Portable Photoionization Detector PPID3

User Manual

from firmware revision : 1.02.019

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Germany

EU-Konformitätserklärung / EU-Declaration of conformity

Artikelnr. / Part No.: 0003313

Name und Anschrift des Herstellers oder seines Bevollmächtigten /
Name and address of the manufacturer or his authorised representative:

ACI Analytical Control Instruments GmbH
Volmerstraße 9A
D-12489 Berlin
Germany

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller. /
This declaration of conformity is issued under the sole responsibility of the manufacturer.

Gegenstand der Erklärung / Object of the declaration:

Portable Photoionisation Detector PPID3-*

Der oben beschriebene Gegenstand der Erklärung erfüllt die einschlägigen Harmonisierungsrechtsvorschriften der Union / The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

EMV-Richtlinie 2014/30/EU - elektromagnetische Verträglichkeit /
EMC-Directive 2014/30/EU - electromagnetic compatibility:

Harmonisierte Normen / harmonized standards:
EN 50270:2015, EN 50270:2015/AC:2016

RoHS-Richtlinie 2011/65/EU & 2015/863 - Beschränkung gefährlicher Stoffe in elektrischen und elektronischen Geräten /
RoHS-Directive 2011/65/EU & 2015/863 - restriction of hazardous substances in electrical and electronic equipment

ACI Analytical Control Instruments GmbH
Dipl.-Ing. Andreas Otto
Managing Director

Berlin, July 2025

Contents

1 General

The company ACI Analytical Control Instruments (hereinafter the 'manufacturer') provides with the Portable Photoionization Detector PID3 (hereinafter the 'device') a continuously measuring detector for volatile organic compounds (VOCs) with a high stable hollow cathode lamp with Ceramic Discharge Channel with an ionization potential < 10.6 eV. The use of new technologies for the excitation source and the sensor allows a high stability of measurement and longer maintenance intervals.

2 Safety and Usage Instructions

2.1 Terms and Symbols

In this manual, certain common terms and symbols used to warn you of dangers or to give you cautions that are important in avoiding injury or damage. Observe and follow these cautions and regulations to avoid accidents and damage. These terms and symbols explained below.

DANGER
Indicates a hazardous situation, which, if not avoided, WILL result in death or serious injury.

WARNING
Indicates a hazardous situation, which, if not avoided, COULD result in death of serious injury.

CAUTION
Indicates a hazardous situation, which, if not avoided, MAY in minor or moderate injury.

NOTICE
Indicates a property damage message.

Usage
Indicates a helpful information, hint or recommendation.

2.2 Correct Use

The device is suitable for outdoor and indoor applications without limitations, e.g. offshore industry, chemical and petrochemical industry, water and sewage industry **when no explosion protection is required**.

It is imperative that this user manual be read and observed when using the product. In particular, the safety instructions, as well as the information for the use and operation of the product, must be carefully read and observed. Furthermore, the national regulations applicable in the user´s country must be taken into account for a safe use.

WARNING
This product is supporting life and health. Inappropriate use, maintenance or servicing may affect the function of the device and thereby seriously compromise the user`s life.
Before use, the product operability must be verified. The product must not be used if the function test is unsuccessful, it is damaged, a competent servicing/maintenance has not been made, genuine manufacturer spare parts have not been used.

Alternative use, or use outside this specification will be considered as non-compliance. This also applies especially to unauthorised alterations to the product and to commissioning work that has not been carried out by manufacturer or authorised persons.

2.3 Liability Information

The manufacturer accepts no liability in cases where the product has been used inappropriately or not as intended. The selection and use of the product are the exclusive responsibility of the individual operator. Product liability claims, warranties also as guarantees made by manufacturer with respect to the product are voided, if it is not used, serviced or maintained in accordance with the instructions in this manual.

2.4 Safety and Precautionary Measures to be adopted

WARNING
The following safety instructions must be observed implicitly. Only in this way the safety and health of the individual operators and the correct functioning of the instrument can be guaranteed.

- The device described in this manual must be operated and maintained in strict accordance with their labels, cautions, instructions, and within the limitations stated.
- The device is designed to detect volatile organic compounds or vapours in air.
- Do not position the device in direct sunlight or on the dashboard of vehicles to avoid overheating.
- The device can be used in any position. In the event of rain, it is recommended that the gas inlet is facing downwards. The gas inlet filter is equipped with a hydrophobic membrane, which blocks the gas flow and thus the measurement in the event of water ingress..
- The only absolute method to ensure proper overall operation of the device is to check it with a known concentration of the gas for which it has been calibrated. Consequently, calibration checks must be included as part of the routine inspection of the system.
- As with all devices of these types, high levels of, or long exposure to, certain compounds in the tested atmosphere could contaminate the sensor. In atmospheres where the device may be exposed to such materials, calibration must be performed frequently to ensure that the operation is dependable and display indications are accurate.
- Use only genuine manufacturer replacement parts when performing any maintenance procedures provided in this manual. Failure to do so may seriously impair instrument performance. Repair or

alteration of the device, beyond the scope of these maintenance instructions or by anyone other than an authorised manufacturer service personnel, could cause the product to fail to perform as designed.

- The device is designed for applications under atmospheric conditions.
- Significant dust deposits on the gas inlet will increase the response time of the device. Checks for filter condition must be done at regular intervals.

2.5 Permanent Instrument Warranty

Warranty

Seller warrants that this product is designed and manufactured to the latest internationally recognized standards by manufacturer under a quality management system that is certified to ISO 9001. As such the manufacturer warrants that this product will be free from defective parts and workmanship and will repair or (at its option) replace any instruments which are or may become defective under proper use within twenty four [24] months from date of commissioning by an approved manufacturer representative.

This warranty does not cover wearing parts, i.e. parts inside the gas way like valves, pumps, lamp and other or damage caused by accident, abuse or abnormal operating conditions.

Defective goods must be returned to manufacturer premises accompanied by a detailed description of any issue. Where return of goods is not practicable manufacturer reserves the right to charge for any site attendance where any fault is not found with the equipment. Manufacturer shall not be liable for any loss or damage whatsoever or howsoever occasioned which may be a direct or indirect result of the use or operation of the contract goods by the buyer or any party.

This warranty covers instrument and parts sold to the buyer only by authorized distributors, dealers and representatives as appointed by manufacturer. The warranties set out in this clause are not pro rata, i.e. the initial warranty period is not extended by virtue of any works carried out there under.

