted waste.
Dispose of at separate collection points for reuse and recycling. Observe country-specific requirements.

Legal information on the disposal of old devices

It is prohibited by law to dispose of electrical and electronic devices in household waste. Devices must be disposed of at collection points for electronic waste (recycling centre). Commercial end users can return old appliances to our company site free of charge after prior notification. The organisation

of the return is carried out by our customer service. The old appliances are then disposed of in an environmentally friendly manner by certified specialist companies.

Awite is registered with the EAR Foundation under the following number: WEEE Reg. No. DE 56690856

13 Appendix

13.1 Type Examination Certificate

Translation

1 **EU-Type Examination Certificate**

2 **Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014**

3 EU-Type Examination Certificate Number: **BVS 24 ATEX E 045** Issue: **00**

4 Equipment: **Mobile gas analysis system type Awi2GO**

5 Manufacturer: **Awite Bioenergie GmbH**

6 Address: **Grünseiboldsdorfer Weg 5, 85416 Langenbach, Germany**

7 This product and any acceptable variations thereto are specified in the appendix to this certificate and the documents referred to therein.

8 DEKRA Testing and Certification GmbH, Notified Body number 0158, 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 the confidential Report No. BVS PP 24.2083 EU.

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018 **General requirements**
EN 60079-11:2012 **Intrinsic Safety "i"**

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the "Specific Conditions of Use" listed under item 17 of this certificate.

11 This EU-Type Examination Certificate relates only to the technical design of the specified product in accordance to the Directive 2014/34/EU. Further requirements of the 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:

Ex **II 2G Ex ib IIA T1 Gb**

DEKRA Testing and Certification GmbH
Bochum, 2024-12-10

Signed: Oliver Brumm
Managing Director

DEKRA Testing and Certification GmbH, Handwerkstr. 15, 70565 Stuttgart, Germany
Certification body: Dinnendahlstr. 9, 44809 Bochum, Germany
Phone +49.234.3696-400, Fax +49.234.3696-401, e-mail DTC-Certification-body@dekra.com

13 **Appendix**

14 **EU-Type Examination Certificate**

BVS 24 ATEX E 045 issue 00

15 **Product description**

15.1 **Subject and type**

Mobile gas analysis system type Awi2GO

15.2 **Description**

The mobile gas analysis system type Awi2GO is suitable for measuring of gases of the gas group IIA. The mobile gas analysis system type Awi2GO is intrinsically safe equipment and is suitable for use in areas requiring EPL Gb. All circuits have protection level "ib". The mobile gas analysis system type Awi2GO is powered by an internal Li-Ion battery which has to be charged only outside of the hazardous area.

Listing of all components used referring to older standards

None

15.3 **Parameters**

15.3.1 Supply battery

Nominal voltage	3.6 V
Rated capacity	2200 mAh at 45 mA
Nominal charging voltage	5 V, U_m = 250 VAC, charging connector USB (type C)

15.3.2 Ambient temperature -20 °C ≤ T_a ≤ 40 °C

16 **Report Number**

BVS PP 24.2083 EU, as of 2024-12-10

17 **Specific Conditions of Use**

None

18 **Essential Health and Safety Requirements**

Met by compliance with the requirements mentioned in item 9.

19 **Remarks and additional information**

Drawings and documents are listed in the confidential report.

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA Testing and Certification GmbH
Bochum, 2024-12-10
BVS-HRH/Mu A 20220277 / 34269800

Managing Director

DEKRA Testing and Certification GmbH, Handwerkstr. 15, 70565 Stuttgart, Germany
Certification body: Dinnendahlstr. 9, 44809 Bochum, Germany
Phone +49.234.3696-400, Fax +49.234.3696-401, e-mail DTC-Certification-body@dekra.com

13.2 IECEx-Certificate

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres
for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	**IECEx BVS 25.0015**	Page 1 of 3	Certificate history:
Status:	**Current**	Issue No: 0	
Date of Issue:	2025-05-19		
Applicant:	**Awite Bioenergie GmbH** Grünseiboldsdorfer Weg 5 Langenbach 85416 **Germany**		
Equipment:	**Mobile gas analysis system type Awi2GO**		
Optional accessory:			
Type of Protection:	**Intrinsic safety "i"**		
Marking:	Ex ib IIA T1 Gb		

Approved for issue on behalf of the IECEx Certification Body: **Deniz Pezzutto**

Position: **Certification Manager**

Signature: (for printed version)

Date: (for printed version) 2025-05-19

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.

Certificate issued by:

DEKRA Testing and Certification GmbH
Certification Body
Dinnendahlstrasse 9
44809 Bochum
Germany

IECEx Certificate of Conformity

Certificate No.: **IECEx BVS 25.0015** Page 2 of 3

Date of issue: 2025-05-19 Issue No: 0

Manufacturer: **Awite Bioenergie GmbH**
Grünseiboldsdorfer Weg 5
Langenbach 85416
Germany

Manufacturing locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

DE/BVS/ExTR25.0027/00

Quality Assessment Report:

DE/TPS/QAR25.0005/00

IECEx Certificate of Conformity

Certificate No.: **IECEx BVS 25.0015** Page 3 of 3

Date of issue: 2025-05-19 Issue No: 0

EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

General product information:

Mobile gas analysis system type Awi2GO

Description:

The mobile gas analysis system type Awi2GO is suitable for measuring of gases of the gas group IIA. The mobile gas analysis system type Awi2GO is intrinsically safe equipment and is suitable for use in areas requiring EPL Gb. All circuits have protection level "ib". The mobile gas analysis system type Awi2GO is powered by an internal Li-Ion battery which has to be charged only outside of the hazardous area.

List of all components used with reference to older standards
none

Parameters:

Supply battery

Nominal voltage	3.6 V
Rated capacity	2200 mAh at 45 mA
Nominal charging voltage	5 V, Um = 250 VAC, charging connector USB (type C)
Ambient temperature	-20 °C ≤ Ta ≤ 40 °C

SPECIFIC CONDITIONS OF USE: NO

13.3 Declaration of Conformity

EU-Konformitätserklärung Nr. 1 (original)
EC Conformity Declaration No. 1 (translation)

CE

Hersteller, Manufacturer:	**Awite Bioenergie GmbH** **Grünseiboldsdorfer Weg 5** **D-85416 Langenbach**
Produkt, Product:	**Mobiles Gasanalysegerät, Mobile Gas Analysis Device**
Typenbezeichnung, Type designation:	**Awi2GO**

Das bezeichnete Gerät entspricht den aufgeführten EU-Richtlinien, Verordnungen und Normen.

The denoted device corresponds to the listed EU guidelines, directives and standards.

Richtlinien, Guidelines:	**2014/34/EU**
Es entspricht außerdem folgenden EU-Richtlinien und Verordnungen bzw. hält deren Schutzziele ein: It also corresponds to the listed EU guidelines and directives or complies with their protection targets:	**2014/30/EU, 2011/65/EU, 2023/1542**
Normen (auszugsweise), Standards (in part):	**EN 60079-0:2017, EN 60079-11:2011+Cor.:2012**

Kennzeichnung, Marking: CE **0123** **BVS 24 ATEX E 045** Ex **II 2 G** **Ex ib IIA T1 Gb**

Langenbach, 19. Dezember 2024, 19th Dezember 2024

Dr.-Ing. Ernst Murnleitner

(Ansprechpartner bei Rückfragen, contact person for queries)