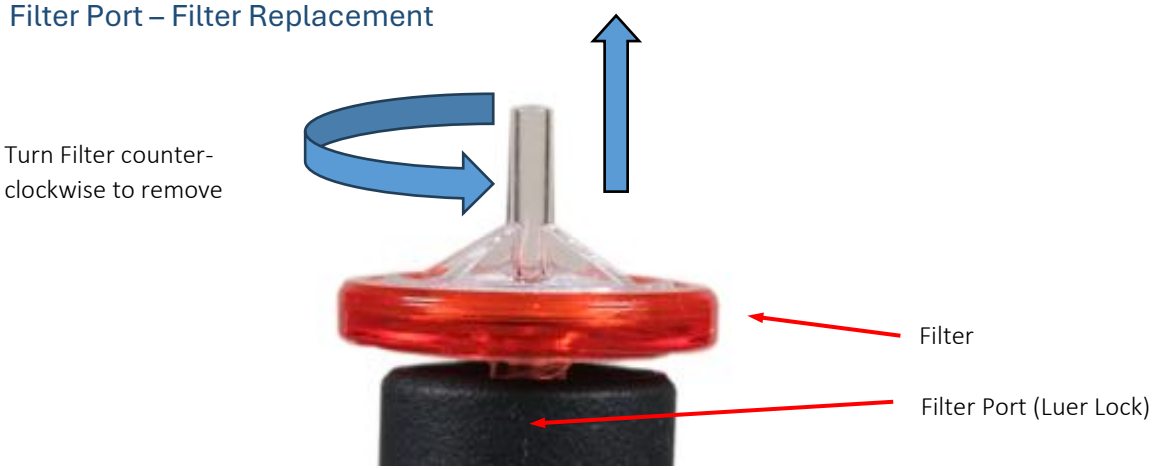
In no event will manufacturer be liable for any incidental damages, consequential damages, special damages, punitive damages, statutory damages, indirect damages, loss of profits, loss of revenues, or loss of use, even if informed of the possibility of such damages. Manufacturers liability for any claims arising out of or related to this product will in no case exceed the order value. To the extent permitted by applicable law, these limitations and exclusions will apply regardless of whether liability arises from breach of contract, warranty, tort (including but not limited to negligence), by operation of law, or otherwise.

3 PPID3 at a Glance

3.1 Sample Inlet Filter – Installation

CAUTION
Do not use the device without installed dust/water protection filter. Impurities within ambient air or water can get into gas path and damage the device. Only use origin replacement filter (spare part).

3.1.1 Filter Port – Filter Replacement



3.2 Charging – Options

CAUTION
Do not charge the device if it is obviously damaged

3.2.1 How To – Charging

1. Charge over USB-Connector. USB-C Charger with 15 Watt Output recommended.
2. USB-C cable with a maximum length of 2 metre.
3. Wireless Charge field at Rear-side of device
4. Protection against battery charging at too low temperature. Built-in heater to enable battery charging even at sub-zero temperatures.
5. High battery capacity for superior operating time.
6. Battery can be replaced by authorised service.

Avoiding deep discharge extends the service life.
The device itself will shutdown or not start before deep discharge capacity is reached.
Do not charge device at temperatures over 40 °C.

Recommended storage conditions for battery for longer periods:

- minimum 50 % of battery charge level
- at normal environment conditions
- recharge every 6 month

3.2.2 Battery indicator

	Battery is fully charged Typical remaining device runtime is 18 hours.
	Battery is charging.
	Battery charge level > 75%
	Battery charge level > 50%
	Battery charge level > 25%
	Battery charge level < 25%
	Battery is nearly empty Remaining device runtime is at least 10 minutes.

The typical remaining device runtime is reached with new battery at 25°C.

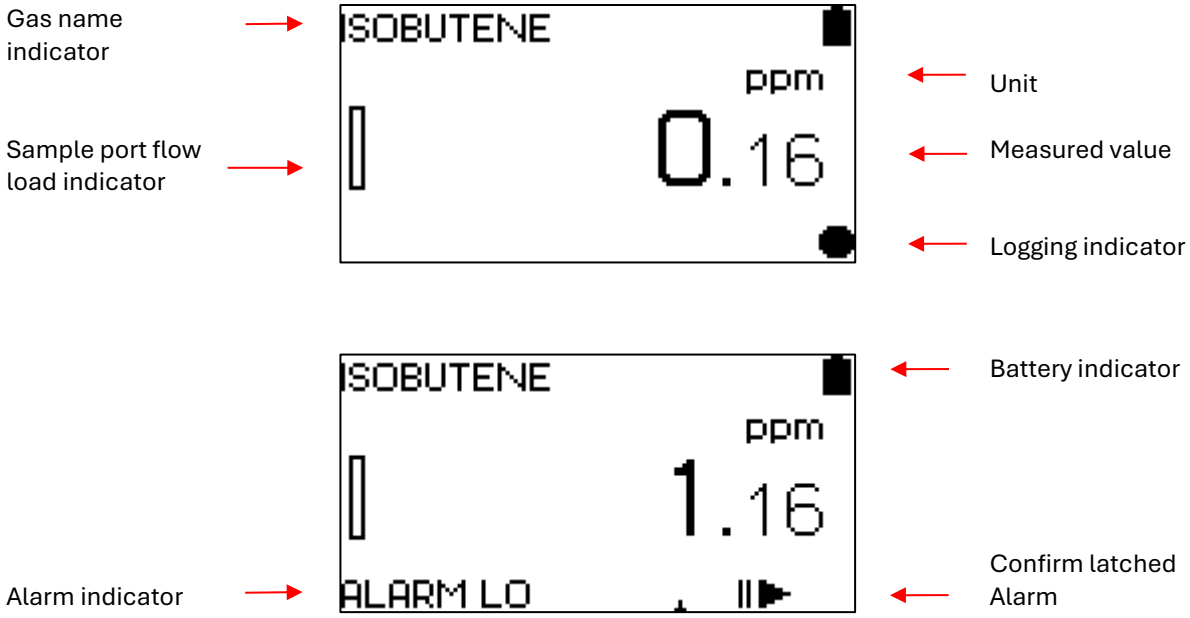
4 User Interface

4.1 Startup

Press the right button to view the battery status. Hold the right button to switch on. The device then carries out a warmup and self-diagnostic sequence, which takes approximately 30 seconds

If the self-diagnostic sequence is satisfactorily completed, the main screen is displayed.

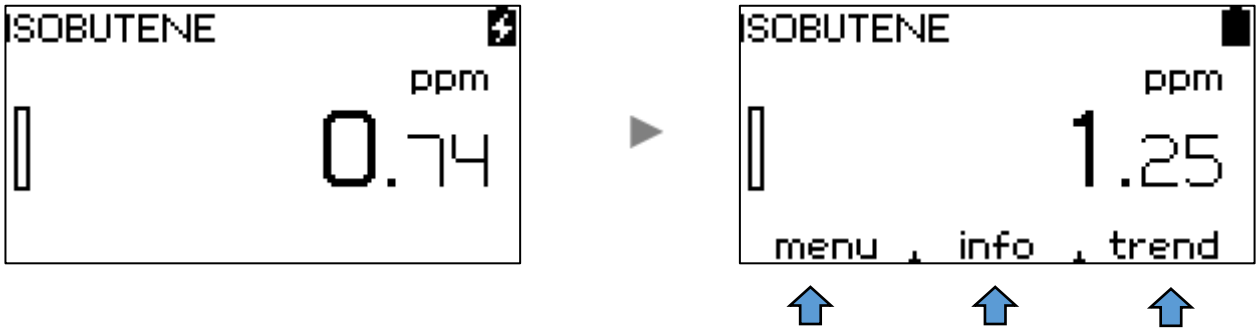
4.2 Display Overview



Sample Port – Dust/Water Filter should be replaced when sample port flow load indicator is filled up completely.

4.3 Operating Buttons

The device is operated via three buttons located below the display. The buttons have tactile feedback and are illuminated.



4.3.1 How To – Activate a Button

1. The assignment of the buttons changes according to the menu item currently selected.
2. Press the button below the action you want to perform.
3. The display will response to user input and shows the navigation bar.
4. Select the desired menu item.

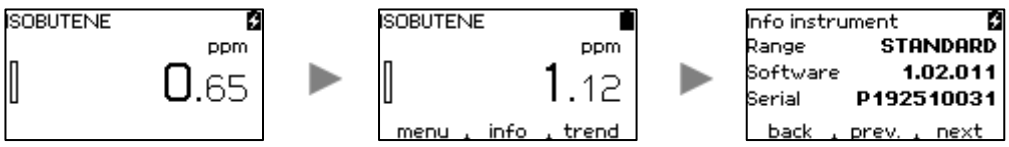
After a period of 5 seconds of inactivity, the navigation bar disappears automatically.

4.4 Instrument Info

This feature allows inspecting the instruments settings WITHOUT leaving the measurement function.

4.4.1 How To – Activate the Instrument Info

1. Tap one of the keys to activate navigation bar.
2. Select the item “info” at the navigation bar.
3. Select the item “next” repeatedly to scroll through the info screens.
4. Select the item “back” to go to measurement screen.

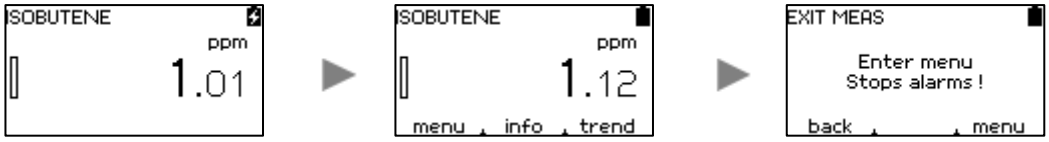


4.5 Instrument Menu and turn off

WARNING
When entering the instrument menu the measurement function will ABORT. No measurement will be performed, all alarms will be switched off.

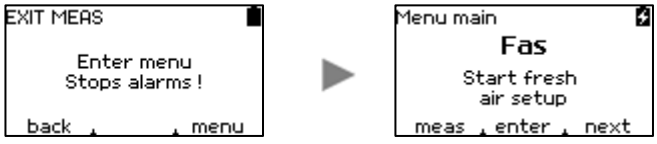
4.5.1 How To – Leave measurement

1. Tap one of the keys to activate navigation bar.
2. Select the item “menu” at the navigation bar.
3. Select the item “menu” to leave measurement.



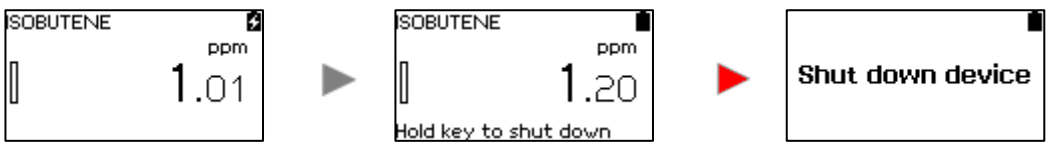
4.5.2 How To – Activate the Instrument Menu

1. Leave the measurement.
2. Select the item “menu” at the navigation bar.
3. The first item in main menu is entered.
4. “next” for other menu options.
5. “enter” to perform menu point.



4.5.3 How To – Shut down device

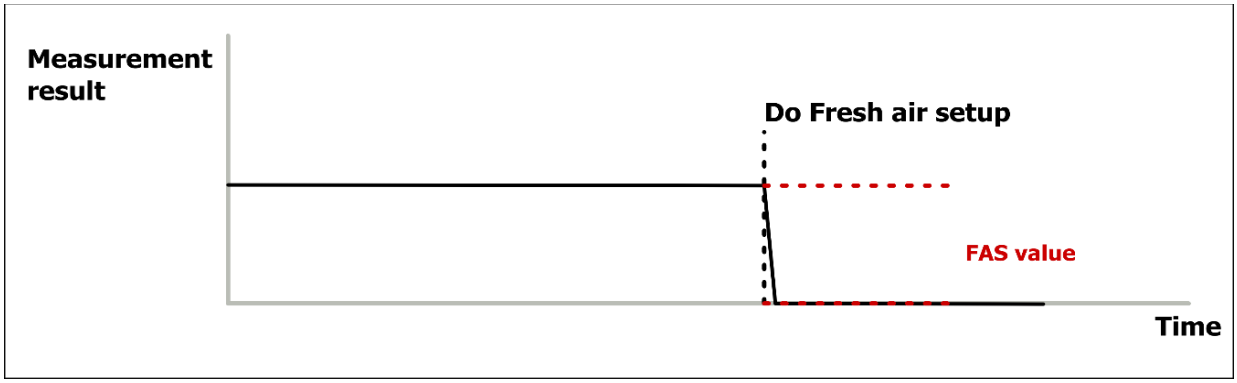
1. Device must be in measurement screen
2. Hold the left key
3. Device will turn off when message appears on screen



5 Operation

5.1 Fresh Air Setup (FAS)

A fresh air adjustment should be made in pure ambient atmosphere to increase the display accuracy in principle before the start of a measurement. The measured result on display is actually set to 0.00 by the fresh air calibration.



If the Fresh Air Setup fails (0.00 display will not be reached), then a calibration should be carried out.

Basically, we recommend the fresh air setup at high and low ambient temperatures on the local working field in order to increase the display accuracy.
The Fresh Air Setup value is temporarily stored until the device is switched off.

5.1.1 How To – Start FAS

1. Go to the instrument menu and select “FAS”
2. “Enter” to go to FAS screen
3. Press “run” to start fresh air setup

5.2 Calibration

WARNING
Test gases used for calibration can be a health risk. Proper ventilation or extraction must be ensured.

5.2.1 General

The calibration must be done at regular intervals in accordance with applicable national and regional regulations. The device calibration and the accuracy of the measuring can easily be checked at any time by using the build-in **Calibration Test** function. It is recommended to carry out a calibration check before using the device for the first time.

The device should be in operation for at least 30 minutes before calibration.

5.2.2 Preparations before Calibration / Calibration Test

To perform a calibration, you need a pressure cylinder of SPAN Gas and / or ZERO Gas, a flow reducer, a tube and a T-piece. The flow reducer should provide a flow of at least 500 ml/min. The T-piece should be installed between flow reducer and sample port – dust filter. The open tube length on T-piece junction should be 300 – 500 mm. (see following connection scheme).

You can also use our calibration kit (article no. 0003332). The pressure regulator is suitable for standard calibration gas containers with a capacity of 34 litres or 112 litres (thread 5/8" -UNF).

For calibration, it is recommended to use the **Calibration Kit** from accessories. (see chapter Accessories)

5.3 Calibration Procedure

Calibration adjusts the measuring sensitivity of the device so that the displayed value corresponds to the actual gas concentration present. Calibration can be carried out with the standard test gas isobutene, the displayed value for another gas is then corrected by a gas-specific response factor to be set. It is also possible to calibrate directly with the target gas if this is available with a known concentration. A common standard test gas is isobutene with a concentration of 100 ppm in air. This gas provides good measurement accuracy for most purposes where measurements are to be made in the range from 0 to max. 500 ppm. The highest measuring accuracy is achieved at the calibration point. For special requirements, it may be advantageous to use test gas with a different concentration.

5.3.1 Calibration Methods

The device supports two different methods for calibration. (**Standard Calibration** with span gas [Isobutene in air] and **Extended Calibration** with span gas [User gas in air] with known concentration). Which calibration method is carried out, depends on the measurement task, e.g. overview measurements, workplace monitoring, control measurements, worst-case measurements, environmental measurements and emission measurements.

Both calibration data for **Extended Calibration** and **Standard Calibration** are stored independently of one another. Via the Instrument Menu >> MEAS CONFIG, the user can choose most appropriate calibration data setting for his measurement application.

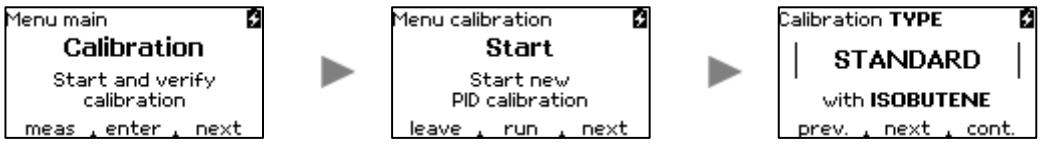
Both calibration methods using a two-point-calibration, which can be performed as a manual or an automatic calibration.

- Both, fresh air (zero gas) and calibration gas (span gas) must be applied successively to the Sample Port – Gas Input.
- The user will be asked for applying the right gas during the calibration sequence.

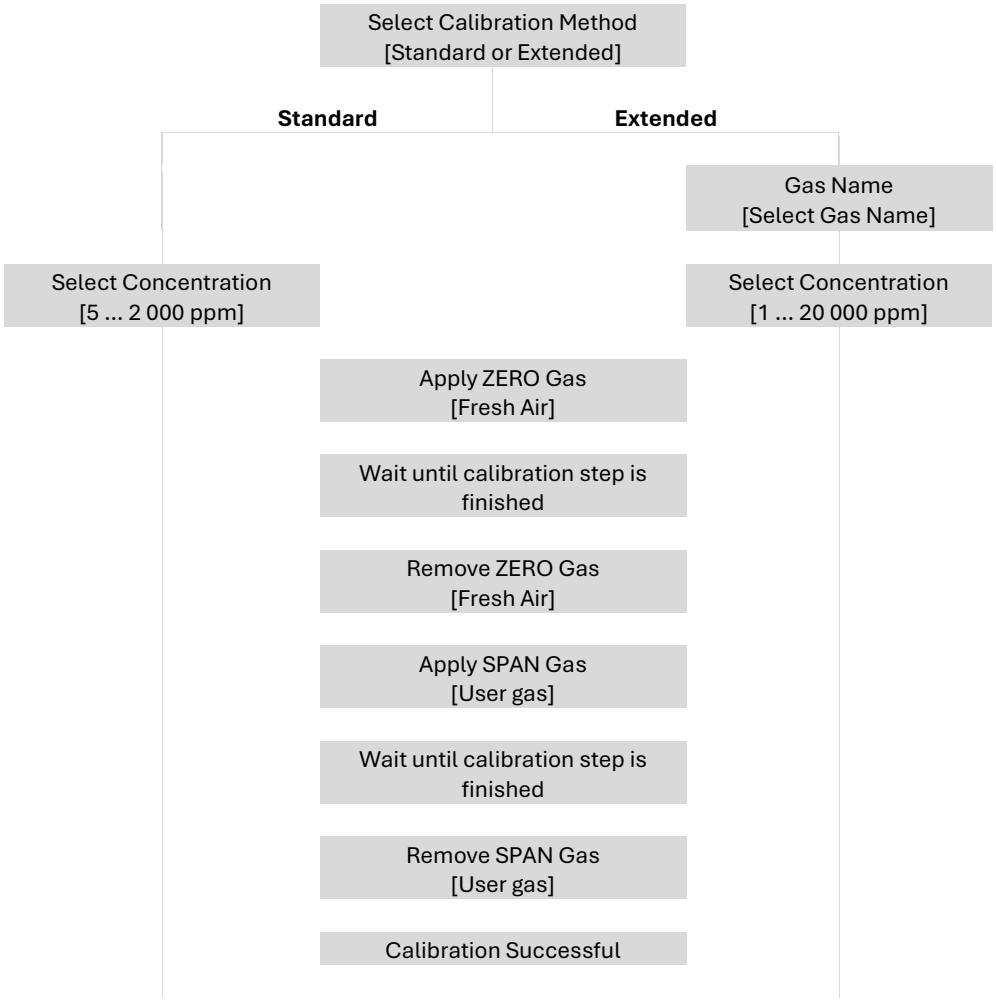
After starting any calibration, calibration gas [zero or span gas] must be applied until calibration step is finished. The calibration procedure can be cancelled at any time by pressing “abort”. The previous device calibration will be used.

5.3.2 How To – Start Calibration

4. Go to the instrument menu and select “Calibration”
5. “Enter” to go to calibration screen (start new calibration)
6. Press “run” to start new calibration and follow the instructions on the screen



5.3.3 Calibration sequence for standard and extended calibration



5.3.4 Calibration Verification

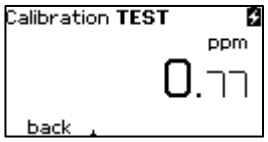
The calibration test allows you to check the device display when zero gas or calibration gas is present without generating alarm signals.

The calibration check makes it possible to assess whether the display accuracy of the device still meets the requirements, whether a sudden deterioration in the measuring behaviour has occurred, e.g. due to a greatly increased sample gas concentration or contamination, or whether a repeat calibration is required after a longer period of operation.

Guideline values regarding the frequency of testing and permissible deviations can be found in IEC 62990-2 or DGUV Information 213-056.

5.3.5 How To – Start Calibration Test

1. Go to the Instrument Menu and select CALIBRATION
2. Select “enter” to go to calibration screen
3. Select with “next” VERIFY and press “run”



Calibration TEST from PID

- Apply Gas to the Sample Port
- The current measurement value will be displayed
- No Alarms will occur

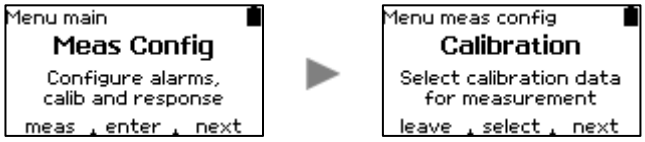
5.4 Measurement Configuration

This menu will be used for device measurement configuration setting

- Calibration method
- Response factor
- Alarm settings

5.4.1 How To – Configure Measurement

1. Go to the Instrument Menu and select MEAS CONFIG
2. Select “enter” to start measurement configuration
3. Select “next” to go through configurations



Calibration

This menu item allows you to select which calibration data will be used for the measurement.
The user can select between the following two calibration data settings:

- **STANDARD** or **EXTENDED**

See section: Selection of Calibration Data

Response

This menu item allows you to select a response factor.

- **ISOBUTENE, BENZENE, CS2, Custom,** ...

See section: Response Factor

Alarms

This menu item allows you to select two user configurable alarm leves.

- **ALARM LO** and **ALARM HI**
- And latching enable for each alarm

See section: Alarm Setting

Measurement unit

This menuitem allows yout to select the device measurement unit

- **ppm, mg/m^3, µmol/mol, ml/m^3**

See section: Measurement unit Alarm Setting

5.4.2 Selection of Calibration Data

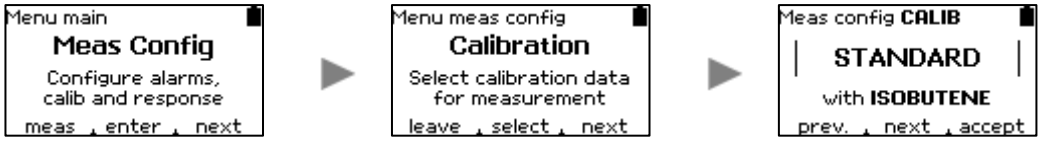
The device supports two different methods for calibration. (**Standard Calibration** with SPAN Gas [Isobutene in air] and **Extended Calibration** with SPAN Gas [User gas in air] with known concentration)

This menu setting allows you to select which type of calibration data are used for measurement.

Both calibration data for **Extended Calibration** and **Standard Calibration** are stored independently of one another.

5.4.3 How To – Select Calibration Data

1. Go to the Instrument Menu and select MEAS CONFIG
2. Select “enter” to start measurement configuration
3. Select Calibration, change with “next/prev.” calibration data setting and “accept”



5.4.4 Response Factor

Based on SPAN Gas [Isobutene] calibration for correct reading of other VOCs it is necessary to set a response factor. This factor reflects the sensitivity of the known VOC compared with the calibration gas and can be more or less than 1. A list of predefined response factors based on official literature and custom factors are stored in the device and can be selected by user. Additionally, the user got the possibility to specify a list of particular response factors with a maximum of 100 entries by an additional configuration software via PC (optional communication cable required). After selecting a response factor, the gas name will be shown on the display.

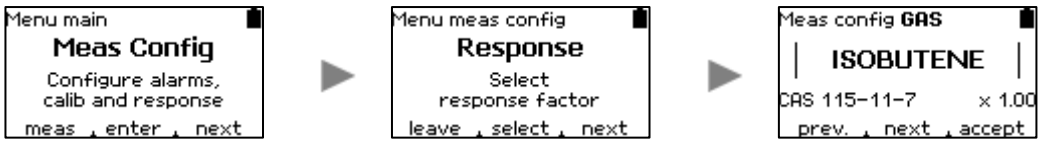
5.4.5 List of Response Factors for PID with 10.6 eV Lamp:

List Item	Gas Name	Response Factor
1.	ISOBUTENE	1.00
2.	BENZENE	0.55
3.	Custom 0.50	0.50
4.	Custom 1.25	1.25
5.	Custom 2.00	2.00
6.	Custom 5.00	5.00
7.		
8.		

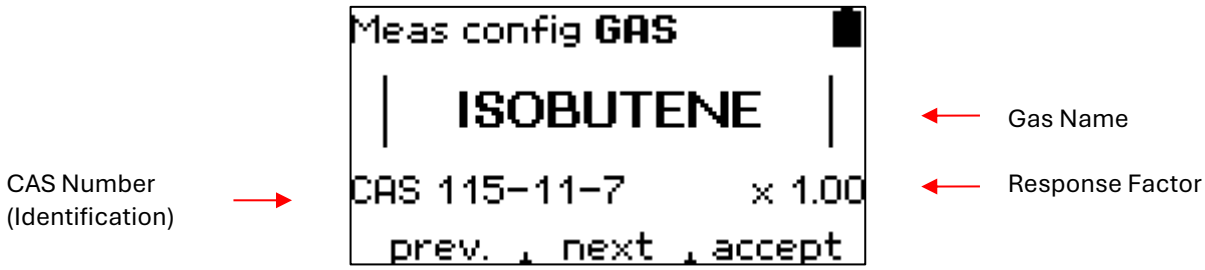
The list of response factors is only available if **Standard Calibration** is selected in MEAS CONFIG.

5.4.6 How To – Select Response Factor

1. Go to the Instrument Menu and select MEAS CONFIG
2. Select “enter” to start measurement configuration
3. Select Response, change with “next/prev.” calibration data setting and “accept”



5.4.7 Response Screen



5.4.8 Alarm Setting

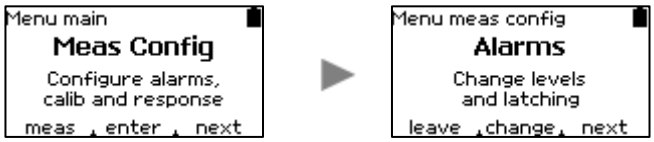
It is obligated to set “ALARM HI” higher than “ALARM LO”.

The device features two user configurable alarm levels:

ALARM LO	0.1 – 20 000 ppm
ALARM HI	0.2 – 20 000 ppm

5.4.9 How To – Configure Alarm Setting

1. Go to the Instrument Menu and select MEAS CONFIG
2. Select “enter” to start measurement configuration
3. Select Alarms, “change” to change alarm levels and latching and “accept”



ALARM LO level

- 0.1 – 20 000 ppm

ALARM LO latching

Alarm LO state will be active even if measurement value is below level

ALARM HI level

- 0.2 – 20 000 ppm

ALARM HI latching

Alarm HI state will be active even if measurement value is below level

Enable **alarm latching does not automatically reset** when the gas concentration rises above the chosen alarm threshold (Alarm LO or Alarm HI). Press the **"II▶"** to confirm the active alarm.

5.4.10 Measurement unit

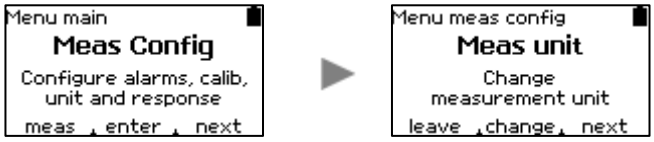
It is recommended to check alarm values when changing the measurement unit.

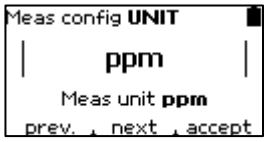
The device features four measurement units:

ppm	
mg/m^3	Calculated from mg/m^3 factor from selected response factor
µmol/mol	
ml/m^3	

5.4.11 How To – Configure measurement unit

1. Go to the Instrument Menu and select MEAS CONFIG
2. Select "enter" to start measurement configuration
3. Select Meas unit, change with "next/prev." and "accept"





Measurement units

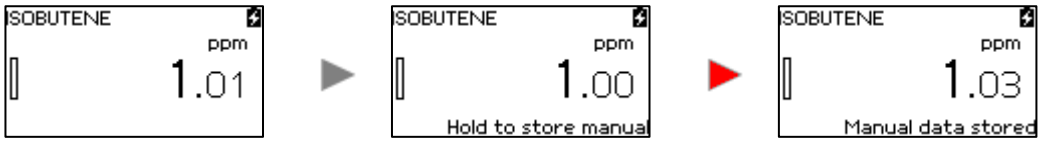
- ppm
- mg/m^3
- µmol/mol
- ml/m^3

5.5 Data storage

This menu will be used for device data storage configuration setting and storage handling.

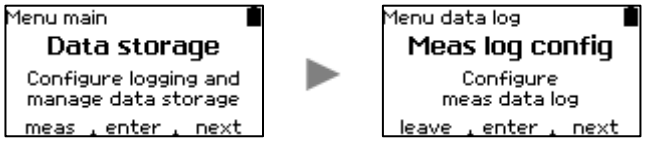
5.5.1 How To – Store manual measurement data

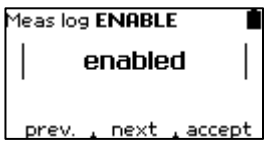
4. Device must be in measurement screen
5. Hold the right key
6. Data is stored when message appears on screen



5.5.2 How To – Configure measurement data logging

1. Go to the Instrument Menu and select DATA STORAGE
2. Select “enter” to start storage configuration
3. Select “enter” to configure measurement data log





Data log ENABLE

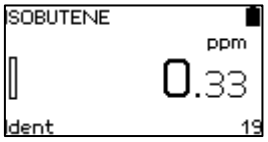
Enable or disable measurement data logging

Data log INTERVAL

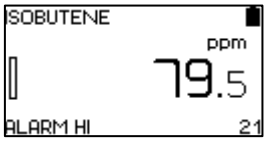
Measurement data log interval can be set from 1 second up to 1 hour

Data log IDENT

Shows the ident (Sequence number) of the latest measurement data log item in measurement screen



Measurement screen with Ident enabled in normal status

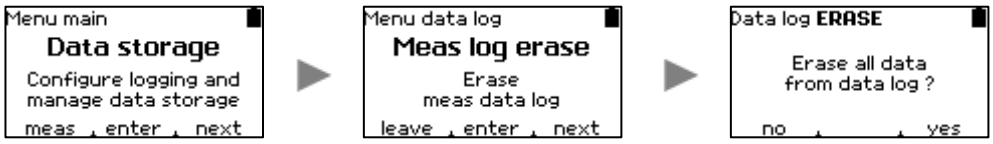


Measurement screen with Ident enabled in alarm status

If the smallest adjustable measurement interval (1 s) is chosen, measurement data over a period of up to 8 hours could be stored.

5.5.3 How To – clear measurement data logging

1. Go to the Instrument Menu and select DATA STORAGE
2. Select “enter” to start storage configuration
3. Select “enter” to start erase measurement data log
4. Confirm to erase data log

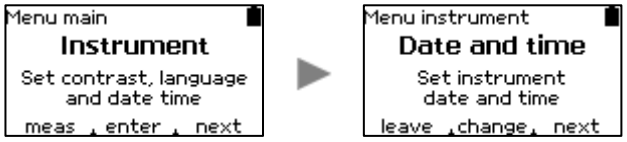


5.6 Instrument settings

This menu will be used for device settings.

5.6.1 How To – Set date and time

1. Go to the Instrument Menu and select INSTRUMENT
2. Select “enter” to go to instrument settings
3. Select “change” to change date and time



5.6.2 How To – Set language

1. Go to the Instrument Menu and select INSTRUMENT
2. Select “enter” to go to instrument settings
3. Select “next” to the language screen

The device will reboot to assume the new language setting.

5.6.3 How To – Set display contrast

1. Go to the Instrument Menu and select INSTRUMENT
2. Select “enter” to go to instrument settings
3. Select “next” to the contrast screen

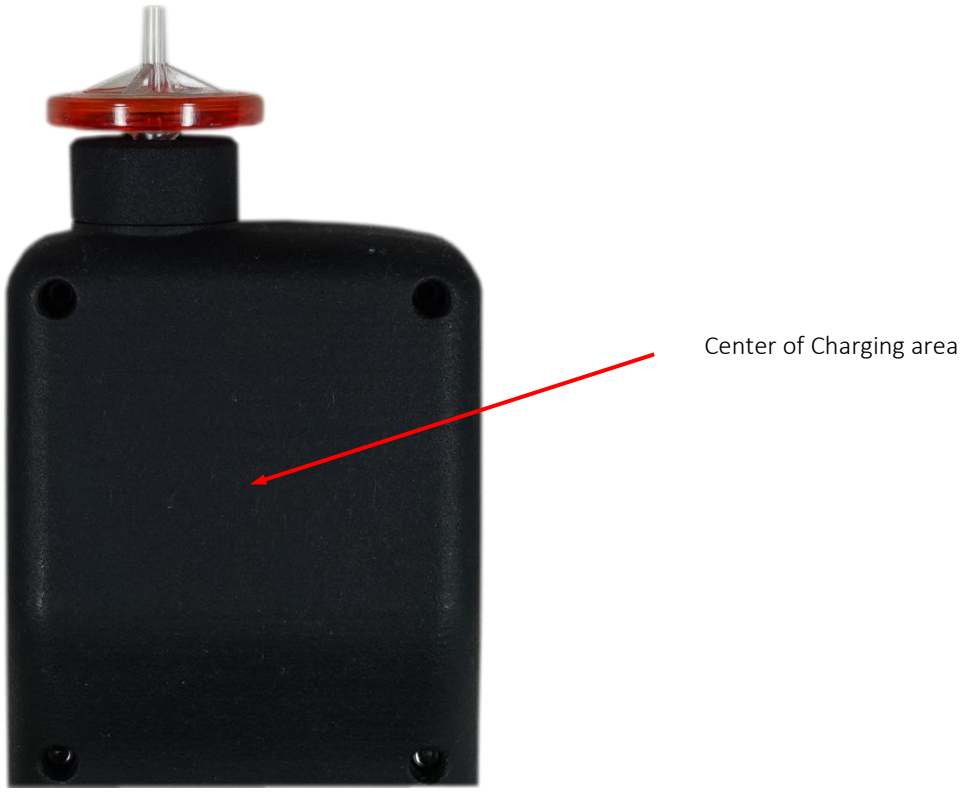
5.7 Interfaces

5.7.1 USB (C-Type)

The device is equipped with a sealed USC-C connection. This can be used to charge the device battery, but also to configure device parameters or to read out stored data. Use only USB-C cable with a maximum length of 1 metre.

5.7.2 Wireless Charging

The device has an interface for contactless charging. The position is marked on the housing (centre of the top back of the device).



5.8 Advanced

5.8.1 Reset (Factory Default Setting)

You have to calibrate the instrument after executing this function.

The device can be restored to the original factory defaults.

Alarm levels	ALARM LO ALARM HI	20 ppm 50 ppm
Calibration		Standard Calibration
Response Factor	ISOBUTENE	x 1.00

5.8.2 How To – Reset to factory defaults

1. Go to the Instrument Menu, select SERVICE.
2. Select “enter” to go to instrument service
3. Select factory reset
4. Select “run” and confirm to reset device settings and erase logging data
5. The device will reboot after factory reset

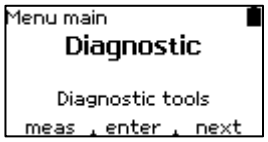
Customized response factors that are generated via PC software PPID3 Control Center will be deleted after reset. All stored logging data is erased.

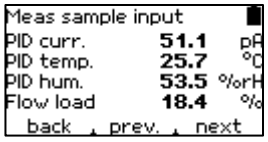
5.8.3 Diagnostic

The diagnostic allows switching components or detailed measurement values of the instrument for diagnostic purposes.

5.8.4 How To – Activate Diagnostic

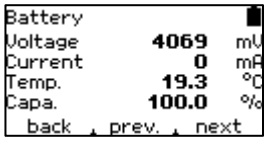
1. Go to the Instrument Menu, Advanvced and select DIAGNOSTIC
2. Select “enter” to start Diagnostic
3. Select the item “next” or “prev.” to repeatedly scroll through the diagnostic screens
4. Select the item “back” to go to main menu





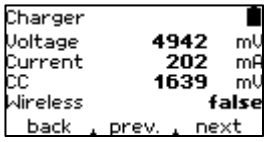
PID sensor values

- PID current, temperature, humidity measured directly in sensor
- Numerical flow load value



Battery values

- Voltage, current, temperature and numerical capacity



Charger values

- Input voltage and current
- USB cable and wireless charging info

The displayed temperature and humidity do not correspond to the ambient conditions because they were measured in the device. In general, the ambient temperature will be lower and the humidity higher.

5.9 Measurement

The device supports the following measurement range

Signal range (Isobutene equivalent)	0 ... 2000 ppm
Resolution	0.01 ppm (max.)
Recommended SPAN Gas for calibration	100 ppm Isobutene
Recommended ZERO Gas for calibration	Synthetic Air
Over range	2400 ppm Isobutene

5.10 Resolution of Measurement Result

According to the value of the measurement result, the display value is rounded:

Measurement result Isobutene	Rounded to resolution
result < 5 ppm	0.01 ppm
result < 10 ppm	0.01 ppm
result < 20 ppm	0.02 ppm
result < 50 ppm	0.05 ppm
result < 120 ppm	0.1 ppm
result < 200 ppm	0.2 ppm
result < 500 ppm	0.5 ppm
result < 1000 ppm	1 ppm
result < 2500 ppm	2 ppm
result > 2500 ppm	out of range from here

5.11 Output States

State	LED				Buzzer
	Status (green)	Alarm 1 (red left)	Alarm 2 (red right)	Error (yellow)	
Startup	blink on/off	off	off	on	Beep pair, single
Menu / Maintenance	on	off	off	on	
Normal	on, heartbeat	off	off	off	
Alarm LO	on	blink	off	off	Beep pair slow, continous
Alarm HI	on	off	blink	off	Beep pair fast, continous
Over range	on	off	blink	off	Beep pair fast, continous
Under range	on	off	blink	off	Beep pair fast, continous
Error	off	off	off	on	Beep pair fast, paused
Pump blocked	on	blink	off	off	Beep pair fast, continous
Device turned off					
charging	off	off	off	on	
charging complete	on	off	off	off	

6 Maintenance and Service

WARNING
For safety reasons this product is supporting life and health. Equipment must be maintenanced and serviced by qualified personal only; otherwise the approval may be adversely affected, wrong readings could occur, and persons relying on this product for their safety could sustain serious personal injury or death.

NOTICE
The device contains electronic components, which react sensitively to electrostatic discharge (ESD). Work on or in the unit must be done only by qualified personal and in full compliance with the appropriate instructions and pertinent regulations.

6.1 Maintenance Intervals

The maintenance intervals must be set keeping the environmental conditions in mind (especially in high-polluted environment).

A periodic inspection of the device must be performed at least once a year. The first inspection shall take 3 month after installation.

It is strongly recommended that the maintenance intervals below be respected in order to guarantee reliable operation.

Part Number	Parts	Maintenance Interval	Comment
0002184	Dust Filter	1 times a year / or every 3 month	For use in high-polluted environment, the dust filter shall be exchanged if flow load indicator indicates full.
0002598	Front Isolation	1 times a year	The front isolation shall be exchanged no later than 1 year after continuous operation.
0002670	Lamp	every 2 years	Parts shall be exchanged no later than 2 years after continuous operation.
0002673	Pump	every 2 years	
0002671	Sensor Block	every 2 years	

6.2 How To – Replace the Sample Port – Dust Filter

Replace Sample Port – Dust Filter

1. Unscrew the dust filter counter-clockwise.
2. Replace the dust filter by a new one.
3. Screw new filter clockwise, tighten moderately

Calibrate the device after installation of a new dust filter.

7 Technical Data

Detector principle	VUV- Photoionization with 10.6 eV hollow cathode lamp with Ceramic Discharge Channel (optional 11,8 eV lamp)
Detection ranges	0 ... 2 000 ppm Isobutene *
Display range	0 ... 20 000 ppm, depending on response factor of detected substance
Lower detection limit	Typical 0,05 ppm Isobutene (2000 ppm Range) *
Display resolution	Dynamic
Response time	T90 < 10 s *
Signal integrity	Up to 100 ppm typical > 98 % * Up to 2 000 ppm typical > 95 % *
Influence of humidity	Humidity and temperature compensation at -10 ... 55 °C and 0 ... 90 % rH residual effect less than < 10 %
Operating condition	-10 ... 55 °C 0 ... 95 % rH, non-condensing
Storage conditions	-20 ... 60 °C 0 ... 95 % rH, non-condensing (45°C for 3 months limited by battery)
Gas sampling	Integrated diaphragm pump (about 200-300 ml/min) with function monitor. Sample inlet with dust and water protection filter
PID lamp lifetime	10,6 eV: Min. 8 000 hours, typical more than 15 000 hours 11,8 eV: 4 months from delivery
Signalisation	Visual: Ultra-bright LEDs, Acoustic: Alarm, at least 90 dB (A) in 30 cm
Alarms	Locked alarm, Self-triggering alarm, 2 adjustable alarm levels
Power supply	Integrated Li-Ion-battery 3,6 V/24 Wh
Runtime / Charging time	Runtime >15 hours / Charge approx. 6 hours with recommended USB charger, approx. 10 hours with Wireless-Charger
Display	Full graphic monochrome OLED-display
Digital interfaces	USB-C
Program functions	Continuous measurement with automatic and manual data storage, threshold monitoring, two-point calibration, self-test, fresh air compensation,
Calibration	Two-point calibration Zero gas and span gas via sample inlet
Memory	For 8 hours one measurement data per second with time, temperature, and humidity
Response factors	Up to 100 selectable response factors can be set for 10,6eV lamp Input of user-specific response factors possible for 10,6eV and 11,8eV lamp
User interface	Graphical OLED display, 3 tactile buttons
Dimension, weight	220 mm x 75 mm x 48 mm (L x W x H), less 450 g
Ingress Protection	IP54

* The indicated values were obtained under standardized conditions with 10,6eV lamp.
Test gas was isobutene in synthetic air.

8 Approvals

8.1 Marking

Product: **Portable Photoionization Detector PPID3-***

Manufacturer: ACI Analytical Control Instruments GmbH
Volmerstraße 9A
D-12489 Berlin
Germany

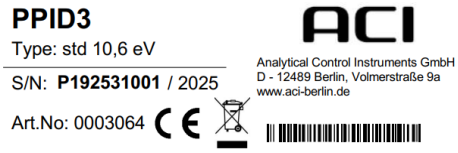
Type key:

PPID3 - R*- L*

0 – Lamp 10,6 eV; 1…future options
Measurement range: 0 – standard; 1…future options

Year of Manufacture: see Label

S/N: see Label



8.1.1 EMC Conformance according to the Directive 2014/30/EU

EN 50270:2015 Type 2,

9 Appendix

9.1 Error Messages

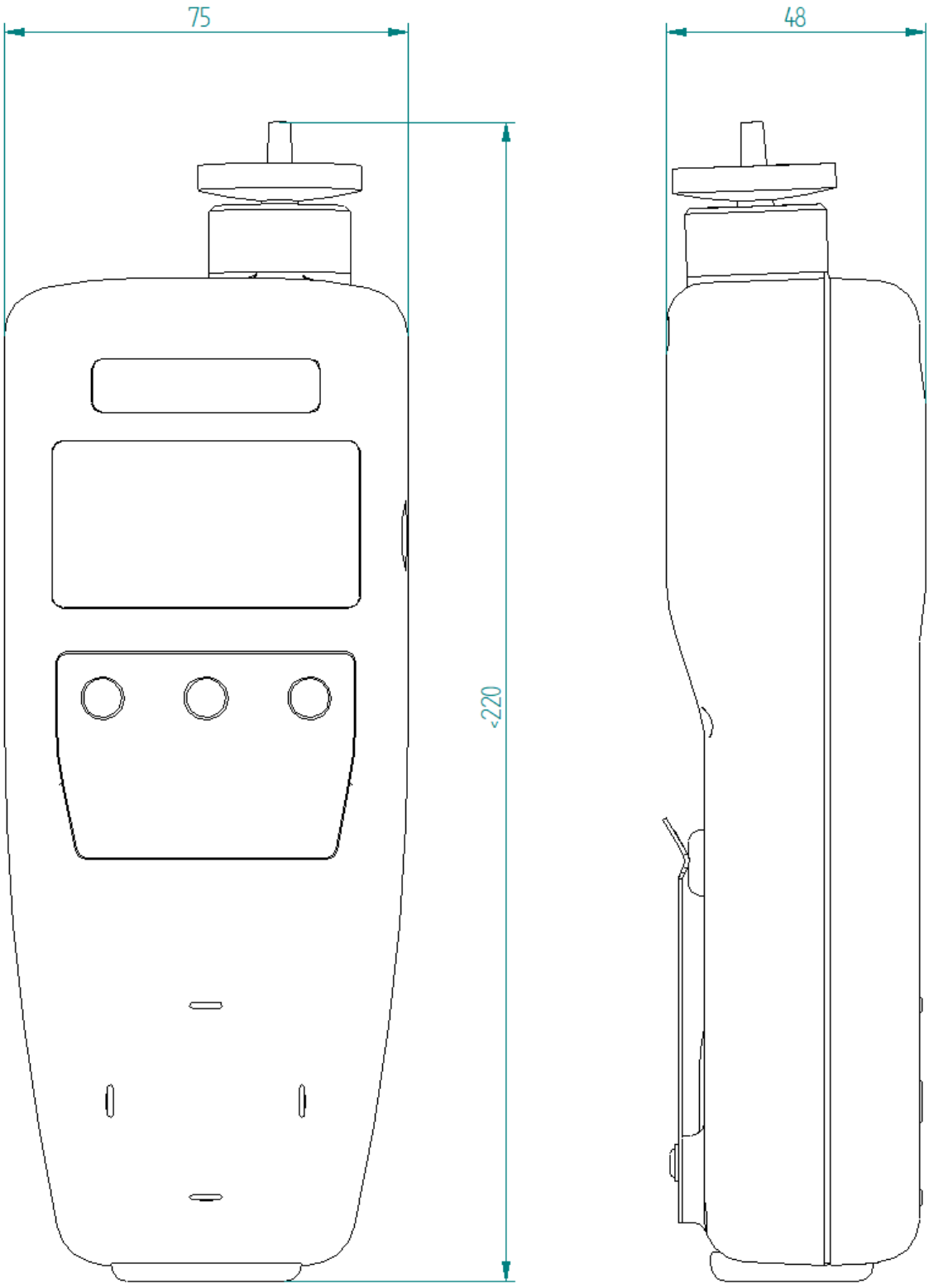
If an error is detected, the error message, followed by a short description, will be displayed. In this case, the normal operation of the device will not respond to gas.

Display	Cause	Troubleshooting
PID lamp	The PID lamp does not work.	Check that the PID lamp connector is well connected (Opening of the device is required).
PID sensor	PID sensor does not work.	Check that the cable between PID sensor and PCU-PCB is well connected (Opening of the device is required).
PID humid	PID humidity sensor error.	
Pump Motor	The pump motor does not work.	Check that the Pump motor connector is well connected (Opening of the device is required).
Pump Blocked	The pump was blocked or got heavy load.	Check input with dust filter. Check the tubing in second step (Opening of the device is required).
LED	LEDs does not work.	Restart the device.

If the error code is still shown after a restart and troubleshooting, the device could be defective.

For additional support, please contact the manufacturer.

9.2 Mechanical Drawing



Dimensions shown in millimeters.

10 Contact Information

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Volmerstraße 9A

D-12489 Berlin

Germany

Tel: +49 30 7543 97710

Fax: +49 30 7543 97711

www.aci-berlin.de

11 Ordering Information

Available options:

I.	**R0**	Detection Range (Standard Range 0 ... 2000ppm)
II.	**L0**	Lamp (10.6 eV)
	L1	Lamp (future option)

The following variants are available as standard.

		I.	-	II.	ACI Part No.
PPID3	-	R0	-	L0	0003313

12 Scope of Delivery

Part Number	Description	Notice
PPID3-R0-L0	PPID3 complete device in Carrying case with: • 1 x 10.6 eV VUV lamp (mounted in the device) • 1 x Dust/Water Filter • 1 x USB-Cable • 1 X Quick start guide • 1 x User manual • 1 x Declaration of conformity (in users manual) • 1 x Certificate of inspection	Further accessories and spare parts available

13 Spare Parts

Part Number		
0002591	Dust/Water Filter	
0002975	Front Isolation Pack (5 pieces)	
0003298	SPID3 – Lamp Kit 10.6 eV	
0003344	SPID3 – Lamp Kit 11.8 eV	
0003297	Std Sensorblock kit	
0003191	brushless pump kit	

14 Accessories

Part Number		
0002719	Calibration Kit • Calibration Gas 100 ppm Isobutene in air 34 l • Tube • Flow Controller with pressure indicator (Thread 5/8" -UNF) (Only in Germany)	
0003332	Calibration Kit • Tube • Flow Controller with pressure indicator (Thread 5/8" -UNF)	
0002735	Calibration Gas 100 ppm Isobutene in air 34 l (Only in Germany)	
0003339	USB-C cable	
0003338	USB-C Charger (Only in Germany)	

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